Fisheries Mitigation Plan

for

the Empire Wind Project

Version 1.0

Prepared Pursuant to

Section 12.05 of the Offshore Wind Renewable Energy Certificate Purchase and Sale Agreement by and Between the New York State Energy Research and Development Authority and Equinor Wind US LLC

Albany, NY

Prepared by

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Communication Officers, Contact Information, Links		
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Links to project information:

Project website: www.empirewind.com

Fisheries website: www.empirewind.com/fisheries

Table of Contents

1. Fisheries Mitigation Plan Summary

1.1. Overall philosophy and principles

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

- Equinor Wind's approach and philosophy to project development is premised on the belief that the fishing industry and offshore wind energy developments can be compatible and can co-exist. Equinor Wind believes that co-existence can be achieved by carefully evaluating existing uses of the lease area, avoiding impacts where feasible, or reducing impacts through mitigation.
- Equinor Wind's approach to fisheries mitigation is founded upon the fisheries mitigation hierarchy. More specifically, this approach means that we anticipate and avoid impacts on fisheries resource and fishers; minimize impacts where avoidance is not possible; and take steps to offset any significant residual adverse impacts that are predicted to remain.
- Equinor Wind believes that the Empire Wind Project can be developed in a manner that minimizes disruption to the natural environment, natural resources, and existing uses of the Lease Area. Equinor Wind believes that a successful coexistence strategy requires open and regular communication between the Empire Wind project team and the fishing industry, starting with the development and survey phase, and continuing through permitting, construction, operation, and decommissioning of the wind farm.
- Equinor Wind does not intend to restrict or apply for broad-based restrictions on fishing activities within the operational wind farm. To the extent that any restrictions are necessary, these may be limited to standard safety zones during the construction phase, and operational safety zones around manned or sensitive offshore platforms or access points.

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 FMP and support decision-making throughout the life cycle of the project (pre-construction, surveys, site design, construction, operations, and decommissioning).

- Mitigation measures will be identified and developed with relevant fisheries stakeholders through an iterative process of project design, including site selection, cable routing, timing of works, and consideration of construction and operations methods.
- Equinor Wind has already taken the following steps to minimize potential impacts:
    - Modifying survey schedules and locations in survey planning, and in real-time by adaptive management of survey locations to avoid areas with active and/or seasonal fishing;
    - Early spatial planning incorporating data and feedback, and real-time adaptive management during survey data acquisition, to avoid high use, high value, and high sensitivity fisheries areas in planning the export cable routes;

- Establishing a fisheries communications and outreach strategy to effectively engage with and solicit input from a wide range of fishers and stakeholders in multiple regions; and

- Applying data and fisheries feedback in early spatial planning for the project area, including setting "Layout Rules" for the wind farm layouts that aim to minimize impacts on fishing and facilitate continued safe access to traditional fishing grounds.

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 FMP. Include links, if available, for all references.

- Equinor Wind US Fisheries Liaison & Outline Coexistence Plan (FLP), which provides an overview of Equinor Wind's overall approach to offshore wind development and consideration of fisheries resources; the principles of which have been adopted for the Empire Wind Project. The FLP can be found at www.empirewind.com/fisheries
- To achieve the objective of co-existence, the Empire Wind Project has been and will continue to follow industry best practices, including, but not limited to:
    - Development of Mitigation Measures to Address Potential Use Conflicts between Commercial Wind Energy Lessees/Grantees and Commercial Fishermen on the Atlantic Outer Continental Shelf, Bureau of Ocean Energy Management (BOEM) 2014-654;
    - Best Practice Guidance for Offshore Renewables Developments: Recommendations for Fisheries Liaison - Fishing Liaison with Offshore Wind and Wet Renewables Group (FLOWW), UK;
    - Fishing and Submarine Cables Working Together – published by the International Cable Protection Committee;
    - Bureau of Ocean Energy Management (BOEM) 2015 – Guidelines for Providing Information on Fisheries Social and Economic Conditions for Renewable Energy Development on the Atlantic Outer Continental Shelf Pursuant to 30 Code of Federal Regulations (CFR) Part 585;
    - BOEM 2013 – Guidelines for Providing Information on Fisheries for Renewable Energy Development on the Atlantic Outer Continental Shelf Pursuant to 30 CFR Part 585;
    - BOEM n.d.(a) – Previously Identified Offshore Wind Development Concerns;
    - BOEM n.d.(b) – Possible Best Management Practices and Mitigation Measures to Reduce Conflicts between Fishing and Wind Industries;
    - Hooker 2014 – Bureau of Ocean Energy Management Fishing and Offshore Energy - Best Management Practices;
    - McCann 2012 – Developing Environmental Protocols and Modelling Tools to Support Ocean Renewable Energy and Stewardship;
    - Ecology and Environment 2014 – Development of Mitigation Measures to Address Potential Use Conflicts between Commercial Wind Energy Lessees/Grantees and

Commercial Fishermen on the Atlantic Outer Continental Shelf: Report on Best Management Practices and Mitigation Measures;

- Virginia Coastal Zone Management Program (VCZMP) 2015 – Collaborative Fisheries Planning for Virginia's Offshore Wind Energy Area;
- Lipsky et al. 2016 – Addressing Interactions between Fisheries and Offshore Wind Development: The Block Island Wind Farm;
- Moura et al. 2015 – Options for Cooperation between Commercial Fishing and Offshore Wind Energy Industries: A Review of Relevant Tools and Best Practices;
- Gray et al. 2016 – Changes to fishing practices around the UK as a result of the development of offshore windfarms – Phase 1;
- Petruny-Parker et al. 2015 – Identifying Information Needs and Approaches for Assessing Potential Impacts of Offshore Wind Farm Development on Fisheries Resources in the Northeast Region;
- Mid-Atlantic Fishery Management Council (MAFMC) 2014 – Offshore Wind Best Management Practices Workshop;
- New York States Offshore Wind Master Plan: Fish & Fisheries Study, Section 6 and Appendix D (2017); and
- Anticipated best practice guidance tools that may be developed through initiatives such as F-TWG, E-TWG, Responsible Offshore development Alliance (RODA) Task Force, and other groups.
- Guidelines for Providing Benthic Habitat Survey Information for Renewable Energy Development on the Atlantic Outer Continental Shelf (Benthic Guidelines; BOEM 2013a
- Experience gained from collaborating with the fishing industry in Equinor's offshore wind energy developments in Europe.
- The application of lessons learned from the US as the offshore wind industry develops.

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 fisheries mitigation.

- Openness is a core value and cornerstone of the Empire Wind Project's approach to fisheries liaison and communications. Regular, open consultation will be key to ensuring that all parties are well informed of offshore activities and project updates, and in order to provide meaningful input in design and mitigation options.
- Equinor Wind understands that effective, clear and inclusive communication is required to ensure as many affected stakeholders as possible can be reached.
- Equinor Wind intends that its fisheries outreach will be as inclusive as possible; including engagement with fisheries stakeholders through Fishing Industry Representatives ("FIR") and/or groups such as F-TWG and RODA, as well as engaging with organizations or individual fishers not represented in these groups.

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.

Name/Title	Role/Responsibilities	Contact Information
Stephen Drew; Fisheries Liaison Officer (FLO; Empire Wind Project)	• Representative on F-TWG, RODA Task Force, Mass FWG and other working groups; • Primary point of contact between Project and fishing fleets; • Maintain database and track all interactions between project team and fishers; • Arrange meetings and disseminate information; • Consult with FIRs (see below); • Support development of procedures to address lost/damaged fishing gear claims as appropriate; • Monitor fishing activity during surveys and for assessments; • Attendance at Fisheries Council meetings; • Fisheries data collection and supporting on impact assessments and identification of appropriate mitigation; •	+1 908 339 7439 sdrew@searisksolutions.com

Name/Title	Role/Responsibilities	Contact Information
Elizabeth Marchetti; Fisheries Manager, Equinor Wind US	• Primary contact with Empire Wind Management Team on fisheries matters; • Representative on F-TWG, Responsible Offshore Science Alliance (ROSA), Mass FWG and other working groups; • Point of contact between Project and fishing fleets; • Maintain database of fisheries interactions; • Arrange meetings and disseminate project information; • Consult with FIRs (see below); • Monitor fishing activity during surveys and for assessments; • Attendance at Fisheries Council meetings; • Fisheries data collection and supporting on impact assessments and identification of appropriate mitigation; • Provision of Offshore Fishery Liaison Officer's (OFLRs) and scout vessels during surveys and construction activities.	+1 401 954 2902 emarc@equinor.com
Wofgang Rain, Supporting FLO, Equinor Wind US	• Ensure coverage for FLO	+1 206 427 6553 wrain@equinor.com
Fishing Industry Representatives (FIRs)	• Essential contacts within fishing community to represent/relay views of majority of fishers; • Main point of contact for FLO; • Identify individuals/groups to provide feedback on specific topics; • Assist in distribution of information.	Multiple contacts.
Offshore Fisheries Liaison Officer (OFLR), representing Equinor Wind US	• Present onboard vessels working on behalf of Equinor Wind, for example survey and construction vessels; • Maintain daily contact with and keep records of fishing vessels; • Keep masters and watch officers informed of fishing vessels or fishing gear in the area; • Outreach to fishing vessels; • Ad-hoc assistance to wind farm-related vessel officers to support co-existence,	Contact details for contacting OFLRs vessel to vessel at sea will be distributed with Survey Flyers. Equinor Wind FLOs will be the primary point of contact for enquiries related to survey activity (see above)

Name/Title	Role/Responsibilities	Contact Information
	including ensuring the principles of the Fisheries Mitigation Plan (FMP) are adhered to offshore	

2.3. Identification of fishing industry stakeholders

This section should describe the process by which stakeholders relevant to fisheries and the fishing industry will be identified and classified by stakeholder group.

Effective consultation is essential for sharing information and soliciting feedback. Effective consultation is facilitated with the establishment of a comprehensive contact database for local and regional fisheries associations, societies, groups, individual fishers and the various industry organizations. This database is maintained and regularly updated by the FLO in conjunction with Equinor Wind's key project team members.

Members of the commercial and recreational fishing communities are identified through various channels and include, but are not limited to:

- Contacting fishing industry leaders known through the combined FLOs' and Fisheries Manager's liaison and industry experience;
- Contacting fishing industry association leaders;
- Attending Fishery Management Council meetings;
- Attending meetings related to offshore wind and fisheries interactions;
- Manning stands at commercial and recreational fishing forums;
- Recommendations from state and federal fisheries staff;
- Fisheries Management Council Advisory Panel lists online;
- Public comments and documents online;
- Word of mouth from the fishing community;
- Automatic Identification System (AIS) monitoring including ship identification;
- Fishing vessels identified offshore during surveys by the OFLR;
- NMFS permit holder lists online;
- Dock visits; and
- Fisheries contacts information referenced in NYSERDA's New York State Offshore Wind Master Plan Fish and Fisheries Study (NYSERDA, 2017; Appendix J).

2.4. Participation in stakeholder and technical working groups

2.4.1. Communication with F-TWG

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

- Equinor Wind will continue to participate in the F-TWG, represented by Martin Goff, and the Equinor Wind US and the Empire Wind dedicated FLO (Stephen Drew or Fisheries Manager Elizabeth Marchetti).

- Equinor Wind will present all aspects of the Empire Wind FMP to the F-TWG during dedicated workshops at appropriate timing intervals to ensure the goals of the FMP are met and the FMP is evolved to reflect feedback.
- As well as the F-TWG, Equinor Wind will proactively engage with the fishing industry not represented on F-TWG, or in addition to those on F-TWG. This may be via industry groups such as RODA, other FIRs, or with individual fishing organizations or fishers.

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.

Equinor Wind is committed to continuing consultation with New York state agencies throughout the Empire Wind project development process. This includes:

- Consultation on matters including the Empire Wind project development updates and schedules, benthic and fisheries resources, fisheries outreach and coexistence, avian and bat studies, onshore ecology, visual assessments and historic properties.
- Site Assessment Plan (SAP), approved on November 21, 2018, included consultation with the New York State Department of Environmental Conservation (NYSDEC).
- Consultation on the Construction and Operation Plan (COP), including provision of the COP for review and feedback at the time of submission to BOEM. The state agencies include:
    - New York Department of State;
    - New York State Department of Environmental Conservation;
    - New York State Office of Parks, Recreation and Historic Preservation;
    - New York State Department of Public Service;
    - New York Office of General Services; and
    - New York State Energy Research and Development Authority

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 FMP.

- Equinor is participating on international fisheries groups, including the UK's Fishing Liaison with Offshore Wind and Wet Renewables Group (FLOWW).
- Equinor Wind is participating in the Environmental Technical Working Group (E-TWG).
- Equinor Wind participates in other state Fisheries Working Groups, for example the Massachusetts Fisheries Working Group.

2.5. Communication methods and tools

2.5.1. Methods 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.

Proposed Outreach Methods/Tools	Phase*			
	1	2	3	4
Contact with FIRs	X	X	X	X
Contact with fisheries associations	X	X	X	X
Directly from the FLO to individual fishermen not represented by an FIR, but identified on the FLO's database	X	X	X	X
USCG Notice to Mariners	X	X	X	X
Electronic email distribution to commercial fishing permit holders (National Oceanic and Atmospheric Administration (NOAA) or state agencies)	X	X	X	X
Empire Wind's website- "Fisheries" page	X	X	X	X
Offshore Wind-Fisheries-specific websites for disseminating information, for example F-TWG	X	X	X	X
Local harbor masters	X	X	X	X
State Fisheries mailing lists	X	X	X	X
3D Simulation Tool demonstrations (provides perspective on turbine layouts, spacing, which facilitates discussions on ability to fish and transit between turbines)	X	X		
Survey flyers / Notification Flyers (includes information related to surveys, construction or maintenance schedules and activities, contact information and requests for feedback)	X	X	X	X
Statements of Common Ground (SoCG) (Established between developers and stakeholders to set out areas of agreement, disagreements, and unresolved issues. May include description of development and affected parties, summary of consultation to date, issues discussed, resolved, unresolved, etc.)	X	X	X	X
Fisheries specific newsletters (includes project overview, schedules, meetings; requests for information; contact information and other information)	X	X	X	X
Presentations or networking at fishing conferences and exhibitions	X	X	X	X
Notices in fishing news publications	X	X	X	X
**Phase: 1: Survey/Design; 2: Construction; 3: Operation; 4: Decommission*				

2.5.2. Communication with vessels

This section should describe communication methods/tools with vessels actively fishing in areas in or adjacent to the Project area during site assessment and construction activities and facilitate proper notification to vessels and resource managers.

- Notification of upcoming site assessment and/or construction activities via various sources, including Survey Flyers, LNTMs, email shots, details on project specific webpages and relevant fisheries web pages.
- The OFLR will be responsible for monitoring the presence of fishing vessels and/or fishing gear in or around locations of site assessments and/or construction activity, and communications with vessels at sea and for relaying information back to the FLO.
- The FLO and Fisheries Manager will be responsible for engaging with fisheries managers, fleet managers, FIRs and individual fishermen prior to and during site assessment and/or construction activity.

- The FLO will monitor AIS in real-time to identify fishing activity (for those fishing vessels carrying AIS) in or around locations of sites assessment and/or construction activity.
- Where appropriate, Scout Vessels acting on behalf of Equinor Wind will monitor for the presence of static fishing gear, identify owners and contact details, and relay the information to site assessment/construction vessels/OFLRs and the FLO.

2.5.3. Protection of confidential information

This section should describe how confidential information shared by stakeholders will be protected.

- Equinor Wind appreciates that some fisheries information, such as discrete fishing sites, can be commercially sensitive to those fishermen. In these circumstances, Equinor Wind will work with the individual fishing organization/fisherman to establish confidentiality agreements for the purpose of sharing information for the objective of using such information to work towards avoiding or minimizing impacts.

3. Monitoring and Research Pre-, During, and Post-Construction

3.1. Identification of scope of monitoring activities/studies

This section should provide an overview of the anticipated monitoring activities, including how the specific scope of monitoring activities will be identified and what types of scientific questions will be addressed.

- Baseline data characterization and monitoring will be conducted in accordance with best practices, including BOEM guidance as well as consideration of recommendations for further research from groups such as F-TWG and E-TWG and potentially ROSA;
- Equinor Wind will explore appropriate monitoring protocols, including, for example, monitoring of potential behavioral responses or changes in spatial and temporal distribution of biological resources or fishing practices as a direct result of the offshore wind energy development.
- Monitoring plans for the Empire Wind Project are not yet defined. It is felt this is best dealt with in consultation and in collaboration with other wind developers, the fishing industry and the regulators.

3.2. Baseline data and characterization approach

This section should describe how baseline data will be established on the spatial and temporal presence of fish and invertebrates in the proposed area of the Project at multiple life history stages included egg, larval, juvenile, adult, and spawning stages, as well as associated fish and invertebrate habitats.

3.2.1. Existing literature and data of benthic and fisheries resources

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

- Public data sources suitable for characterizing benthic habitat and fisheries resources in the relevant area, including evaluation of NYSERDA's Master Plan Fish and Fisheries Study (2017; Appendix J).
- NOAA National Centers for Coastal Ocean Science and BOEM Comprehensive Seafloor Substrate Mapping and Model Validation in the Atlantic (2019).
- Estuarine Living Marine Resource database (NOAA 2000) provide descriptions of spatial and temporal distributions of species (by life stage) in Hudson River/Raritan Bay and the Great South Bay, however, the database is not updated regularly.
- Use of fisheries effort data as a proxy for fish species (see 3.2.3).
- Full description of baseline data will be presented in the COP for Lease OCS-A 0512, which includes the Empire Wind project.

3.2.2. Data collected of benthic and fisheries resources

This section should describe survey activities undertaken or that will be undertaken by the developer that will inform the baseline characterization of benthic and fisheries resources.

- Equinor Wind commissioned benthic sampling in 2018 by Gardline Environmental covering the entire Lease Area and building on previous comprehensive benthic surveys carried out by NOAA National Center for Coastal Ocean Science (NOS). These

Equinor Wind surveys were conducted at a total of 67 sample stations, and included grab samples, drop down digital video and stills imagery. Grab samples were analyzed for sediment grain size distribution and macro faunal analysis. As described in Section 3.7, this report will be made publicly available for download from the Empire Wind website.

- Equinor Wind commissioned, benthic sampling was conducted in 2019 by Inspire Environmental, covering all of the proposed potential export cable routes for the Lease Area, including the proposed Gowanus export cable route for the Empire Wind project. Sampling included Sediment Profile Imaging (SPI) and Plan View (PV) imaging at 157 sample stations, with 15 reference stations and sediment grab samples for sediment grain size analysis and macrofaunal analysis for verification. As described in Section 3.7, this report will be made publicly available for download from the Empire Wind website.
- NOAA National Centers for Coastal Ocean Science and BOEM Comprehensive Seafloor Substrate Mapping and Model Validation in the Atlantic research/survey collected sediment grab samples at 400 locations in the lease area, as well as bathymetric data and opportunistic fisheries data.
- Geophysical, benthic habitat (through geophysical interpretation), and geotechnical surveys from March 2018 to November 2018 across the entire Lease Area and export cable corridors, with additional geophysical and geotechnical surveys carried out in 2019 to fill in data gaps and cover areas from landfall to the 65 ft (20 m) depth contour.
- With the site specific and existing benthic data, and the existing fisheries data, there is sufficient data for the purpose of the COP impact assessments, spatial planning and/or mitigation. However, Equinor Wind will consult with E-WTG, F-TWG, RODA, ROSA and the fishing industry, including fisheries scientists and managers, on requirements for further surveys for targeted fisheries monitoring and research.

3.2.3. Existing literature and data of the fishing industry

This section should describe the existing literature and data that are available for baseline characterization of the commercial and recreational fishing industry.

The key data sources referenced for the purpose of understanding the fisheries use baseline are summarized below and include, but are not limited, to the following:

- BOEM's 2017 Study entitled, Socio-Economic Impact of Outer Continental Shelf Wind Energy Development on Fisheries in the U.S. Atlantic;
- New York State's Master Plan Fish and Fisheries Study (2017);
- State by State analyses of public, commercial fisheries statistics as published by the NOAA Office of Science and Technology;
- NOAA Fisheries Marine Recreational Information Program (MRIP) data on recreational fishing;

- Rhode Island Department of Environmental Management - Division of Marine Fisheries' paper entitled, Spatiotemporal and economic analysis of vessel monitoring system data within wind energy areas in the greater North Atlantic;
- The Mid-Atlantic Regional Ocean Council (MARCO) Data Portal;
- The BOEM & NOAA Marine Cadaster National Viewer for geospatial data; and
- The Northeast Regional Ocean Council's (NROC) spatial data portal.
- A full description of the data sources to inform the baseline will be presented in the Lease OCS-A 0512 COP, which includes the Empire Wind project.

3.2.4. Data collected by the Developer or the fishing industry

This section should describe data collected, or will be collected, to support baseline characterization.

- Using long term purchased AIS datasets, real-time AIS data and collecting AIS in the field with AIS receivers on Equinor survey vessels (noting not all fishing vessels carry AIS).
- Taking nautical charts to recreational and commercial fishers and asking them to mark fished areas and hang ups. Charts included Long Range Navigation ("LORAN") to help aid positioning.
- Requesting navigation plotter/logger data of tows, which have been provided by a number of trawlers and used for planning purposes.
- General discussions with fishers.
- Using fisheries resource baseline and in particular commercial species, as a proxy to areas that are or may be fished.
- Using Vessel Monitoring System data (VMS).
- Visual and radar observations in the field, conducted by the OFLR from March 2018 to November 2018 and April 2019 to August 2019, including those fishing vessels not carrying AIS.
- Observations from the Equinor Wind digital aerial avian surveys, where vessel images were an opportunistic data point.

3.3. Monitor for potential impacts during each phase

This section should describe how potential impacts will be monitored on these types of life history stages 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.

- Equinor Wind acknowledges that ongoing research and monitoring at the project site and wider regional scale is important to refine the understanding of impacts, potential mitigation options, and for future planning purposes, including facilitating the responsible leasing and development of future offshore wind energy areas within the New York Bight.
- Equinor Wind is committed to exploring appropriate monitoring protocols, for example monitoring of potential behavioral responses or changes in spatial and temporal distribution

of biological resources or fishing practices as a direct result of the offshore wind energy development.

- Monitoring and research should ideally be targeted towards interactions between offshore wind energy developments and the receptors it is being judged against.
- Equinor Wind proposes to conduct studies in collaboration with other developers, fishers, F-TWG and other fisheries groups or initiatives, such as ROSA and the RODA Task Force.
- Potential studies should be tested for statistical power prior to initiating.
- Equinor Wind is in favor of developing and supporting research initiatives that focus on addressing coexistence; that is, research aimed at improving opportunities for continued and enhanced access for recreational and commercial fishing in the operational offshore wind energy developments. For example, Equinor Wind is supportive of research aimed at innovative technical approaches to issues such as turbine spacing, impacts on navigation equipment, trawling equipment, safety equipment, training and/or information dissemination options.

3.4. Assess and quantify changes to fishery resources

This section should describe how changes to fisheries resources will be quantified using statistically sound methods

- Detecting change in biological resources such as fisheries resources as a direct result of an offshore wind development can be challenging, as the fisheries resource may be subject to natural fluctuations in abundance and spatial and temporal distribution due to outside factors, for example oceanographic conditions. As such, any proposals for monitoring should be statistically robust and Equinor Wind advocates for technical experts to conduct statistical power analyses up front in the planning process before implementing future studies.
- Equinor Wind will collaborate with F-TWG and E-TWG and seek input from stakeholders on monitoring requirements and methods.
- Equinor Wind supports collaborative research and monitoring opportunities.
- Equinor Wind is committed to exploring appropriate monitoring protocols, for example monitoring of potential behavioral responses or changes in spatial and temporal distribution of biological resources as a direct result of the offshore wind energy development.
- Equinor Wind is willing to explore collaborative fisheries research and monitoring initiatives, such as ROSA.

3.5. Assess potential changes to commercial and recreational fishing activities

3.5.1. Current and historical usage

This section should describe how the proposed Project area is used by commercial and recreational fisheries in the region, including current and historic usage as well as how associated transit routes will be determined.

- Current and historical use of the Empire Wind project area by commercial and recreational fisheries has and will continue to be determined by the means described

in sections 3.2.3 and 3.2.4. A full description will be presented in the COP for Lease Area OCS-A 0512, which includes the Empire Wind project.

3.5.2. Changes in usage

This section should describe how changes in commercial and recreational fishing patterns will be calculated postconstruction using statistically sound methods.

- Monitoring changes in pre and post construction fishing effort due to the presence of an offshore wind energy development can be challenging. Many factors dictate fishing effort within a given area on a seasonal and year by year basis which make statistically detecting "change" difficult. For example, fishing effort may be influenced by factors independent of an offshore wind farm such as quota, presence of a mobile species, market prices, fuel prices and fisheries closures. As such, due to the complexities and the need to design a methodology that has both industry and fisheries support, Equinor Wind proposes that if required, such studies be discussed as part of the F-TWG.
- In addition, Equinor Wind will consult on potential monitoring and research with the fishing industry.
- Committed to explore alternate monitoring protocols, such as behavioral responses or changes in spatial and temporal distribution of biological resources or fishing practices.
- If impacts are present, can consider several options, including:
    - (i) explore whether further mitigation can be applied to reduce impacts (e.g., improved access through technical solutions to fishing practices and/or navigation equipment);
    - (ii) using adaptive management by applying mitigation in the spatial planning and layouts of later phases of the Lease development; and
    - (iii) sharing the results so that they can be used in adaptive management on a wider scale, for development of future lease areas in the New York Bight and wider offshore wind energy space.

3.6. Addressing data gaps

This section should describe how data gaps will be addressed.

- Equinor Wind is committed to working with F-TWG, regulators and fishing community to establish if fisheries data gaps still exist, the potential data sources and/or studies that can better inform these gaps or impacts, and to agree on methodologies for conducting meaningful studies.

3.7. Data availability

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

- Equinor Wind will make the following fisheries related studies publicly available:
    - 2018 benthic survey report covering the "SAP" related survey locations within Lease Area (benthic grab samples with grain size and macro fauna analysis, drop down

video stills, habitat description). This report is currently available on the Empire Wind webpage;
    - 2018 benthic survey report covering "COP" related survey locations within Lease Area totaling 67 sample locations (benthic grab samples with grain size and macro fauna analysis, drop down video stills, habitat description). This report will be made available on the Empire Wind webpage, currently expected in December 2019;
    - 2019 benthic survey report covering "COP" related survey locations within the proposed export cable corridors (Sediment Profile Imaging (SPI) Plan View Imaging (PVI), benthic grab samples with grain size and macro fauna analysis, drop down video stills, habitat description). This report will be made available on the Empire Wind webpage, currently expected in December 2019;
    - 2017 to 2018 digital aerial survey images, monthly, quarterly and annual reports of avian species, marine mammals, sea turtles and data of large bony fish assemblages as observed from the 12 x monthly digital aerial surveys carried out from November 2017 to October 2018. These data and reports are all currently available on the ReMOTe webpage https://remote.normandeau.com/ewind_overview.php; and
    - On request, and subject to Equinor Wind's approval, historical oceanographic data not deemed proprietary for the benefit of further fisheries related research, for example seawater temperature and salinity, from the Metocean Facilities deployed within the Lease Area. Requests to be made directly via Julia Bovey at jbov@equinor.com.
- Equinor Wind will consider sharing otherwise proprietary seawater temperature data from Metocean Facilities deployed within the Lease Area for researchers to better understand the "cold pool" effect in the NY Bight. Requests to be made directly via Julia Bovey at jbov@equinor.com.

4. Supporting Other Research

4.1. Support of collaborative research

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

- Equinor Wind will consider proposals for collaborative opportunities to conduct research and monitoring. Studies may include fishing feasibility (by technique) within operational wind farms.
- Equinor Wind will be open to collaboration with other offshore wind developers.
- Open to collaboration with other organizations.
- Options for research can be discussed through the F-TWG, or other fisheries related initiatives such as ROSA and the fishing industry.
- Equinor Wind will, where feasible, consider making existing wind farm related vessels or buoys available for research opportunities where this does not materially impact existing objectives of those resources. For example, Equinor Wind will consider proposals for adding additional or third-party self-contained sensors on survey vessels, construction vessels, operations and maintenance (O&M) vessels, wind farm structures or wind farm related buoys and metocean moorings.
- Willing to consider requests to access existing Equinor's operating offshore wind energy developments in Europe.
- Willing to make non-proprietary or business sensitive data available that can support wider fisheries research that may not be directly linked to offshore wind farm developments but can inform future fisheries practices (e.g. seawater temperature data to inform research on the "Cold Pool").

4.2. Handling/processing requests

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

4.3. 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.

- Commercially sensitive data (e.g., wind resource data and operational availability estimates, geological information, etc.).

4.4. 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.

- Equinor Wind will commit to facilitating and/or conducting at least one research study into improving coexistence, for example studies that consider understanding and/or improving fishing access to operating offshore wind farms, and at least one study related to fisheries resources in relation to offshore wind farm development.
- Equinor Wind will commit to a budget of $250,000 over a 3-year period for fisheries coexistence research and $250,000 over a 3-year period for fisheries resource research.

4.5. 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.

- Equinor Wind has made the Metocean Facilities within the Lease Area available to SUNY Stony Brook to attach receiver gates for Atlantic sturgeon, and other incidental tagged marine life.
- Equinor Wind is collaborating with the Wildlife Conservation Society (WCS) and Woods Hole Oceanographic Institute (WHOI) on real-time large whale detection and notification buoys in a minimum 2-year monitoring program.
- Equinor Wind is collaborating on the potential to support ROSA.
- Equinor Wind is a member of the RODA Task Force.

5. Proposed Mitigation of Impacts to Benthic/Fishery Resources

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

The table below should list the potential impacts and risks to benthic/fishery resources and proposed mitigation measures. To this end, a description of how the potential adverse impacts of infrastructure design elements (e.g., turbine spacing and layout, turbine foundation type, cable burial and protection methods, and cable crossing designs) on fishing in the proposed Project area will be considered in mitigating impacts should be included. The mitigation measures should also demonstrate that the Project area and proposed site design allows for reasonable flexibility in the site layout (e.g. orientation of turbine lines, distance between turbines, and navigation areas) to accommodate changes that may be needed in the future. The section should also describe the planned operational protocol to avoid, minimize, and mitigate impacts to fish, invertebrates and fisheries during Project construction and operation phases, such as vessel transit routes, designation and monitoring of safety zones, gear monitoring and retrieval, and communication with fishing vessels and resource managers.

Potential Impacts	Proposed Mitigation Measures	Phase*			
		1	2	3	4
Physical disturbance and habitat loss, including sensitive habitats	• Avoid, to the extent possible, siting structures (e.g. offshore wind turbine foundations) in areas of sensitive benthic habitat. • Include NOAA NMFS in survey plan review in coordination with BOEM to address potential impacts to threatened or endangered species Avoid, to the extent possible, sensitive benthic habitats through the planning of routing export cable corridors. • Bury wind farm electrical cables to sufficient depth to minimize surface protection requirements that modify the existing conditions. • Apply real time measures to avoid intrusive sampling of sensitive habitats, using drop down cameras. • Appropriate and reasonable use of foundation scour protection where needed as identified in modelling. Will calculate extent of potential habitat loss as part of COP assessments and share results with F-TWG and other working groups	X	X	X	X
Underwater noise	• Selection of gravity-based substructure (GBS) foundations that do not require percussive pile driving during foundation installation • If pile driving is used, then a “soft start” will be applied at the startup of piling. • If pile driving is used then potential use of noise reducing technologies if deemed required by regulators as appropriate to the impacts, and subject to being commercially and technically available.	X	X		

Potential Impacts	Proposed Mitigation Measures	Phase*			
		1	2	3	4
Increased suspended sediment concentration and deposition	• Apply best management practices and timing during cable installation to minimize sediment suspension and dispersal during sensitive periods (e.g. certain spawning events). • Will undertake sediment transport modeling to quantify sediment concentrations and affected areas for COP assessments, which will be shared with F-TWG Use of scour protection around wind turbine foundations as appropriate to reduce sediment resuspension.		X	X	
Exposure to accidental spills, pollution or trash from project related vessels and structures	• Apply best practices for vessel operations. • Implement an Oil Spill Response Plan (OSRP).	X	X	X	X
Potential exposure to Electromagnetic Fields (EMF)	• Cables will be armored. • Cables will be buried to sufficient depths (for a variety of reasons), to the extent possible. • If sufficient burial is not feasible, potential for further barriers through surface cable protection. • Conduct EMF modeling and assessments to identify potential mitigation requirements. • Post construction surveys at an appropriate interval to monitor for exposed cables.			X	
Water Quality	• Export cable routing will, to the extent possible, avoid existing and historic dumping grounds to avoid resuspension of materials during construction.		X		
**Phase: 1: Survey/Design; 2: Construction; 3: Operation; 4: Decommission*					

5.2. Coordination with F-TWG and other stakeholders

This section should describe how the Developer will engage with stakeholder groups such as the F-TWG and other regional fishermen that address stakeholder concerns related to benthic and fisheries resource. Specifically, describe the key types of information and design decisions where feedback will be solicited from stakeholders.

- Equinor Wind has and will continue to engage in discussion on the following topics with F-TWG, E-TWG, regulators and other stakeholder groups as appropriate to solicit feedback on studies and designs:
    - Spatial planning of export cable routing;
    - Sediment transport modeling;
    - EMF modeling and assessment;
    - Project Design Envelope;

- Project Layouts; and
- Benthic and fisheries resource data collected and assessed as part of the COP submission.

6. Proposed Mitigation of Impacts to the Recreational and Commercial Fishing Industry

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

The table below should list the potential impacts and risks to recreational and commercial fishing and proposed mitigation measures. To this end, this section should describe how the potential adverse impacts of infrastructure design elements (e.g., turbine spacing and layout, turbine foundation type, cable burial and protection methods, and cable crossing designs) on fishing in the proposed Project area will be considered in mitigating impacts. The mitigation measures should also demonstrate that the Project area and proposed site design allows for reasonable flexibility in the site layout (e.g. orientation of turbine lines, distance between turbines, and navigation areas) to accommodate changes that may be needed in the future. The section should also describe the planned operational protocol to avoid, minimize, and mitigate impacts to fish, invertebrates and fisheries during Project construction and operation phases, such as vessel transit routes, designation and monitoring of safety zones, gear monitoring and retrieval, and communication with fishing vessels and resource managers.

Potential Impacts	Proposed Mitigation Measures	Phase*			
		1	2	3	4
Impacts to commercial fish species	• See section 5.1	X	X	X	X
Temporary displacement/loss of access to traditional fishing grounds during survey activities	• Equinor Wind is actively avoiding areas being fished during survey activities. • Pre-survey consultation with fishing industry to determine upcoming spatial and temporal use, which is avoided by survey vessels where feasible. • Planning of export cables routes that avoid heavily fished areas, for example static gear, prior to surveying. • Timing of offshore surveys to avoid seasonal fishing where feasible. • Dissemination of information related to offshore survey activities, with contact details for further information. • Real-time adaptive management and monitoring of fishing activity – using OFLRs, real-time AIS and consultation with the fishing community to modify survey areas of coverage as appropriate. • Engagement with recreational fishermen in the field by the OFLR.	X	X	X	X
Temporary displacement/loss of access to traditional fishing	• To the extent possible and reasonable, actively avoiding areas being fished during construction activities through pre-planning the timing and location of activities.		X		

Potential Impacts	Proposed Mitigation Measures	Phase*			
		1	2	3	4
grounds during construction phase	• Dissemination of construction scheduling information as early as possible with fishers. • Use of real-time fisheries monitoring and adaptive management of construction timing and location, to the extent possible. • Potential for use of construction practices such as rolling construction safety zones in consultation with the appropriate regulators, F-TWG and fishing community, to minimize overall area of temporary closed areas.				
Displacement/loss of access to traditional fishing grounds during operations phase activities	• Equinor Wind does not intend to restrict or apply for broad-based restrictions on fishing activities within the operational wind farm. To the extent that any restrictions are necessary, these may be limited to standard safety zones during the construction phase, and operational safety zones around manned or sensitive offshore platforms or access points. • Sufficient burial of inter-array and export cables to facilitate continued seabed penetrating fishing activity. Thoughtful spatial planning and project design, including the application of "Layout Rules" to ensure transparency of future layouts, with flexibility to modify layouts following consultation. Layout Rules to be finalized and consulted on with F-TWG, regulators and with wider fishing industry, and as part of development of the Navigation Safety Risk Assessment. The Layout Rules have been designed to facilitate continued access to fishing grounds, with orientation of turbine rows, alignments and spacing that are sympathetic to existing practices, based on data and feedback.			X	
Navigational safety concerns and loss of fishing gear from construction activities and the presence of structures and cables and subsequent decommissioning	• Potential use of rolling construction safety zones. • Dissemination of information to fishers on wind turbine and cable locations. • Provision of wind turbine locations for inclusion on navigational charts. • Intention to bury inter-array and export cables where feasible and based on Cable Burial Risk Assessment. • Periodical post installation cable surveys as appropriate, with sharing of information on identified navigational risks as appropriate.		X	X	X

Potential Impacts	Proposed Mitigation Measures	Phase*			
		1	2	3	4
Navigational safety concerns due to increased project related vessel traffic	• Dissemination of information of planned construction vessel activities, timing, location, routes, vessel details, etc. • Notification to fishing community of any unscheduled O&M activities. • Communications plan with emergency contacts and procedures. • Prescribed transit routes for offshore wind energy development construction and support vessels between ports and the offshore site. • Project related construction and support vessels to follow best practice guidance, including Convention on the International Regulations for Preventing Collisions at Sea (COLREGS). • Project related vessels to be made aware of final FMP and mitigation measures. • Where appropriate and feasible, an OFLR on at least one Project related construction and support vessel in the field during construction to aid communications. • FLO for contact by fishers during construction, operations and decommissioning activities. • Real-time monitoring of fishing vessel activity to apply adaptive management to project related vessel movements.		X	X	X
**Phase: 1: Survey/Design; 2: Construction; 3: Operation; 4: Decommission*					

6.1.1. General approach to avoiding and mitigating fishing gear loss

This section should describe how potential loss of fishing gear due to snags on turbine structures, associated cables or cable mattresses, or related structures installed or deployed as a result of offshore wind energy development, will be minimized.

- Mitigation measures include:
  - Marking & lighting of partially built structures following Private Aids to Navigations (PATONS);
  - Dissemination of charted locations of partially built and installed structures to the fishing community;
  - Provision of locations of partially built structures and installed structures in digital formats that can be uploaded to typical navigation equipment, for example navigation plotters;
  - USCG Notice to Mariners (NTMs);
  - Provision of locations of partially built structures and installed structures for updating NOAA Nautical Charts, as well as USCG Local Notices to Mariners at more frequency (i.e., weekly);

- Consultation with the fishing community with the potential to establish temporary safety exclusion zones around partially installed wind farm electrical cables;
- Provision of safety vessels around high risk structures;
- Prescribed transit routes for project related vessels;
- Real-time monitoring and notifications to fishing vessels;
- Bury cables to depths below fishing gear penetration where feasible and making the position of cables available for the fishing community; Where burial is not feasible, use of cable protection where appropriate to findings of the cable burial risk assessment (CBRA) and consultation;
- Avoidance of use of concrete mattresses in areas of snagging risk.

6.1.2. Processing claims for lost fishing gear

This section should describe how the Developer will approach claims of lost gear in the event of a snag that provides for a fair and timely review of the claim and appropriate compensation of impacted parties.

- Equinor Wind will work with F-TWG and fishing community to establish the appropriate procedures in advance of the start of construction activities.

6.2. Coordination with F-TWG and other stakeholders

This section should describe how the Developer will engage with stakeholder groups such as the F-TWG and other regional fishermen and shipping and navigation to determine Project layouts that address stakeholder concerns. Specifically, describe the key types of information and design decisions where feedback will be solicited from stakeholders.

- Fisheries data and consultation feedback from the fishing industry and maritime community has resulted in the Empire Wind Project establishing Layout Rules that aim to minimize impacts on existing fishing practices and facilitate ongoing access to traditional fishing grounds. The Layout Rules also take into account existing and future maritime navigation trends and Search and Rescue capabilities.
- Equinor Wind will consult with the fishing industry on the Project's Layout Rules and indicative layouts via F-TWG, RODA and fishing organizations.
- Equinor Wind will present the Project's Layout Rules and some indicative layouts to facilitate feedback in a "Layouts Brochure". Equinor Wind will distribute the layouts brochure directly to fisheries contacts and will make the brochure publicly available on the Empire Wind webpage at www.empirewind.com/fisheries .

Feedback from the Layouts consultations will be considered for modifying the Project's Layout Rules and potential layouts.

7. Project Decommissioning

7.1. Potential impacts based on available information and experience

This section should describe potential impacts to benthic/fisheries and the fishing industry from decommissioning the project, based on available information and relevant experience (if any).

- At this early stage it is not possible to accurately predict impacts and appropriate mitigation from decommissioning. It can be reasonably judged that impacts from decommissioning are not expected to exceed impacts from construction.
- Potential impacts and mitigation options will become clearer post construction and during operations, facilitated by monitoring.

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 fisheries stakeholders, and any elements of its contemplated decommissioning plan that can be identified at this stage.

- The process for development of a decommissioning plan will be discussed further will E-TWG and F-TWG and relevant regulators and stakeholders.
- Lessons learned from the construction and operations activities will be applied to the decommissioning plan at the appropriate time.
- Equinor Wind will consult with the fishing industry on the Empire Wind decommissioning plans at the appropriate time, closer to the decommissioning activities.

8. (Optional) Fisheries Compensation Plan

8.1. Consideration of compensation plan

If a fisheries compensation plan is being considered to offset impacts, this section should describe how it will determine instances where all reasonable attempts to avoid and minimize Project impacts, or restoration to predevelopment conditions are not feasible and some type of fisheries compensation plan is warranted.

- Equinor Wind considers that at this early stage of development, the primary focus should be on understanding the full extent of potential impacts and what avoidance measures or effective mitigation can be applied to address them from the outset. It is therefore too early to assume the need for and quantify financial compensation measures.
- As such, Equinor Wind is not in a position to provide further details of financial compensatory measures related to potential temporary displacement or restricted access of fisheries to traditional fishing grounds related to Empire Wind.
- Should financial compensation be required, Equinor Wind will work with the relevant regulators and fisheries organizations to establish the details and principles of a compensation plan.

8.2. Approach to developing compensation plan

8.2.1. Coordination with stakeholders

This section should describe how a fisheries compensation plan was, or will be developed; how the Developer will coordinate with the F-TWG and other entities in the design or review of the fisheries compensation plan.

- As per section 8.1.

8.2.2. Third-party administration

This section should describe how the compensation plan will be administered by an nongovernmental third-party to provide reasonable and fair compensation for impacts that cannot be sufficiently addressed through other means.

- Should financial compensation be required, Equinor Wind supports a process for identifying recipients and values that is open to third-party scrutiny and may be managed by an independent third-party (under confidential agreements where sensitive information exists).

9. Additional Considerations

9.1. Additional mitigation strategies and FMP 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 FMP will be updated and refined based on additional information and stakeholder feedback.

- Equinor Wind will continuously evaluate and evolve this FMP, including addressing additional guidance and information, so it remains complete and sufficient.
- Equinor Wind will engage with the F-TWG and fisheries organizations and use feedback in these discussions to evolve the FMP.

9.2. Process for updating the FMP

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 FMP.

- As per section 9.1.