Environmental Mitigation Plan

for

Sunrise Wind

Version ~~1~~2.~~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 Resource 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

Sunrise Wind | Powered by Ørsted & Eversource

August~~October~~ 20~~ 23~~, 202~~119~~

Record of Revision		
Version No. and Revision Date	**Description of changes**	**Revision on pages**
[1.0~~Version No~~; 10/23/2019~~date~~]	[Original issue]	[~~page(s)~~]
2.0;12/01/2020	Update based on E-TWG comments and COP application	All pages
2.1; 08/20/2021	August, 2021	Cover page

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Laura Morse **Marine Mammal and Sea Turtle Lead ~~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~~ specialist; Member of RWSE planning group.	Phone: 857-310-8616 Email: LAURM@orsted.com
Brita Woeck **Avian Lead and Environmental Manager**	Receive, process, and disseminate scientific data collected in the relevant Lease Area(s) Lead on avian topics; E-TWG specialist.	Phone: 857-348-3274 Email: BRIWO@orsted.com
Gregory DeCelles **Fisheries Science Specialist**	Receive, process, and disseminate scientific data collected in the relevant Lease Area(s) Member of the ROSA Advisory Council and Interim Fisheries Methods Working Group	Phone: 857-408-4497 Email: GREDE@orsted.com
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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/

Data Portal: Under Construction

Table of Contents

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.

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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 has and will continue to 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 has and will continue to 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 has and will continue to 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 has and will continue to 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 has and will continue to 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 documents.~~:~~ Data sources for resource baseline characterization are listed in the resource-specific sections below.

  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 202017)
  - https://www.boem.gov/sites/default/files/documents/newsroom/Avian%20Survey%20Guidelines.pdf
- 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 202017)
  - https://www.boem.gov/sites/default/files/documents/about-boem/Archaeology%20and%20Historic%20Property%20Guidelines.pdf
- Guidelines for Providing Geophysical, Geotechnical, and Geohazard Information Pursuant to 30 CFR Part 585 (BOEM 2020~~2015~~)
  - https://www.boem.gov/sites/default/files/documents/about-boem/GG-Guidelines.pdf
- 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 202015)
  - https://www.boem.gov/sites/default/files/documents/about-boem/Social%20%26amp%3B%20Econ%20Fishing%20Guidelines.pdf
- 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/

- Recommendations for Mapping Fish Habitat (NOAA's National Marine Fisheries Greater Atlantic Regional Fisheries Office Habitat Conservation and Ecosystem Services Division 2020)

- Draft Proposed Guidelines for Providing Information on Lighting and Marking of Structures Supporting Renewable Energy Development (BOEM 2019)
  - https://www.boem.gov/sites/default/files/documents/renewable-energy/Lighting-and-Marking-Guidelines.pdf

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/
- NYSDEC. n.d. New York Bight Whale Monitoring Program (NYSDEC n.d.)
  - https://www.dec.ny.gov/lands/84428.html
- NYSDEC. 2018. Summary Report of the New York Bight Sea Turtle Workshop (NYSDEC 2018)
  - https://www.dec.ny.gov/docs/fish_marine_pdf/dmrturtlereport.pdf

Tools:

- New York Office of Planning and Development Geographic Information Gateway
  - http://opdgig.dos.ny.gov/#/home
- 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
- National Oceanic Atmospheric Administration Greater Atlantic Regional Fisheries Office (NOAA GARFO). 2016. GARFO Acoustics Tool: Analyzing the effects of pile driving on ESA-listed species in the Greater Atlantic Region (webpage). National Marine Fisheries Service.
  - https://www.greateratlantic.fisheries.noaa.gov/protected/section7/guidance/consultation/index.html
- 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://neoceanplanning.org/plan/
- New York State Offshore Wind Master Plan (NYSERDA 2017), with corresponding studies/appendices listed below
  - https://www.nyserda.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.nyserda.ny.gov/All-Programs/Programs/Offshore-Wind/Studies-and-Surveys
- New York State Offshore Wind Master Plan Fish and Fisheries Study (NYSERDA 2017)

- ~~o~~ https://www.nyserda.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)
  - ~~o~~ https://www.nyserda.ny.gov/All-Programs/Programs/Offshore-Wind/Studies-and-Surveys
- New York State Offshore Wind Master Plan Sand and Gravel Resources Study (NYSERDA 2017)
  - ~~o~~ https://www.nyserda.ny.gov/All-Programs/Programs/Offshore-Wind/Studies-and-Surveys
- New York State Offshore Wind Master Plan Environmental Sensitivity Analysis (NYSERDA 2017)
  - https://www.nyserda.ny.gov/All-Programs/Programs/Offshore-Wind/Studies-and-Surveys
- New York Ocean Action Plan 2017 – 2027 (NYSDEC n.d.)
  - https://www.dec.ny.gov/lands/84428.html
- New York State (NYS). 2015. 2015 New York State Energy Plan.
  - https://energyplan.ny.gov/Plans/2015.aspx.

Other:

- New York State Fisheries Technical Working Group (NYSERDA 2019)
  - https://nyfisheriestwg.ene.com/
- New York State Environmental Technical Working Group
  - https://www.nyetwg.com/~~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 has and will continue to engage with both regulatory (including federal and state agencies) and non-regulatory stakeholders (including the fishing community, environmental groups, and local communities).
- Sunrise Wind has ~~will~~ carried~~y~~ 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. Stakeholder mapping will be periodically updated with newly identified stakeholders during the Project lifetime.

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
Stephanie Wilson~~ophie Hartfield Lewis~~ **Head of US Permitting**	Department head for Orsted US Permitting	Email: STEPW@orsted.com ~~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 **Marine Mammal and Sea Turtle Lead and ~~Science Coordinator~~**	Receive, process, and disseminate scientific data collected in the Lease Areas	Phone: 857-310-8616 Email: LAURM@orsted.com

~~and~~ **Environmental Manager**	Marine mammal expert, E-TWG ~~and F-TWG attendee~~ specialist; Member of RWSE planning group.	
Brita Woeck **Avian Lead and Environmental Manager**	Receive, process, and disseminate scientific data collected in the relevant Lease Area(s) Lead on avian topics; E-TWG specialist	Phone: 857-348-3274 Email: BRIWO@orsted.com
Gregory DeCelles **Fisheries Science Specialist**	Receive, process, and disseminate scientific data collected in the relevant Lease Area(s) Member of the ROSA Advisory Council and Interim Fisheries Methods Working Group	Phone: 857-408-4497 Email: GREDE@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**	Head ~~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

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 has ~~will~~ taken 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 has and will continue to 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.
- Ørsted's Laura Morse, a representative for Sunrise Wind and its affiliates, has~~ve~~ 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 and Ørsted's Madeline Hodge will participate in a panel on cumulative impacts in 2020.
- Sunrise Wind has ~~will further~~ dedicated Project-specific resources to the E-TWG, ~~Stephanie Wilson,~~ Liz Gowell and Michael Evans.
- Sunrise Wind has dedicated specialists contributing to the Specialist Committees, including Laura Morse on the Marine Mammal and Sea Turtle Specialist Committee and Brita Woeck on the Bird and Bat Specialist Committee.
- 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 has ~~will~~ hosted inter-agency Project kick-off meetings with federal and New York state regulators, and federally recognized tribes. The meetings ~~will~~ introduce~~d~~ the Project and team and key components.
- Sunrise Wind has hosted and will continue to host Project update meetings with federal and New York state regulators, and federally recognized tribes to provide status updates on Project activities and design.

- Sunrise Wind will continue to consult with the Consulting New York 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 continue to 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 has~~is~~ developed~~ing~~ 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 has and will continue to leverage its affiliates' experience implementing successful community outreach and engagement plans for many offshore wind projects in the US, Europe, and Asia.
- Sunrise Wind has developed a Project Involvement Plan specifically for outreach to communities on Long Island where the onshore portions of the Project will be located.

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
Website promotion	X	X	X	X
Social media	X	X	X	X
Notice to Mariners	X	X	X	X
**Phase: 1: Survey/Design; 2: Construction; 3: Operation; 4: Decommissioning*				

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, and Ørsted's Gregory DeCelles is actively involved in, 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 is~~will~~ employing 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. Handing/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 implements Section 2.2.5 of the RFP.
- Sunrise Wind will set up a data portal or similar data sharing website. This site will provide information on available non-proprietary data that is either publicly available or available

upon request. This portal is intended to integrate with existing platforms (including Northeastern Regional Association of Coastal Ocean Observing System [NERACOOS], Southeast Coastal Ocean Observing Regional Association [SERACOOS], Mid-Atlantic Coastal Ocean Observing System [MARACOOS], Northeast Regional Ocean Council [NROC], and Mid-Atlantic Ocean Data Portal [MARCO]) and will serve as :

  - A central guide to available Sunrise Wind environmental data
  - A link to portals/website where data is visualized live
  - A link to available and archived data sets or a link to request access to available data

- Sunrise Wind will use meta-data standards, where they are established, set by NOAA and NCEI for met/ocean data and biological data (https://www.ncei.noaa.gov/resources/metadata).
- Sunrise Wind will engage with U.S. Integrated Ocean Observing System (IOOS), NERACOOS, NROC and trust agencies to address any meta-data gaps and ensure future consistency of environmental data collection.
- Sunrise Wind will coordinate with NERACOOS to make available any non -proprietary data from met-ocean instruments (e.g. FLIDAR) in near real-time once deployed for use by mariners as well as the National Weather Service for forecast modelling as applicable.
- Sunrise Wind participated in a joint Regional Ocean Observing Systems (NERACOOS/MARACOOS) and Ocean Data Portals (NROC/MARCO) Coordination of data platforms webinar on October 2, 2020.

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 3rd party Science Coordinator who will in coordination with Sunrise Wind staff 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.

- Sunrise Wind and its affiliates have provided funding for 10 Vemco VR16-4H tags to the University of Massachusetts Dartmouth to support telemetry research at Cox Ledge.

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 and its affiliates have agreed to sharing available PSO data collected to date with New England Aquarium and NMFS GARFO for analysis funded by the Marine Mammal Commission. This data will be compared to ongoing aerial surveys conducted by New England Aquarium in the RI-MA-WEA and MA-WEA.
- Sunrise Wind's affiliates have presented some summary PSO data results and data collection methods, including data collected during geophysical and geotechnical surveys for Sunrise Wind, at the 2019 World Marine Mammal Conference, including:
    - Steckler et al., 2019: New Technology Instantly Shares Sightings to Prevent Vessel Strikes.
    - Smultea et al., 2019: Review of Night Vision Technologies for Detecting Cetaceans from Vessels at Sea
    - Smultea LLC is drafting a paper for publication with a more detailed review of thermal camera systems used during Geophysical and Geotechnical surveys and based on Orsted PSO data including Sunrise Wind data.
- Sunrise Wind and its affiliates will continue to voluntarily report any and all North Atlantic Right whales and maintain ongoing engagement with WhaleAlert, New England Aquarium (NEAQ), and NMFS GARFO and Northeast Fisheries Science Center (NEFSC) to enhance and improve on real-time sharing of information across multiple data platforms.
- Orsted's Ocean Wind project recently launched the ECO-PAM project (https://orsted-eco-pam-web-portal.srv.axds.co/). The project includes deployment of a buoy (the Martha's Vineyard Buoy) in the vicinity of the Sunrise Wind project and near real-time sightings from the buoy are directly fed to the Mysticetus data entry platform for PSOs' awareness. Currently all active real-time passive acoustic sensors (5) south of Cape Cod are funded by offshore wind developers: http://dcs.whoi.edu/.
- 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 commercially and recreationally important fisheries species within the region of influence of the Project. The studies would be developed around clear research questions and testable hypotheses. The analytical methods and the data analyses will be clearly stated in the monitoring plan.
- To the extent practicable, Sunrise Wind will aim to employ techniques that integrate with ongoing data collection efforts and will consider having spatial and temporal overlap with existing surveys when possible.
- To the extent practicable, Sunrise Wind will strive to coordinate with fisheries monitoring being carried out by other developers.

- 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.
- Sunrise Wind and its affiliates will share some results of monitoring completed for the Block Island Wind Farm at a future E-TWG meeting in 2021.

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~~ Sstudies are available to assess the baseline characteristics for marine mammals and sea turtles potentially occurring within the Project Area.~~:~~ Such studies include, but are not limited to, the following documents. The full list of data sources used for baseline characterization is located in the Sunrise Wind Construction and Operations Plan (COP).
- NYSERDA and/or NYSDEC studies on marine wildlife and whales, including:~~;~~
    - New York State Department of Environmental Conservation (NYSDEC). 2015. List of Endangered, Threatened and Special Concern Fish & Wildlife Species of New York State. Accessed July 2020.
    - New York State Department of Environmental Conservation (NYSDEC). 2020. Seagrass Management. Accessed June 2020.
        - https://www.dec.ny.gov/lands/110813.html.
    - New York State Energy Research and Development Authority (NYSERDA). 2017. Offshore Wind Master Plan. July 2020
        - https://www.nyserda.ny.gov/All%20Programs/Programs/Offshore%20Wind/About%20Offshore%2 0Wind/Master%20Plan
    - New York Bight Whale Monitoring Program Aerial Survey (NYSDEC 2020)
        - https://www.dec.ny.gov/lands/113818.html#Methods
    - Normandeau and APEM 2019a. Digital Aerial Baseline Survey of Marine Wildlife in Support of Offshore Wind Energy. Second Annual Report Summer 2016 – Spring 2018 Fourth Interim Report. Accessed August 2020.
        - https://remote.normandeau.com/docs/NYSERDA_2016-2018_4th_Semi-Annual_report.pdf
    - Normandeau and APEM 2019b. Digital Aerial Baseline Survey of Marine Wildlife in Support of Offshore Wind Energy, Summer 2018 Taxonomic Analysis Summary Report. Accessed August 2020.
        - https://remote.normandeau.com/docs/NYSERDA_Summer_2018_Taxonomic_Analysis_Summary_Report.pdf
    - Normandeau and APEM 2019c. Digital Aerial Baseline Survey of Marine Wildlife in Support of Offshore Wind Energy, Fall 2018 Taxonomic Analysis Summary Report. Accessed August 2020.
        - https://remote.normandeau.com/docs/NYSERDA_Fall_2018_Taxonomic_Analysis_Summary_Report.pdf

- Normandeau and APEM 2019d. Digital Aerial Baseline Survey of Marine Wildlife in Support of Offshore Wind Energy. Accessed August 2020.
  - https://remote.normandeau.com/docs/NYSERDA_Spring_2019_Taxonomic_Analysis_Summary_Report.pdf.
- Normandeau and APEM. 2020. Digital Aerial Baseline Survey of Marine Wildlife in Support of Offshore Wind Energy Winter 2018-2019 Taxonomic Analysis Summary Report. Accessed August 2020.
  - https://remote.normandeau.com/docs/NYSERDA_Winter_2018_19_Taxonomic_Analysis_Summary_Report.pdf
  - https://www.dec.ny.gov/animals/7494.html

○ BOEM studies on whales, sea turtles, and marine species, including:~~;~~

- Bureau of Ocean Energy Management (BOEM). 2013. Commercial Wind Lease Issuance and Site Assessment Activities on the Atlantic Outer Continental Shelf Offshore Rhode Island and Massachusetts, Revised Environmental Assessment. Office of Renewable Energy Programs. OCSEIS/EA. BOEM 2013-1131.
- Bureau of Ocean Energy Management (BOEM). 2014. Commercial Wind Lease Issuance and Site Assessment Activities on the Atlantic Outer Continental Shelf Offshore Massachusetts, Revised Environmental Assessment. OCS EIS/EA, BOEM 2014-603.
- Bureau of Ocean Energy Management. 2018. Summary Report: Best Management Practices Workshop for Atlantic Offshore Wind Facilities and Marine Protected Species (2017). Sterling (VA): US Department of the Interior, Bureau of Ocean Energy Management, Atlantic OCS Region, Washington, D.C. OCS Study BOEM 2018-015.
  - https://www.boem.gov/sites/default/files/renewable-energy-program/Final-Summary-Report-for-BMP-Workshop-BOEM-2018-015-%281%29.pdf
- Bureau of Ocean Energy Management (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 CFR Part 585. Accessed June 2020.
  - https://www.boem.gov/sites/default/files/renewable-energy-program/Regulatory-Information/BOEM-Marine-Mammals-and-Sea-Turtles-Guidelines.pdf.
- Bureau of Ocean Energy Management (BOEM). 2019. Vineyard Wind Offshore Wind Energy Project Biological Assessment. December 2018 (Revised March 2019) For the National Marine Fisheries Service. Accessed June 2020.
  - https://www.boem.gov/sites/default/files/documents//Revised%20Biological%20Assessment%20Submitted%20to%20the%20U.S.%20Fish%20and%20Wildlife%20Service.pdf

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- Bureau of Ocean Energy Management (BOEM). 2020. National Marine Fisheries Service Endangered Species Act Section 7 Consultation Biological Opinion. Construction, Operation, Maintenance and Decommissioning of the Vineyard Wind Offshore Energy Project (Lease OCS-A 0501) GARFO-2019-00343. September 2020.
  - https://www.boem.gov/sites/default/files/documents/renewable-energy/Final%20Biological%20Opinion%20from%20NOAA%20Fisheries.pdf
- Bureau of Ocean Energy Management (BOEM). 2020. Vineyard Wind 1 Offshore Wind Energy Project Supplement to the Draft Environmental Impact Statement. OCS EIS/EA BOEM 2020-025.
  - https://www.boem.gov/sites/default/files/documents/renewableenergy/Vineyard-Wind-1-Supplement-to-EIS.pdf.

○ NOAA studies on marine mammals and marine turtles, including:~~;~~

- NOAA Fisheries 2017. 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.
  - https://www.nefsc.noaa.gov/psb/AMAPPS/docs/AMAPPS%202017%20annual%20report_final.pdf
- NOAA Fisheries. 2020. Office of Protected Resources, Marine Mammal Stock Assessment Reports. (SARs) by Species/Stock
  - https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessment-reports-species-stock
- National Oceanic Atmospheric Administration (NOAA) Fisheries. 2020. The Greater Atlantic Region ESA Section 7 Mapper. Accessed July 2020.
  - https://www.fisheries.noaa.gov/resource/map/greater-atlantic-region-esa-section-7-mapper
- National Oceanic Atmospheric Administration (NOAA) Fisheries. n.d.[a]. ESA Threatened and Endangered Species Directory. Accessed July 2020.
  - https://www.fisheries.noaa.gov/speciesdirectory/threatenedendangered?title=&species_category=1000000031&species_status=any&regions=1000001111&items_per_page=25&sort=

○ Atlantic Marine Conservation Society (AMCS). 2020. AMSEAS Responds to Three Whales in Two Days. Accessed July 2020.

- https://www.amseas.org/source-blog-2/2020/7/20/amseas-responds-tothree-whales-in-two-days

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- https://besjournals.onlinelibrary.wiley.com/doi/full/10.1111/2041-210X.13244

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  - https://www.frontiersin.org/articles/10.3389/fmars.2020.00100/full
- Bellmann M. A., Brinkmann J., May A., Wendt T., Gerlach S. & Remmers P. (2020) Underwater noise during the impulse pile-driving procedure: Influencing factors on pile-driving noise and technical possibilities to comply with noise mitigation values. Supported by the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (Bundesministerium für Umwelt, Naturschutz und nukleare Sicherheit (BMU)), FKZ UM16 881500. Commissioned and managed by the Federal Maritime and Hydrographic Agency (Bundesamt für Seeschifffahrt und Hydrographie (BSH)), Order No. 10036866. Edited by the itap GmbH.
- 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.
- Curtice C., Cleary J., Shumchenia E., Halpin P.N. 2019. 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).
  - http://seamap.env.duke.edu/models/mdat/MDAT-Technical-Report.pdf
- 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/
- Kraus, S.D., R.D. Kennet and L. Thomas. 2019. A Framework for Studying the Effects of Offshore Wind Development on Marine Mammals and Turtles. Report prepared for the Massachusetts Clean Energy Center, Boston, MA 02110, and the Bureau of Ocean Energy Management. May 2019.
  - https://www.boem.gov/sites/default/files/environmental-stewardship/Environmental-Studies/Renewable-Energy/A-Framework-for-Studying-the-Effects.pdf
- ~~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
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  - 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. 2016a. 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 J.J., L. Mannocci, and P.N. Halpin. 2016b. Final Project Report: Marine Species Density Data Gap Assessments and Update for the AFTT Study Area, 2015-2016 (Base Year). Document version 1.0. Report prepared for Naval Facilities Engineering Command, Atlantic by the Duke University Marine Geospatial Ecology Lab, Durham, NC.
- Roberts J.J., Mannocci L, Halpin P.N. (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
- Roberts J.J., L. Mannocci, R.S. Schick, and P.N. Halpin. 2018. Final Project Report: Marine Species Density Data Gap Assessments and Update for the AFTT Study Area, 2017-2018 (Opt. Year 2). Document version 1.2. Report prepared for Naval Facilities Engineering Command, Atlantic by the Duke University Marine Geospatial Ecology Lab, Durham, NC.
  - http://seamap.env.duke.edu/resources/dsm/references/USECGOM/AFTT_Update_2017_2018_Final_Report_v1.2_excerpt.pdf
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  - Accessed at:

- Other state and regional studies on marine mammals and sea turtles, including:
  - Coastal Research and Education Society of Long Island, Inc. (CRESLI). 2020. CRESLI Seal Research. Accessed August 2020.
  - https://www.cresli.org/common/news/articles/article_detail.cfm?QID=10936&clientID=12000&topicID=0&subsection=sidebar%20/.
  - Kenney R.D., and K.J. Vigness-Raposa. 2010. Marine Mammals and Sea Turtles of Narragansett Bay, Block Island Sound, Rhode Island Sound, and Nearby Waters: An Analysis of Existing Data for the Rhode Island Ocean Special Area Management Plan. University of Rhode Island. Ocean Special Area Management Plan Technical Report #10. pp 337.
- 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 have ~~will~~ included and will continue to include PSO sightings data derived from HRG and geotechnical surveys conducted in the Project Area~~relevant Lease Area(s)~~.
- Sunrise Wind will rely on baseline data fro~~r~~m NYSERDA's 3-year fine scale aerial survey of marine wildlife as well as the existing literature and datasets described in Section 4.1.1, and other published scientific literature.
- Sunrise Wind has completed a Project-specific Marine Mammal, Sea Turtle, and ESA-Listed Fish Assessment and a comprehensive underwater acoustic assessment to include modeling in support of evaluation of potential impacts due to noise generated during construction of the Project.
- 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. Need for additional data collection will be determined through coordination with the jurisdictional federal and state agencies through the permitting process.
- 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 and the four ESA-listed sea turtles are of greatest concern because of their currently low population status.

- Sunrise Wind notes that 36~~8~~ marine mammal species (cetaceans and pinnipeds) and five sea turtle species are known to occur within the north Atlantic OCS region. All 36~~8~~ 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 14~~0~~ MMPA protected species considered to have regular or ~~both~~ common occurrence in the waters surrounding the ~~relevant Lease~~ Project a~~A~~rea~~(s) or that have the likelihood of occurring~~, at least seasonally:
    - harbor porpoise (*Phocoena phocoena*),
    - Atlantic white-sided dolphin (*Lagenorhynchus acutus*),
    - Atlantic spotted dolphin (*Stenella frontalis*),
    - 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*),
    - fin whale (*Balaenoptera physalus*),
    - North Atlantic right whale (*Eubalaena glacialis*),
    - sei whale (*Balaenoptera borealis*),
    - minke whale (*Balaenoptera acutorostrata*),
    - sperm whale (*Physeter catodon*),
    - 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~~ Project a~~A~~rea~~(s)~~:
    - Leatherback (most likely to be encountered in the waters surrounding the Lease Area and export cable~~(s)~~);
    - Loggerhead (most likely to occur in the nearshore water surrounding the Lease Area~~(s)~~ and export cable during summer and fall);
    - Atlantic (Kemp's) ridley (documented presence in nearshore waters during summer and fall~~so rarely sighted that their presence either nearshore or offshore is considered unlikely~~); and
    - green sea turtle (documented presence around seagrass beds in nearshore waters during the summer and fall, however, considered to be uncommon~~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[1]	Phase*			
		1	2	3	4

Underwater noise impacts from geophysical survey equipment	• Exclusion and monitoring zones for marine mammals and sea turtles during all site assessment surveys, including:
	  ○ 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 night vision binoculars and infrared technology during period of poor visibility
		X	X	X	

[1] 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.

Underwater noise impacts from construction and installation activities	• The Project will implement the following mitigation measures, pursuant to ongoing dialogue with BOEM and NOAA Fisheries. Each of these methods and tools has been successfully applied by Orsted, Sunrise Wind, and/or its affiliates in support of geophysical surveys and/or the construction and operation of offshore wind projects across the globe. A protected species mitigation and monitoring plan (PSMMP) will be developed in phases and will describe these measures and will be included within the Incidental Harassment Authorization (IHA) and further expanded as for the COP: o Exclusion and monitoring zones o Ramp-up/soft-start procedures o Shutdown procedures (if technically feasible) o Qualified and NOAA Fisheries-approved protected species observers (PSOs) o Noise attenuation technologies o Passive Acoustic Monitoring systems (fixed and mobile) o Reduced visibility monitoring tools/technologies (e.g., night vision, infrared and/or thermal cameras) o Adaptive vessel speed reductions o Utilization of software to share visual and acoustic detection data between platforms in real time. • Use of passive acoustic monitoring equipment (PAM) to measure the sound field 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 develop a Project-specific protected species mitigation and monitoring plan.~~ • Has~~Will~~ conducted an underwater acoustic assessment in support of evaluation of potential impacts to marine mammals due to		X		

	noise generated during construction and operation of the Project, particularly with regard to pile driving activities. The assessment followed NOAA Fisheries' 2018 revised Technical Guidance for Assessing the Effects of Anthropogenic Sound on Marine Mammal Hearing (NOAA Construction and Operations Plan Fisheries 2018a) and NOAA Fisheries' Greater Atlantic Regional Fisheries Office tool for assessing the potential effects to ESA-listed fish and sea turtles exposed to elevated levels of underwater sound from pile driving. Potential zones of influence described in this assessment will be reflected in the proposed mitigation measures in the mitigation and monitoring plan.				

VesselShip strikes on marine mammals and sea turtles	• Provide tTraining for all vessel personnel regarding animal identification and protocol when sightings occur • Training for personnel onboard Project vessels will include marine mammal sighting and reporting that will stress individual responsibility for marine mammal awareness and protection. • 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: ○ 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) Or will implement alternative mitigation measures pursuant to engagement with BOEM and NOAA Fisheries • Require operational automatic identification system (AIS) on all vessels associated with the construction, O&M, and decommissioning of the Project, pursuant to USCG and AIS carriage requirements. AIS will be used to monitor the number of vessels and traffic patterns for analysis and compliance with vessel speed requirements. • 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 of Project personnel~~and/or the integrity of the Project activity occurring.~~ • Adhere to NOAA Fisheries' Vessel Strike Avoidance Measures and Reporting for Mariners (NOAA Fisheries 2008). • Support the Whale Alert network to enhance awareness of and reduce the risk of ship		X	X	X

	strikes in the maritime community (http://www.whalealert.org/)				
Direct or indirect effects from changes in water quality due to contamination or spills	• Require all construction and O&M vessels to comply with applicable International Convention for the Prevention of Pollution from Ships (IMO MARPOL), federal (USCG and EPA), and state regulations and standards for the management, treatment, discharge, and disposal of onboard solid and liquid wastes and the prevention and control of spills and discharges.			X	X
Indirect or direct impacts from EMF during operation	• Cable shielding as well as cable burial, where feasible, will limit EMF exposure.			X	

**Phase: 1: Survey/Design; 2: Construction; 3: Operation; 4: Decommissioning*
*** 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.*

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. A decision to undertake pre- during and post-construction monitoring would be based on requirements from federal and state agencies. Sunrise Wind proposes to undertake a strategic process to develop methodologies and study topics, based on requirements from federal and state agencies, and utilizing a scientific advisory committee composed of technical experts, to provide objective scientific guidance for Project consideration. The final plans would be subject to additional review and input by federal and state parties during the regulatory review processes for the Project. ~~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~~ Sstudies are available to assess the baseline characteristics for birds and bats potentially occurring within the Project Area. Such studies include, but are not limited to, the following documents~~:~~. The full list of data sources used for baseline characterization is located in the Sunrise Wind COP.
- ~~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;
    - Jennings, K. 2018. Presentation: 2018 Long Island Colonial Waterbird & Piping Plover Update. Harbor Herons & Other Waterbirds of the Greater NY/NJ Harbor Working Group (December 11, 2018). Prepared by New York State Department of Environmental Conservation.
    - NYSERDA. 2017. New York State Offshore Wind Master Plan: Birds and Bats Study. NYSERDA Report 17-25q.
        - https://www.nyserda.ny.gov/All-Programs/Programs/Offshore-Wind/About-Offshore-Wind/Master-Plan
    - NYSERDA. 2017. New York State Offshore Wind Master Plan: Cable Landfall Permitting Study. NYSERDA Report 17-25q.
        - https://www.nyserda.ny.gov/All%20Programs/Programs/Offshore%20Wind/About%20Offshore%20Wind/Master%20Plan
    - Normandeau and APEM. 2019. Remote Marine and Onshore Technology Digital Aerial Baseline Survey of Marine Wildlife in Support of Offshore Wind Energy. Prepared for New York State Energy Research and Development Authority.
        - https://remote.normandeau.com/portal_data.php?pj=6&public=1
    - ~~NYSERDA's Offshore Wind Master Plan Birds and Bats Study;~~
  - BOEM and USFWS studies on marine species, seabirds, and bats;

- Dowling, Z., P.R. Sievert, E. Baldwin, L. Johnson, S. von Oettingen, and J. Reichard. 2017. Flight Activity and Offshore Movements of Nano-Tagged Bats on Martha's Vineyard, MA. OCS Study BOEM 2017-054. U.S. Department of the Interior, Bureau of Ocean Energy Management, Sterling, VA. 39 pp.
- Johnson, J.A., J. Storrer, K. Fahy, and B. Reitherman. 2011. Determining the Potential Effects of Artificial Lighting From Pacific Outer Continental Shelf (POCS) Region Oil and Gas Facilities on Migrating Birds. OCS Study BOEMRE2011-047. US Department of the Interior, Bureau of Ocean Energy Management, Regulations and Enforcement, Camarillo, CA, 20+ pp.
- Loring, P.H., J.D. McLaren, P.A. Smith, L.J. Niles, S L. Koch, H.F. Goyert, H. Bai. 2018. Tracking movements of threatened migratory rufa Red Knots in U.S. Atlantic Outer Continental Shelf Waters. Sterling (VA): US Department of the Interior, Bureau of Ocean Energy Management. OCS Study BOEM 2018-046. 145 p.
- Loring, P., P.W.C. Paton, J.D. McLaren, H. Bai, R. Janaswamy, H.F. Goyert, C R. Grif f in, P.R. Sievert. 2019. Tracking Offshore Occurrence of Common Terns, Endangered Roseate Terns, and Threatened Piping Plovers with VHF Arrays. Sterling (VA): US Department of the Interior, Bureau of Ocean Energy Management. OCS Study BOEM 2019-017. 140 p.
- Pelletier, S.K., K. Omland, K.S. Watrous, and 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.
- Spiegel, C.S., A.M. Berlin, A.T. Gilbert, C.O. Gray, W.A. Montevecchi, I.J. Stenhouse, S.L. Ford, G.H. Olsen, J.L. Fiely, L. Savoy, M.W. Goodale, and C.M. Burke. 2017. Determining Fine-scale Use and Movement Patterns of Diving Bird Species in Federal Waters of the Mid-Atlantic United States Using Satellite Telemetry. OCS Study BOEM 2017-069. US Department of the Interior, Bureau of Ocean Energy Management, Sterling, VA.
- Veit, R.R., T.P. White, S.A. Perkins, 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.

- ~~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);~~

- Curtice, C., J. Cleary, E. Shumchenia, and P.N. Halpin. 2019. 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.
  - http://seamap.env.duke.edu/models/mdat/MDAT-Technical-Report.pdf
- Loring, P.H., P. Paton, J. Osenkowski, S. Gilliland, J. Savard, and S. Mcwilliams. 2014. Habitat use and selection of black scoters in southern New England and siting of offshore wind energy facilities. The Journal of Wildlife Management. Vol 78.4.
  - https://wildlife.onlinelibrary.wiley.com/doi/abs/10.1002/jwmg.696
- Paton, P., K. Winiarski, C. Trocki, and S. McWilliams. 2010. Spatial Distribution, Abundance, and Flight Ecology of Birds in Nearshore and Offshore Waters of Rhode Island. Interim Technical Report for the Rhode Island Ocean Special Area Management Plan 2010. June 17, 2010.
- New York State Breeding Bird Atlas (NYS BBA). 2007. [Internet] 2000–2005. Release 1.0. Albany (New York): New York State Department of Environmental Conservation [updated June 11, 2007].
  - http://www.dec.ny.gov/animals/7312.html.
- ~~NPS. 2018b.~~ Fire Island National Seashore Bat Population Monitoring and White-nose Syndrome. October 2018.
- ~~NOAA MDAT models (Curtice et al. 2016, Winship et al. 2018);~~
- Winiarski, K, P. Paton, S. McWilliams, and D. Miller. 2012. Rhode Island Ocean Special Area Management Plan: Studies Investigating the Spatial Distribution and Abundance of Marine Birds in Nearshore and Offshore Waters of Rhode Island. Department of Natural Resources Science, University of Rhode Island. October 10, 2012.
- ~~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, P.M. and A.C. Brown. 2007. Migration of bats past a remote island of fers clues toward the problem of bat fatalities at wind turbines. Biological Conservation 139:1-11.~~Cryan and Brown 2007;~~
  - ~~Johnson et al. 2011;~~
  - Hatch, S.K., E.E. Connelly, T.J. Divoll, I.J. Stenhouse, and K.A. Williams. 2013. Offshore observations of eastern red bats (Lasiurus borealis) in the Mid-Atlantic United States using multiple survey methods. PLoS ONE 8: e83803. ~~Hatch et al. 2013;~~
  - ~~Pelletier et al. 2013;~~

- Sjollema, A.L., J. E. Gates, R.H. Hilderbrand, and J. Sherwell. 2014. Offshore activity of bats along the mid-Atlantic coast. Northeastern Naturalist 21: 154–163. ~~Sjollemas et al. 2014;~~
- ~~Dowling et al. 2017.~~
- Stantec. 2018. Long Island Roost Study: Northern Long-eared Bats. Prepared for Cassadaga Wind LLC. August 22, 2018. 21 pp + appendices.

- Agency coordination and communication:~~Other states and regional studies on seabirds and bats~~.
  - USFWS. 2020~~a~~. Information for Planning and Consultation, Letter Re: List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project. March 11, 2020.
  - New York Natural Heritage Program (NYNHP). 2020. Letter, Re: Sunrise Offshore Wind Farm. March 27, 2020.

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 and bats include:
  - Biodiversity Research Institute (BRI). 2018. Assessment of the Potential Effects of the Bay State Wind Offshore Wind Farm on Birds: Lease Area OCS-A 0500. Report to Tetra Tech Inc. Biodiversity Research Institute, Portland, ME. 229 pp.
- 10 ~~Lease Area-wide~~ offshore avian boat-based surveys (conducted every 2 weeks) of a relevant Lease Area between June and October 2017 in an effort to fill a data gap for roseate terns. ~~, which observe~~O~~d o~~ver 6,500 birds from 31 species were observed in the ~~in the~~ Lease Area. Two common terns (*Sterna hirundo*) and one unidentified tern were observed, however no roseate terns were observed.~~; and~~
  - Bay State Wind. 2019. Construction and Operations Plan, Volume II: Site Characterization and Assessment of Impact-Producing Factors and List of References. Submitted to BOEM March 15, 2019, Revised June 28, 2019.
  - Stantec Consulting Services Inc. (Stantec) 2016. Vessel-based Acoustic Bat Monitoring: Block Island Wind Farm, Rhode Island. Prepared for: Deepwater Wind Block Island, LLC. October 5, 2016.
  - Stantec. 2018. Vessel-based Acoustic Bat Monitoring: South Fork Wind Farm and South Fork Export Cable. Prepared for: Deepwater Wind Block Island, LLC. March 19, 2018.
  - Stantec. 2018. 2017 Acoustic Monitoring: Block Island Wind Farm, Rhode Island. Prepared for: Deepwater Wind Block Island, LLC. March 19, 2018.
  - Stantec. 2019. Draft Seacor Supporter Vessel-Based Acoustic Bat Monitoring. South Fork Wind Farm. Prepared for Deepwater Wind South Fork, LLC.

- Stantec. 2019. Draft Fugro Discovery Vessel-Based Acoustic Bat Monitoring. South Fork Wind Farm. Prepared for Deepwater Wind South Fork, LLC.
- Stantec. 2019. Draft Conti Vessel-Based Acoustic Bat Monitoring. South Fork Wind Farm. Prepared for Deepwater Wind South Fork, LLC.
- Stantec. 2020. Draft Fugro Discovery Vessel-based Acoustic Bat Survey Sunrise Wind Farm. Prepared for Sunrise Wind LLC.
- Stantec. 2020. Draft 2019 Fugro Discovery Vessel-based Acoustic Bat Survey Revolution Wind Farm. Prepared for Revolution Wind, LLC.
- Stantec. 2020. Draft Fugro Enterprise and Fugro Searcher Vessel-Based Acoustic Bat Survey Sunrise Wind Farm. Prepared for Sunrise Wind LLC.
- ~~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 will also rely on baseline data from NYSERDA's aerial baseline survey of the NY Offshore Planning Area as well as the existing literature and datasets described in Section 5.1.1, and other published scientific literature.
- Sunrise Wind has completed a Project-specific Avian and Bat Risk Assessment to evaluate Project construction and operations and maintenance impacts on avian and bat species.
- Sunrise Wind may conduct ~~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 may conduct ~~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 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.
- Sunrise Wind has ~~will~~ completed a pre-construction avian and bat risk assessment ~~,~~ ~~consistent with BOEM 2013 and 2017 guidance,~~ to assess construction and operation impacts. Baseline data for the assessment included, but was not limited to, data sources described in Section 5.1.1 and 5.1.2. The avian and bat risk assessment covers~~ing~~:
  - Marine birds (petrels and shearwaters, loons and grebes, gannets, cormorants, sea ducks, skuas and jaegers, kittiwakes and gulls, terns and skimmers, and alcids)

- Coastal birds (shorebirds, waterfowl [geese, bay ducks, dabblers], and wading birds)
- Land birds (raptors and passerines, woodpeckers and game birds)
- Cave-dwelling bats (*Myotis, Perimyotis*, and *Eptesicus species*)
- Migratory tree-roosting bats (*Lasiurus* and *Lasionycteris* species)
- ~~o~~ Sunrise Wind is developing a post-construction monitoring plan for the Project (described further in Section 5.4.1) which will identify data gaps unique to the region and Project area that will be addressed through monitoring.~~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).~~

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 p~~P~~iping p~~P~~lover (*Charadrius melodus*); and
  - rufa subspecies of r~~R~~ed k~~K~~not (*Calidris canutus rufa*).
- Sunrise Wind identified the northern long-eared bat, which is listed as threatened ~~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 18.9~~21.5~~ mi from Martha's Vineyard and 30.5~~7~~ mi from Montauk, 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.
- Sunrise Wind has identified the following avian species to likely be present in the Project Area based on observations made during the Bay State Wind boat-based surveys (BRI 2018), MassCEC aerial surveys (Veit et al. 2016), and NYSERDA survey (Normandeau and APEM 2019):
  - 2 species of loon;
  - 2 species of grebes;
  - 9 species of petrels and shearwaters;
  - 2 species of wading birds;
  - 2 species of swans and geese;
  - 1 species of gannet;

- 1 species of cormorants;
- 7 species of ducks
- 7 species of sea ducks;
- 2 species of raptors;
- 11 species of shorebirds and phalaropes;
- 4 species of skuas and jaegers;
- 10 species of gulls;
- 6 species of terns and skimmers;
- 6 species of auks;
- 1 species of nightjars; and
- 4 species of passerines;

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[2]	Phase*			
		1	2	3	4
Collision risk to ~~marine~~ birds and bats	• Wind Turbine Generators (WTGs) will have air gaps from MSL to minimum blade swept height of at least 98 ft (30 m) which minimizes collision risk to marine birds given that many seabirds fly below this height • Committed to an indicative layout scenario with Project structures sited in an east-west/north-south oriented grid with 1.15- by 1.15-mi (1- by 1-nm; 1.85- by 1.85-km) spacing that aligns with other proposed adjacent offshore wind projects in the RI-MA WEA and MA WEA. This wide spacing of WTGs may allow avian and bat species to avoid individual WTGs and minimize risk of potential collision. • Sunrise Wind will take measures to reduce perching opportunities at operating turbines, if appropriate based on further consultations with state and federal agencies.		X	X	

[2] 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[2]	Phase*			
		1	2	3	4
	• Sunrise Wind will use ADLS or related means (e.g., dimming or shielding) to limit visual impact, pursuant to approval by the FAA and BOEM and commercial and technical feasibility at the time of FDR/FIR approval, and dialogue with stakeholders. In addition to limiting visual impact, reducing lighting will also reduce the potential for impacts to birds and bats that can be attracted to light sources. • Construction and operational lighting will be limited to the minimum necessary to ensure safety and compliance with applicable regulations. Limiting lighting to that which is required for safety and compliance with applicable regulations is expected to minimize impacts on avian and bat species. • The Project onshore cables will not include any overhead utility lines, thus minimizing potential impacts to birds and bats associated with collision with overhead lines. • Sunrise Wind will document any dead (or injured) birds or bats found incidentally on vessels and structures during construction, O&M, and decommissioning and provide an annual report to BOEM and USFWS.				
~~Collision risk to marine birds and bats~~	~~• During construction, consider leaving lights on only when necessary, down-shielding when possible, and minimizing the use of high-intensity work lights, while complying with FAA and United States Coast Guard (USCG) requirements for lighting.~~		~~X~~		
Displacement of birds and bats from habitat in offshore environment	• Committed to an indicative layout scenario with Project structures sited in an east-west/north-south oriented grid with 1.15- by 1.15-mi (1- by 1-nm; 1.85- by 1.85-km) spacing that aligns with other proposed adjacent offshore wind projects in the RI-MA WEA and MA WEA. This wide spacing of WTGs may reduce risk of barrier effects and/or displacement.			X	
Habitat impacts, including breeding and nesting areas - Birds	• Project has ~~will locate~~ sited onshore facilities and associated work spaces on previously disturbed lands (e.g. roadways, ROWs, developed industrial/commercial areas) to		X	X	X

Potential Impacts	Proposed Mitigation Measures[2]	Phase*			
		1	2	3	4
	the extent reasonably feasible~~practicable~~, thereby minimizing impacts to undisturbed avian habitat. • 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, and Sunrise Wind will work with state and federal agencies to develop construction monitoring and impact minimization plans. • The distance of the Project offshore (greater than 15 mi [13 nm, 24.1 km]) avoids coastal and nearshore areas, which are areas that are known to concentrate birds, particularly shorebirds and sea ducks. • An Invasive Species Management Plan will be implemented to manage the spread of invasive plant species that could negatively impact native plants and impact avian habitat. • Accidental spill or release of oils or other hazardous materials will be managed offshore through an Emergency Response Plan /Oil Spill Response Plan and onshore through a Spill Prevention Control and Countermeasure Plan. • Will take measures to reduce perching opportunities (e.g., install anti-perching devices), if appropriate based on further consultations with state and federal agencies.				
Habitat impacts, including breeding and nesting areas - Bats	• Onshore Project facilities are primarily sited within previously disturbed and developed areas (e.g., roadways, ROWs, developed industrial/commercial areas) to the extent feasible, thereby minimizing impacts to undisturbed bat habitat. • The distance of the Project offshore (greater than 15 mi [13 nm, 24.1 km]) avoids coastal and nearshore areas, which are areas where bats typically occur.		X	X	X

Potential Impacts	Proposed Mitigation Measures[2]	Phase*			
		1	2	3	4
	• Will work with USFWS and NYSDEC and endeavor to employ protection measures for the northern long-eared bat, including: ○ 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. If work is anticipated to occur outside of these time-of-year restriction periods, Sunrise Wind will work with state and federal agencies to develop construction monitoring and impact minimization plans. • An Invasive Species Management Plan will be implemented to manage the spread of invasive plant species that could negatively impact native plants and impact bat habitat. • Accidental spill or release of oils or other hazardous materials will be managed offshore through an Emergency Response Plan /Oil Spill Response Plan and onshore through a Spill Prevention Control and Countermeasure Plan.				
**Phase: 1: Survey/Design; 2: Construction; 3: Operation; 4: Decommission*					

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 and bat boat-based surveys, which are described in Section 5.1.2. ~~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 haswill completed an pre-construction avian and bat risk assessment, consistent with BOEM 2013 and 2017 guidance, to assess construction and operation impacts, as described in Section 5.1.3. 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 anticipateswill conduct a additional pre-construction avian surveys to be conducted onshore, including nesting bird surveys at the landing location on Long Island, and surveys for bat species for the onshore portions of the Project, if appropriate, pending consultation with state and federal wildlife agencies and applicable permit requirements. 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 developing an avian post-construction monitoring plan for the Project that will summarize the approach to monitoring; describe overarching monitoring goals and objectives; identify the key avian species, priority questions, and data gaps unique to the region and Project area that will be addressed through monitoring; and describe methods and time frames for data collection, analysis, and reporting. Post-construction monitoring will assess impacts of the Project with the purpose of filling select information gaps and supporting validation of the avian risk assessment completed for the Project. Focus may be placed on improving knowledge of ESA-listed species occurrence and movements offshore, avian collision risk, species/species group displacement, or similar topics. Where possible, monitoring conducted by Sunrise Wind will build on and align with post-construction monitoring conducted by the other Orsted/Eversource offshore wind projects in the Northeast region. Sunrise Wind will engage with state and federal agencies and eNGOs to identify appropriate monitoring options and technologies, and to facilitate acceptance of a final plan.

- **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 S~~studies are available to assess the baseline characteristics for fish, invertebrates and their habitats occurring within the Project Area. Such studies include, but are not limited to, the following documents. The full list of data sources used for baseline characterization is located in the Sunrise Wind COP.~~:~~
  - NYSERDA and/or NYSDEC studies on marine wildlife;
    - New York State Department of Environmental Conservation (NYSDEC). 2008. Coastal Fish & Wildlife Habitat Assessment Form – Carmans River. December 15. ~~Accessed July 2020.~~
      - https://www.dos.ny.gov/opd/programs/consistency/Habitats/LongIsland/Carmans_River.pdf.
    - NYSERDA. 2017a. New York State Offshore Wind Master Plan: Fish and Fisheries Study. NYSERDA Report 17-25q.
      - https://www.nyserda.ny.gov/All-Programs/Programs/Offshore-Wind/About-Offshore-Wind/Master-Plan
  - BOEM studies on marine habitats~~species~~ and lobsters and crabs;
    - Collie, J.S. and J.W. King. 2016. Spatial and Temporal Distributions of Lobsters and Crabs in the Rhode Island Massachusetts Wind Energy Area. U.S. Dept. of the Interior, Bureau of Ocean Energy Management, Atlantic OCS Region, Sterling, Virginia. OCS Study BOEM 2016-073.
    - Guida, V., A. Drohan, H. Welch, J. McHenry, D. Johnson, V. Kentner, J. Brink, D. Timmons, and E. Estela-Gomez. 2017. Habitat Mapping and Assessment of Northeast Wind Energy Areas. Sterling, VA: US Department of the Interior, Bureau of Ocean Energy Management. OCS Study BOEM 2017-088. 312 p.
  - NOAA and Northeast Fisheries Science Center studies and stock assessment reports, including: ~~on trawl surveys, sea scallops, and clams;~~
    - Cargnelli, L.M., S.J. Griesbach, P.L. Berrien, W.W. Morse, and D.L. Johnson. 1999a. Essential fish habitat source document: Haddock, Melanogrammus aeglefinus, life history and habitat characteristics. NOAA Tech Memo NMFS-NE-128. 31 p.

- Cargnelli, L.M., S.J. Griesbach, D.B. Packer, P.L. Berrien, D.L. Johnson, and W.W. Morse. 1999b. Essential Fish Habitat Source Document: Pollock, Pollachius virens, Life History and Habitat Characteristics. NOAA Tech Memo NMFS-NE-131. 38 p.
- Cargnelli, L.M., S.J. Griesbach, D.B. Packer, P.L. Berrien, W.W. Morse, and D.L. Johnson. 1999c. Essential Fish Habitat Source Document: Witch Flounder, Glyptocephalus cynoglossus, Life History and Habitat Characteristics. NOAA Tech Memo NMFS-NE-139. 38 p.
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- Studies that Sunrise Wind and~~or~~ its affiliates have conducted in the ~~relevant Lease~~Project Area~~(s)~~ and surrounding waters of the north Atlantic as outlined in Section 6.1.2.

- Additionally, there are several fishery-independent trawl surveys that have collected information from the Lease Area and surrounding waters which can be used to characterize the baseline for fish and invertebrate communities. For example, there are biannual trawl surveys conducted by the NOAA Northeast Fisheries Science Center and the Northeast Area Monitoring and Assessment Program (NEAMAP). The New York State Department of Environmental Conservation also conducts a near shore tawl survey from Breezy to Block Island Sound.

- ~~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 Project area ~~relevant Lease Area(s)~~ in accordance with the relevant BOEM guidelines. ~~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 has and will continue to conduct appropriate site assessment surveys to establish baseline conditions of wildlife within the Project Area.

- ~~Sunrise Wind~~ has and will continue to conduct high resolution geophysical surveys (HRG) and geotechnical surveys in the Project Area in accordance with BOEM's *Guidelines for Providing Geophysical, Geotechnical, and Geohazard Information Pursuant to 30 CFR Part 585* (BOEM 2020).~~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 has completed several surveys to characterize the benthic habitat in the Project Area. The survey protocols were reviewed in several rounds and meetings by federal and state agencies, including BOEM, NOAA, NPS, NYSDEC, NYSDOS, NYSERDA, and RI and MA state agencies, and feedback was incorporated into the survey plan. The surveys included:
    - Benthic habitat surveys, consisting of Sediment Profile Imaging (SPI) and Plan View (PV) images throughout the Project area and grab samples in New York State waters, to characterize the benthic habitat in the Lease Area and along the export cable in accordance with BOEM's *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);
    - A targeted video survey of habitat areas of interest within the Lease Area based on benthic habitat survey results and geophysical survey results; and
    - A submerged aquatic vegetation survey in the intracoastal waterway north of Fire Island.
- Sunrise Wind will complete comprehensive benthic habitat mapping which will integrate the results of the benthic surveys and final geophysical data in accordance with NOAA's *Recommendations for Mapping Fish Habitat* (NOAA's National Marine Fisheries Greater Atlantic Regional Fisheries Office Habitat Conservation and Ecosystem Services Division 2020)
- Sunrise Wind has utilized the benthic survey information collected by affiliates of Sunrise Wind for the South Fork Wind Project, Revolution Wind Project, Bay State Wind Project, and Block Island Wind Farm to provide additional information on the regional benthic environment of the Northwest Atlantic Outer Continental Shelf off Southern New England. These surveys include:
    - Bay State Wind LLC. 2019. Construction and Operations Plan, Bay State Offshore Wind Farm. Submitted to Bureau of Ocean Energy Management. Submitted by Bay State Wind LLC. Submitted March 2019, Revised July 2019.
    - Deepwater Wind South Fork, LLC. 2019. Construction and Operations Plan, 30 CFR Part 585. Submitted to Bureau of Ocean Energy Management. Submitted by Deepwater Wind South Fork, LLC. Submitted June 2018, Revised September 2018, Revision 2 Submitted May 2019.
    - ~~o~~ DWW Rev I, LLC. 2020. Construction and Operations Plan, Revolution Wind Farm. Prepared by VHB, Providence, RI. Submitted to the Bureau of Ocean Energy Management, Sterling, VA. March 2020.

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- Sunrise Wind has completed a Project-specific Essential Fish Habitat Assessment that describes the species and life stages with designated EFH that may occur within the Project Area and assesses the potential impacts from construction and operation and maintenance of the Project on EFH.
-
- 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 completed benthic surveys in the Project Area and Sunrise Wind's affiliates have completed benthic surveys in the region, as outlined in Section 6.1.2, to address data gaps related to the benthic habitats existing in the Project Area and regional environment of the Northwest Atlantic Outer Continental Shelf off Southern New England.
- 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. Fisheries monitoring will be performed in accordance with Guidelines for Providing Information on Fisheries for Renewable Energy Development on the Atlantic Outer Continental Shelf Pursuant to 30 CFR Part 585 (BOEM 2019). As the timeline allows, the monitoring will commence at least two years prior to offshore construction. Monitoring will continue during construction, and at least two years of post-construction monitoring will be carried out, in accordance with applicable permitting requirements.

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 with various life stages ~~and ESA-listed species~~ that may occur or are expected to occur within the Project Area to be of greatest concern. These species include:
  - **New England Finfish**: American Plaice (*Hippoglossoides platessoides*); Atlantic Cod (*Gadus morhua*); Atlantic Herring (*Clupea harengus*); Atlantic Wolffish (*Anarhichas lupus*); Haddock (*Melanogrammus aeglefinus*); Monkfish (*Lophius americanus*); Ocean Pout (*Zoarces americanus*); Offshore Hake (*Merluccius albidus*); Pollock (*Pollachius virens*); Red Hake (*Urophycis chuss*); Silver Hake (*Merluccius bilinearis*); White Hake (*Urophycis tenuis*); Windowpane Flounder (*Scophthalmus aquosus*); Winter Flounder (*Pseudopleuronectes americanus*); Witch Flounder (*Glyptocephalus cynoglossus*); Yellowtail Flounder (*Limanda ferruginea*)
  - **Mid Atlantic Finfish**: Atlantic Butterfish (*Peprilus triacanthus*); Atlantic Mackerel (*Scomber scombrus*); Black Sea Bass (*Centropristis striata*); Bluefish (*Pomatomus saltatrix*); Scup (*Stenotomus chrysops*); Summer Flounder (*Paralichthys dentatus*)
  - **Invertebrates**: Atlantic Sea Scallop (*Placopecten magellanicus*); Atlantic Surfclam (*Spisula solidissima*); Longfin Inshore Squid (*Doryteuthis pealeii*); Northern Shortfin Squid (*Illex illecebrosus*); Ocean Quahog (*Arctica islandica*)
  - **Highly Migratory Species**: Albacore Tuna (*Thunnus alalonga*); Bluefin Tuna (*Thunnus thynnus*); Skipjack Tuna (*Katsuwonus pelamis*); Yellowfin Tuna (*Thunnus albacares*)
  - **Skates**: Barndoor Skate (*Dipturis laevis*); Little Skate (*Leucoraja erinacea*); Winter Skate (*Leucoraja ocellate*).
  - **Sharks:** Basking Shark (*Cetorhinus maximus*); Blue Shark (*Prionace glauca*); Common Thresher Shark (*Alopias vulpinus*); Dusky Shark (*Carcharhinus obscurus*); Porbeagle Shark (*Lamna nasus*); Sandbar Shark (*Carcharhinus plumbeus*); Sand Tiger Shark (*Carcharias Taurus*); Shortfin Mako Shark (*Isurus oxyrinchus*); Smoothhound Shark Complex (Atlantic stock) (*Mustelus canis*); Spiny Dogfish (*Squalus acanthias*); Tiger Shark (*Galeocerdo cuvier*); and White Shark (*Carcharodon carcharias*)
- ~~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 five ~~three~~ ESA listed fish species that may occur within the ~~relevant Lease~~ Project Area as also of greatest concern due to their listed status~~(s)~~:
  - Atlantic Sturgeon (*Acipenser oxyrinchus oxyrinchus*);~~Atlantic salmon (Gulf of Maine Distinct Population Segment),~~
  - Giant Manta Ray (*Manta birostris*);~~Shortnose sturgeon, and~~
  - Oceanic Whitetip Shark (*Carcharhinus longimanus*);~~Atlantic sturgeon~~
  - Shortnose Sturgeon (*Acipenser brevirostrum*); and
  - Cusk (*Brosme brosme*)

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[3]	Phase*			
		1	2	3	4
Micro-siting conflicts with habitats and fishery resources	• 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 • Project infrastructure will be sited to avoid and minimize impacts to sensitive habitats (e.g., hard bottom habitats) to the extent practicable.	X			
Temporary, alteration of the seabed and localized increases in noise and turbidity	• To the extent feasible, installation of the Project cables will be buried using equipment such as mechanical plow, jet plow, and/or mechanical cutter. These equipment options would result in less habitat modification than dredging options. The feasibility of cable burial equipment will be determined based on an		X		X

[3] 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[3]	Phase*			
		1	2	3	4
	assessment of seabed conditions and the Cable Burial Risk Assessment. • A plan for vessels will be developed prior to construction to identify no-anchorage areas to avoid documented sensitive resources. • DP vessels will be used for installation of the Project cables to the extent practicable. DP vessels minimize seafloor impacts, as compared to use of a vessel relying on multiple anchors. • Mobile fish and invertebrates are expected to temporarily leave the area in response to construction or decommissioning activity. Soft-start/ramp up procedures utilized for pile driving for marine mammals and sea turtles are expected to benefit fish and invertebrates and allow them to temporarily leave the area of activity. Because identical or similar habitat is widely available in the immediate area as identified in Project surveys and existing studies, 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 in-water restrictions on construction will be employed to the extent feasible to avoid or minimize~~reduce~~ direct impacts on species of concern, such as Atlantic sturgeon or winter~~summer~~ flounder, during construction.~~some biological resources~~. Time of year restrictions will be pursuant to regulatory requirements. If work is anticipated to occur outside of these time-of-year restriction periods, Sunrise Wind will work with state and federal agencies to develop appropriate construction monitoring and impact minimization plans.				
Changes to water quality from accidental spills and/or releases, and erosion and run-off	• Require all construction and O&M vessels to comply with applicable International Convention for the Prevention of Pollution from Ships (IMO MARPOL), federal (USCG and EPA), and state regulations and standards for		X	X	X

Potential Impacts	Proposed Mitigation Measures[3]	Phase*			
		1	2	3	4
during onshore construction	the management, treatment, discharge, and disposal of onboard solid and liquid wastes and the prevention and control of spills and discharges. • Implementation of a Stormwater Pollution Prevention Plan (SWPPP), including erosion and sedimentation control BMPs and revegetation measures, to minimize potential water quality impacts from construction and O&M of the onshore portions of the Project. • Implementation of an Erosion and Sediment Control Plan through the SWPPP • Accidental spill or release of oils or other hazardous material will be managed onshore through i~~I~~mplementation of a Spill Prevention, Control, and Countermeasure (SPCC) Plan • Accidental spill or release of oils or other hazardous materials will be managed offshore through an Emergency Response Plan/~~Implementation of~~ an Oil Spill Response Plan (OSRP) • ~~Implementation of an Erosion and Sediment Control Plan~~				
Long-term changes to seabed, and habitat	• 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. • Construction and operational lighting will be limited to the minimum necessary to ensure safety and compliance with applicable regulations. Limiting lighting to that which is required for safety and compliance with applicable regulations is expected to minimize impacts on essential fish habitat.		X	X	
Colonization of encrusting invertebrates on wind turbine generators (WTG), which will quickly lead to the development of biogenic habitat and associated	• The shift toward a structure-based community ~~is~~ may be considered desirable by some user groups, including commercial and recreational fishermen, because it supports higher trophic level fish that are of commercial and recreational value (e.g. Reubens et al., 2013).		X	X	X

Potential Impacts	Proposed Mitigation Measures[3]	Phase*			
		1	2	3	4
communities centered on the structures					
Distribution of mobile species, including lobsters, groundfish, and pelagic predators	• Within several months of completion of construction, the abundance and distribution of benthic invertebrates is expected to return to pre-construction conditions (e.g., Roach, M. 2019) • Methods under evaluation to limit impacts, pursuant to regulatory concurrence, include: ○ 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 fisheries monitoring 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.		X	X	X
EMF ~~i~~Impacts during operation	• ~~Will use c~~Cable shielding as well as cable burial, where feasible, will limit EMF exposure~~to minimize EMF~~.		~~X~~	X	
**Phase: 1: Survey/Design; 2: Construction; 3: Operation; 4: Decommission*					

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 has and 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 has conducted 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 has ~~will~~ conducted a pre-construction EMF analysis to determine the EMF exposure levels fisheries resources would experience. The EMF analysis indicated that EMF strong enough to potentially disturb marine life are not likely to extend more than a few feet into the water column. EMF modeling results and the results of previous scientific studies suggest that EMF will be below levels detectable by finfish but may be detectable by elasmobranchs and some invertebrate species. Detection of EMF is not expected to induce population level changes.

Sunrise Wind is committed to collaborative science with the commercial and recreational fishing industries prior to, during, and following construction. Fisheries monitoring studies are being planned to assess the impacts associated with the Project on economically and ecologically important fisheries resources within the Project Area. These studies will be conducted in collaboration with the local fishing industry and will build upon monitoring efforts being conducted by affiliates of Sunrise Wind at other wind farms in the region. A number of monitoring techniques (e.g., trawl survey, ventless trap survey, dredge survey, optical surveys) can be utilized to evaluate changes to environmental resources in the Project area. As practicable, the survey designs used by the developer will be made compatible with other regional surveys (e.g., NEFSC trawl survey) to facilitate information integration with, and compared to, information from existing data collection efforts.

- Sunrise Wind is ~~will~~ developing study topics and methodologies through an iterative process and will includ~~e~~ing input from various stakeholders and agencies from multiple states, including New York, Rhode Island, and Massachusetts. 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. As the timeline allows, s~~S~~urveys will commence at least 2 years prior to offshore construction and will be conducted in order to collect sufficient pre-construction baseline data. Surveys ~~prior to offshore construction, and~~ will continue throughout construction and operation of the Project, in accordance with applicable permitting requirements. The research question(s), hypotheses, sampling design, and statistical analyses will be clearly described for each survey. The sampling designs for the monitoring surveys (e.g., Before-After-Control-Impact, or Before-After-Gradient) will be based on published methodologies that have been used to investigate the impacts associated with offshore wind development. Monitoring guidance being developed through the ROSA 'Interim Fisheries Methods Working Group' (of which Gregory DeCelles is an active member) will also be considered in the design and implementation of fisheries monitoring studies.

- ~~**Sunrise Wind has and will continue to 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 has and will continue to 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 has and will continue to ~~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 understands that all facilities will need to be removed to a depth of 15 ft (4.6 m) below the mudline, unless otherwise authorized by BOEM (30 CFR § 585.910(a)).
- Sunrise Wind will decommission the Project in accordance with a detailed Project-specific decommissioning and removal 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. This plan will account for changing circumstances during the operational phase of the Project and will reflect new discoveries particularly in the areas of marine environment, technological change, and any relevant amended legislation.
- 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.