

Environmental Mitigation Plan
for
Sunrise Wind
Version 1.0

Prepared Pursuant to

**Section 12.06 of the Offshore Wind Renewable Energy
Certificate Purchase and Sale Agreement by and Between the
New York State Energy Development and Research Authority
and Sunrise Wind LLC dated October 23, 2019**

for

New York State Energy Research and Development Authority
Albany, NY

Prepared by

Sunrise Wind LLC



October 23, 2019

Communication Officers, Contact Information, Links		
Name/Title	Role	Contact Information
Michael Evans Permitting Manager	Permitting manager for Sunrise Wind	Phone: 614-218-4286 Email: MICEV@orsted.com
Sophie Hartfield Lewis Head of US Permitting	Department head for Orsted US Permitting	Email: SOPHA@orsted.co.uk
Mark Gardella Manager Offshore Wind	Responsible for onshore permitting for Sunrise Wind	Phone: 860-665-2583 Email: mark.gardella@eversource.com
James Berg Supervisor of Permitting for Offshore Wind	Responsible for onshore permitting for Sunrise Wind	Phone: 860-665-3421 Email: james.berg@eversource.com
Laura Morse Science Coordinator and Environmental Manager	Receive, process, and disseminate scientific data collected in the relevant Lease Area(s) Marine mammal expert, E-TWG and F-TWG attendee	Phone: 857-310-8616 Email: LAURM@orsted.com
Jennifer Garvey Development Manager	New York stakeholder manager	Phone: 857-348-3258 Email: JEGAR@orsted.com
John O’Keeffe Head of Marine Affairs	Lead for marine stakeholder communications and fisheries department; F-TWG attendee	Phone: 857-332-4485 Email: JOHNO@orsted.com
Rodney Avila Corporate Fisheries Liaison	Collect data about the structure of fishing communities associated with the Project area.	Phone: 857-332-4479 Email: RODAV@orsted.com

Links to project information:

Project website: <https://sunrisewindny.com/>

Table of Contents

1. Environmental Mitigation Plan Summary	1
1.1. Overall philosophy and principles	1
1.2. Overall approach to incorporating data and stakeholder feedback	1
1.3. Existing guidance and best practices that will be followed	2
2. Communications and Collaboration Approach	6
2.1. Overview and communication plan objectives	6
2.2. Communication officers/positions, responsibilities, and contact information	6
2.3. Identification of stakeholders	7
2.4. Participation in stakeholder and technical working groups	7
2.4.1. Communication with E-TWG	7
2.4.2. Communication with other New York State agencies	8
2.4.3. Communication with other stakeholder and working groups	8
2.5. Communication methods and tools by phase	8
3. Supporting Other Research	10
3.1. Support of collaborative research	10
3.2. Handling/processing requests	10
3.3. Data availability	10
3.4. Proposed restrictions	10
3.5. Financial commitment for third party research	11
3.6. Proposed or existing commitments/collaborations	11
4. Proposed Mitigation of Impacts to Marine Mammals and Sea Turtles	12
4.1. Baseline characterization	12
4.1.1. Available information	12
4.1.2. Data being collected	13
4.1.3. Additional data being collected to address data gaps	13
4.2. Species at risk	13
4.3. Potential impacts/risks and mitigation measures by project stage	14
4.4. Monitor for impacts during each phase	17
4.4.1. Pre/Post Monitoring to assess and quantify changes	17
4.4.2. Address data gaps	17
4.5. Strategies for developing alternate protocols	17
5. Proposed Mitigation of Impacts to Birds and Bats	19

5.1.	Baseline characterization	19
5.1.1.	Available information	19
5.1.2.	Data collected	20
5.1.3.	Additional data being collected to address data gaps	20
5.2.	Species at risk	21
5.3.	Potential impacts/risks and mitigation measures by project stage	21
5.4.	Monitor for impacts during each phase	22
5.4.1.	Pre/Post Monitoring to assess and quantify changes	22
5.4.2.	Address data gaps	23
5.5.	Strategies for developing alternate protocols	23
6.	Proposed Mitigation of Impacts to Fish, Invertebrates, and their Habitats	24
6.1.	Baseline characterization	24
6.1.1.	Available information	24
6.1.2.	Data being collected	25
6.1.3.	Additional data being collected to address data gaps	25
6.2.	Species at risk	25
6.3.	Potential impacts/risks and mitigation measures by project stage	26
6.4.	Monitor for impacts during each phase	28
6.4.1.	Pre/Post Monitoring to assess and quantify changes	28
6.4.2.	Address data gaps	29
6.5.	Strategies for developing alternate protocols	29
7.	Project Decommissioning	30
7.1.	Potential impacts on marine wildlife, birds, bats, and fisheries	30
7.2.	Approach for developing plan and coordination with stakeholders	30
8.	Additional Considerations	31
8.1.	Additional mitigation strategies and EMP refinement	31
8.2.	Process for updating the EMP	31

1. Environmental Mitigation Plan Summary

1.1. Overall philosophy and principles

This section should describe the overall philosophy and principles the Developer will follow to avoid, minimize, restore, and off-set potential environmental impacts.

- At Orsted, we have a vision of a world that runs entirely on green energy. As one of the world's largest green energy developers, sustainability is deeply rooted in what we do and who we are as a company. As part of our overall philosophy we have built our sustainability targets around the UN's Sustainable Development Goals and assisted with writing the UN Sustainable Ocean Global Principles. Our annual Sustainability report can be found here - https://orstedcdn.azureedge.net/-/media/Annual_2018/Sustainability_report_2018.ashx?la=en&rev=ae72e27749aa4a34a5f2d91783da7431&hash=75AB7D9FEE750ED5FBB41D7CA5E32980
- All energy infrastructure is built in a unique environment where we aim to do our utmost to protect the natural ecosystems. It is central that we manage environmental impacts on these ecosystems well to acquire permission to build wind farms. In 2018, we adopted a new offshore wind biodiversity policy - (<https://orstedcdn.azureedge.net/-/media/WWW/Docs/Corp/COM/Sustainability/Orsted-Offshore-Wind-Biodiversity-Policy.ashx?la=en&rev=be32532eb16a4b20b1f86eed77050e92&hash=D309C9DA9A633E1C47D168ACBD254797>).
- The policy is built on our long-term experience and understanding of the biodiversity challenges we face when building offshore wind farms.
- Sunrise Wind will prioritize avoiding and/or minimizing environmental impacts through siting, design, and real time mitigation, consistent with its environmental stewardship approach under pinned by the Orsted values outlined above.
- Sunrise Wind understands and is committed to early identification of potential impacts, in order to avoid an impact, or to plan for impact mitigation.
- Sunrise Wind will address environmental impacts in siting of the Project components in accordance with all permits and approvals required for the Project, including all permits and approvals from applicable governmental and regulatory authorities charged with protecting the environment.
- Sunrise Wind recognizes the benefits of monitoring activities for this Project as well as the value of project-specific data for informing future aspirations for offshore wind development.
- Sunrise Wind will focus on restoring potentially impacted resources and, to the extent applicable, offsetting the environmental impact when environmental impacts cannot be avoided where possible within the parameters of the Project, in all instances as provided in applicable permits and approvals.

1.2. Overall approach to incorporating data and stakeholder feedback

This section should describe how the Developer will use research, data, and stakeholder feedback to update the EMP and support decision-making throughout the life cycle of the project (pre-construction, surveys, site design, construction, operations, and decommissioning).

- Sunrise Wind will work proactively to identify impacts with stakeholders including, but not limited to, federal and state agencies, Native American Tribes, environmental Non-Government Organization (“e-NGOs”), scientific experts, and state groups like the NYSERDA Environmental Technical Working Group (“E-TWG”). This will involve regular update meetings and briefings to those stakeholders identified above. Additionally, Sunrise will endeavor to incorporate feedback from the stakeholders identified to reduce impacts where appropriate.
- Sunrise Wind will review existing research and data, seek input from stakeholders, and conduct surveys of the Project Area, which will inform decisions made throughout the design, permitting, construction, operation, and decommissioning of the Project.
- Sunrise Wind will review proposed survey rationales and methodologies with regulatory stakeholders, along with surveys already conducted, and seek input on survey work, as well as design, construction, and operation and decommissioning plans for the Project.
- Sunrise Wind will host regular progress meetings with agencies (including relevant New York State Agencies) to provide status updates, planned project activities (i.e. field surveys, siting, etc.) and to solicit feedback as required in connection with permitting processes and permit requirements. Sunrise Wind will endeavor to incorporate feedback into Project plans where appropriate.
- Sunrise Wind will support collaborative science to further understand the potential impacts of offshore wind and will take the results into account in the development, design, construction, and operation of the Project.

1.3. Existing guidance and best practices that will be followed

This section should present a list of existing guidance documents, publications, tools, and/or plans that will be followed to support the EMP. Include links, if available, for all references.

- Sunrise will follow relevant guidance documents and rely on publications, tools and/or plans to support development of the EMP in accordance with applicable permit requirements. Such guidance documents are expected to include, but not be limited to, the following:

Guidance Documents:

- Draft Guidance Regarding the Use of a Project Design Envelope in a Construction and Operations Plan (BOEM 2018)
 - <https://www.boem.gov/Draft-Design-Envelope-Guidance/>
- Guidelines for Providing Information on Marine Mammals and Sea Turtles for Renewable Energy Development on the Atlantic Outer Continental Shelf Pursuant to 30 CFR Part 585 (Marine Mammal and Sea Turtle Guidelines; BOEM 2019)
 - <https://www.boem.gov/BOEM-Marine-Mammals-and-Sea-Turtles-Guidelines/>

- Guidelines for Providing Avian Survey information for Renewable Energy Development on the Atlantic Outer Continental Shelf Pursuant to 30 CFR Part 585 Subpart F (BOEM 2017)
 - <https://www.boem.gov/Avian-Survey-Guidelines/>
- Guidelines for Providing Information on Fisheries for Renewable Energy Development on the Atlantic Outer Continental Shelf Pursuant to 30 CFR Part 585 (BOEM 2019)
 - <https://www.boem.gov/Fishery-Survey-Guidelines/>
- Guidelines for Providing Benthic Habitat Survey Information for Renewable Energy Development on the Atlantic Outer Continental Shelf Pursuant to 30 CFR Part 585 (BOEM 2019)
 - <https://www.boem.gov/BOEM-Renewable-Benthic-Habitat-Guidelines/>
- Guidelines for Providing Archaeological and Historic Property Information Pursuant to 30 CFR Part 585 (BOEM 2017)
 - [https://www.boem.gov/Guidelines for Providing Archaeological and Historic Property Information Pursuant to 30CFR585/](https://www.boem.gov/Guidelines%20for%20Providing%20Archaeological%20and%20Historic%20Property%20Information%20Pursuant%20to%2030CFR585/)
- Guidelines for Providing Geophysical, Geotechnical, and Geohazard Information Pursuant to 30 CFR Part 585 (BOEM 2015)
 - [https://www.boem.gov/G G Guidelines Providing Geophysical Geotechnical Geohazard Information Pursuant to 30 CFR Part 585/](https://www.boem.gov/G%20G%20Guidelines%20Providing%20Geophysical%20Geotechnical%20Geohazard%20Information%20Pursuant%20to%2030%20CFR%20Part%20585/)
- Guidelines for Providing Information on Fisheries Social and Economic Conditions for Renewable Energy Development on the Atlantic Outer Continental Shelf Pursuant to 30 CFR Part 585 (BOEM 2015)
 - <https://www.boem.gov/Social-and-Economic-Conditions-Fishery-Communication-Guidelines/>
- Technical Guidance for Assessing the Effects of Anthropogenic Sound on Marine Mammal Hearing (NOAA Fisheries 2018)
 - <https://www.fisheries.noaa.gov/resource/document/technical-guidance-assessing-effects-anthropogenic-sound-marine-mammal-hearing>
- Data Gathering Process: Geotechnical Departures for Offshore Wind Energy (DNVGL 2018)
 - <https://www.boem.gov/Data-Gathering-Process/>
- Geophysical and Geotechnical Investigation Methodology Assessment for Siting Renewable Energy Facilities on the Atlantic OCS
 - <https://www.boem.gov/G-and-G-Methodology-Renewable-Energy-Facilities-on-the-Atlantic-OCS/>

Publications:

- U.S. Dept. of Energy “Tethys” database for offshore wind energy publications (USDOE-PNNL 2019)
 - <https://tethys.pnnl.gov/>
- NYSERDA Publications and Technical Reports
 - <https://www.nyserda.ny.gov/About/Publications>

- <https://www.nyserda.ny.gov/About/Publications/Offshore-Wind-Plans-for-New-York-State>
- BOEM Renewable Energy Research (BOEM 2019)
 - <https://www.boem.gov/Renewable-Energy-Environmental-Studies/>
- Summary Report: Best Management Practices Workshop for Atlantic Offshore Wind Facilities and Marine Protected Species (BOEM 2018)
 - <https://www.boem.gov/Final-Summary-Report-for-BMP-Workshop-BOEM/>
- Development of Mitigation Measures to Address Potential Use Conflicts between Commercial Wind Energy Lessees/Grantees and Commercial Fishers on the Atlantic Outer Continental Shelf (BOEM 2013; BOEM 2014)
 - <https://www.boem.gov/Draft-Report-on-Fishing-Best-Management-Practices-and-Mitigation-Measures/>
 - <https://www.boem.gov/OCS-Study-BOEM-2014-654/>

Tools:

- Northeast Ocean Data Explorer (NROC 2019)
 - <https://www.northeastoceandata.org/>
- Mid-Atlantic Ocean Data Portal (MARCO 2019)
 - <https://portal.midatlanticocean.org/>
- BOEM/NOAA Marine Cadastre (BOEM & NOAA 2019)
 - <https://marinecadastre.gov/>
- NOAA Essential Fish Habitat (EFH) Data Inventory
 - <https://www.habitat.noaa.gov/application/efhinventory/index.html>
- Ocean Biogeographic Information System (OBIS) Mapper and Protected Species Database (OBIS 2019)
 - <https://mapper.obis.org/>
 - <https://mgel.env.duke.edu/projects-old/obis-seamap/>
- NOAA-USFWS ESA inventory/mapper and Section-7 Consultation tools – Mapper and IPaC (NOAA 2019; USFWS 2019)
 - <https://www.greateratlantic.fisheries.noaa.gov/protected/section7/listing/index.html>
 - <https://ecos.fws.gov/ipac/>
- NOAA Marine Mammal Acoustic Technical Guidance (NOAA 2018)
 - <https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-acoustic-technical-guidance>
- NOAA Marine Mammal Annual Stock Assessments (NOAA 2019)
 - <https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessments>
- Additional sources such as Marine-Life Data and Analysis Team (MDAT; <http://seamap.env.duke.edu/models/mdat/>) as recommended by National Oceanic and Atmospheric Administration (NOAA) Fisheries and the Bureau of Ocean Energy Management.

Plans:

- Mid-Atlantic Regional Ocean Action Plan (MARCO 2016)

- <http://midatlanticocean.org/ocean-planning/>
 - Northeast Ocean Plan (NROC 2016)
 - <https://neooceanplanning.org/plan/>
 - New York State Offshore Wind Master Plan (NYSERDA 2017), with corresponding studies/appendices listed below
 - <https://www.nyserderda.ny.gov/All-Programs/Programs/Offshore-Wind/Offshore-Wind-in-New-York-State-Overview/NYS-Offshore-Wind-Master-Plan>
 - New York State Offshore Wind Master Plan Birds and Bats Study (NYSERDA 2017)
 - <https://www.nyserderda.ny.gov/All-Programs/Programs/Offshore-Wind/Studies-and-Surveys>
 - New York State Offshore Wind Master Plan Fish and Fisheries Study (NYSERDA 2017)
 - <https://www.nyserderda.ny.gov/All-Programs/Programs/Offshore-Wind/Studies-and-Surveys>
 - New York State Offshore wind Master Plan Marine Mammals and Sea Turtle Study (NYSERDA 2017)
 - <https://www.nyserderda.ny.gov/All-Programs/Programs/Offshore-Wind/Studies-and-Surveys>
 - New York State Offshore Wind Master Plan Sand and Gravel Resources Study (NYSERDA 2017)
 - <https://www.nyserderda.ny.gov/All-Programs/Programs/Offshore-Wind/Studies-and-Surveys>
 - New York State Offshore Wind Master Plan Environmental Sensitivity Analysis (NYSERDA 2017)
 - <https://www.nyserderda.ny.gov/All-Programs/Programs/Offshore-Wind/Studies-and-Surveys>

Other:

- New York State Fisheries Technical Working Group (NYSERDA 2019)
 - <https://nyfisheriestwg.ene.com/>
- New York State Environmental Technical Working Group
 - <http://www.briloon.org/offshorewindny/who>

2. Communications and Collaboration Approach

2.1. Overview and communication plan objectives

This section should provide an overview of the communication plan and objectives and its importance in environmental migration.

- Sunrise Wind will engage with both regulatory (including federal and state agencies) and non-regulatory stakeholders (including the fishing community, environmental groups, and local communities).
- Sunrise Wind will carry out a detailed stakeholder mapping process to promote the Project’s awareness of relevant inputs, even from hard to reach groups, and consideration of appropriate information that is applicable to the Project.

2.2. Communication officers/positions, responsibilities, and contact information

This section will provide a list of communication officers, their role, and name and contact information. The list should provide stakeholders with an understanding of who should be called for a particular issue or question. It will also include links to the project and fisheries website so readers know where to find additional information.

Name/Title	Role/Responsibilities	Contact Information
Michael Evans Permitting Manager	Permitting manager for Sunrise Wind	Phone: 614-218-4286 Email: MICEV@orsted.com
Sophie Hartfield Lewis Head of US Permitting	Department head for Orsted US Permitting	Email: SOPHA@orsted.co.uk
Mark Gardella Manager Offshore Wind	Responsible for onshore permitting for Sunrise Wind	Phone: 860-665-2583 Email: mark.gardella@eversource.com
James Berg Supervisor of Permitting for Offshore Wind	Responsible for onshore permitting for Sunrise Wind	Phone: 860-665-3421 Email: james.berg@eversource.com
Laura Morse Science Coordinator and Environmental Manager	Receive, process, and disseminate scientific data collected in the Lease Areas Marine mammal expert, E-TWG and F-TWG attendee	Phone: 857-310-8616 Email: LAURM@orsted.com
Jennifer Garvey Development Manager	New York stakeholder manager	Phone: 857-348-3258 Email: JEGAR@orsted.com

John O’Keeffe Head of Marine Affairs	Lead for marine stakeholder communications and fisheries department; F-TWG attendee	Phone: 857-332-4485 Email:
Rodney Avila Corporate Fisheries Liaison	Collect data about the structure of fishing communities associated with the Project Area.	Phone: 857-332-4479 Email: RODAV@orsted.com

Project website: <https://sunrisewindny.com/>

2.3. Identification of stakeholders

This section should describe the process by which stakeholders relevant to environmental issues will be identified and classified by stakeholder group.

- Sunrise Wind is continuing to work on its engagement and consultation strategy. In developing a consultation and stakeholder strategy, Sunrise Wind will take into account the following essential requirements:
 - the groups and individuals interested in or affected by the proposed development are identified;
 - Information issued to the public and consultees is accurate, understandable, issued at the appropriate time and does not overwhelm recipients;
 - Dialogue is held between those affected by the decisions and those responsible for making the decisions;
 - The comments provided by the public and consultees are incorporated within the final decision-making process and final decision;
 - Feedback is provided to all consultees, including the public, explaining the actions taken and how the final decision has been influenced by the process.
- Sunrise Wind will identify stakeholders based on a detailed and overarching approach to assessing all those interested parties including information collected from the following areas:
 - Commissioned studies that identify federal, state, and local permits, approvals, and consultations required for the Project;
 - List of potential agencies and associated authorizations required for the Project;
 - NYSERDA’s recommendations;
 - E-TWG and F-TWG recommendations;
 - Attendees of Project open house events;
 - Interest groups of potentially impacted resources;
 - Recommendations provided at local community meetings;
 - Prior experience during outreach for the South Fork Wind Farm Project;

2.4. Participation in stakeholder and technical working groups

2.4.1. Communication with E-TWG

This should describe the communication and collaboration approach with members of the E-TWG and consultations.

- Sunrise Wind and its affiliates have been active participants in the E-TWG and associated work groups since their inception.
- Sunrise Wind and its affiliates have actively participated in the organizing committees for the 2018 and 2020 State of the Science workshop, and Ørsted’s Sophie Hartfield Lewis was a keynote speaker in 2018.
- Sunrise Wind will further dedicate Project-specific resources to the E-TWG.
- Sunrise Wind will continue working with the E-TWG and attend future meetings and workshops. Specifically, Sunrise Wind will participate and engage relevant stakeholders participating in the E-TWG pursuant to Section 12.04 of the OREC Agreement.

2.4.2. Communication with other New York State agencies

This should describe communication with New York State agencies during each phase of the project.

- Sunrise Wind will host inter-agency Project kick-off meetings with federal and New York state regulators, and federally recognized tribes. The meeting will introduce the Project and team and key components.
- Sunrise Wind will consult with the Consulting State Agencies at the request of such agencies to provide status updates on planned Project activities (i.e. field surveys, siting, etc.) and to solicit feedback.
- Sunrise Wind will consult with the Consulting New York State Agencies pursuant to Section 12.03 of the OREC Agreement.

2.4.3. Communication with other stakeholder and working groups

This should describe any relevant participation with other stakeholder groups, such as international fisheries groups that would help inform the EMP.

- Sunrise Wind is developing a Community Outreach Plan for the Project to identify and engage various interests including local communities, environmental groups, fishing communities, recreational boating groups, low income populations, and labor and local business interest.
- In development of the Community Outreach Plan, Sunrise Wind will leverage its affiliates’ experience implementing successful community outreach and engagement plans for many offshore wind projects in Europe and Asia.

2.5. Communication methods and tools by phase

This section should describe the communication and outreach methods and tools that will be employed for each stakeholder group during each phase of the project.

- Sunrise Wind will continually refine its Community Outreach Plan during each phase of the Project, subject to applicable permitting requirements.

Proposed Outreach Methods/Tools	Phase*			
	1	2	3	4
Outreach to local communities through informational meetings	X	X	X	X
Press releases	X	X	X	X

Proposed Outreach Methods/Tools	Phase*			
	1	2	3	4
Website promotion	X	X	X	X
Social media	X	X	X	X
Notice to Mariners	X	X	X	X
<i>*Phase: 1: Survey/Design; 2: Construction; 3: Operation; 4: Decommission</i>				

3. Supporting Other Research

3.1. Support of collaborative research

This section should describe how opportunities for developing or investing in collaborative research with the environmental industry to collect ecological data will be identified and undertaken. The description must account for the need to coordinate with members of the E-TWG during data gathering and assessment.

- Sunrise Wind is committed to supporting third party research associated with development of the Project and intends to take a collaborative approach to science. Sunrise Wind has committed to providing funds to support third party research as outlined in Section 3.5.
- Sunrise Wind will engage with the E-TWG, in accordance with Section 12.04 of the OREC Agreement, regarding potential research topics, scopes and methodologies.
- Sunrise Wind and its affiliates support the Responsible Offshore Science Alliance (ROSA), which establishes science priorities collaboratively with agencies and the fishing industry and maximizes the value of the investment spent on fisheries science.
- Sunrise Wind will employ a Science Coordinator to facilitate reasonable requests for data and other forms of participation in science initiatives designed to enhance understanding of impacts from offshore wind.

3.2. Handling/processing requests

This section should describe how requests for coordination with third-party supported scientists will be processed - including providing reasonably-requested Project data and access to the Project area for independent scientists examining environmental and fishery sensitivities and/or the impacts of offshore wind energy development on fish, invertebrates and fisheries for the purpose of publication in peer reviewed journals.

- Sunrise Wind will employ a designated Science Coordinator to receive, process and collaborate on requests for Project data.
- Sunrise Wind will establish a workspace to coordinate and facilitate data sharing.
- Sunrise Wind will coordinate with non-Project vessels, including research vessels, for independent scientists to examine any environmental sensitivities as a result of the Project.

3.3. Data availability

This section should describe how data will be made available in accordance with Section 2.2.5 of the RFP.

- Sunrise Wind will make environmental data available in accordance with Section 12.07 of the OREC Agreement which reflects Section 2.2.5 of the RFP.

3.4. Proposed restrictions

This section should describe any restrictions on data provision or access that may be required to protect trade secrets or maintain site security.

- Sunrise Wind will use a Science Coordinator who will consider and, as appropriate, implement, any restrictions on data provision or access that Sunrise Wind believes may be required to protect trade secrets or maintain site security as part of that process.

3.5. Financial commitment for third party research

This section should provide a level of financial commitment, if elected, that will be appropriated to leverage third-party environmental research funding related to fish, invertebrates and fisheries, including federal or State-supported research. Or, if elected, provide the level of commitment to a general fund for supporting third-party research into relevant fish and invertebrate communities and associated commercial and recreational fisheries and the effects of offshore wind energy development.

- Sunrise Wind has made commitments to third-party environmental research funding for marine mammals and fisheries concerns. The details of these commitments are being finalized and will be announced at a future date.

3.6. Proposed or existing commitments/collaborations

This section should describe proposed or existing commitments and collaborations with third-party researchers in support of monitoring activities and assessing impacts.

- Sunrise Wind is developing site-specific studies which would examine fisheries and benthic resource topics, such as larval distributions, benthic habitat quality, distribution of nonindigenous/invasive species, and distribution and abundance of selected commercial fisheries species within the region of influence of the Project
- Sunrise Wind will coordinate with non-Project vessels, including research vessels, for independent scientists to examine fishery sensitivities and other environmental topics.
- Sunrise Wind will use commercial fishing vessels for the research it conducts whenever feasible, available, and appropriate.
- Sunrise Wind and its affiliates are developing additional commitments and collaborations with third-party researchers which will be announced when details of the collaborations are finalized.

4. Proposed Mitigation of Impacts to Marine Mammals and Sea Turtles

4.1. Baseline characterization

4.1.1. Available information

Describe existing literature and datasets that are available for baseline characterization.

- Without limitation, the following studies are available to assess the baseline characteristics for marine mammals and sea turtles potentially occurring within the Project Area:
 - NYSERDA and/or NYSDEC studies on marine wildlife and whales;
 - BOEM studies on whales, sea turtles, and marine species;
 - NOAA studies on marine mammals and marine turtles;
 - CETAP (Cetacean and Turtle Assessment Program) (1982): A characterization of marine mammals and turtles in the mid- and north Atlantic areas of the U.S. outer continental shelf. Cetacean and Turtle Assessment Program, University of Rhode Island. Final Report #AA551-CT8-48 to the Bureau of Land Management, Washington, DC, 538 pp.
 - Kraus, S.D., S. Leiter, K. Stone, B. Wikgren, C. Mayo, P. Hughes, R.D. Kenney, C.W. Clark, A. N. Rice, B. Estabrook and J. Tielens. 2016. Northeast Large Pelagic Survey Collaborative Aerial and Acoustic Surveys for Large Whales and Sea Turtles. U.S. Department of the Interior, Bureau of Ocean Energy Management, Sterling, Virginia. OCS Study BOEM 2016-054. 117 pp. + appendices.
 - <https://www.boem.gov/RI-MA-Whales-Turtles/>
 - NOAA Fisheries 2017a. 2017 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.
 - Available online at:
https://www.nefsc.noaa.gov/psb/AMAPPS/docs/AMAPPS%202017%20annual%20report_final.pdf
 - NOAA Fisheries. 2017b. Office of Protected Resources, Marine Mammal Stock Assessment Reports. (SARs) by Species/Stock
 - <http://www.nmfs.noaa.gov/pr/sars/species.htm>
 - Halpin, P.N., Read, A.J., Fujioka, E., Best., B.D., Donnelly, B., Hazen, L.J., Kot, C., Urian, K., LaBrecque, E., Dimatteo, A., Cleary, J., Good, C., Crowder, L.B., and Hyrenbach, K.D. 2009. OBIS-SEAMAP: The World Data Center for Marine Mammal, Sea Bird, and Sea Turtle Distributions. *Oceanography* 22(2):104–115, doi:10.5670/oceanog.2009.42.
 - http://www.tos.org/oceanography/assets/docs/22-2_halpin.pdf
 - Roberts, J. J., Best, B. D., Mannocci, L., Fujioka, E., Halpin, P. N., Palka, D. L., Garrison, L.P., Mullin, K. D., Cole, T. V. N., Khan, C. B., McLellan, W. A., Pabst, A., and Lockhart, G.G. 2016. Habitat-based cetacean density models for the U.S. Atlantic and Gulf of Mexico. *Scientific Reports* 6, 22615 (2016). <https://www.nature.com/articles/srep22615>

- Roberts JJ, Mannocci L, Halpin PN (2017) Final Project Report: Marine Species Density Data Gap Assessments and Update for the AFTT Study Area, 2016-2017 (Opt. Year 1). Document version 1.4. Report prepared for Naval Facilities Engineering Command, Atlantic by the Duke University Marine Geospatial Ecology Lab, Durham, NC.
 - https://www.greateratlantic.fisheries.noaa.gov/protected/whaletrp/trt/meetings/April%202019/Duke%20Model%20Information/aftt_update_2016_2017_final_report_v1.4_excerpt.pdf
- Curtice C., Cleary J., Shumchenia E., Halpin P.N. 2018. Marine-life Data and Analysis Team (MDAT) technical report on the methods and development of marine-life data to support regional ocean planning and management. Prepared on behalf of the Marine-life Data and Analysis Team (MDAT).
 - Accessed at: <http://seamap.env.duke.edu/models/MDAT/MDAT-TechnicalReport.pdf>
- Other state and regional studies on marine mammals and sea turtles.
- Sunrise Wind will comply with BOEM’s site characterization requirements in 30 CFR § 585.626(3).

4.1.2. Data being collected

Describe data collected, or will be collected, to support baseline characterization.

- Sunrise Wind will continue to conduct appropriate site assessment surveys to establish baseline conditions of wildlife within the Project Area.
- The surveys conducted by Sunrise Wind to support baseline characterization will include PSO sightings data derived from HRG and geotechnical surveys conducted in the relevant Lease Area(s).
- Sunrise Wind will rely on baseline data from NYSEDA’s 3-year fine scale aerial survey of marine wildlife.
- Sunrise Wind will apply best available marine mammal densities as provided by the Duke University MDAT project.

4.1.3. Additional data being collected to address data gaps

Describe additional data that will be collected, to support baseline characterization to address data gaps.

- Sunrise Wind will continue to collect PSO sightings data derived from HRG and geotechnical surveys conducted in the relevant Lease Area(s).
- Sunrise Wind is considering development of potential study topics following a review of the literature on existing offshore wind farms (including the baseline materials described), regional and local stakeholder concerns, and data gaps identified by resource managers in the Project Area and vicinity.
- Sunrise Wind will support funding for collection of data related to the impact of noise on communication of marine and terrestrial animals for baseline characterization and impacts analysis. The details of this funding will be announced at a later date.

4.2. Species at risk

Describe which species the Proposer believes to be of greatest concern and why.

- Sunrise Wind believes, of all the marine mammals and sea turtle species that have the potential to occur within the Project Area, the five ESA-listed whales are of greatest concern because of their currently low population status.
- Sunrise Wind notes that 38 marine mammal species (cetaceans and pinnipeds) and five sea turtle species are known to occur within the north Atlantic OCS region. All 38 marine mammal species are protected by the Marine Mammal Protection Act (MMPA), and some are additionally protected by the Endangered Species Act (ESA). All of the identified sea turtle species are protected by the ESA.
- Sunrise Wind identified 10 MMPA protected species considered both common in the waters surrounding the relevant Lease Area(s) or that have the likelihood of occurring, at least seasonally:
 - harbor porpoise (*Phocoena phocoena*),
 - Atlantic white-sided dolphin (*Lagenorhynchus acutus*),
 - short-beaked common dolphin (*Delphinus delphis*),
 - bottlenose dolphin (*Tursiops truncatus*),
 - long-finned pilot whale (*Globicephala melas*),
 - Risso's dolphin (*Grampus griseus*),
 - humpback whale (*Megaptera novaeangliae*),
 - minke whale (*Balaenoptera acutorostrata*),
 - harbor seal (*Phoca vitulina*), and
 - gray seal (*Halichoerus grypus*)
- Sunrise Wind identified five ESA-listed whale species known to occur within the waters of the north Atlantic OCS region:
 - North Atlantic right whale (*Eubalaena glacialis*),
 - blue whale (*Balaenoptera musculus*),
 - fin whale (*Balaenoptera physalus*),
 - sei whale (*Balaenoptera borealis*), and
 - sperm whale (*Physeter macrocephalus*)
- Sunrise Wind identified four ESA-listed sea turtle species that are considered possible to occur in the relevant Lease Area(s):
 - Leatherback (most likely to be encountered in the waters surrounding the Lease Area(s));
 - Loggerhead (most likely to occur in the nearshore water surrounding the Lease Area(s) during summer and fall);
 - Atlantic (Kemp's) ridley (so rarely sighted that their presence either nearshore or offshore is considered unlikely); and
 - green sea turtle (most likely to occur in the nearshore water surrounding the Lease Area(s) during summer and fall).
- The presence and/or absence of marine mammals within these waters can be affected by a variety of parameters including water temperature, movements or availability of prey, and human presence or disturbance.

4.3. Potential impacts/risks and mitigation measures by project stage

The table below should list the potential impacts to marine mammals and sea turtles and proposed mitigation measures. To this end, a description of proposed measures to minimize the impacts of sound on marine mammals and sea turtles during all phases of Project development should be included. In addition, provide a description of the anticipated pre- and post-construction survey techniques to establish an ecological baseline and changes to that baseline within the Project site; the minimum size of exclusion zone intended to be monitored during geophysical surveys and construction; planned approaches to understanding marine mammal and sea turtle presence and absence within the development site exclusion zone during site assessment and construction (e.g., a combination of visual monitoring by protected species observers and passive acoustic monitoring, the use of night vision and infra-red cameras during nighttime activities, etc.); proposed temporal constraints on construction activities and geophysical surveys with noise levels that could cause injury or harassment in marine mammals (e.g., seasonal restrictions during periods of heightened vulnerability for priority species; commencing activities during daylight hours and good visibility conditions, dynamic adjustments following the detection of a marine mammal); and proposed equipment and technologies the Proposer would use to reduce the amount of sound at the source, if any.

Potential Impacts	Proposed Mitigation Measures ⁶	Phase*			
		1	2	3	4
Underwater noise impacts from geophysical survey equipment	<ul style="list-style-type: none"> • Exclusion and monitoring zones for marine mammals and sea turtles during all site assessment surveys, including: <ul style="list-style-type: none"> ○ A 1,640-foot (ft) (500-meter [m]) separation distance for the North Atlantic right whale and a 328-ft (100-m) separation distance for all other marine mammal species and sea turtles. ○ Pre-clearance of exclusion zones as defined by NOAA Fisheries ○ Ramp-up and shut-down procedures • A visual monitoring program conducted by NOAA Fisheries-approved PSOs • Environmental training for all vessel personnel regarding animal identification and protocol when sightings occur • Require Project vessels to comply with NOAA ship speed regulations and BOEM lease conditions specific to vessel speeds • Tow passive acoustic monitoring equipment (PAM) during geophysical surveys, pursuant to regulatory concurrence for current approved surveys** Use of 	X	X	X	

⁶ All proposed mitigation measures are subject to applicable regulatory processes and applicable permit requirements. This list of proposed mitigation measures is a good faith statement of currently anticipated mitigation measures. Actual mitigation measures will be pursuant to applicable permits and may vary from this list.

Potential Impacts	Proposed Mitigation Measures ⁶	Phase*			
		1	2	3	4
	night vision binoculars and infrared technology during period of poor visibility				
Underwater noise impacts from construction and installation activities	<ul style="list-style-type: none"> • Use of passive acoustic monitoring equipment (PAM) during foundation installation, pursuant to regulatory concurrence • Committed to noise attenuation technologies to reduce sound from pile driving of foundations, pursuant to regulatory concurrence • Will evaluate attenuation of noise from a range of methods and will assess their effectiveness, commercial viability, safety risk, and practicability • Will conduct an underwater acoustic assessment in support of evaluation of potential impacts to marine mammals due to noise generated during construction and operation of the Project, particularly with regard to pile driving activities • Will develop a Project-specific protected species mitigation and monitoring plan 		X		
Ship strikes on marine mammals	<ul style="list-style-type: none"> • Training for all vessel personnel regarding animal identification and protocol when sightings occur • Use of trained Protected Species Observers (PSOs) as required by the Project-specific Protected Species Mitigation and Monitoring Plan (PSMMP) • Require Project vessels to comply with NOAA ship speed regulations and BOEM lease conditions specific to vessel speeds: <ul style="list-style-type: none"> ○ 10 knots for vessels 65 ft (19.8 m) or greater during the period of November 1 through April 30. ○ 10 knot (<18.5 km per hour [km/h]) speed restrictions in any Dynamic Management Area (DMA) • Adhere to NOAA Fisheries Operational Guidelines when in sight of marine mammals (NOAA Fisheries & NOS 2013), unless doing so would compromise human or environmental health and safety and/or the integrity of the Project • Adhere to NOAA Fisheries' Vessel Strike Avoidance Measures and Reporting for Mariners (NOAA Fisheries 2008). • Training for personnel onboard Project vessels will include marine mammal sighting and reporting that will stress individual responsibility for marine mammal awareness and protection. 	X	X	X	X

Potential Impacts	Proposed Mitigation Measures ⁶	Phase*			
		1	2	3	4
	<ul style="list-style-type: none"> Support the Whale Alert network to enhance awareness of and reduce the risk of ship strikes in the maritime community (http://www.whalealert.org/) 				
<p>*Phase: 1: Survey/Design; 2: Construction; 3: Operation; 4: Decommission</p> <p>** NOAA Fisheries has determined, and best available science supports, that for towed-PAM, its utility in further reducing impact for Orsted's HRG activities is very limited and that the proximity to propeller noise and low frequency engine noise can mask the low frequency sounds emitted by baleen whales, including right whales.</p>					

4.4. Monitor for impacts during each phase

Describe how potential impacts will be monitored on these types wildlife during each phase of physical work for the Project (site assessment, construction, operation, and decommissioning) to inform mitigation planning for later phases of the Project as well as for future Projects.

4.4.1. Pre/Post Monitoring to assess and quantify changes

Describe how changes to environmental resources will be quantified using statistically sound methods

- Sunrise Wind is considering development of study topics and methodologies for pre- and post-construction monitoring of marine mammals and sea turtles. Any study topics and methodologies would be developed through an iterative process including input from various stakeholders and agencies from multiple states, including New York, Rhode Island, and Massachusetts. Surveys will be conducted in order to collect sufficient baseline data prior to offshore construction and will continue throughout construction and operation of the Project in accordance with applicable permit requirements.
- Sunrise Wind will evaluate other technologies to support adaptive mitigation and monitoring to increase Project flexibility through enhanced situational awareness, including:
 - autonomous real time marine mammal acoustic detectors (i.e., buoys and gliders); and
 - real time marine mammal sightings data software/platform to share data.

4.4.2. Address data gaps

Describe how data gaps will be addressed.

- Sunrise Wind will 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.
- Sunrise Wind will work with regulatory agencies when developing the monitoring and mitigation plan in an effort to address existing data gaps through pre- and post-construction monitoring in accordance with applicable permit requirements.

4.5. Strategies for developing alternate protocols

Describe the process for determining when mitigation strategies are insufficient and under what conditions they might elect to rehabilitate or restore impacted marine mammals and sea turtles in an alternative location.

- Sunrise Wind will work with federal and state agencies to determine appropriate and practicable marine wildlife monitoring and mitigation methods during the construction, operation, and decommissioning phases of the Project.
- Sunrise Wind will continue to engage with BOEM, NOAA Fisheries, USFWS, and other stakeholders to identify and implement appropriate and practicable measures to avoid, minimize, and/or mitigate impacts throughout all phases of the Project as required by applicable permits.
- Following identification of potential impacts, Sunrise Wind will work with regulators to establish processes for evaluating the effectiveness of selected mitigation strategies. Additionally, it will coordinate with federal and state agencies to identify additional mitigation strategies or potential modifications to selected mitigation measures that may be implemented in the event the base mitigation strategies are determined to be insufficient by relevant regulatory agencies.

5. Proposed Mitigation of Impacts to Birds and Bats

5.1. Baseline characterization

Describe how baseline data will be established on the presence of bird and bat assemblages, temporal and spatial use of the site by key species within the area of the proposed Project.

5.1.1. Available information

Describe existing literature and datasets that are available for baseline characterization.

- Without limitation, the following studies are available to assess the baseline characteristics for birds and bats potentially occurring within the Project Area:
 - BOEM 2014 Environmental Assessment, which listed the following birds likely in the relevant Lease Area(s):
 - 19 species of waterfowl,
 - 4 species of loons and grebes,
 - 10 species of shearwaters and petrels,
 - 1 species of gannet,
 - 2 species of cormorants,
 - 2 species of shorebirds (phalaropes),
 - 3 species of jaegers,
 - 6 species of alcids (auks), and
 - 20 species of gulls and terns.
 - NYSERDA and/or NYSDEC studies on marine wildlife and birds and bats;
 - NYSERDA's Offshore Wind Master Plan Birds and Bats Study;
 - BOEM studies on marine species, seabirds, and bats;
 - NOAA studies on seabirds;
 - MassCEC seabird surveys (Veit et al. 2016):
 - Three years of aerial avian surveys found 25 species of seabirds, with two species of sea ducks, Whitewinged scoter (*Melanitta deglandi*) and Long-tailed duck (*Clangula hyemalis*), occurring in the highest numbers in the relevant Lease Area(s) and nearby waters;
 - Rhode Island Ocean Special Area Management Plan (SAMP) (Paton et al. 2010);
 - NOAA MDAT models (Curtice et al. 2016, Winship et al. 2018);
 - Massachusetts Breeding Bird Atlas (Petersen and Meservey 2003);
 - National Audubon Society Christmas Bird Count (NAS 2010);
 - eBird (eBird 2012);
 - The NYSERDA Cable Landfall Permitting Study:
 - Reports that as many as 44 birds of conservation concern may occur along Long Island's southern coast and coastal areas near New York City.
 - Confirms summer long-eared bat activity in Brookhaven during surveys conducted in 2016 and 2017;
 - Published data of bats in offshore and nearshore environments:
 - Grady and Olson 2006;
 - Cryan and Brown 2007;
 - Johnson et al. 2011;

- Hatch et al. 2013;
- Pelletier et al. 2013;
- Sjollemas et al. 2014;
- Dowling et al. 2017.
- Other states and regional studies on seabirds and bats.

5.1.2. Data collected

Describe data collected, or will be collected, to support baseline characterization.

- Sunrise Wind will continue to conduct appropriate site assessment surveys to establish baseline conditions of wildlife within the Project Area.
- The surveys conducted by Sunrise Wind or its affiliates to support baseline characterization of birds include:
 - Lease-Area-wide offshore avian boat-based survey of a relevant Lease Area between June and October 2017, which observed over 6,500 birds from 31 species in the Lease Area; and
 - Ongoing NYSERDA aerial baseline survey of NY Offshore Planning Area.
- Sunrise Wind anticipates additional avian surveys to be conducted within New York state nearshore waters, including nesting bird surveys along the landing location on Long Island, pending consultation with state and federal wildlife agencies and applicable permit requirements.
- Sunrise Wind will conduct bat surveys for the onshore areas of the Project, if appropriate, pending consultation with state and federal wildlife agencies and applicable permit requirements.

5.1.3. Additional data being collected to address data gaps

Describe additional data collected that will be collected, to support baseline characterization to address data gaps.

- Sunrise Wind anticipates additional avian surveys to be conducted onshore, including nesting bird surveys along the landing location on Long Island, pending consultation with state and federal wildlife agencies and applicable permit requirements.
- Sunrise Wind will complete a pre-construction avian assessment, consistent with BOEM 2013 and 2017 guidance, to assess construction and operation impacts covering:
 - Migratory shorebirds, wading birds, raptors, songbirds, coastal waterbirds, and marine birds (marine birds include loons, seaducks, tube-nosed species, gannets and allies, gulls and allies, terns, and auks); and
 - Species with greater Federal protection, including Bald Eagle (*Haliaeetus leucocephalus*), Golden Eagle (*Aquila chrysaetos*), Roseate Tern (*Sterna dougallii*), Piping Plover (*Charadrius melodus*), and Red Knot (*Calidris canutus*).
- Sunrise Wind will conduct a pre-construction bat survey for the onshore areas of the Project, if appropriate, pending consultation with state and federal wildlife agencies and applicable permit requirements.
- If appropriate, and pursuant to regulatory concurrence, Sunrise Wind is considering development of several potential study topics for biological resource monitoring following

a review of the literature on existing offshore wind farms (including the baseline materials described), regional and local stakeholder concerns, and data gaps identified by resource managers in the Project Area and vicinity.

5.2. Species at risk

Describe which species the Proposer believes to be of greatest concern and why.

- Sunrise Wind identified the following ESA-listed bird species at greatest risk/concern:
 - northwestern Atlantic Ocean population of Roseate Tern (only species observed by Veit et al (2016 study in relevant Lease Area(s)));
 - Atlantic Coast population of the Piping Plover (*Charadrius melodus*); and
 - rufa subspecies of Red Knot (*Calidris canutus rufa*).
- Sunrise Wind identified the northern long-eared bat, which is listed as endangered by the ESA and NYSDEC, as of greatest concern.
 - Ahlen et al (2009) shows evidence of bats visiting wind farms located relatively close to shore (2.5 to 4.3 mi [4 to 7 km]) in Europe, however, the Project is located 21.5 mi from Martha’s Vineyard and 30.7 mi from New York.
 - Bat occurrence in offshore waters appears to be relatively low, with highest activity exhibited by migratory tree bat species.
 - Migratory tree bat activity would be limited to migration period (May, August, September).
 - NYSDEC has indicated that Long Island is generally an important area for the northern long-eared bat.

5.3. Potential impacts/risks and mitigation measures by project stage

The table below should list the potential impacts and mitigation measures to understand and minimize the Project’s risk to birds and bats. At a minimum this should include the steps the Proposer will pursue to minimize risk to birds and bats (e.g. lighting); and identification of technological approaches to assess impacts or any Proposals for other research or mitigations relating to birds or bats planned or under consideration at this time.

Potential Impacts	Proposed Mitigation Measures ⁷	Phase*			
		1	2	3	4
Collision risk to marine birds and bats	<ul style="list-style-type: none"> • Wind Turbine Generators (WTGs) will have air gaps of at least 98 ft (30 m) which minimizes collision risk to marine birds given that many seabirds fly below this height 			X	
Collision risk to marine birds and bats	<ul style="list-style-type: none"> • During construction, consider leaving lights on only when necessary, down-shielding 		X		

⁷ All proposed mitigation measures are subject to applicable regulatory processes and applicable permit requirements. This list of proposed mitigation measures is a good faith statement of currently anticipated mitigation measures. Actual mitigation measures will be pursuant to applicable permits and may vary from this list.

Potential Impacts	Proposed Mitigation Measures ⁷	Phase*			
		1	2	3	4
	when possible, and minimizing the use of high-intensity work lights, while complying with FAA and United States Coast Guard (USCG) requirements for lighting.				
Habitat impacts, including breeding and nesting areas - Birds	<ul style="list-style-type: none"> • Project will locate onshore facilities and associated work spaces on previously disturbed lands to the extent reasonably practicable • Onshore vegetation clearance and cable landing activity, where reasonably practicable, will occur outside the breeding or nesting periods. If not reasonably practicable, the area will be surveyed prior to clearance • Will take measures to reduce perching opportunities (e.g., install anti-perching devices) 		X	X	X
Habitat impacts, including breeding and nesting areas - Bats	<ul style="list-style-type: none"> • Will work with USFWS and NYSDEC and endeavor to employ protection measures for the northern long-eared bat, including: <ul style="list-style-type: none"> ○ from November 1 to March 31, no cutting of trees within a quarter mile of a hibernaculum; ○ from April 1 to October 31, no cutting of known and documented roost trees within five miles of known hibernacula, and no cutting of trees within 150 feet of a documented summer occurrence; and ○ from April 1 to October 31, no cutting of trees within a quarter mile of a hibernaculum unless for protection of human life and property. 		X	X	X
<i>*Phase: 1: Survey/Design; 2: Construction; 3: Operation; 4: Decommission</i>					

5.4. Monitor for impacts during each phase

Describe how potential impacts will be monitored on these types of wildlife during each phase of physical work for the Project (site assessment, construction, operation, and decommissioning) to inform mitigation planning for later phases of the Project as well as for future Projects.

5.4.1. Pre/Post Monitoring to assess and quantify changes

Describe how changes to environmental resources will be quantified using statistically sound methods.

- Sunrise Wind and its affiliates have conducted a pre-construction offshore avian boat-based survey of a relevant Lease Area between June and October 2017, which observed over 6,500 birds from 31 species in the Lease Area.

- Sunrise Wind will complete a pre-construction avian assessment, consistent with BOEM 2013 and 2017 guidance, to assess construction and operation impacts covering:
 - Migratory shorebirds, wading birds, raptors, songbirds, coastal waterbirds, and marine birds (marine birds include loons, seaducks, tube-nosed species, gannets and allies, gulls and allies, terns, and auks); and
 - Species with greater Federal protection, including Bald Eagle (*Haliaeetus leucocephalus*), Golden Eagle (*Aquila chrysaetos*), Roseate Tern (*Sterna dougallii*), Piping Plover (*Charadrius melodus*), and Red Knot (*Calidris canutus*).
- Sunrise Wind will conduct a pre-construction survey for bat species for the onshore portions of the Project, if appropriate. The results of the bat surveys, as well as known mortality risks from non-project sources, will inform mitigation, minimization, or conservation measures for impacts to bat species in coordination with federal and state agencies.
- Sunrise Wind is considering development of study topics and methodologies for pre- and post-construction monitoring of bird and bat impacts. Any study topics and methodologies would be developed through an iterative process including input from various stakeholders and agencies from multiple states, including New York, Rhode Island, and Massachusetts. Surveys would be conducted in order to collect sufficient baseline data prior to offshore construction, and will continue throughout construction and operation of the Project, in accordance with applicable permitting requirements.

5.4.2. Address data gaps

Describe how data gaps will be addressed.

- Sunrise Wind will 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.
- Sunrise Wind will work with regulatory agencies when developing the monitoring and mitigation plan in an effort to meet existing data gaps through pre- and post-construction monitoring in accordance with applicable permitting requirements.

5.5. Strategies for developing alternate protocols

Describe the process for determining when mitigation strategies are insufficient and under what conditions they might elect to rehabilitate or restore impacted birds and bats in an alternative location.

- Following identification of potential impacts, Sunrise Wind will work with regulators to establish processes for evaluating the effectiveness of selected mitigation strategies. Additionally, it will coordinate with federal and state agencies to identify additional mitigation strategies or potential modifications to selected mitigation measures that may be implemented in the event the base mitigation strategies are determined to be insufficient by relevant regulatory agencies.

6. Proposed Mitigation of Impacts to Fish, Invertebrates, and their Habitats

6.1. Baseline characterization

Describe what is known about the proposed site in terms fish and invertebrate assemblage, and temporal and spatial variations in fish, invertebrates and their habitats at the proposed site. The use of collaborative monitoring models with the fishing community is encouraged to develop trusted baseline data.

6.1.1. Available information

Describe existing literature and datasets that are available for baseline characterization.

- Without limitation, the following studies are available to assess the baseline characteristics for fish, invertebrates and their habitats occurring within the Project Area:
 - NYSERDA and/or NYSDEC studies on marine wildlife;
 - BOEM studies on marine species and lobsters and crabs;
 - NOAA studies on trawl surveys, sea scallops, and clams;
 - Other state and regional studies on ocean trawls surveys;
 - Additional studies by, RICRMC, RIDMF, MADMF, and MACZM in the waters of the northeast Atlantic related to of offshore wind development; and
 - Studies that Sunrise Wind or its affiliates have conducted in the relevant Lease Area(s) and surrounding waters of the north Atlantic.
- Based on the existing literature and datasets:
 - The relevant Lease Area(s) can be characterized as a complex ecosystem with multiple commercially valuable species including scallops, longfin squid, surf clam, etc.
 - Finfish within the vicinity of the Project Area can be categorized in two groups based on vertical habitat use: demersal and pelagic.
 - Demersal fish likely to occur in Project Area include: American plaice, Atlantic cod, black sea bass, haddock, monkfish, ocean pout, red hake, scup, skates (barndoor, little, thorny, winter), smooth dogfish, spiny dogfish, silver hake, summer flounder, tautog, windowpane flounder, winter flounder, witch flounder and yellowtail flounder.
 - Pelagic fishes likely to occur include: Sharks, tunas (including the Atlantic Bluefin tuna), bluefish, butterfish, cobia, American eel, American shad, Atlantic herring, Atlantic mackerel, blueback herring, king mackerel, menhaden, Spanish mackerel, and striped bass
 - Common commercially harvested species include: several species of skate and shark, longfin squid, red and silver hake, monkfish, scup summer flounder, yellowtail flounder, black sea bass, Atlantic herring, Atlantic mackerel, butterfish, bluefish, striped bass, tunas, mahi mahi, swordfish, American lobster, soft shell clam, Atlantic surf clam, blue crabs, horseshoe crabs, blue mussels, bay scallops, sea scallops, conch, eastern oyster, and northern quahog.

- The relevant Lease Area(s) contain known spawning area for commercially harvested squid
- Juveniles of several species of flounder have been observed in the relevant Lease Area(s)
- Winter flounder “are suspected” of spawning in the relevant Lease Area(s)

6.1.2. Data being collected

Describe data collected, or will be collected, to support baseline characterization.

- Since August 2016, Sunrise Wind and its affiliates have been completing geophysical, geotechnical, and benthic surveys, as well as desktop analyses, to identify areas of sensitive benthic habitat in the relevant Lease Area(s). As part of the regulatory process, Sunrise Wind will continue to conduct these surveys within the remainder of the Project Area, and along the proposed export cable route to New York.
- Sunrise Wind will continue to conduct appropriate site assessment surveys to establish baseline conditions of wildlife within the Project Area.
- Sunrise Wind will conduct additional surveys as part of the permitting process to inform the baseline characterization including:
 - benthic habitat surveys to characterize the benthic habitat; and
 - geotechnical and high resolution geophysical (HRG) surveys.
- Sunrise Wind will incorporate additional data from the Massachusetts Division of Marine Fisheries (MADMF) and other agencies that have proposed conducting regional studies on the impacts of offshore wind development along the northern Atlantic OCS.

6.1.3. Additional data being collected to address data gaps

Describe additional data collected that will be collected, to support baseline characterization to address data gaps.

- Sunrise Wind will continue consulting with federal and state agencies and other stakeholders (universities, commercial and recreational fishermen, etc.) to build a baseline understanding of fisheries resources and to identify sensitive habitats and areas of particular concern in the relevant Lease Area(s).
- Sunrise Wind has identified potential Project site-specific studies relevant to fisheries and benthic resources to include larval distributions, benthic habitat quality, distribution of nonindigenous/invasive species, and distribution and abundance of selected commercial fisheries species within the region of influence of the Project. These study topics were selected following a review of the literature on existing offshore wind farms, regional and local stakeholder concerns, and data gaps.

6.2. Species at risk

Describe which species the Proposer believes to be of greatest concern and why.

- Sunrise Wind identified the following essential fish habitat (EFH) species and ESA-listed species that may occur or are expected to occur within the Project Area to be of greatest concern.
- Sunrise Wind identified the following EFH species:

- various life stages of more than two dozen nonmigratory managed species, including finfish, sharks and rays, and invertebrates;
- three coastal migratory pelagic species; and
- 17 highly migratory managed fish species.
- Sunrise Wind identified the following species with known or expected EFH designation:
 - Atlantic Sea Scallop, longfin quid, northern shortfin squid, northern quahog, surfclam, clearnose skate, little skate, spiny dogfish, winter skate, American plaice, Atlantic cod, Atlantic herring, black sea bass, bluefish, butterfish, haddock, mackerel, monkfish, ocean pout, pollock, red hake, scup, silver hake, summer flounder, windowpane flounder, winter flounder, witch flounder, yellowtail flounder, king mackerel, Spanish mackerel, cobia, albacore tuna, bigeye tuna, bluefin tuna, skipjack tuna, yellowfin tuna, basking shark, blue shark, common thresher shark, dusky shark, porbeagle shark, sandbar shark, sand tiger shark, scalloped hammerhead shark, shortfin mako shark, smooth dogfish, tiger shark, and White Shark
- Sunrise Wind identified the following three ESA listed species that may occur within the relevant Lease Area(s):
 - Atlantic salmon (Gulf of Maine Distinct Population Segment),
 - Shortnose sturgeon, and
 - Atlantic sturgeon

6.3. Potential impacts/risks and mitigation measures by project stage

The table below should list the potential impacts to fish, invertebrates, and their habitats and proposed mitigation measures. To this end, this section should describe how the Developer will minimize risk to fish, invertebrates and their habitats (e.g., foundation type, scour protection, cable shielding for electromagnetic fields, construction windows, siltation/turbidity controls, use of dynamic-positioning vessels and jet plow embedment).

Potential Impacts	Proposed Mitigation Measures ⁸	Phase*			
		1	2	3	4
Micro-siting conflicts with habitats and fishery resources	<ul style="list-style-type: none"> ● Conducting geophysical and geotechnical surveys, benthic surveys, and desktop analyses to inform site design and layout ● Seeking input from regulatory, the fishing industry, and maritime industry to locate foundations and cable routes in the least impactful manner that is practicable 	X			

⁸ All proposed mitigation measures are subject to applicable regulatory processes and applicable permit requirements. This list of proposed mitigation measures is a good faith statement of currently anticipated mitigation measures. Actual mitigation measures will be pursuant to applicable permits and may vary from this list.

Potential Impacts	Proposed Mitigation Measures ⁸	Phase*			
		1	2	3	4
Temporary, alteration of the seabed and localized increases in noise and turbidity	<ul style="list-style-type: none"> • Mobile fish and invertebrates are expected to temporarily leave the area in response to construction or decommissioning activity. Because identical habitat is widely available in the immediate area, the temporary displacement is not considered significant. • Committed to noise attenuation technologies to reduce sound from pile driving of foundations, pursuant to regulatory requirements • Time of year restrictions on construction will reduce impacts on some biological resources. Time of year restrictions will be pursuant to regulatory requirements 		X		X
Changes to water quality from accidental spills and/or releases, and erosion and run-off during onshore construction	<ul style="list-style-type: none"> • Implementation of a Stormwater Pollution Prevention Plan (SWPPP) • Implementation of a Spill Prevention, Control, and Countermeasure (SPCC) Plan • Implementation of an Oil Spill Response Plan (OSRP) • Implementation of an Erosion and Sediment Control Plan 		X	X	X
Long-term changes to seabed, and habitat	<ul style="list-style-type: none"> • Populations of benthic organisms would not be significantly diminished by the small area of sea floor that will be disturbed by the Project construction • Use of horizontal direction drill at the landfall to minimize impacts to sensitive shoreline vegetation and shellfish resources. 		X	X	
Colonization of encrusting invertebrates on wind turbine generators (WTG), which will quickly lead to the development of biogenic habitat and associated communities centered on the structures	<ul style="list-style-type: none"> • The shift toward a structure-based community is considered desirable because it supports higher trophic level fish that are of commercial and recreational value. 		X	X	X
Distribution of mobile species, including lobsters, groundfish, and pelagic predators	<ul style="list-style-type: none"> • Within several months of completion of construction, the abundance and distribution of benthic invertebrates is expected to return to pre-construction conditions • Methods under evaluation to limit impacts, pursuant to regulatory concurrence, include: 		X	X	X

Potential Impacts	Proposed Mitigation Measures ⁸	Phase*			
		1	2	3	4
	<ul style="list-style-type: none"> ○ Micrositing WTG and export cable locations to avoid sensitive habitats where feasible; ○ Burying cables wherever feasible using the most appropriate tools and methods; ○ Conducting pre- and post- construction surveys and assessments; ○ Slow start (ramp up) of pile driving equipment; ○ Emplacement of scour protection; and ○ Reduction of marine debris; and ○ Time of Year (TOY) restrictions. 				
EMF Impacts	<ul style="list-style-type: none"> ● Will use cable shielding to minimize EMF ● Target burial depths for the export cables and inter-array cables will minimize EMF impacts 		X	X	
<i>*Phase: 1: Survey/Design; 2: Construction; 3: Operation; 4: Decommission</i>					

6.4. Monitor for impacts during each phase

Describe how potential impacts will be monitored on these types of fish and invertebrates during each phase of physical work for the Project (site assessment, construction, operation, and decommissioning) to inform mitigation planning for later phases of the Project as well as for future Projects.

6.4.1. Pre/Post Monitoring to assess and quantify changes

Describe how changes to environmental resources will be quantified using statistically sound methods.

- Sunrise Wind and its affiliates will continue to conduct pre-construction studies to supplement existing baseline information that contribute to evaluating the long-term impacts.
- Sunrise Wind will conduct a pre-construction water quality assessment and sediment transport assessment to determine the spatial and temporal impacts of potential increased sediment within the water column and identify which species may be affected by these changes during construction.
- Sunrise Wind will conduct a pre-construction EMF analysis to determine the EMF exposure levels fisheries resources would experience.
- Sunrise Wind will develop study topics and methodologies through an iterative process including input from various stakeholders and agencies from multiple states, including New York, Rhode Island, and Massachusetts. Surveys will be conducted in order to collect sufficient baseline data prior to offshore construction, and will continue throughout construction and operation of the Project, in accordance with applicable permitting requirements.

- Sunrise Wind will conduct site-specific studies to examine the impact of the Project on marine resources and will comply with requirements of applicable agencies. Specifically, Sunrise Wind will examine fisheries and benthic resource topics such as larval distributions, benthic habitat quality, distribution of nonindigenous/invasive species, distribution and abundance of selected commercial fisheries species, and impacts to resources from climate change within the region of influence of the Project.

6.4.2. Address data gaps

Describe how data gaps will be addressed.

- Sunrise Wind will 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 in accordance with applicable permitting requirements.
- Sunrise Wind will work with regulatory agencies when developing the monitoring and mitigation plan in an effort to meet existing data gaps through pre- and post-construction monitoring in accordance with applicable permitting requirements.

6.5. Strategies for developing alternate protocols

Describe the process for determining when mitigation strategies are insufficient and under what conditions they might elect to rehabilitate or restore impacted fisheries in an alternative location or when the provision of compensation of some form may be appropriate.

- Sunrise Wind will engage the fishing community and other relevant stakeholders including Federal and State agencies regarding mitigation measures that should be implemented to reduce potential impacts to both biological and socioeconomic resources.

7. Project Decommissioning

7.1. Potential impacts on marine wildlife, birds, bats, and fisheries

This section should describe potential impacts to marine mammals, sea turtles, birds, bats, and fisheries and habitats from decommissioning the project, based on available information and relevant experience (if any).

- In March 2017, Ørsted became the first developer to decommission an offshore wind project, the Vindeby Offshore Wind Farm near Lolland, Denmark (Vindeby Project).
- Sunrise Wind waste handling processes during decommissioning will focus on re-use or recycling, with disposal as the last option.
- Sunrise Wind anticipates that impacts to marine mammals, sea turtles, birds, bats and fisheries would be expected to be similar to the construction phase but to a lesser extent.

7.2. Approach for developing plan and coordination with stakeholders

This section should describe how a decommissioning plan will be developed to identify and mitigate potential impacts, including coordination with stakeholders, and any elements of its contemplated decommissioning plan that can be identified at this stage.

- Sunrise Wind will decommission the Project in accordance with a detailed Project-specific decommissioning plan that will be developed in compliance with applicable laws, regulations, and generally accepted industry practices that exist at the end of the Project's operational life.
- Sunrise Wind will develop the decommissioning plan in coordination with stakeholders including regulatory agencies, fisheries and marine stakeholders, and local communities.

8. Additional Considerations

8.1. Additional mitigation strategies and EMP refinement

This section should describe any additional mitigation strategies not otherwise described herein that would improve the Plan and reduce impacts on the fishing community. In addition, describe how the EMP will be updated and refined based on additional information and stakeholder feedback.

- Sunrise Wind will update and refine the EMP, pursuant to Section 12.06 of the OREC Agreement, as outreach with stakeholders, including regulatory agencies and local communities and groups, continue and as information on the Project Area is collected through additional survey work and development of permit applications and permits.

8.2. Process for updating the EMP

This section should describe how feedback from the fishing industry stakeholders, F-TWG, and other agencies and working groups will be incorporated and updated in the EMP.

- Sunrise Wind anticipates that stakeholder feedback will play an integral role in shaping study scopes and protocols to support environmental assessments, as well as mitigation measure that may be needed in response to assessment findings.
- Updates to the EMP are anticipated on a bi-annual basis and on an ad-hoc basis in connection with milestone events, such as preparation for permitting filings or finalization of study plans.
- Updates to the EMP are intended to reflect the results of iterative exchanges with members of the E-TWG, F-TWG and relevant stakeholders.