

PROPOSALS FOR PURCHASE OF OFFSHORE WIND RENEWABLE ENERGY CERTIFICATES ORECRFP20-1

Prepared for

The New York State Energy Research and Development Authority Submitted by



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PUBLIC



4.4 Fisheries Mitigation Plan

Response to New York State Energy Research and Development Authority Request for Proposals ORECRFP20-1



Fisheries Mitigation Plan for Liberty Wind Version 1.0

Prepared pursuant to [contract number, date (TBD)]

with

New York State Energy Research and Development Authority

Albany, NY

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Links to project information:

Project website: <u>https://www.vineyardwind.com/</u> Fisheries website: <u>https://www.vineyardwind.com/fisheries</u>

TABLE OF CONTENTS

FISHERIES MI	TIGATION	PLAN FOR L	IBERTY WIND		1
1.	Fisherie	s Mitigatior	PlanSummary		4
	1.1	-	ilosophy and principles		4
1.2	Overall	-	incorporating data and stakeholder feedback		4
1.3			nd best practices that will be followed		5
2.	Commu	- inications ar	d CollaborationApproach		7
	2.1	Overview	and communication plan objectives		7
	2.2	Communi	cation officers/positions, responsibilities, and contact inform	mation	7
	2.3	Identificat	tion of fishing industry stakeholders		8
	2.4	Participat	ion in stakeholder and technical working groups		8
		2.4.1	Communication with F-TWG		8
		2.4.2	Communication with other New York State agencies		8
		2.4.3	Communication with other stakeholder and working grou	ips	9
	2.6	Communi	cation methods and tools		9
		2.6.1	Methods by phase		9
		2.6.2	Communication with vessels		11
3.	Monito	ring and Res	search Pre-, During, and Post-Construction		12
	3.1	Identificat	tion of scope of monitoring activities/studies		12
	3.2	Baseline d	lata and characterization approach		12
		3.2.1	Existing literature and data of benthic and fisheries resou	rces	12
		3.2.2	Data collected of benthic and fisheries resources		13
	3.3	Monitor f	or potential impacts during each phase		14
	3.4	Assess an	d quantify changes to fishery resources		15
	3.5	Assess po	tential changes to commercial and recreational fishing activ	ities	16
		3.5.1	Current and historical usage		16
		3.5.2	Changes in usage		16
	3.6	Addressin	g data gaps		17
	3.7	Data avail	ability		17
4.0	Support	ting Other Re	esearch		18
	4.1	Support o	f collaborative research		18
	4.2	Handing/	processing requests		18
	4.3	•	restrictions		18
	4.4	Financial	commitment for third party research		19
	4.5	Proposed	or existing commitments/collaborations		19
5.	-	-	n of Impacts to Benthic/FisheriesResources		21
	5.1		mpacts/risks and mitigation measures by project stage		21
	5.2		ion with F-TWG and other stakeholders		23
6.	-	-	n of Impacts to the Recreationaland Commercial Fishing In	dustry	24
	6.1		mpacts/risks and mitigation measures by project stage		24
		6.1.1	General approach to avoiding and mitigating fishing gear	loss	25
		6.1.2	Processing claims for lost fishing gear		26
	6.2		ion with F-TWG and other stakeholders		26
7.	-	Decommiss	-		27
	7.1		mpacts based on available information and experience		27
	7.2	Approach	for developing plan and coordination with stakeholders	PUBLIC	27

TABLE OF CONTENTS (CONTINUED)

8.	(Optiona	al) Fisherie	es Compensation Plan	28
	8.1	Conside	ration of compensation plan	28
	8.2	Approa	ch to developing compensation plan	28
		8.2.1	Coordination with stakeholders	28
		8.2.2	Third-party administration	28
9.	Addition	al Conside	erations	29
	9.1	Additior	nal mitigation strategies and FMP refinement	29
	9.2	Process	for updating the FMP	29

1. Fisheries 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 fisheries impacts.

Vineyard Wind (the "Proposer") is committed to developing, permitting, and deploying well-sited offshore wind projects with minimal environmental impact. To do so, the Proposer: (1) employs project design and siting measures aimed at avoiding potential impacts from the outset; (2) extensively surveys and monitors offshore areas in support of baseline characterization; (3) works collaboratively with regulators and interested stakeholders to identify appropriate and practicable solutions to further avoid, minimize, restore, and/or offset likely potential impacts; and (4) incorporates data, research, and stakeholder feedback into the final design of its projects. Vineyard Wind has applied this approach in developing the nation's first commercial-scale offshore wind project—Vineyard Wind 1— and is using the same approach for the Liberty Wind (the "Project") and Park City Wind projects.

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 (preconstruction, surveys, site design, construction, operations, and decommissioning).

Vineyard Wind is committed to working with stakeholders, supporting research, and taking steps to implement appropriate mitigation measures where Liberty Wind's impacts cannot be avoided. In line with this commitment:

- Vineyard Wind will seek consultation and coordinate with relevant stakeholders.
- Vineyard Wind will review existing research and data and seek input from stakeholders regarding data gaps to inform decisions made throughout the Project life cycle.
- Vineyard Wind will review and seek input from stakeholders on proposed and conducted survey rationales and methodologies as well as design, construction and operation, and decommissioning plans for the Project.
- To the extent that the timeline allows, pre- and post-construction monitoring will be designed to improve the understanding of impacts of offshore wind energy development and operations on wildlife.
- Vineyard Wind anticipates periodically assessing information gathered through pre-, during, and post-construction surveys and other means to determine if adjustments to avoidance, minimization, and mitigation measures are needed.

• Vineyard Wind will rely on research, data, and stakeholder feedback to update this Fisheries Mitigation Plan (FMP) and support decision-making throughout the life cycle 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 FMP. Include links, if available, for all references.

- Vineyard Wind will continue implementing its Fisheries Communication Plan (FCP), which is based on best practice guidance and input from fisheries stakeholders. The FCP is updated periodically and includes a list of best practice guidance documents, publications, and/or plans for fisheries outreach.
 - The FCP is available at: <u>https://www.vineyardwind.com/fisheries</u>
- Vineyard Wind will continue to follow and implement best practices appropriate and relevant to the Project, including those outlined in:
 - Appendix A of the Bureau of Ocean Energy Management's (BOEM) (2020) Information Guidelines for a Renewable Energy Construction and Operations Plan (COP)—Version 4.0: <u>https://www.boem.gov/sites/default/files/documents/aboutboem/COP%20Guidelines.pdf</u>
 - Draft Guidance Regarding the Use of a Project Design Envelope in a Construction and Operations Plan (BOEM 2018): <u>https://www.boem.gov/sites/default/files/renewable-energy-program/Draft-Design-Envelope-Guidance.pdf</u>
 - Additional BOEM guidelines/guidance documents, including:
 - BOEM's (2013) Guidelines for Providing Benthic Habitat Survey Information for Renewable Energy Development on the Atlantic Outer Continental Shelf Pursuant to 30 CFR Part 585: <u>https://www.boem.gov/sites/default/files/renewable-energy-</u> program/Regulatory-Information/BOEM-Renewable-Benthic-Habitat-<u>Guidelines.pdf</u>
 - BOEM's (2015) 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: <u>https://www.boem.gov/Social-and-Economic-Conditions-Fishery-Communication-Guidelines/</u>
 - Best practice guidance tools that have been, or may be, developed through initiatives such as the F-TWG, the E-TWG, Responsible Offshore Development Alliance (RODA) Joint Industry Task Force, Responsible Offshore Science Alliance (ROSA), and other groups.

- Vineyard Wind anticipates consulting a number of publications, tools, and plans for the Project, including those listed in Section 3.2.
- Vineyard Wind will also build on the lessons learned and critical hands-on experience gained developing, permitting, and constructing the Vineyard Wind 1 and Park City Wind projects.

2. Communications and CollaborationApproach

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.

- Early, often, and inclusive communication with a range of stakeholders is a hallmark of Vineyard Wind's collaborative development approach. The Proposer's communication efforts prioritize information sharing, soliciting feedback on the design and execution of the Project, and supporting an efficient and timely permitting process. Towards that end:
- Vineyard Wind will seek methods and processes to allow for a two-way flow of information between key stakeholders and developers, highlighting how feedback informs the Proposer's decision making.
- Vineyard Wind will provide updates to fishing industry stakeholders in an appropriate manner that is easily accessed and widely distributed.
- Vineyard Wind will continue to periodically update its FCP to ensure communication methods remain effective and useful.
- Throughout the life cycle of the Project, Vineyard Wind will continue to actively engage and communicate with stakeholders, foster, build, and maintain build trusted relationships, and work to address concerns.

2.2 Communication officers/positions, responsibilities, and contact information

This section should 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 should also include links to the project website so readers know where to find additional information.

Name/Title	Role/Responsibilities	Contact Information
Crista Bank Fisheries Liaison	Lead fisheries contact and the F-TWG representative	508-525-0421 cbank@vineyardwind.com
Caela Howard Fisheries Liaison	Focuses on communications with members of the fishing industry in Connecticut and Rhode Island.	508-386-9832 choward@vineyardwind.com
Vineyard Wind Fisheries Representatives	Represent the interests of different fisheries to Vineyard Wind	Contact information available at: https://www.vineyardwind.com/fishe ries-partners

Project website: <u>https://www.vineyardwind.com/</u> Fisheries Website: <u>https://www.vineyardwind.com/fisheries</u>

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.

Vineyard Wind is in active and regular communication with a wide variety of stakeholders relevant to fisheries and the fishing industry. Among other things, Vineyard Wind intends to:

- continue to implement the communication and stakeholder engagement methods outlined in the FCP;
- expand its network of Fisheries Representatives and Offshore Fisheries Liaisons to facilitate effective communication with commercial and recreational fisheries stakeholders as well as the identification of new stakeholders;
- maintain consultations with relevant regulatory and agency stakeholders and state technical working groups; and
- continue engagement in regional science efforts through the Regional Wildlife Science Entity (RWSE), ROSA, and similar entities with a regional fisheries focus.

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.

- Vineyard Wind will dedicate project specific technical resources to the F-TWG.
- To the extent practicable, Vineyard wind will continue to work with and attend future F-TWG meetings and sponsored conferences.
- Vineyard Wind will continue to actively participate in the F-TWG and provide Project updates at appropriate intervals.

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.

- Vineyard Wind has communicated with New York State agencies, including Consulting State Agencies, during the initial development phase of the Project to inform Project plans, siting measures, and permitting plans and timelines.
- Vineyard Wind will communicate with Consulting State Agencies on the Project's Site Assessment Plan and COP, including meeting with Consulting State Agencies that request a meeting in order to attempt to resolve any identified issues.

• Vineyard Wind will meet with New York State agencies, including Consulting State Agencies, at their reasonable request, during the development, construction, and operational phases of the Project.

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.

- Vineyard Wind will continue to actively participate in and engage with technical, state, and regional working groups, including:
 - Atlantic States Marine Fisheries Commission;
 - o Connecticut Commission on Environmental Standards;
 - International Council on Exploration of the Seas (member of Working Group on Offshore Wind Development and Fisheries);
 - o Massachusetts Fisheries Working Group on Offshore Wind Energy;
 - Massachusetts Habitat Working Group on Offshore Wind Energy;
 - o Mid-Atlantic Fishery Management Council;
 - New England Fishery Management Council;
 - NYSERDA's E-TWG;
 - NYSERDA's F-TWG;
 - Project Advisory Committee for Automated Radio Telemetry at Offshore Wind Farms;
 - Rhode Island Fisheries Advisory Board meetings;
 - RODA Joint Industry Task Force;
 - ROSA (Board and Council member); and
 - o RWSE.
- Vineyard Wind will continue to communicate and engage with relevant state and federal agencies as well as fishing organizations.
- Vineyard Wind will continue to collaborate with academic and research institutions, state and federal agencies, and others to advance regional science strategies and initiatives.

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.

	Phase*				
Proposed Outreach Methods/Tools	1	2	3	4	
Hire and maintain a network of Fisheries Representatives that represent a particular fishing industry, organization, gear type, port, region, state, or sector(s), and are responsible for communicating concerns, issues, and other input to the project	x	x	x	x	
Maintain a list of fishermen and fisheries stakeholders who wish to receive project, survey, and other updates via email or text	х	х	х	х	
Implement a text/alert notification system where fishermen can sign up to receive daily texts of offshore work progress	х	х		х	
Attend fisheries trade shows and outreach events to encourage fishermen to sign up for alerts regarding the projects offshore work	х	х			
Send notifications with all survey/construction vessels identifying features to fisheries e-mail list	х	х			
Publicize survey, construction, and other project activities through fisheries organization and state websites and newsletters	х	х		х	
Publicize survey and construction activities through SkyMate and other current Vessel Monitoring Systems email alerts		х			
During offshore work, send out regular email updates detailing progress, both for complete areas and areas next on the list		х			
Hire Offshore Fisheries Liaisons, preferably fisherman, to be on project vessels to identify and report fixed gear and fishing activity in the area and help facilitate communication to Fisheries Liaisons onshore during project activities				x	
Hire, with help from Fisheries Representatives, local fisherman respected among the fleet to help spread the word exactly when the project vessels will be in their immediate area, relay any work zone areas to stay clear of, and communicate when vessels have left the area.	x	x		x	
Maintain an email (fisheries@vineyardwind.com) that is monitored by a team, so as to ensure timely response even if the FLs are not immediately available.	х	х	х	х	
Maintain a fisheries section on Vineyard Wind's website (https://www.vineyardwind.com/fisheries), which includes information on the latest mariner updates, fisheries science, charts, FAQs, and fisheries partners	х	х	х	x	
Holding open houses and webinar information sessions	х	х	х	х	
Holding fishing port office hour information sessions	х	х	х	х	
Attending and speaking at state fisheries working group meetings	х	х	х	х	
Social media postings	х	х	х	х	
*Phase: 1: Survey/Define Project Envelope/Permitting; 2: Construction; 3: Operation; 4: Decom	missic	oning	•		

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.

- To avoid fisheries conflicts, to the greatest extent practicable, Vineyard Wind will seek to employ a fishing captain or other experienced fishing industry representative to be onboard vessels during key time/activities where potential conflicts could be greatest.
- Vineyard Wind will implement and refine the vessel communication tools and protocols included in the FCP to facilitate communication with vessels actively fishing in areas in or adjacent to the Project area during sire assessment and construction activities.

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.

- Vineyard Wind will implement appropriate monitoring activities to assess potential impacts from the Project.
- Monitoring methods and scientific designs will meet the highest scientific standards.
- To the greatest extent practicable, fisheries and related research will be performed onboard commercial and recreational fishing vessels. These vessels will meet all appropriate regulatory safety and scientific standards prior to the beginning of any monitoring activity.
- To the greatest extent practicable, monitoring activities will be designed to work with or operate within regional study efforts to both contribute to regional science and enable use of larger data sets to assess impacts.

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

- Numerous data sources characterize the temporal and spatial distribution, abundance, and community composition of fish, invertebrates, and their habitats potentially affected by Project activities. Key sources by include, but are not limited to:
 - Northeast Fisheries Science Center (NEFSC) multispecies bottom trawl surveys and other databases
 - o Massachusetts Department of Marine Fisheries trawl surveys
 - Northeast Ocean Data Portal
 - Comprehensive Seafloor Substrate Mapping and Model Validation in the New York Bight (Battista et al. 2019)

- University of Massachusetts School for Marine Science and Technology (SMAST) video survey of the western portion of the Massachusetts Wind Energy Area (MA WEA) (2013; 2014) and other SMAST databases
- NYSERDA's Digital Aerial Baseline Survey of Marine Wildlife in Support of Offshore Wind Energy and Remote Marine and Onshore Technology (ReMOTe)
- NYSERDA's (2017) Fish and Fisheries Study
- NOAA's Fisheries and Endangered Species [Internet] databases and Deep-Sea Coral Data Portal
- Habitat Mapping and Assessment of Northeast Wind Energy Areas (Guida et al. 2017)
- Northeast Area Monitoring and Assessment Program (NEAMAP)
- The Nature Conservancy and SMAST Offshore Video Survey and Oceanographic Analysis: Georges Bank to the Chesapeake (2003–2012) (Bethoney et al. 2015)
- o Southern New England Juvenile Fish Habitat Research Study (2017)
- Spatial and Temporal Distributions of Lobsters and Crabs in the Rhode Island/Massachusetts Wind Energy Area (Collie and King 2016)
- Southern New England Industry-Based Yellowtail Flounder Survey (2003–2005) (Valliere 2007)
- o BOEM studies and environmental assessments, including:

BOEM's (2014) Revised Environmental Assessment for the MA WEA

BOEM's (2018) Vineyard Wind Offshore Wind Energy Project Biological Assessment for NOAA

BOEM's (2018) DEIS for Vineyard Wind 1

BOEM's (2019) Vineyard Wind Offshore Wind Energy Project Essential Fish Habitat Assessment

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.

 Vineyard Wind has initiated and supported multiple ongoing seasonal fisheries and benthic macroinvertebrate field surveys and studies to characterize baseline conditions in Lease Areas OCS-A 0522 and OCS-A 0501. These studies were developed with input from fishermen, fisheries scientists, and regulatory agencies. The offshore work is conducted on fishing vessels. The surveys use a range of established survey methods to assess different facets of the regional ecology using accepted protocols that are designed to be compatible with previous data and ongoing regional surveys. The data collection includes:

- Vineyard Wind is already conducting trawl and drop camera surveys in Lease Area OCS-A 0522 in collaboration with SMAST. Trawl surveys occur each season (spring, summer, winter, fall) and drop camera surveys occur twice per year.
- Vineyard Wind is collecting benthic habitat data via surficial and subsurface sonar systems, underwater video, and benthic grab samples as part of its geological and geotechnical (G&G) surveys in Lease Area OCS-A 0522.
- SMAST is also conducting trawl and drop camera surveys in Lease Area OCS-A 0501 and has conducted an American Lobster, Black Sea Bass, Larval Lobster Abundance Survey, and Lobster Tagging Study in the northern portion of Lease Area OCS-A 0501.
- Vineyard Wind has also partnered with the New England Aquarium to study highly migratory species presence across the MA WEA and Rhode Island/Massachusetts Wind Energy Area (RI/MA WEA), with help from the pelagic recreational fleet. The study determined that recreational effort for highly migratory species is widespread, with the highest levels of recreational fishing activity occurring to the west of Lease Area OCS-A 0522.
- Vineyard Wind has conducted comprehensive desktop studies of existing literature on fish and invertebrates as well as essential fish habitat assessments for Vineyard Wind 1 and Park City Wind.
- Vineyard Wind will conduct an in-depth desktop study that includes the data sources listed above as well as recently completed and ongoing studies, including BOEM and NOAA NEFSC's Fishery Physical Habitat and Epibenthic Invertebrate Baseline Data Collection program.

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.

- Surveys are already underway to assess baseline conditions of fish, invertebrates, and their habitats in Lease Area OCS-A 0522. The pre-construction baseline survey data within Lease Area OCS-A 0522 are expected to be utilized in future environmental assessments to assess changes attributable to development activities.
- Vineyard Wind will seek to collaborate with other regulatory agencies and stakeholder groups (e.g., the E-TWG, the F-TWG, and ROSA) to identify research needs and opportunities.
- Vineyard Wind plans to implement appropriate monitoring measures to assess potential changes to the ecological baseline established for the Project in line with applicable federal and state permitting requirements.

• Monitoring efforts will always be designed, to the greatest extent practicable, to work with or operate within regional study efforts to both contribute to regional science and enable use of larger data sets to assess impacts.

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.

- Ideally, specific questions and focal taxa will be chosen for the Project either based on site-specific fisheries risk assessment, or in relation to broader regional efforts to assess variation between sites and understand cumulative impacts for sensitive species.
- Monitoring will, to the extent practicable, use appropriate study designs and methodologies to effectively analyze risk prior to construction and evaluate impacts during construction and operation by testing hypotheses and helping to assure statistical power for meaningful data analysis.
- Outside expertise will, if practicable, be consulted during study design and data analysis processes.
 - The monitoring measures for Liberty Wind will be informed and refined based on those that have been put in place for Vineyard Wind 1 and Park City Wind. Building on its experience from Vineyard Wind 1, Vineyard Wind may use a beyond BACI framework (recommended by BOEM) and/or a BAG framework to monitor impacts to fish and invertebrates. Details of the assessment methodology will be developed by Vineyard Wind in collaboration with relevant state and federal agencies, fisheries stakeholders, and New York fisheries scientists.
 - Vineyard Wind will assess the most appropriate statistical tools to use, which may include ANOVA tests, the Bray-Curtis dissimilarity index, etc.
 - To the greatest extent possible, Vineyard Wind will continue to design its surveys and monitoring efforts to be compatible with previous data and ongoing regional surveys. In addition to other benefits, this will allow for a more statistically robust assessment of changes to environmental resources.
 - Vineyard Wind also expects to develop a benthic habitat monitoring plan for the Project that is built upon the framework developed for Vineyard Wind 1 and/or Park City Wind but will seek to advance understanding and not revisit questions that may have already been answered.

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.

- Vineyard Wind will consult a range of resources to quantify and inventory how Lease Area OCS-A 0522 is used by commercial and recreational fisheries in the region, including datasets and studies conducted by BOEM, NOAA, New York State, and other state agencies.
- Vineyard Wind will conduct a commercial and recreational fisheries assessment that will be presented in the Project's COP.
- For recreational fisheries, Vineyard Wind recently partnered with the New England Aquarium Anderson Cabot Center for Ocean Life to study highly migratory species presence across the MA WEA and RI/MA WEA, based on a desktop review and input from the pelagic recreational fleet. The study determined that recreational effort for highly migratory species is widespread, with the highest levels of recreational fishing activity occurring to the west of Lease Area OCS-A 0522.
- Vineyard Wind anticipates continuing conversations with recreational fishermen throughout every phase of the Project to determine potential changes to recreational fishing patterns and will consider opportunities to further support ongoing research efforts.
- Qualitative information on how Lease Area OCS-A 0522 and offshore export cable corridor (OECC) is used by commercial and recreational fisheries in the region will also be collected. This information will be derived from Vineyard Wind's ongoing, multi-year fisheries communication program, which includes those efforts detailed in this FMP.

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.

- Vineyard Wind will continue to engage with commercial and recreational fishermen to assess whether and how fishing patterns in Lease Area OCS-A 0522 are altered by the Project post-construction.
- As appropriate, Vineyard Wind will consider other methods to monitor and quantify changes in commercial and recreational fishing patterns in consultation with federal and state regulators and fisheries stakeholders.
- Vineyard Wind will apply experience with projects that will be constructed and operational prior to Liberty Wind

3.6 Addressing data gaps

This section should describe how data gaps will be addressed.

- The MA WEA, which includes the Offshore Wind Generation Facility site, is well-studied and numerous studies already exist to characterize fish and invertebrate assemblage and their habitats in Lease Area OCS-A 0522, the OECC, and the surrounding region.
- To supplement existing data and address data gaps, Vineyard Wind is conducting trawl and drop camera surveys within Lease Area OCS-A 0522. Vineyard Wind is also collecting benthic habitat data via surficial and subsurface sonar systems, underwater video, and benthic grab samples during G&G surveys in the Lease Area.
- Vineyard Wind will seek to work with stakeholders, including regulatory agencies, to identify data gaps to be addressed through surveys or permitting applications.
- Vineyard Wind will continue working with the region's fisheries interests to identify research priorities that will inform the design and effort of studies to evaluate Project-related impacts.
- Vineyard Wind will continue to work with stakeholders, including regulatory agencies, commercial fishermen, recreational fisherman, and the F-TWG, to identify data gaps to be addressed through surveys or permitting applications.

3.7 Data availability

This section should describe how fisheries data will be made available in accordance with Section 2.2.6 of the RFP.

- Vineyard Wind will make non-proprietary environmental and fisheries data publicly available in a format and manner best suited for efficient distribution.
- Through ROSA and the Regional Science Entity, Vineyard Wind plans to work with stakeholders and other offshore wind developers to find ways to streamline and standardize available data across all lease areas to further support independent research and collaborative science.
- Vineyard Wind plans to make all fisheries monitoring data generated by the Project publicly available on its website at: <u>https://www.vineyardwind.com/fisheries-science</u>.

4.0 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.

- Vineyard Wind is committed to supporting collaborative research with the fishing industry to collect ecological and/or fishing data and will continue to work with a wide array of fisheries interests, including members of the F-TWG, to identify collaborative research opportunities.
- Vineyard Wind will continue to identify opportunities to support collaborative research through the engagement processes described above and below.
- Vineyard Wind will build on the collaborative research efforts already underway among adjacent MA WEA and RI/MA WEA developers. This will occur through ROSA, the RWSE, and in partnership with leading academic and research institutions, subject matter expertise within agencies, and other engaged parties. These parties are well-represented within the F-TWG, and Vineyard Wind anticipates consulting with the F-TWG as part of this commitment.

4.2 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 sensitivities and/or the impacts of offshore wind energy development on fish, invertebrates and fisheries for the purpose of publication in peerreviewed journals.

- Vineyard Wind will review any requests for coordination with third-party supported scientists on a case-by-case basis to the extent that such requests do not concern environmental and fisheries data that Vineyard Wind already intends to make public, as described in Section 3.7.
- Vineyard Wind has already responded to environmental data requests from NYSERDA and numerous others and will continue to do so.

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.

• Vineyard Wind will seek to explain why identified data types are considered commercially sensitive.

- Vineyard Wind may impose restrictions on data provision or site access to protect competitively sensitive information, maintain site security, and ensure safety. All requests for such information will be considered and discussed with the requestor and not unreasonably denied.
- Vineyard Wind notes that some data, while not proprietary, may be time consuming or costly to produce depending on the specific request and the primary format it was collected in. Vineyard Wind will work to advance such requests, but also hopes that the regional science entities will make accessing data from all developers easier and more standardized to, at least in part, address this potential issue.

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.

- Vineyard Wind has made a financial commitment to leverage third-party environmental research funding related to fish, invertebrates, and fisheries. The details of this commitment will be finalized and announced at a future date.
- Vineyard Wind also plans to carefully consider all funding opportunities that arise through the regional science entities (RWSE and ROSA). These groups will be raising funds from other entities and, with support from offshore wind developers, will be able to expand the scope and impact of their efforts to better under the potential environmental effects of offshore wind energy development.

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.

- Vineyard Wind is currently engaged in a number of collaborations with third-party researchers in support of monitoring activities and assessing impacts, including the following:
 - Vineyard Wind is working with SMAST to support fisheries-related monitoring activities in Vineyard Wind's lease areas.
 - Vineyard Wind is working with APEM and Biodiversity Research Institute to conduct aerial digital surveys and boat-based avian surveys in Vineyard Wind's lease areas. Vineyard Wind is also conducting an additional survey over a nearshore avian "hotspot" to continue to improve species identification from aerial digital surveys.

- Vineyard Wind has committed \$3 million to a marine mammals and innovation fund to support the development and demonstration of innovative methods and technologies to enhance marine mammal protections.
- Vineyard Wind has made a financial commitment to support fisheries research and education led by the University of Connecticut's Department of Marine Sciences in conjunction with the Connecticut Initiative on Environmental Research of Offshore Wind, which aims to improve the understanding of environmental impacts from offshore wind.
- Vineyard Wind has made a financial commitment to Mystic Aquarium to further the understanding of underwater noise generated by offshore wind projects and the potential impacts on cetacean and pinniped behavior, hearing, and physiology.
- Vineyard Wind has partnered with Greentown Labs, the largest climatetech startup incubator in North America, to launch the Offshore Wind Challenge, an accelerator program focused on advances in marine mammal monitoring, specifically for data collection and real-time transmission or data analysis.
- Vineyard Wind has partnered with the New England Aquarium Anderson Cabot Center for Ocean Life to document highly migratory species presence across the MA WEA and RI/MA WEA with help from the pelagic recreational fleet.
- Vineyard Wind has partnered with Orsted, Equinor, Mayflower, Massachusetts Clean Energy Center (MassCEC), and the New England Aquarium to continue the Northeast Large Pelagic Survey Collaborative aerial surveys for large whales and sea turtles.
- Vineyard Wind is participating in formation of a Regional Science Entity to advance regional understanding of avian and marine mammal species' relationship with offshore wind.
- Vineyard Wind is a founding board member and council member of ROSA and has committed to both start-up and on-going funding support of that organization.

5. Proposed Mitigation of Impacts to Benthic/FisheriesResources

5.1 Potential impacts/risks and mitigation measures by project stage

The table below should list the potential impacts and risks to benthic/fisheries 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.

Dotontial Impacts	Proposed Mitigation Measures ¹		Phase*				
Potential Impacts	Proposed Mitigation Measures		2	3	4		
Micro-siting conflicts with habitats and fishery resources	 Vineyard Wind will seek input from regulatory authorities, the fishing industry, and maritime industry to locate foundations and cable routes in the least impactful manner that is practicable. To the greatest extent feasible, Vineyard Wind will avoid sensitive habitats when siting offshore cables. The WTGs and electrical service platform (ESP) will be widely spaced, leaving a vast majority of the Offshore Wind Generation Facility site undisturbed by WTG and ESP installation. Vineyard Wind has and will continue to conduct geophysical, geotechnical, and environmental surveys to inform the Project's design and layout. 	x	x				
Temporary, alteration of the seabed and localized increases in noise and turbidity	 Vineyard Wind will seek to use noise attenuation technologies to reduce sound from pile driving of foundations (if such methods are used) Scour protection may be installed around foundations, where necessary, to minimize scouring and sediment suspension around foundations. As practicable, Vineyard Wind will minimize underwater noise during pile driving through a soft-start, which allows fish time to move away from the area. Other mitigation measures implemented to protect marine mammals and sea turtles from underwater noise will also protect fish species. Vineyard Wind will perform sediment dispersion modeling to assess the potential impacts of cable installation activities. 		x				

Detential Increases		Phase*					
Potential Impacts	Proposed Mitigation Measures ¹		2	3	4		
	 In nearshore areas where sensitive resources are located near the potential landfall sites, horizontal directional drilling may be used to minimize disturbance of coastal habitats by drilling underneath them instead of through them. Use of mid-line anchor buoys will be considered, where feasible and considered safe, as a potential measure to reduce potential impacts from anchor line sweep. 						
Long-term changes to seabed habitat	 Vineyard Wind will, to the extent possible, avoid sensitive benthic habitats. The addition of foundations and scour protection, as well as cable protection in some areas, may act as an artificial reef and provide rocky habitat previously absent from the area. 		x	x	x		
Electromagnetic Fields (EMF) Impacts	 Vineyard Wind will use proper shielding to reduce EMF. This can be achieved through sheathing and burial of cables; where sufficient burial depth cannot be achieved, the cables can be covered by cable protection (which would shield EMF). Vineyard Wind expects to conduct EMF modeling and assessments to identify potential mitigation requirements as part of the permitting process. 		Х	x			
Cable Burial	 Vineyard Wind will bury offshore cables to an appropriate minimal depth to reduce exposure risk. If depth cannot be reached, Vineyard Wind will add protective materials over the cable. Vineyard Wind will evaluate cable burial techniques based on their ability to maximize the likelihood of achieving sufficient cable burial, minimize the need for cable protection, and minimize suspended sediments during installation. Vineyard Wind intends to avoid or minimize the need for cable protection to the greatest extent feasible. 		x				

measures will be determined pursuant to applicable permitting processes and may vary from the list provided herein.

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 resources. Specifically, describe the key types of information and design decisions where feedback will be solicited from stakeholders.

- Vineyard Wind will coordinate with the F-TWG to address concerns and mitigate impacts to benthic/fisheries resources.
- Upon request, Vineyard Wind will provide a detailed, step by step breakdown of the process used to create the Project layout.
- Vineyard Wind will incorporate lessons learned from Vineyard Wind 1 and Park City Wind to facilitate stakeholder consultations related to benthic and fisheries resources along with design decisions for the Project.

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 fisheries and proposed mitigation measures. To this end, this section should describe 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. 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 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.

Detential Immedia	Proposed Mitigation Measures ¹	Phase*					
Potential Impacts	Proposed Mitigation Measures			3	4		
Fishing gear loss	 Vineyard Wind will seek consultation with regulatory authorities and fisheries stakeholders for the development and use of a Gear Loss Prevention and Claim Procedure. 	х	х	х	Х		
Navigational safety concerns	 Vineyard Wind will seek consultation with appropriate regulators, the F-TWG and fishing community, to minimize the overall area of temporary closed areas. Vineyard Wind will incorporate best practices and lessons learned from Vineyard Wind 1 and Park City Wind into construction and operational protocols for the Project. 	x	x	x	x		
Displacement/loss of access to traditional fishing grounds during survey and construction activities	 Vineyard Wind will coordinate with fishing stakeholders to determine spatial and temporal use. Vineyard Wind shall, to the extent practicable, avoid heavily fished areas. Vineyard Wind will endeavor to minimize potential disruptions to fishing activities from site assessment and construction activities. 	Х	Х	x	x		
EMF Impacts	 Vineyard Wind will use proper shielding to reduce EMF. This can be achieved through sheathing and burial of cables; where sufficient burial depth cannot be achieved, the cables can be covered by cable protection (which would shield EMF). Vineyard Wind expects to conduct EMF modeling and assessments to identify potential mitigation requirements as part of the permitting process. 		х	x			
Cable Burial	 Vineyard Wind will bury offshore cables to an appropriate minimal depth to reduce exposure risk. If depth cannot be reached, Vineyard Wind will add protective materials over the cable. 		x				

Dotontial Impacts	Descrete di Dalatan Basaran 1	Phase*					
Potential Impacts	Proposed Mitigation Measures ¹	1	2	3	4		
	 Vineyard Wind will evaluate cable burial techniques based on their ability to maximize the likelihood of achieving sufficient cable burial, minimize the need for cable protection, and minimize suspended sediments during installation. Vineyard Wind intends to avoid or minimize the need for cable protection to the greatest extent feasible. 						
Impacts to sensitive areas	 Vineyard Wind will collaborate with state regulatory authorities and key stakeholders to collect data and avoid sensitive areas to the extent that is reasonably practicable. To the greatest extent feasible, Vineyard Wind will avoid sensitive habitats when siting offshore cables. The WTGs and ESP will be widely spaced, leaving a vast majority of the Offshore Wind Generation Facility site undisturbed by WTG and ESP installation. Vineyard Wind has and will continue to conduct geophysical, geotechnical, and environmental surveys to inform the Project's design and layout. 	x	x				

*Phase: 1: Survey/Define Project Envelope/Permitting; 2: Construction; 3: Operation; 4: Decommissioning

 The proposed mitigation measures described in the table are preliminary in nature and subject to review and approval from jurisdictional agencies in accordance with regulatory and permitting requirements. Final mitigation measures will be determined pursuant to applicable permitting processes and may vary from the list provided herein.

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.

- Vineyard Wind will endeavor to bury export cables to sufficient to minimize exposure risk. If the "appropriate depth" cannot be reached, Vineyard Wind will add protective materials over the cable which to the extent practicable also allows for fishing tooccur.
- Vineyard Wind has proposed a preliminary Project layout with 1 x 1 nautical mile spacing between WTGs, and design elements aimed at minimizing the potential loss of fishing gear due to snags on foundation structures, associated cables and cable protection, or related structures.
- Vineyard Wind will incorporate lessons learned from Vineyard Wind 1 and Park City Wind into avoidance and mitigation measures for fishing gear loss for Liberty Wind.
- Any potential gear snags will be communicated to regulatory authorities and through fisheries communication channels listed above.

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 and appeals of the claim and appropriate compensation of impacted parties.

- Vineyard Wind will work with the F-TWG and fishing community to establish the appropriate procedures in advance of the start of construction activities. When practical, the procedures will be standardized across projects, fisheries, gear types, and geographic regions.
- Vineyard Wind will incorporate lessons learned from the fishing gear loss claims procedures established for Vineyard Wind 1 and Park City Wind into the procedure established for the Project.

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.

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

- Vineyard Wind will coordinate with the F-TWG (in accordance with Section 12.04 of the Agreement) and stakeholders to address concerns and mitigate impacts to the fishing industry.
- Vineyard Wind will engage with the F-TWG, regional fishermen and other maritime stakeholders such as maritime experts, consultants and marine safety committees to refine Project layouts that aim to minimize impacts on existing fishing practices and facilitate ongoing access to traditional fishing grounds.
- Vineyard Wind will work with fishermen and other stakeholders through Vineyard Wind's dedicated fisheries staff to help address key concerns such as navigation, vessel access, and safety.
- Vineyard Wind will prepare a navigational risk assessment for the Project's COP.

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).

- Vineyard Wind's waste handling processes during the decommissioning of the Project will focus on re-use or recycling, with disposal as the last option.
- Vineyard Wind will collaborate with regulatory authorities and key fisheries stakeholder groups to better understand the effects and potential impacts associated with decommissioning.
- Vineyard Wind will consider best management practices available at the time of decommissioning to minimize any potential impacts to benthic/fisheries and the fishing industry.

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.

- Vineyard Wind will decommission the Project in accordance with all necessary laws and regulations and generate a detailed Project-specific decommissioning plan.
- Vineyard Wind will seek input on the detailed Project-specific decommissioning plan from regulatory agencies, fisheries and marine stakeholders, and local communities.
- Vineyard Wind will apply "lessons learned" during the construction and operation of the Project to the decommissioning plan, when appropriate.

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.

- At this early stage of the Project, Vineyard Wind is focused on refining environmental assessments, further evaluating potential design changes to avoid and/ or minimize impacts, and identifying potential mitigation approaches.
- In the event avoidance and mitigation strategies prove insufficient, Vineyard Wind would consider alternative approaches in consultation with impacted user groups and relevant federal and state agencies.

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.

• In line with best practice, the need for a fisheries compensation plan will be determined towards the later stages of the Project's permitting process in consultation with federal and state regulators, fisheries stakeholders, and the F-TWG through the processes and on-going communication efforts described in this FMP.

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.

- If a fisheries compensation plan is deemed necessary and appropriate, as part of the Project's permitting process, Vineyard Wind will work with relevant federal and state agencies and potential impacted user groups to develop a fisheries compensation plan that provides reasonable and fair compensation for impacts that cannot be sufficiently addressed through other means.
- In developing the fisheries compensation plan, Vineyard Wind will evaluate and consider different funding mechanisms and approaches, including the use of a nongovernmental third-party to administer any plan.
- Lessons learned from Vineyard Wind 1 and Park City Wind will be incorporated into any fisheries compensation plan(s) developed for the Project.

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.

- Throughout the Project's multi-year permitting process, Vineyard Wind will continue to assess potential risks to species as well as commercial and recreational fishermen and identify measures to avoid, minimize, or mitigate potential impacts in line with applicable federal and state permitting requirements. Stakeholder input as well as lessons learned from Vineyard Wind 1 and Park City Wind will inform this effort as well as refinement of the FMP.
- Vineyard Wind will engage with the F-TWG and fisheries organizations and use feedback in these discussions to evolve the FMP.
- Vineyard Wind anticipates continuing to support collaborative efforts on potential mitigation strategies in connection with Vineyard Wind 1, Park City Wind, and/or Liberty Wind.

9.2 Process for updating the FMP

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

- Vineyard Wind will continuously evaluate and evolve this FMP, in line with applicable federal and state permitting requirements, so that all the components of the FMP are complete and sufficient.
- Vineyard Wind expects that additional guidance and information will become available throughout the planning and regulatory process and, as such will continue to consider its relevance to the FMP at the appropriate intervals.
- Updates to the FMP are intended to reflect the results of iterative exchanges with members of the F-TWG, E-TWG, and other relevant stakeholders, working groups, and agencies.