



**Leading Light
Wind**

Environmental Mitigation Plan

For

Leading Light Wind



New York State Energy Research and Development Authority

Albany, NY

Prepared by:

Invenergy Wind Offshore LLC

601 W 26th St., Suite 1420, New York, NY 10001

January 26, 2023

Record of Revision

Revision Date	Description of changes	Revision on pages
January 26, 2023	Issue for ORECRFP22-1	N/A

Communication Officers, Contact Information,

Name/Title	Role	Contact Information
Wes Jacobs	Project Director	wjacobs@invenergy.com (609) 457-0899

Link to project information: [<https://leadinglightwind.com/>]

Table of Contents

1.0	Environmental Mitigation Plan Summary	5
1.1	Overall Philosophy and Principals	5
1.2	Overall Approach to Incorporating Data and Stakeholder Feedback	5
1.3	Existing Guidance and Best Practices That Will be Followed	6
2.0	Communications and Collaboration Approach	8
2.1	Overview and Communication Plan Objectives	8
2.2	Communication Officers/Positions, Responsibilities, and Contact Information	8
2.3	Identification of Stakeholders	9
2.4	Participation in Stakeholder and Technical Working Groups	9
2.5	Communication Methods and Tools by Phase	10
3.0	Supporting Other Environmental Research	12
3.1	Support of Collaborative Research	12
3.2	Handling/Processing Requests	13
3.3	Data Availability	13
3.4	Proposed Restrictions	14
3.5	Financial Commitment for Third Party Research	14
3.6	Proposed or Existing Commitments/Collaborations	15
4.0	Proposed Mitigation of Impacts to Marine Mammals and Sea Turtles	16
4.1	Baseline Characterization	16
4.2	Species of Interest	17
4.3	Potential Impacts and Mitigation Measures by Phase	17
4.4	Monitor for Potential Impacts During Each Phase	20
4.5	Strategies for Developing Alternative Protocols	21
5.0	Proposed Mitigation of Impacts to Birds and Bats	22
5.1	Baseline Characterization	22
5.2	Species of Interest	25
5.3	Potential Impacts and Mitigation Measures by Phase	25
5.4	Monitor for Potential Impacts During Each Phase	27
5.5	Strategies for Developing Alternative Protocols	28

6.0	Proposed Mitigation of Impacts to Fish, Invertebrates and their Habitats	29
6.1	Baseline Characterization	29
6.2	Species of Interest	29
6.3	Potential Impacts and Mitigation Measures by Phase	30
6.4	Monitor for Potential Impacts During Each Phase	33
6.5	Strategies for Developing Alternative Protocols	34
7.0	Considerations for Subsea Cables and Overland Cables	35
7.1	Mitigation Strategies for Subsea and Overland Cables	35
8.0	Additional Considerations	36
8.1	Additional Mitigation Strategies and EMP Refinement	36
8.2	Process for Updating the EMP	36
9.0	Project Decommissioning	37
9.1	Potential Impacts Based on Available Information and Experience	37
9.2	Approach for Developing Plan and Coordination with Stakeholders	38

List of Tables

Table 1: Communication Officers/Positions, Responsibilities, and Contact Information	8
Table 2: Proposed Communication Methods and Tools by Phase	11
Table 3: Potential Impacts and Mitigation Measures by Phase – Marine Mammals and Sea Turtles	18
Table 4: Potential Impacts and Mitigation Measures by Phase – Birds and Bats	26
Table 5: Proposed Impacts and Mitigation Measures by Phase – Fish, Invertebrates, and their Habitats	30



1.0 Environmental Mitigation Plan Summary

1.1 Overall Philosophy and Principals

Leading Light Wind's overall approach and philosophy to development is based on the belief that the natural environment and offshore wind energy development can mutually coexist and thrive. Leading Light Wind believes that coexistence can be achieved by careful evaluation of existing uses in the lease area and waters adjacent to the lease area and offshore export cable routes (the project area), avoiding impacts where feasible, and where needed, reducing impacts through mitigation.

Leading Light Wind believes that to develop the most comprehensive Environmental Mitigation Plan (EMP) that avoids or minimizes adverse environmental impacts during the various stages of project execution should be:

- Identified and developed in early and frequent consultation and coordination with the relevant stakeholders.
- Based on robust baseline characterization that has been developed in consultation with relevant stakeholders.
- Evidence-based and founded on the latest science.
- Focused on targeted data collection, monitoring and/or research to satisfy information gaps.
- Incorporated into spatial planning (e.g., project siting and design).
- Applied throughout the project design and implementation processes (e.g., surveys, construction methods and operations and maintenance activities).

Leading Light Wind recognizes the importance of adaptive management and will continue to evolve its procedures for the evaluation and mitigation of impacts to environmental resources throughout the project life cycle.

1.2 Overall Approach to Incorporating Data and Stakeholder Feedback

Leading Light Wind Will use research, data, and stakeholder feedback to update this EMP and support decision making throughout the life cycle of the project.

Leading Light Wind believes consultation and coordination with relevant stakeholders is an important means of identifying potential risks or opportunities for sufficiently avoiding and mitigating environmental impacts. Relevant stakeholders include regulatory agencies, marine users, research organizations (e.g., universities, regional consortiums, NYSERDA Technical Working Groups), leading subject matter experts, and Environmental Non-Government Organizations (ENGOS). A comprehensive description of Leading Light Wind's stakeholder engagement strategy is described in the Stakeholder Engagement Plan (see Section 16 of the proposal).

Leading Light Wind shall review existing research and data and seek input from stakeholders regarding data gaps to inform decisions made throughout the project life cycle.

Leading Light Wind will consult with the relevant stakeholder groups to get feedback on plans, data, mitigation, and buy in on decisions in advance of the regulatory process. As described in the Leading Light Wind Permitting Plan (see Section 10 of the proposal), Invenergy met with the Bureau of Ocean Energy Management (BOEM) in August 2022 to discuss its comprehensive data collection strategy to characterize the lease area and potential cable routes. Key data collection principles include but are not limited to leveraging existing data and science where applicable; consulting past-project precedent; conducting purposeful data collection that is useful in evaluating potential project impacts and data gaps; and engaging with relevant stakeholders. These principles will be applied throughout the project life cycle.

Leading Light Wind will seek input from relevant stakeholders on survey rationales and methodologies. Through the permitting process, and throughout the project life cycle, Leading Light Wind will seek input from relevant stakeholders on design, construction and operation, and decommissioning plans.

Leading Light Wind's pre- and post-construction monitoring shall be designed to improve the understanding of impacts of offshore wind energy development and operations on wildlife. Monitoring would serve as the primary measure for ensuring return of natural habitat functionality following completion of construction and necessary operation. Leading Light Wind intends to collaborate with relevant stakeholders, potentially in association with other proposed offshore wind projects, to conduct all project related monitoring in scientifically valid ways that further the knowledge of movements and potential impacts of wildlife species of concern within New York Bight. Monitoring provides an excellent platform for bolstering our shared understanding of the New York Bight and the larger Atlantic Ocean ecosystems but will require deliberate collaboration and coordination. Regional consortiums such as the Regional Wildlife Science Collaborative (RWSC) and Responsible Offshore Science Alliance a (ROSA) play critical roles here.

1.3 Existing Guidance and Best Practices That Will be Followed

Leading Light Wind will follow existing guidance documents, to the extent practicable, and update references as new guidance becomes available.

- NOAA NMFS. 2018. 2018 Revision to: Technical Guidance for Assessing the Effects of Anthropogenic Sound on Marine Mammal Hearing: Underwater Acoustic Thresholds for Onset of Permanent and Temporary Threshold Shifts, April 1, 2018.
- NMFS GARFO. 2020. Recommendations for Mapping Fish Habitat. NMFS GARFO Habitat Conservation and Ecosystem Services Division.
- BOEM. 2019. Guidelines for Providing Information on Marine Mammals and Sea Turtles for Renewable Energy Development on the Atlantic Outer Continental Shelf Pursuant to 30 C.F.R. Part 585 Subpart F. June 2019. Available online at: <https://www.boem.gov/sites/default/files/renewable-energy-program/Regulatory-Information/BOEM-Marine-Mammals-and-Sea-Turtles-Guidelines.pdf>.
- BOEM. 2019. Guidelines for Providing Information on Fisheries for Renewable Energy Development on the Atlantic Outer Continental Shelf Pursuant to 30 C.F.R. Part 585. Available at: <https://www.boem.gov/sites/default/files/renewable-energy-program/BOEMFishery-Guidelines.pdf>
- NOAA. 2021. Information Needs to Assess Essential Fish Habitat Impacts from Offshore Wind Energy Projects Along the U.S. Atlantic. Available at: <https://media.fisheries.noaa.gov/2022-02/EFH-InfoNeeds-OSW-GARFO.pdf>
- BOEM. 2019. Guidelines for Providing Benthic Habitat Survey Information for Renewable Energy Development on the Atlantic Outer Continental Shelf Pursuant to 30 C.F.R. Part 585. Available at: <https://www.boem.gov/sites/default/files/renewable-energy-program/Regulatory-Information/BOEM-Renewable-Benthic-Habitat-Guidelines.pdf>. The guidance recommends that the NMFS EFH mapper tool (<http://www.habitat.noaa.gov/protection/efh/habitatmapper.html>) be used for species identification and habitat characteristics at any particular location (page 7).
- BOEM. 2020. Guidelines for Providing Information on Fisheries Social and Economic Conditions for Renewable Energy Development on the Atlantic Outer Continental Shelf Pursuant to 30 C.F.R. Part 585. May 27, 2020. Available at: <https://www.boem.gov/sites/default/files/documents/aboutboem/Social%20%26amp%3B%20Econ%20Fishing%20Guidelines.pdf>.
- BOEM 2020. Guidelines for Providing Avian Survey Information for Renewable Energy Development on the Outer Continental Shelf Pursuant to 30 C.F.R. Part 585. May 27, 2020. Available at: <https://www.boem.gov/sites/default/files/documents/newsroom/Avian%20Survey%20Guidelines.pdf>.

- NMFS 2021. Letter of Concurrence on Site Characterization Surveys for Offshore Wind Energy Development. Greater Atlantic Region Fisheries Office. Gloucester, MA. Revised September 2021. Available at: https://media.fisheries.noaa.gov/2021-12/OSW%20surveys_NLAA%20programmatic_rev%201_2021-09-30%20%28508%29.pdf.
- BOEM. 2013. Guidelines for Submission of Spatial Data for Atlantic Offshore Renewable Energy Development Site Characterization Surveys. Available at: https://www.boem.gov/sites/default/files/uploadedFiles/BOEM/Renewable_Energy_Program/Regulatory_Information/Spatial_Data_Guidelines.pdf
- BOEM. 2021. Project Design Criteria and Best Management Practices for Protected Species Associated with Offshore Wind Data Collection. Available at: <https://www.boem.gov/sites/default/files/documents//PDCs%20and%20BMPs%20for%20Atlantic%20Data%20Collection%2011222021.pdf>
- BOEM. 2021. Programmatic Endangered Species Consultation and Revised Conditions for Protected Species during Offshore Wind Data Collection Activities, Frequently Asked Questions. Available at: <https://www.boem.gov/sites/default/files/documents/renewable-energy/state-activities/Protected-Species-FAQ.pdf>

2.0 Communications and Collaboration Approach

2.1 Overview and Communication Plan Objectives

Leading Light Wind recognizes that implementing a communication plan and identifying communication objectives is important to environmental mitigation.

Inverenergy has a proven track record of developing successful projects by engaging relevant stakeholders in honest, open, and meaningful dialogue early and often throughout the life of a project as evidenced by our 30GW project portfolio in four continents that will be applied to the Leading Light Wind project.

Leading Light Wind shall seek methods and processes to allow for a two-way flow of information between key stakeholders and developers, specifically highlighting how the developer uses this feedback to inform their decision making. Relevant stakeholders for the Leading Light Wind project include regulatory agencies, marine users, research organizations (e.g., universities, regional consortiums, NYSERDA Technical Working Groups), leading subject matter experts, and ENGOs. A comprehensive description of Leading Light Wind’s stakeholder engagement strategy is described in the Stakeholder Engagement Plan.

Leading Light Wind shall provide updates to environmental stakeholders in an appropriate manner that would be easily accessed and widely distributed. Openness is a core value and cornerstone of Leading Light Wind’s approach to engaging with and sharing data with relevant stakeholders. A comprehensive description of Leading Light Wind’s stakeholder engagement strategy is described in the Stakeholder Engagement Plan (see Section 16 of the proposal).

2.2 Communication Officers/Positions, Responsibilities, and Contact Information

Table 1 below provides a list of communication officers, their role, and contact information. The project website link is: <https://leadinglightwind.com>

Table 1: Communication Officers/Positions, Responsibilities, and Contact Information

Name/Title	Role/Responsibilities	Contact Information
Wes Jacobs Project Director	Primary point of contact for the Leading Light Wind project	wjacobs@inverenergy.com
Annette Ehrhorn BOEM Project Coordinator	Primary point of contact for BOEM on Lease OCS-A-0542	Annette.ehrhorn@boem.gov
Carmen Bennett Senior Manager, Federal Permitting	Primary point of contact for Leading Light Wind on environmental matters Environmental Technical Working Group (E-TWG) representative (primary)	cbennett@inverenergy.com
Ross Diamond Manager, State Permitting	Secondary point of contact for Leading Light Wind on environmental matters E-TWG representative (secondary)	rdiamond@inverenergy.com
Kirsten Barnstead, Associate, Biological Systems	Point of contact for Leading Light Wind on matters related to wildlife assessment and impacts E-TWG representative (alternate)	kbarnstead@inverenergy.com

Casey Fontana, Technical Manager	Point of contact for Leading Light Wind on matters related to navigation safety	cfontana@invenergy.com
Michael Porto, External Engagement Director	Primary point of contact for stakeholder management	mporto@invenergy.com

2.3 Identification of Stakeholders

Leading Light Wind will continue to engage with relevant stakeholders via independent meetings or through environmental round tables in order to maximize opportunities to discuss the project and solicit feedback. Relevant stakeholders include regulatory agencies, marine users, research organizations (e.g., universities, regional consortiums, NYSERDA Technical Working Groups), leading subject matter experts, and ENGOS. This process will continue throughout the Leading Light Wind project life cycle. Stakeholder lists, contact details and correspondence are listed on Leading Light Wind’s internal stakeholder tracking tool and classified accordingly.

2.4 Participation in Stakeholder and Technical Working Groups

2.4.1 Communication with E-TWG

Leading Light Wind shall dedicate project specific technical resources to the Environmental Technical Working Group (E-TWG).

Leading Light Wind is committed to active participation on the E-TWG as a means to collaborate on best practices and research for offshore wind energy development, balancing environmental concerns with responsible technically and commercially feasible offshore wind development. Leading Light Wind considers the participation of the ENGOS on E-TWG as an additional opportunity to engage with this key stakeholder group on responsible development and insights on additional outreach that may be valuable.

To the extent practicable, Leading Light Wind shall work with the E-TWG and shall attend E-TWG meetings and workshops. Current representation of Leading Light Wind on the E-TWG can be found within the Communication Officers table located within Section 2.2 of this document.

Leading Light Wind has identified individuals that will serve at a least one-year term in the role of primary and secondary core E-TWG members.

2.4.2 Communication with Other New York State Agencies

Leading Light Wind is committed to continuing consultation with New York State agencies throughout the project development process, including, but not limited to, project updates and plans, environmental data collection, baseline assessments, potential mitigation options, terrestrial archaeology, historic architecture, and permitting. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

2.4.3 Communication with Other Stakeholder and Working Groups

Leading Light Wind shall seek to collaborate with other regulatory agencies and stakeholder groups and continue to actively engage as participating members and sponsors of regional collaborative efforts (e.g., E-TWG, Fisheries Technical Working Group [F-TWG], ROSA, and RWSC, etc.).

In terms of communication and participation on stakeholder and working groups, Leading Light Wind will continue to actively engage as participating members and sponsors of regional collaborative efforts including the E-TWG, F-TWG, Maritime Technical Working Group [M-TWG], ROSA, and RWSC, and the New York Habitat and Fisheries Working Groups.

Leading Light Wind will continue to engage with federal and state regulatory agencies as needed to facilitate the development of effective mitigation measures. Leading Light Wind will also engage with the general public through web postings, social media notifications, project newsletter, open houses, and public hearings to share project information and address comments and questions.

2.4.4 Communication and Collaboration with Other Developers

Leading Light Wind shall continue its ongoing collaboration with other developers in the offshore space, and particularly with adjacent leaseholders.

Leading Light Wind shall seek to maximize the impact of research efforts such as data collection, methodology, analysis, and dissemination by collaborating with other developers, particularly those in adjacent lease areas, taking on similar initiatives. Through meetings coordinated by BOEM and the American Clean Power Association (ACP), New York Bight leaseholders are engaging in collaborative efforts to achieve the following shared objectives:

- Work together to identify innovative avoidance, minimization, mitigation, and monitoring measures based on lessons learned in the industry both domestically and globally.
- Develop data collection and research means and methods that provide maximum scientific benefit.
- Seek opportunities to meet as a group on select topics to reduce the need for individual meetings, reducing the strain on resources within those agencies.
- Seek to meet jointly in other forums and/or request joint New York Bight presentations/agenda items at various working group and stakeholder meetings to reduce the need for individual presentations.
- Participate in BOEM convenings of Native American Tribes.

Specific activities undertaken to date include participation in a regular New York Bight leaseholder forum specific to the BOEM Programmatic Environmental Impact Statement (PEIS), and engagement with neighboring leaseholder Atlantic Shores on turbine layout and spacing, data collection strategies, and other shared objectives.

2.5 Communication Methods and Tools by Phase

Table 2 describes the communication and outreach methods and tools that will be employed for each stakeholder group during each phase of the project.

Table 2: Proposed Communication Methods and Tools by Phase

Proposed Outreach Methods/Tools	Phase*			
	1	2	2	4
Host public meetings, open houses	x	x	x	x
Host/attend/participate in stakeholder meetings and workgroups	x	x	x	x
Conduct website promotion	x	x	x	x
Develop and share visual simulation tools	x	x	x	x
Attend and participate in Federal agency meetings, in person, webinars	x	x	x	x
Attend and participate in E-TWG, F-TWG, and M-TWG meetings	x	x	x	x
Host/attend/participate in Tribal meetings (in person, webinars)	x	x	x	x
Disseminate project newsletters	x	x	x	x
Sponsor and participate in RSWC and ROSA	x	x	x	x
<i>*Phase: 1: Survey/Design; 2: Construction; 3: Operation; 4: Decommissioning</i>				

3.0 Supporting Other Environmental Research

3.1 Support of Collaborative Research

Over the last 20 years, Invenergy has made community partnerships a core principle of our business and this continues to guide the role we want to play in a changing world. Invenergy sponsors environmental research programs that advance the state of practices for environmentally responsible energy infrastructure development, construction, and operations, as well as sponsors conservation initiatives that contribute to improving the natural world around Invenergy projects. Through these partnerships and activities, we have amplified our impact in the communities where we live, work, and operate. The details of this important company work are provided annually in the Invenergy Impact Report (<https://invenergy.com/our-people/invenergy-impact>). We will extend these guiding principles to our offshore wind portfolio and the Leading Light Wind project.

Leading Light Wind is committed to collaborating with the marine science community, TWGs, ENGOs, other offshore wind energy developers, and third-party groups to facilitate research aligned with these guiding principles. As US-focused research priorities are still being organized and coordinated, it is important for Leading Light Wind to engage with regional science organizations to ensure investment in research is strategic and advances gaining knowledge in the right areas and as quickly as possible. Leading Light Wind is a member and financial sponsor of the RWSC and ROSA and highly values the role that these organizations play in identifying research needs, and developing tools and standards for data collection, data sharing to fill those information gaps.

In furtherance of regional science goals, Leading Light Wind will adhere to the following objectives:

- Continue to engage with ROSA on their Fish FORWRD database which provides strategic insight into future research needs and helps facilitate the development of appropriate collaborative regional research initiatives.
- Continue to engage with RWSC on their developing Science Plan which will provide strategic insight into future research needs and help facilitate the development of appropriate collaborative regional research initiatives.
- Sponsor rigorous scientific research that helps inform offshore wind policy and responsible project decision-making.
- Conduct all project related data collection and monitoring in alignment with larger research efforts and further knowledge of species of concern, when appropriate, going beyond regulatory minimum monitoring protocols.
- Engage with ROSA, RWSC, TWGs, and other technical experts to review research proposals to critically assess the need for and value-add of each proposal to ensure resources are spent on the highest importance needs. Leading Light Wind will engage with regional technical experts to develop assessment and prioritization criteria to identify and outline priority research areas and needs for funding.
- Support the E-TWG Regional Synthesis Workgroup, ROSA, and RWSC in their ongoing efforts to develop criteria for prioritization of offshore wind-related environmental and fisheries research and apply criteria and data standards as practicable as they are developed and agreed upon by these organizations.
- Advocate technical experts conduct appropriate analyses (e.g., statistical power analyses) up front in the research planning process before implementing future studies to ensure scientific validity. In addition, F-TWG and/or ETWG are appropriate forums in which to discuss the development of such analyses and how they should be part of the research planning process.
- Target regionally located institutions and science organizations regarding collaborative data collection, monitoring, and research.
- Seek out and support underfunded organizations that provide valuable contributions to scientific knowledge and/or species protection.

- Focus on question-driven science and develop collaborations to collect environmental data to accompany studies of wildlife to better understand underlying drivers of distribution and habitat use.
- Make Leading Light Wind vessels, structures, and lease area available to host research projects that are compatible with the respective missions.
- In evaluating potential research projects, consider attention to the unique geologic, geographic, and environmental conditions of the lease area (e.g., proximity to unique features such as the Hudson Canyon, distance from shore, water depth, and species composition).

3.2 Handling/Processing Requests

Consistent with the objectives outlined above, Leading Light Wind will endeavor to meet with any interested parties when contacted to discuss prospective research requests and site or equipment access. Leading Light Wind is a strong supporter of collaborative research and has set aside funds specifically for third-party research as described below (Section 3.5 of this document). In evaluating proposals not being considered through one of the regional research collaborations such as RWSC, Leading Light Wind will establish a committee of expert technical advisors to assess and comment on proposals, as well as seek input from regional organizations such as ROSA, RWSC and TWGs to ensure proposal are not only scientifically valid but effectively address overall data and science gaps identified by these coordinating bodies.

Should there be sufficient volume of independent research interest, Leading Light Wind may create and publish targeted requests for proposals in a manner similar to that used by other funding entities such as US Department of Energy, to maximize creativity in research approaches and questions, as well as offer equal opportunity for new or underrepresented groups to seek funding and participate in research.

3.3 Data Availability

To enhance the understanding of environmental characteristics, or use by wildlife, of any offshore, nearshore, or onshore areas, Leading Light Wind is committed to making public relevant data and supporting metadata so long as it is not considered proprietary in nature, considered confidential business information, or discloses information that may compromise sensitive environmental resources.

Leading Light Wind will seek to collect and report data consistent with standards established by regional organizations and share data through established multi-sector data and information sharing platforms related to offshore wind planning and development such as the Northeast Ocean Data Portal and Mid-Atlantic Ocean Data Portal. Prior to any disclosure, data made available by Leading Light Wind will undergo rigorous quality assurance/quality control (“QA/QC”) and version control.

Within 90 days of contract execution, Leading Light Wind will provide NYSERDA with a Data Management and Availability Plan which will follow the guidelines set forth in the Wildlife Data Standardization and Sharing: Environmental Data Transparency for New York State Offshore Wind Development (Final NYSERDA Report May 2021). As required the Data Management and Availability Plan will include a list of relevant data expected to be collected with commitments to submit raw data to appropriate database(s) as soon as feasible, but not more than two years, after internal QA/QC. All data will include comprehensive metadata using Federal Geographic Data Committee standards, or others, as appropriate. Updates to the data plan will be submitted with quarterly reports.

3.4 Proposed Restrictions

Leading Light Wind will withhold data that is considered proprietary in nature, confidential business information, or potentially compromises the security of any sensitive environmental resources.

Leading Light Wind will restrict access to commercially sensitive data (e.g., wind resource data and operational availability estimates, geological information, etc.) as well as some data collected as part of collaborative efforts in cases in which collaborators have restrictions to which Leading Light Wind are bound. Generally, Leading Light Wind will seek to develop collaborative efforts that do not restrict data distribution based on withholding until publication or other academic presentation and would include clear end dates for data withholding for such purposes. Some data may need to be withheld if Tribes or commercial fisheries determine data to be culturally or commercially sensitive. For example, specific locations of fishing areas or cultural practices may need to be withheld or data may need to be aggregated in some cases.

Leading Light Wind will ensure any requests for site access do not create health or safety risk for project vessels, facilities, and personnel, the requestor, other ocean users, or the public, or cause disruption with the overall mission of such vessels or facilities.

3.5 Financial Commitment for Third-party Research

Leading Light Wind, contingent upon a winning bid under this Request for Proposals ORECFRP22-1, is committed to supporting regional monitoring of wildlife and key commercial fish stocks, and third-party research, by leveraging its \$300 million community benefits program aligned with the principles outlined above. As referenced in Leading Light Wind's Stakeholder Engagement Plan, the community benefits program includes budgeted funding categories that will ensure follow-through in this critical area. Leading Light Wind anticipates pursuing third-party research partnerships through its Partnerships category, and likewise looks forward to engaging with relevant communities and stakeholder groups to identify third-party research opportunities that will be funded through the Community Investment Fund.

Leading Light Wind commits \$5,000 per MW of Offer Capacity [REDACTED] to support regional monitoring of fish and invertebrates that support economically important fisheries to better understand how offshore wind energy development is potentially altering the biomass and/or distribution of these stocks and \$5,000 per MW of Offer Capacity [REDACTED] to provide financial and technical support to ongoing regional wildlife monitoring efforts and toward emerging research on potential alterations in behavior, populations, or distribution of sensitive wildlife as deemed necessary to better understand the effects of offshore wind development. Leading Light Wind will provide within one year of award, a Monitoring Plan detailing the commitment of the funding. The Monitoring Plan will describe the commitment of fifty percent of the funding within two years of the award, and the remaining fifty percent within three years of the award.

In developing the required Monitoring Plan, Leading Light Wind will adhere to the objectives outlined in Section 3.1 above. The financial support for monitoring may be provided by any combination of disbursement to regional organizations and direct expenditure to finance the monitoring work. Leading Light Wind will report specific spending activity, including amount, purpose, and result of investment, in their quarterly progress reports to NYSERDA.

In developing priorities for third-party research, Leading Light Wind will adhere to the objectives outlined in Section 3.1 above. In evaluating third-party research proposals, Leading Light Wind will establish a committee of technical advisors to assess and comment on proposals, as well as seek input from regional organizations such as ROSA, RWSC and TWGs to ensure proposal are not only scientifically valid but address overall data and science gaps identified by these

coordinating bodies. Funds will be directed toward areas of fundamental need as identified in Invenergy's engagement with regional technical experts (TWGs, ROSA, RWSC, etc.) and in alignment with recognized research priorities at the state and federal level, as described above. Consideration in funding will be aimed at providing resources to historically underfunded entities and programs in effort to promote equitable access to research opportunities. As themes emerge in research need, Invenergy may, as noted above, develop RFPs focused on broad objectives to promote creativity in approach, methodology, and application of emerging technologies as applicable to effectively address questions that advance understanding of sensitive resources and responses to development, and offer solutions for optimization of data collection, analyses, and dissemination.

3.6 Proposed or Existing Commitments/Collaborations

Leading Light Wind is a committed member and financial sponsor of the RWSC and ROSA. Leading Light Wind will rely heavily on these organizations as we make decisions regarding data collection, data standards, data sharing, and research commitments.

Leading Light Wind has begun establishing relationships and is contemplating partnerships with the scientific community and is targeting regionally located institutions involved in relevant offshore wind related research [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

4.0 Proposed Mitigation of Impacts to Marine Mammals and Sea Turtles

4.1 Baseline Characterization

4.1.1 Available Information

Leading Light Wind evaluated the extent to which existing, publicly available data sources were suitable for characterizing environmental resources in the relevant area, including evaluation of NYSERDA's Master Plan (2020) and research that followed publication of the plan.

Leading Light Wind has referenced the NYSERDA Master Plan Marine Mammals and Sea Turtles Study (2017; Appendix L) to characterize baseline conditions. This study reviewed the available data and has provided summaries of "Best Available Data" in the form of comprehensive lists of datasets for marine mammals and sea turtles. Leading Light Wind has also referenced NOAA Fisheries Marine Mammal Stock Assessment Reports and monitoring surveys conducted for NYSERDA and NYSDEC to characterize baseline conditions. Additional literature and datasets include but are not limited to:

- NYSERDA Digital Aerial Baseline Survey of Marine Wildlife in Support of Offshore Wind Energy OPA Final Report 2021 and accompanying annual reports on sea turtles and marine mammals.
- NOAA Fisheries 2019. Annual Report of a Comprehensive Assessment of Marine Mammal, Marine Turtle, and Seabird Abundance and Spatial Distribution in US waters of the Western North Atlantic Ocean – AMAPPS II. In Press. 2019.
- NOAA Fisheries 2020-2024 AMAPPS III (ongoing with annual reports)
- Hayes et al. 2022 U.S. Atlantic and Gulf of Mexico Marine Mammal Stock Assessments 2021 (updated annually).
- Roberts et al. 2022. Habitat-based Marine Mammal Density Models for U.S. Atlantic. Online Mapper prepared for Naval Facilities Engineering Command, Atlantic by the Duke University Marine Geospatial Ecology Lab, Durham, NC (updated periodically).
- Roberts et al. 2022. Habitat-based Marine Mammal Density Models for U.S. Atlantic. Online Mapper prepared for Naval Facilities Engineering Command, Atlantic by the Duke University Marine Geospatial Ecology Lab, Durham, NC (update Tetra Tech and LGL. 2020. Final Comprehensive New York Bight Whale Monitoring Aerial Surveys
- Tetra Tech and LGL. 2020. Final Comprehensive New York Bight Whale Monitoring Aerial Surveys Years 1-3 Survey Report for March 2017 – February 2020. Technical Report produced By Tetra Tech and LGL for NYSDEC under Tetra Tech contract C009926. May 18, 2020.
- Zoidis et al (2022) Distribution and density of six large whale species in the New York Bight from monthly aerial surveys 2017-2020. Continental Shelf Research. 230: <https://doi.org/10.1016/j.csr.2021.104572>
- WHOI (Woods Hole Oceanographic Institution). 2018. Autonomous real-time marine mammal detections – New York Bight Buoy. Woods Hole Oceanographic Institution and Wildlife Conservation Society. Available online at: http://dcs.whoi.edu/nyb0218/nyb0218_buoy.shtml.
- Murray et al. 2022. Acoustic presence and vocal activity of North Atlantic Right Whales (NARWs) in the New York Bight: Implications for protecting a critically endangered species in a human-dominated environment. Conservation Science and Practice, p.e12798.
- NMFS and USFWS 5-Year Reports, updated status reviews, and updated recovery plans on ESA-listed species

Leading Light Wind will engage with neighboring lease holders who are also engaged in the collection of baseline data that will strengthen the regional understanding of baseline characterization within the project area.

4.1.2 Data Being Collected

Leading Light Wind will collect data and support baseline characterization. Data to be collected will include:

- Observations of all NARWs and dead, entangled, or distressed marine mammals shall be communicated to federal authorities as soon as is practicable, and no later than 24 hours after occurrence.

[REDACTED]

- Leading Light Wind will use data and observations from Protected Species Observers (PSOs) onboard project related offshore survey vessels and across projects comprising a northeast regional dataset, where appropriate.

4.2 Species of Interest

BOEM's Environmental Assessment (2014) reports 32 species of marine mammals in the Northwest Atlantic Outer Continental Shelf (OCS) region of the mid-Atlantic that are protected by the Marine Mammal Protection Act (MMPA). Five of these species are listed under the Endangered Species Act (ESA) and are known to be present (a sixth species, humpback whale, is ESA-listed by the State of New York but not Federally), at least seasonally, in the Leading Light Wind lease area and potential export cable areas. Four species of sea turtle are known to occur in the vicinity of the Leading Light Wind lease area, all four of which are ESA-listed. The marine mammal species of greatest concern in the area is the NARW due to its low and declining population numbers. Though harbor porpoise population numbers are much larger than the NARW, their sensitivity to noise and the degree to which it disrupts their behavior makes it a species of concern. In considering sea turtles in the lease area, the Kemp's ridley sea turtle is a species of greater concern due to its declining population numbers and small size, which makes the animals difficult to spot and employ mitigation measures. In addition to species protected under ESA and the MMPA, there are species that NYSDEC has designated as High Priority of Greatest Conservation Need. These species may also warrant special consideration.

4.3 Potential Impacts and Mitigation Measures by Phase

Table 3 below lists the potential impacts to marine mammals and sea turtles and proposed mitigation measures by project phase.

Table 2: Potential Impacts and Mitigation Measures by Phase – Marine Mammals and Sea Turtles

Potential Impacts	Proposed Mitigation Measures	Phase*			
		1	2	3	4
Underwater noise impacts from geophysical survey equipment	<ul style="list-style-type: none"> Exclusion, clearance, and monitoring zones shall be maintained around noise-generating activities to help measure and mitigate potential noise-related effects on marine mammals. Monitoring during noise-generating activities shall be done through an integrated monitoring approach, including the use of PAM, National Marine Fisheries Service (NMFS)-approved PSOs, and other proven technologies, as appropriate, to the extent practicable and in compliance with federal regulation. Noise generating geophysical survey work shall not commence after dark or at other times of low visibility that would prevent sufficient monitoring of exclusion zones unless an alternative mitigation monitoring plan that does not rely only on visual observation has been approved by NMFS, to the extent compatible with practicability and worker safety. 	x	x	x	
Underwater noise impacts from construction and installation activities	<ul style="list-style-type: none"> Leading Light Wind shall seek to use noise attenuation technologies to reduce sound from pile driving of foundations (if such methods are used). Monitoring during noise-generating activities shall be done through an integrated monitoring approach, including the use of PAM, NMFS-approved PSOs, and other proven technologies, as appropriate, to the extent practicable. Leading Light Wind shall not commence impact pile driving for foundation installation during poor visibility conditions such as darkness, fog, and heavy rain, unless an alternative mitigation monitoring plan that does not rely only on visual observation has been approved by NMFS, to the extent compatible with practicability and worker safety. 		x		

Potential Impacts	Proposed Mitigation Measures	Phase*			
		1	2	3	4
Vessel strikes on marine mammals	<ul style="list-style-type: none"> Leading Light Wind shall ensure that all vessel personnel are trained regarding animal identification and protocols when sightings occur. Leading Light Wind shall provide reference materials on board all project vessels for identification of marine mammals and sea turtles. Leading Light Wind shall limit vessels speeds to 10 knots (18.5 km/h) or less for vessels 65 feet or greater during the period of November 1 through April 30 and implement separation distances. 	x	x	x	x
Electromagnetic Fields (EMF), resulting in potential disturbance to marine mammals/sea turtles and/or their prey resource	<ul style="list-style-type: none"> Leading Light Wind shall use proper shielding to reduce EMF impacts. Leading Light Wind shall conduct EMF modeling and assessments to identify potential mitigation requirements. Electrical cables shall be sufficiently buried where feasible to reduce EMF effects. Surface cable protection where sufficient burial is not possible and where appropriate based on a Cable Burial Risk Assessment (CBRA) and EMF assessments (acting as a further barrier between EMF and receptor). 	x	x	x	
Micro-siting conflicts with habitats and fisheries resources	<ul style="list-style-type: none"> Leading Light Wind will avoid, to the extent practical, siting structures (wind turbines, offshore substations, and submarine cables) in areas of sensitive habitat. 	x			
Additional proposed measures	<ul style="list-style-type: none"> Development of a monitoring program (pursuant to BOEM guidelines) to address specific questions, to include identifying key species of interest, and when possible, to contribute to the understanding of long-term project-specific impacts and larger scale efforts to understand cumulative impacts. 		x	x	
*Phase: 1: Survey/Design; 2: Construction; 3: Operation; 4: Decommissioning					

4.4 Monitor for Potential Impacts During Each Phase

Leading Light wind will monitor potential impacts to marine mammals and sea turtles during each phase of physical work for the project (survey/design, construction, operation, and decommissioning) to inform mitigation planning.

Leading Light Wind shall seek to collaborate with regulatory agencies and stakeholder groups (e.g., E-TWG, F-TWG, and ROSA) to identify research needs and opportunities. As part of the adaptive vessel plan, Leading Light Wind will establish a situational awareness network for marine mammal and sea turtle detections through the integration of sighting communication tools such as Mysticetus, Whale Alert, WhaleMap, etc. Additionally, sighting information will be made available to all project vessels through the established network. For NARW specifically, Leading Light Wind will monitor NMFS NARW reporting channels, USCG VHF Channel 16, and real-time acoustic networks such as the WHOI/WCS DMON buoys. Monitoring of impacts to marine mammals and sea turtles during each phase of the project will be accomplished through PSO reports when they are needed for mitigation, and a combination of visual and acoustic data collection.

In some cases when statistically robust methods are not practicable for addressing a data gap or question, models or proxy systems can be applied with ongoing validation with additional data collection. In the event it is infeasible to address a question with directed research or models, effects may need to be assessed in a risk framework and mitigation applied to address potential impacts with high likelihood and severity.

4.4.1 Assess and Quantify Changes

Leading Light Wind will statistically quantify changes to environmental resources.

Ideally, specific questions and focal species shall be chosen for the project either based on site-specific fisheries risk assessment, or in relation to broader regional efforts to assess variation between sites and understand cumulative impacts for sensitive species.

Monitoring will, to the extent practicable, use appropriate study designs and methodologies to effectively analyze risk prior to construction and evaluate impacts during construction and operation by testing hypotheses and helping to assure statistical power for meaningful data analysis. Leading Light Wind will ideally target monitoring and research towards interactions between offshore wind energy developments and the receptors it is being judged against. Leading Light Wind will include both visual and acoustic approaches.

Outside expertise will, if practicable, be consulted during study design and data analysis processes. Leading Light Wind will use the latest findings and determinations from other projects to focus research of changes on receptors and impacts that have been observed in other projects in the New York Bight, while still considering the unique location of the lease area.

[REDACTED]

[REDACTED]

To achieve statistically robust outcomes, scientific experts will be consulted and engaged in research and monitoring, and Leading Light Wind will be actively engaged in regional efforts through the RWSC, E-TWG, and potentially other

regional collaboratives [REDACTED]
[REDACTED]

4.4.2 Address Data Gaps

Leading Light Wind shall work with stakeholders, including regulatory agencies and local groups, in the design phase of the project to identify data gaps to be addressed through surveys or permitting applications.

Leading Light Wind believes the baseline information for sea turtles and marine mammals is adequate enough to enact responsible spatial planning and provide a comprehensive assessment of impacts. However, Leading Light Wind is open to collaborate on studies, research, and monitoring that furthers understanding of species behavior to ensure the most effective mitigation is employed. Similarly, Leading Light Wind will engage stakeholders to identify data gaps and will consider proposals for research and monitoring on a case-by-case basis that prioritize the filling of those data gaps. Leading Light Wind will also consider priorities and criteria set by NYSERDA's working groups, RWSC, and ROSA and work collaboratively with researchers and other developers to contribute as practicable to studies aimed at filling data gaps. Leading Light Wind will also consider priorities and criteria set by NYSERDA's working groups, RWSC, and ROSA and work collaboratively with researchers and other developers to contribute as practicable to studies aimed at filling data gaps.

4.5 Strategies for Developing Alternative Protocols

When mitigation strategies are insufficient, Leading Light Wind shall, as necessary, explore alternative protocols when mitigation strategies are insufficient with the E-TWG, regulatory agencies, and relevant stakeholders.

Leading Light Wind has not finalized a process for alternative protocols but is open to exploring this further in consultation with the E-TWG, regulatory agencies, and relevant stakeholders. The project will take additional measures to avoid or reduce potential impacts to marine mammal and sea turtle prey resources in consultation with E-TWG and BOEM and other stakeholders, consistent with the EMP.

Leading Light Wind will continue to consult with BOEM, NOAA NMFS and other key stakeholders throughout the project development process to determine if any alternative or additional appropriate and proportionate mitigation measures may be necessary.

All required mitigation and monitoring measures will be integrated into the project's "Protected Species Mitigation Protocol(s)." Leading Light Wind is open to consulting with relevant agencies, ENGOs and E-TWG on further appropriate and proportionate mitigation options, for example, real-time monitoring or observations of marine mammals when in transit and commitments to monitor daily reports on marine mammal sightings and Dynamic Management Areas.

Leading Light Wind is also open to engagement on potential offset mitigation measures to support population health of marine mammals and sea turtles in the event mitigation strategies initially employed are considered insufficient at some later date.

5.0 Proposed Mitigation of Impacts to Birds and Bats

5.1 Baseline Characterization

Leading Light Wind will establish baseline data for the presence of bird and bat assemblages within the project area.

Leading Light Wind evaluated the extent to which existing, and publicly available data sources were suitable for characterizing environmental resources in the relevant area, including evaluation of NYSERDA's Master Plan (2017) and research that followed publication of the plan. Leading Light Wind will leverage existing data from prior studies on bird and bat assemblages as part of an effort to evaluate data gaps and evaluate potential impacts. [REDACTED]

5.1.1 Address Data Gaps

Leading Light Wind will rely on the following datasets for baseline characterization for avian species, as well as any relevant studies that become publicly available in the future:

- NYSERDA Digital Aerial Baseline Survey of Marine Wildlife in Support of Offshore Wind Energy OPA Final Report 2021 and accompanying annual reports on birds.
- NOAA Fisheries 2019. Annual Report of a Comprehensive Assessment of Marine Mammal, Marine Turtle, and Seabird Abundance and Spatial Distribution in US waters of the Western North Atlantic Ocean – AMAPPS II. In Press. 2019.
- NOAA Fisheries 2020-2024 AMAPPS III (ongoing with annual reports).
- Information on threatened and endangered species and/or their habitat is also available through USFWS IPaC, available at <https://ecos.fws.gov/ipac/>
- NYSDEC Environmental Resource Mapper, available at <https://www.dec.ny.gov/animals/38801.html>
- Kinlan, B.P., Menza, C., & F. Huettmann. 2012. Predictive Modeling of Seabird Distribution Patterns in the New York Bight. Chapter 6 in "A biogeographic assessment of seabirds, deep sea corals and ocean habitats of the New York Bight: science to support offshore spatial planning." NOAA Technical Memorandum NOS NCCOS 141 (2012).
- NYSERDA 2010a. Pre-development of avian species for the proposed Long Island – New York City Offshore Wind Project Area. Final Report prepared for the New York State Energy Research and Development Authority. October 2010.
- Kinlan, B.P., Winship, A.J., White, T.P., & J. Christensen. 2016. Modeling At-Sea Occurrence and Abundance of Marine Birds to Support Atlantic Marine Renewable Energy Planning: Phase I Report. U.S. Department of the Interior, Bureau of Ocean Energy Management, Office of Renewable Energy Programs, Sterling, VA. OCS Study BOEM 2016-039. xvii+113 pp., available at <https://www.data.boem.gov/PI/PDFImages/ESPIS/5/5512.pdf>.

- NYSERDA 2017. New York State Offshore Wind Master Plan, November 2017, available at <https://www.nyserdera.ny.gov/All-Programs/Programs/Offshore-Wind/Offshore-Wind-in-NewYork-State-Overview/NYS-Offshore-Wind-Master-Plan>.
- Paton, P., K. Winiarski, C. Trocki, and C. McWilliams. 2010. Spatial Distribution, Abundance and Flight Ecology of Birds in Nearshore and Offshore Waters in Rhode Island. Chapter 11a in: Rhode Island Ocean Special Area Management Plan (Ocean SAMP) Volume 2. University of Rhode Island, Kingston, RI. 304pp.
- Veit, R.R., T.P. White, S.A. Perkins, and S. Curley. 2016. Abundance and Distribution of Seabirds off Southeastern Massachusetts, 2011-2015. U.S. Department of the Interior, Bureau of Ocean Energy Management, Sterling, Virginia. OCS Study BOEM 2016-067. 82 pp.
- Williams, K.A., I.J. Stenhouse, E.E. Connelly, and S.M. Johnson. 2015. Mid-Atlantic Wildlife Studies: Distribution and Abundance of Wildlife along the Eastern Seaboard 2012-2014. Biodiversity Research Institute. Portland, Maine. Science Communications. Series BRI 2015-19. 32 pp.
- NJDEP 2010a. Ocean/Wind Power Ecological Baseline Studies, Final Report, January 2008-December 2009. New Jersey Department of Environmental Protection Office of Science, available at <https://www.nj.gov/dep/dsr/oceanwind/report.htm>.
- Cetacean and Seabird Assessment Program (CSAP) database of bird observations from 1980-1988.
- Carbon Trust ORJIP One Bird Collision Avoidance Study co-funded by Equinor - Skov, H., Heinanen, S. Norman, T., Ward, R.M., Mendez-Roldan, S & Ellis, I. 2018. ORJIP Bird Collision and Avoidance Study. Final Report- April 2018. The Carbon Trust. United Kingdom. 247 pp., available at https://www.carbontrust.com/media/675793/orjip-bird-collision-avoidancestudy_april2018.pdf
- Red Knot tagging studies being conducted by Atlantic Shores and others.
- Piping Plover migration tracking studies.
- Birds Canada. Motus wildlife tracking system. Motus Wildlife Tracking System
- Cornell Lab of Ornithology. The Birds of the World, online. . Cornell Lab of Ornithology, Ithaca, New York, USA, available at <https://doi.org/10.2173/bna.452>.
- ESRI. 2016. Audubon Important Bird Areas – Polygon. Available at <https://www.arcgis.com/home/item.html?id=af5fe0b13bae4f8297700345d27201fa>.
- Kerlinger, P., J.D. Cherry, and K.D. Powers. 1982. "Records of Migrant Hawks from the North Atlantic Ocean." *The Auk* 100;488-490.
- Bureau of Ocean Energy Management Office of Renewable Energy Programs. (2021). Vineyard Wind Offshore Wind Energy Project Final Environmental Impact Statement.
- Bureau of Ocean Energy Management Office of Renewable Energy Programs. (2021) South Fork Wind Offshore Wind Energy Project Final Environmental Impact Statement.
- EBird. Cornell Lab of Ornithology. Online database. Ithaca, New York, USA. <https://ebird.org/home>
- Loring, P., Paton, P., McLaren, J., Bai, H., Janaswamy, R., Goyert, H., Griffin, C., & Sievert, P. (2019). Tracking offshore occurrence of Common Terns, endangered Roseate Terns, and threatened Piping Plovers with VHF arrays. Sterling, Virginia: US Department of the Interior, Bureau of Ocean Energy Management. OCS Study BOEM, 17.
- U.S. Geological Survey (USGS). 2013. Atlantic Offshore Seabird Dataset Catalog. Patuxent Wildlife Research Center. <https://www.sciencebase.gov/catalog/item/56f15a47e4b0f59b85de0ac4>
- U.S. Fish and Wildlife Service (USFWS). 2013. Bird Migratory Routes. <https://www.fws.gov/refuge/arctic/birdmig.html>
- USFWS 5-Year Reports, updated status reviews, and updated recovery plans on ESA-listed species

Leading Light Wind will rely on the following existing information for its baseline characterization of bat species, as well as any relevant studies that become publicly available in the future:

- Barclay, R. M. R., Baerwald, E. F., & Gruver, J. C. (2009). Variation in bat and bird fatalities at wind energy facilities: Assessing the effects of rotor size and tower height. *Canadian Journal of Zoology*, 85(3), 381–387. <https://doi.org/10.1139/Z07-011>
- Brabant, R., Laurent, Y., Poernik, B. J., & Degraer, D. (2019). Activity and behavior of *Nathusius' pipistrelle* *Pipistrellus nathusii* at low and high altitude in a North Sea offshore wind farm. *Acta Chiropterologica*, 21(2), 341–348. https://doi.org/10.3161/15081109AC_C2019.21.2.009
- Saracino, J. (2018). State of the Science: Technological Approaches for Monitoring Bird and Bat Collisions Offshore, November 13, 2018. United States Department of Energy Wind Energy Technologies Office.
- NYSDEC. 2015a. List of Endangered, Threatened and Special Concern Fish & Wildlife Species of New York State. New York State Department of Environmental Conservation. Available at <http://www.dec.ny.gov/animals/7494.html>. NYSDEC. 2015b. New York State Wildlife Action Plan (SWAP) Species of Greatest Conservation Need, available at <http://www.dec.ny.gov/animals/7179.html>.
- NYSERDA 2017. New York State Offshore Wind Master Plan, November 2017, available at <https://www.nyserda.ny.gov/All-Programs/Programs/Offshore-Wind/Offshore-Wind-in-New-York-State-Overview/NYS-Offshore-Wind-Master-Plan>.
- Pelletier, S.K., K. Omland, K.S. Watrous, T.S. Peterson. 2013. Information Synthesis on the Potential for Bat Interactions with Offshore Wind Facilities – Final Report. U.S. Dept of the Interior, Bureau of Ocean Energy Management, Headquarters, Herndon, VA. OCS Study BOEM 2013-01163. 119 pp.
- Sjollema, A. L., Gates, J. E., Hilderbrand, R. H., & Sherwell, J. (2014). Offshore activity of bats along the Mid-Atlantic Coast. *Northeastern Naturalist*, 21(2), 154–163. <https://doi.org/10.1656/045.021.0201>.
- Solick, D. I. and C.M. Newman. 2021. Oceanic Records of North American Bats and Implications for Offshore Wind Energy Development in the United States. *Ecology and Evolution* 2021 (11): 14,433 – 14,447.
- Stantec Consulting Services Inc. 2016. Long-term Bat Monitoring on Islands, Offshore Structures, and Coastal Sites in the Gulf of Maine, mid-Atlantic, and Great Lakes – Final Report. Prepared for the U.S. Department of Energy. January 15, 2016. 171 pp.
- Thompson, R. H., Thompson, A. R., & Brigham, R. M. (2015). A flock of *Myotis* bats at sea. *Northeastern Naturalist*, 22(4), N27–N30.
- Bureau of Ocean Energy Management Office of Renewable Energy Programs. (2021). Vineyard Wind Offshore Wind Energy Project Final Environmental Impact Statement.
- Bureau of Ocean Energy Management Office of Renewable Programs. (2021) South Fork Wind Energy Project Final Environmental Impact Statement.
- Hatch, S. K., Connelly, E. E., Divoll, T. J., Stenhouse, I. J., & Williams, K. A. 2013. Offshore Observations of Eastern Red Bats (*Lasiurus borealis*) in the Mid-Atlantic United States Using Multiple Survey Methods. *PLOS ONE*, 8(12), e83803. <https://doi.org/10.1371/journal.pone.0083803>.

5.1.2 Data Collected

[REDACTED]

5.2 Species of Interest

BOEM's Revised Environmental Assessment for the Commercial Wind Lease Issuance and Site Assessment Activities on the Atlantic Outer Continental Shelf Offshore New York states that, "...the most likely taxa to occur in the offshore areas [of the New York WEAs] include approximately 19 species of waterfowl, 4 species of loons and grebes, 10 species of shearwaters and petrels, 3 species of gannets and cormorants, 2 shorebirds, 3 jaegers, 6 alcids, 3 sulids, and 20 species of gulls and terns (eBird, 2014; Table 4-5)." While population level impacts are not expected for any bird species, agency and stakeholder concern is highest for T&E bird species (rufa Red Knot, Piping Plover, and Roseate Tern) that may occasionally traverse the area, most likely during migration.

Leading Light Wind identified the following bats with the greatest potential to migrate through the lease area on their way between breeding and wintering grounds in the spring and fall:

- Eastern red bat (*Lasiurus borealis*),
- Hoary bat (*Lasiurus cinereus*), and
- Silver-haired bat (*Lasionycteris noctivagans*).

Leading Light Wind has followed BOEM's guidelines and will use the Mid-Atlantic Ocean Data Portal's data of temporal use, abundance, and species distribution by avian species or groups in the lease area. While it is not anticipated that population level impacts will occur for any bird or bat species, Leading Light Wind understands from discussions with BOEM that it would be useful to have a better understanding of how three federally listed bird species (rufa Red Knot, Piping Plover, and Roseate Tern) use and traverse the New York Bight. Occurrences of these species in the lease area are expected to be limited, and similarly the potential for impacts would be limited. [REDACTED]

[REDACTED]

5.3 Potential Impacts and Mitigation Measures by Phase

Table 4 lists the potential impacts to birds and bats and proposed mitigation measures by project phase.

Table 3: Potential Impacts and Mitigation Measures by Phase – Birds and Bats

Potential Impacts	Proposed Mitigation Measures	Phase*			
		1	2	3	4
Collision risk to marine birds and bats	<ul style="list-style-type: none"> To avoid and minimize attraction- and disorientation-related impacts to birds and bats, artificial lighting on offshore wind projects shall be reduced to the extent practicable while maintaining human safety and compliance with FAA, USCG, BOEM and other regulations. Monitoring shall be conducted to determine if there is a need for perching-related deterrents to reduce attraction and minimize potential perching and loafing opportunities for birds. Physical deterrents to perching (e.g., such as spikes and netting or other best available technology) shall be implemented if there is demonstrated risk at the site (e.g., perching and roosting on infrastructure is a common occurrence) and to the extent that they do not represent a human safety hazard. 		X	X	
Habitat impacts, including breeding and nesting areas	<ul style="list-style-type: none"> Siting and construction of nearshore and onshore project components for offshore wind farms (including but not limited to nearshore export cable routes, landfall sites, onshore cable routes, and onshore substations) shall be conducted in such a way as to avoid or minimize the loss or alteration of bird and bat habitat, as well as avoid or minimize disturbance and direct and indirect effects to bird and bat populations and their prey. Specifically, onshore infrastructure (i.e., landfall site, cable routes, substations) and development activities should 1) maximize the use of previously developed or disturbed areas, and 2) avoid unique or protected habitats, as well as habitat for key species, where feasible. 		X	X	X
Lighting impacts	<ul style="list-style-type: none"> During construction, operations, and maintenance, Leading Light Wind will utilize lighting schemes to minimize exposure of light, as practicable. 	X	X	X	X
Additional proposed measures	<ul style="list-style-type: none"> Development of a monitoring program (pursuant to BOEM guidelines) to address specific questions, to include identifying key species of interest, and when possible, to contribute to the understanding of long-term project-specific impacts and larger scale efforts to understand cumulative impacts. 		X	X	

Potential Impacts	Proposed Mitigation Measures	Phase*			
		1	2	3	4
*Phase: 1: Survey/Design; 2: Construction; 3: Operation; 4: Decommissioning					

5.4 Monitor for Potential Impacts During Each Phase

Leading Light Wind will assess potential impacts to birds and bats during each project phase via monitoring with various methodologies such as acoustic, radio-tags, and visual techniques, when applicable. [REDACTED]

5.4.1 Data Collected

Leading Light Wind will assess and quantify changes to environmental resources using statistically sound methods.

Pre- and post-construction monitoring shall be designed in such a way that it improves understanding of the impacts of offshore wind energy development on birds and bats, including identifying specific questions and taxa on which to focus monitoring efforts for the proposed project, or in relation to broader regional efforts to assess variation between sites and understand cumulative impacts for sensitive species.

[REDACTED]

Monitoring will, to the extent practicable, use appropriate study designs and methodologies to effectively analyze risk prior to construction and evaluate impacts during construction and operation by testing hypotheses and helping to assure statistical power for meaningful data analysis.

Leading Light Wind will continue desktop studies and stakeholder discussions for avian and bat species to analyze risk prior to construction, while monitoring during construction and operations to assess avian use in the project area and qualitatively assess bird and bat fatalities found in the project area. As described in the parallel section for marine mammals and sea turtles, power analyses and methodological evaluation will be applied to question-driven science to assess data and collection methods that can provide statistically robust outcomes in collaboration with scientific experts.

Outside expertise will, if practicable, be consulted during study design and data analysis processes. It is anticipated that dialog will continue with research partners involved with the T&E species research-oriented projects when it comes to study design and data analysis. Review of relevant offshore wind wildlife studies, minimization measures, and “state of the science” with review of bird and bat impacts will continue throughout the life of the project. Similarly, monitoring of wildlife studies and agency information of T&E and other bird and bat species populations will be tracked as they change over the life of the project. For the development of studies, academic, agency, and regional collaborators, such as RWSC and E-TWG, will be engaged as practicable. RWSC’s database of ongoing research and research prioritization criteria (as they are developed) will help inform the studies most needed and identify existing work for collaborative effort.

In some cases when statistically robust methods are not practicable for addressing a data gap or question, models or proxy systems can be applied with ongoing validation with additional data collection. In the event it is infeasible to address a question with directed research or models, effects may need to be assessed in a risk framework and mitigation applied to address potential impacts with high likelihood and severity.

5.4.2 Address Data Gaps

Leading Light Wind shall work with stakeholders, including regulatory agencies and local groups, in the survey/design phase of the project to identify data gaps to be addressed through surveys or permitting applications.

There is extensive existing knowledge on species use from publicly available data from NYSERDA, BOEM, and project studies. Leading Light Wind will engage with relevant stakeholders, for example through the regulatory process and E-TWG, to identify areas where data gaps may exist for further monitoring and research and will consider proposals for research on a case-by-case basis. [REDACTED]

[REDACTED]

5.5 Strategies for Developing Alternative Protocols

Leading Light Wind shall explore, in consultation with the E-TWG, regulatory agencies, and relevant stakeholders, the process for determining when mitigation strategies are insufficient, alternative protocols, and under what conditions they might elect to rehabilitate or restore impacted birds and bats in an alternative location. Leading Light Wind is also open to engagement on potential offset mitigation measures to support population health of birds and bats in the event mitigation strategies initially employed are considered insufficient at some later date.

6.0 Proposed Mitigation of Impacts to Fish, Invertebrates and their Habitats

6.1 Baseline Characterization

6.1.1 Available Information

Public data sources are suitable for baseline characterization of benthic habitat and fisheries resources in the project area, including:

- NYSERDA Digital Aerial Baseline Survey of Marine Wildlife in Support of Offshore Wind Energy OPA Final Report 2021 and accompanying annual reports on sharks and rays.
- NYSERDA's Master Plan Fish and Fisheries Study (2017).
- NOAA National Centers for Coastal Ocean Science and BOEM Comprehensive Seafloor Substrate Mapping and Model Validation in the New York Bight (2019).
- The Estuarine Living Marine Resource (ELMR) database (NOAA 2000). The ELMR database includes species life history descriptions in Hudson River/Raritan Bay.
- The EPA National Coastal Assessment (EPA 2015) conducted benthic macroinvertebrate sampling in NY coastal waters
- Commercial and recreational fisheries data.
- The USFWS IPaC system will be used to identify species listed as endangered, threatened, or candidate species for protection under the ESA, along with designated critical habitats that may occur in or overlap with the lease area.
- NOAA's EFH (Essential Fish Habitat) mapper tool will be used to identify EFH for fish and invertebrate species that may occur in the lease area.
- Fisheries Management Plans, which include information about commercially important fish and fish stocks
- NMFS 5-Year Reports, updated status reviews, and updated recovery plans on ESA-listed species
- Leading Light Wind Fisheries Assessment Report for lease area
- Leading Light Wind Fisheries Assessment Report for Export Cable Route

6.1.2 Data Being Collected

[REDACTED]

6.2 Species of Interest

Federally and state listed estuarine and marine fish species of greatest concern are listed below.

- Atlantic Salmon (*Salmo salar*) – ESA Endangered
- Atlantic Sturgeon (*Acipenser oxyrinchus oxyrinchus*) – New York Bight DPS – ESA Endangered
- Giant Manta Ray (*Manta birostris*) – ESA Endangered
- Oceanic Whitetip Shark (*Carcharhinus longimanus*) – ESA Threatened
- Scalloped Hammerhead Shark (*Sphyrna lewini*) – ESA Threatened
- Shortnose Sturgeon (*Acipenser brevirostrum*) – ESA Endangered; NYDEC Endangered

Additional species of concern are those that inhabit or depend on soft-bottom habitats that will be permanently converted or interrupted by the emplacement of structures and scour protection. Benthic habitat, including that characterized by habitat-forming species, is a key factor in determining EFH. There are 29 species with designated EFH for one or more life stages in the blocks where the proposed Leading Light Wind project will be located. Atlantic sturgeon are vulnerable to ship strikes; it is a suspected reason for poor recovery since their listing under the ESA in 2012. Leading Light Wind will include guidance for minimizing vessel traffic impacts on Atlantic sturgeon in vessel plans where practicable and ESA consultation outcomes will minimize these impacts. In addition to species protected under ESA, there are species that NYSDEC has designated as High Priority of Greatest Conservation Need. These species may also warrant special consideration.

6.3 Potential Impacts and Mitigation Measures by Phase

Table 5 below lists potential impacts to fish, invertebrates, and their habitats and proposed mitigation measures by project phase.

Table 4: Proposed Impacts and Mitigation Measures by Phase – Fish, Invertebrates, and their Habitats

Potential Impacts	Proposed Mitigation Measures	Phase*			
		1	2	3	4
Micro-siting conflicts with habitats and fishery resources	<ul style="list-style-type: none"> • Leading Light Wind shall seek input from regulatory authorities, the fishing industry, and maritime industry to locate foundations and cable routes in the least impactful manner that is practicable. • Leading Light Wind will consider the timing of construction activities; working with the fishing industry and fisheries agencies on sensitive spawning and fishing periods to actively avoid or reduce interaction with receptors, where practicable. • Leading Light Wind will avoid, to the extent practical, siting structures (wind turbines, offshore substations, and submarine cables) in areas of sensitive habitat. 	X	X		

Potential Impacts	Proposed Mitigation Measures	Phase*			
		1	2	3	4
Temporary, alteration of the seabed and localized increases in noise and turbidity	<ul style="list-style-type: none"> Leading Light Wind shall seek to use noise attenuation technologies to reduce sound from pile driving of foundations (if such methods are used) Leading Light Wind will consider the use of appropriate measures and timing during cable installation activities to minimize sediment resuspension and dispersal in areas of known historically contaminated sediments. Leading Light Wind will consider the use of Horizontal Directional Drilling (HDD) at the landfall to minimize physical disturbance of coastal habitats. Leading Light Wind would implement appropriate measures during HDD activities at landfalls to minimize potential release of HDD fluid. To minimize an inadvertent fluid return, an HDD Contingency Plan would be developed and implemented. 	X	X	X	X
Long-term changes to seabed and habitat	<ul style="list-style-type: none"> Leading Light Wind shall, to the extent possible, avoid sensitive benthic habitats. During construction, operations, and maintenance, Leading Light Wind will utilize lighting schemes to minimize exposure of light, as practicable. Most construction vessels will maintain position using dynamic positioning, limiting the use of anchors and jack-up features, where feasible. 	X	X	X	X
EMF impacts	<ul style="list-style-type: none"> Leading Light Wind shall use proper shielding to reduce EMF. Leading Light Wind shall conduct EMF modeling and assessments to identify potential mitigation requirements. Electrical cables shall be sufficiently buried where practicable to reduce EMF effects. Surface cable protection where sufficient burial is not possible and where appropriate based on a CBRA and EMF assessments (acting as a further barrier between EMF and receptor). 		X	X	

Potential Impacts	Proposed Mitigation Measures	Phase*			
		1	2	3	4
Cable burial	<ul style="list-style-type: none"> Leading Light Wind shall bury export and inter-array cables to an appropriate minimal depth to reduce exposure risk. If depth cannot be reached, the developer shall add protective materials over the cable. Leading Light Wind shall conduct routine surveys or inspections of sub-sea cables and shall conduct a survey or inspection to ensure and correct for cable exposure following hurricane or other major events causing disturbance to the seabed. Sufficient burial of inter-array and export cables to facilitate continued seabed penetrating fishing activity. Dissemination of information to fishers on cable locations including inclusion on navigational charts. Development of a Cable Installation Plan detailing how cable installation will be managed. 	x	x	x	
Turbine scour protection	<ul style="list-style-type: none"> Leading Light Wind shall seek collaboration with state and federal regulatory authorities and key stakeholders to assess the use of ecological enhancements for turbine scour protection to provide offsets from potential adverse impacts. Leading Light Wind will install scour protection as needed. 	x	x		
Additional proposed measures	<ul style="list-style-type: none"> Development of a monitoring program (pursuant to BOEM guidelines) to address specific questions, to include identifying key species of interest, and when possible, to contribute to the understanding of long-term project-specific impacts and larger scale efforts to understand cumulative impacts. 		x	x	
*Phase: 1: Survey/Design; 2: Construction; 3: Operation; 4: Decommissioning					

6.4 Monitor for Potential Impacts During Each Phase

6.4.1 Pre/Post Monitoring to Assess and Quantify Changes

Leading Light Wind will quantify changes to environmental resources using statistically sound methods.

Ideally, specific questions and focal taxa shall be chosen for the project either based on site-specific fisheries and benthos, or in relation to broader regional efforts to assess variation between sites and understand cumulative impacts for sensitive species.

Specific questions will focus on the relevant aspects of abundance, distribution, or life history characteristics (such as diet, home range, fitness, etc.) of focal taxa. Focal taxa would be selected to represent appropriate trophic levels and degrees of risk and consider priorities developed through RWSC, ROSA, E-TWG, and F-TWG.

Monitoring will, to the extent practicable, use appropriate study designs and methodologies to effectively analyze risk prior to construction and evaluate impacts during construction and operation by testing hypotheses and helping to assure statistical power for meaningful data analysis. Leading Light Wind will develop a monitoring program (pursuant to BOEM guidelines) to address specific questions, to include identifying key species of interest, and when possible, to contribute to the understanding of long-term project-specific impacts and larger scale efforts to understand cumulative impacts. Leading Light Wind understands that from the outset, any research and monitoring to assess changes and impacts should be statistically robust. However, for some biological monitoring, this level of robustness to adequately detect change as a direct result of an offshore wind farm is not always possible as many outside factors can influence these variations with much greater significance than the factors that can be attributed to causes from offshore wind energy developments (e.g., seawater temperature, nutrient levels, etc.). As described in the parallel section for marine mammals and sea turtles, power analyses and methodological evaluation will be applied to question-driven science to assess data and collection methods that can provide statistically robust outcomes in collaboration with scientific experts.

In some cases when statistically robust methods are not practicable for addressing a data gap or question, models or proxy systems can be applied with ongoing validation with additional data collection. In the event it is infeasible to address a question with directed research or models, effects may need to be assessed in a risk framework and mitigation applied to address potential impacts with high likelihood and severity.

Outside expertise will, if practicable, be consulted during study design and data analysis processes. As such, Leading Light Wind is open to monitoring that explores other approaches to detect and quantify change, where further monitoring is appropriate (e.g., behavioral responses of fish and invertebrates).

Leading Light Wind shall seek to collaborate with other regulatory agencies and stakeholder groups to identify research needs and opportunities. Leading Light Wind will work with the regulatory agencies, E-TWG and relevant stakeholders to identify research and monitoring needs and agree on methodology.

6.4.2 Pre/Post Monitoring to Assess and Quantify Changes

Leading Light Wind shall work with stakeholders, including regulatory agencies and local groups, in the survey/design phase of the project to identify data gaps to be addressed through surveys or permitting applications.

Leading Light Wind will conduct further research and monitoring where data and knowledge gaps remain and where uncertainties over potential significant adverse impacts attributable to the effects of offshore wind farm development.

Leading Light Wind is open to discussing further monitoring and research to fill data gaps as appropriate through regulatory agencies, E-TWG and relevant stakeholders.

6.5 Strategies for Developing Alternative Protocols

Leading Light Wind will consult with the E-TWG, regulatory agencies, and relevant stakeholders to explore alternative protocols and processes for determining when mitigation strategies are insufficient and under what conditions to elect rehabilitation or restoration of impacted fisheries in an alternative location or when the provision of compensation of some form may be appropriate.

Leading Light Wind is also open to engagement on potential offset mitigation measures to support population health of fish, invertebrates, and their habitat in the event mitigation strategies initially employed are considered insufficient at some later date.

7.0 Considerations for Subsea Cables and Overland Cables

7.1 Mitigation Strategies for Subsea and Overland Cables

Leading Light Wind's mitigation strategies for proposed subsea and overland cable routes include the following:

- Sea-to-shore transition will be installed via HDD or similar method to avoid or minimize impacts to the dunes, beach, and nearshore zone, including benthic and shellfish, finfish and EFH resources.
- Leading Light Wind will consider the use of appropriate measures and timing during cable installation activities to minimize sediment resuspension and dispersal in areas of known historically contaminated sediments.
- Leading Light Wind will consider the timing of construction activities and work with the fishing industry and fisheries agencies and other relevant environmental agencies on sensitive spawning and fishing periods to actively avoid or reduce interaction with receptors, where practicable.
- Leading Light Wind will consider the use of HDD at landfall to minimize physical disturbance of coastal habitats. Leading Light Wind would implement appropriate measures during HDD activities at landfalls to minimize potential release of HDD fluid. To minimize an inadvertent fluid return, an HDD Contingency Plan would be developed and implemented.
- During construction, operations, and maintenance, Leading Light Wind will utilize sensitive lighting schemes to minimize exposure of light, as practicable. Most construction vessels will maintain position using dynamic positioning, limiting the use of anchors and jack-up features, where practicable.
- Cable route planning will endeavor to minimize exposure to areas of hard or steep seabed where burial is difficult.
- When appropriate, cable will include sheathing that reduces electromagnetic fields, heat, and vibration associated with cables.

8.0 Additional Considerations

8.1 Additional Mitigation Strategies and EMP Refinement

Leading Light Wind will support collaborative research on potential mitigation strategies and best management practices, with other developers, agencies, and stakeholders.

Leading Light Wind will continue to monitor new and novel approaches to mitigation in the offshore wind industry both in the US and from developments elsewhere in the world, including the forums and networks in which Leading Light Wind participates.

8.2 Process for Updating the EMP

Leading Light Wind will update the EMP based on feedback from environmental stakeholders, E-TWG, and other agencies and working groups.

Leading Light Wind will continuously evaluate and evolve this EMP so that all the components of the EMP are complete and sufficient.

Leading Light Wind expects that additional guidance and information will become available throughout the planning and regulatory process and as such will continue to consider its relevance to the EMP at the appropriate intervals.

Updates to the EMP are intended to reflect the results of iterative exchanges with members of the E-TWG, F-TWG and relevant stakeholders.

Leading Light will continue in its collaboration with the E-TWG to establish a process for updating the Leading Light Wind EMP, where formal updates will likely occur after major project milestones.

Leading Light Wind shall update the EMP in a timely manner that reflects changes made based on key regulatory project deliverable dates.

Leading Light Wind will provide the updated EMP as a publicly available document on the project website.

9.0 Project Decommissioning

9.1 Potential Impacts Based on Available Information and Experience

Leading Light Wind has considered the potential impacts of decommissioning the project on marine mammals, sea turtles, birds, bats, fisheries, and habitats. In general, Leading Light Wind does not expect impacts from decommissioning to exceed impacts resulting from the maximum design scenarios associated with construction. Considering that the impacts of decommissioning are unique to each site, it cannot be reasonably predicted in the pre-construction time frame how and to what extent the benthic environment and wildlife will be impacted. Leading Light Wind will endeavor to mitigate potential adverse impacts of decommissioning as much as practicable and in compliance with requirements at the time of decommissioning. Potential impacts and options for mitigation will be developed post-construction, facilitated by data from monitoring, best available science, information, and lessons learned from other decommissioned and repowered wind farms, input from regulators and fisheries stakeholders, and federal guidelines pursuant to 30 Code of Federal Regulations (CFR) §585.

Leading Light Wind's waste management during decommissioning will focus on re-use or recycling, with disposal as the last option. Wind turbines are composed primarily of steel, iron, copper, and aluminum, all of which are easily and fully recycled. The main exception to that has been the blades, which are composed primarily of fiberglass, which is much less easily recycled. Invenergy has been researching and implementing a blade recycling process that turns unusable wind turbine blades into fiberglass pellets, which can be used in other manufacturing end-uses, including as aggregate in new wind turbine foundations. This process has been used on several sites where blades have been replaced. Although this recycling effort is limited in scope due to the small number of blades needing recycling in the U.S., recycling is expected to expand as the U.S. turbine fleet ages.

The decommissioning sequence will generally be the reverse of the construction sequence and involve similar types and numbers of vessels and equipment. Consideration will be given to potential impacts of decommissioning on protected and sensitive species and habitats. Such consideration will be given to how project components are decommissioned:

- Leading Light Wind will leave buried export and infield cables and anchors in place in order to minimize environmental impacts from decommissioning activities.
- Leading Light Wind will remove wind turbines, pad-mount transformers, foundations to a depth of three feet below grade, overhead collection and transmission lines, and the project substation. These activities will all support the goal of reversing the methods used to install these components and returning the lease area back to its original benthic habitat.
- Removal of scour protection is not reasonably practicable and will therefore be left in place.

As monitoring during operations provides a better understanding of the spatial and temporal presence of marine mammals, sea turtles, birds, bats, and fish habitats within the lease area, mitigation measures can be more tailored and effective at further reducing the likelihood and level of impacts.

Leading Light Wind shall collaborate with regulatory authorities and key fisheries stakeholder groups to better understand the effects and potential impacts associated with decommissioning.

Leading Light Wind will collaborate on further research into the effects and potential impacts associated with decommissioning, including coordination with the E-TWG and F-TWG, using the experiences in Europe to help inform that process as well as experiences from decommissioning of oil and gas installations and other offshore wind developments on the eastern seaboard of the United States.

9.2 Approach for Developing Plan and Coordination with Stakeholders

Leading Light Wind will develop a decommissioning plan to identify and mitigate potential impacts, including coordination with fisheries stakeholders.

Leading Light Wind shall decommission the project in accordance with all necessary laws and regulations and generate a detailed project-specific decommissioning plan.

BOEM defines decommissioning as the removal of all facilities, installations, and other devices permanently or temporarily attached to the seabed on the OCS to a depth of 15 feet below the mudline within two years following the termination of a lease or grant (30 CFR §585.433, §585.910). Leading Light Wind project will continue to align with BOEM's decommissioning definition and guidance over the lifespan of the project. Furthermore, Leading Light Wind will adhere to BOEM's current decommissioning guidance, which includes:

- Receive BOEM approval of a decommissioning application as early as two years before expiration of the Lease or as late as 90 days after expiration.
- Submit a decommissioning notice at least 60 days before beginning any activities related to decommissioning.
- Provide a final notice within 60 days after the removal of any facility, cable, or pipeline.

Leading Light Wind shall seek input on the detailed project-specific decommissioning plan from regulatory agencies, fisheries and marine stakeholders, and local communities. Prior to decommissioning Leading Light Wind, the Fisheries Communication Team will facilitate ongoing communication and engagement with the fishing community and adjust activity timing and scope as appropriate to reduce conflicts. The process for development of a decommissioning plan will be discussed further with the E-TWG and F-TWG and relevant regulators and stakeholders. Leading Light Wind will consult with the fishing industry regarding plans for decommissioning at the appropriate time, closer to the start of those activities.

Leading Light Wind will continue to seek the opinions of stakeholders with further consultation undertaken in the years preceding decommissioning on both the program and any environmental assessment undertaken, in order to minimize the impact on the environment and stakeholders.

Leading Light Wind shall use "lessons learned" from the construction and operation activities and apply them when appropriate to the decommissioning plan. Leading Light Wind's waste handling processes during decommissioning shall focus on re-use or recycling, with disposal as the last option. Wind turbines are composed primarily of steel, iron, copper, and aluminum, all of which are easily and fully recycled. The main exception to that has been the blades, which are composed primarily of fiberglass, which is much less easily recycled.

Procedures for handling waste materials will be set out in a Site Waste Management Plan (SWMP), which will be appended to the Environmental Statement as part of the final Application. Furthermore, the SWMP will: (1) describe and quantify each likely waste type and record how it will be disposed of, reused, recycled, or recovered in other ways during the construction phases; (2) describe the management arrangements for the different waste types and identify potential management facilities in the vicinity of the development; and (3) be updated as further detailed design information becomes available prior to construction.

In addition, Leading Light Wind will act in accordance with Government policy contained in NPS EN-1, considering the types and quantities of waste that will be generated. Leading Light Wind will also consider the "Best Practicable Environmental Option," international standards, other sea users, along with due consideration of commercial and technical viability and health, safety, and environmental risks.