OCS-A 0501

MASS USA

VINEYARD WIND

Request for Proposals New England Region, Real-time Passive Acoustic Monitoring Systems for North Atlantic Right Whales

Vineyard Wind LLC

700 Pleasant Street
Suite 510
New Bedford, MA 02740

May 7, 2019

TO: **Prospective Applicant**

FROM: **Matt Robertson**
Senior Manager of Environmental Affairs
Vineyard Wind LLC

DATE: **May 7, 2019**

RE: **Request for Proposals (RFP) for a network of PAM for the Vineyard Wind Project**

REQUEST FOR PROPOSALS	DATE
RFP ISSUE DATE	MAY 7, 2019
SUBMISSION DEADLINE FOR APPLICATIONS	JUNE 14, 2019

- To apply to this RFP, applicants must submit application materials to Matt Robertson at mrobertson@vineyardwind.com and Elizabeth Hansel at ehansel@vineyardwind.com.
- Applicants must designate primary and backup points-of-contact in the application materials with whom Vineyard Wind will communicate to conduct award negotiations.
- Parties considering applying are invited to submit their contact information to Matt Robertson at mrobertson@vineyardwind.com and Elizabeth Hansel at ehansel@vineyardwind.com to receive updates regarding this RFP.

Contents

1. Revision Control

Revision	Date	Prepared	Details
0	2019-05-03	Elizabeth Hansel	RFP for Issue
1	2019-05-31	Elizabeth Hansel	Submission Deadline Extension

2. Background & Project Overview

Vineyard Wind LLC (Vineyard Wind) is an offshore wind development company seeking to build the first large-scale offshore wind energy project in the United States. Vineyard Wind, based in New Bedford, Massachusetts, is 50% owned by funds of Copenhagen Infrastructure Partners and 50% by Avangrid Renewables. Avangrid Renewables is one of the nation's largest developer / operators of wind energy projects. Copenhagen Infrastructure Partners (CIP) manages over 5 billion Euros in clean energy investments including offshore wind, onshore wind, and offshore power transmission. The partnership of the two companies in Vineyard Wind brings extensive offshore wind expertise and substantial financial capability to developing, building, and operating wind projects offshore Massachusetts.

The Project is an 800 megawatt (MW) renewable energy project being developed in response to the 2016 energy legislation passed by the Massachusetts Legislature and signed by Governor Baker, and in response to evolving demand for offshore wind energy by other New England and northeastern states. Construction of the Project will serve the public interest by increasing the reliability and diversity of the regional and statewide energy supply while reducing greenhouse gas emissions from the regional power generation grid. The Project is expected to create a range of environmental and economic benefits for southeastern Massachusetts (including New Bedford, the Cape, and the Islands), Massachusetts as a whole, and the entire New England region.

The 166,886-acre (260.76 square miles) Lease Area is approximately 10 miles wide and 30 miles long. As shown in Figure 1, the long axis of the Vineyard Wind lease area is oriented northeast to southwest. The Project is located in a portion of the lease area, OCS-A 0501, and that lease area is part of the New England Wind Energy Areas, shown in Figure 2. At its nearest point, the lease area is approximately 14 miles from the southwest side of Nantucket and a similar distance from the southeast corner of Martha's Vineyard. Water depths in the lease area range from ~35-60 meters (~ 115 ft to 197 ft). Water depths gradually increase as distance from land increases. Water depths in the northern half of the lease area generally range from 38 to 49 meters (~115 to 161 ft). A map of the lease area and the anticipated project layout is provided in Figure 1. Vineyard Wind is in the process of developing and permitting the Project and anticipates onshore construction will commence during the fourth quarter of 2019 with offshore construction beginning in 2020.

In an effort to protect the North Atlantic Right Whale (NARW), Vineyard Wind signed an agreement ("eNGO agreement") with the Natrual Resources Defence Council (NRDC), the National Wildlife Federation (NWF), and the Conservation Law Foundation (CLF) (the "NGOs"), which establishes restrictions on construction and operation of the Project to reduce and avoid impacts on the critically endangered NARW.

The purpose of this RFP is to initiate the development of a regional PAMs system that will:

- Support the construction and operations of Vineyard Wind's first 800MW project, as described in the eNGO agreement.
- Provide baseline information about NARW activity in the region to refine existing institutional knowledge and supporting the advancement of NARW localization.
- Create a plan for a regional, long-term PAMs system that will support wind development in the region.

While the PAMs systems contemplated in this RFP is intended to support current and future offshore wind development in the New England region, it is expected that this system could provide better protections for NARWs in the New England region generally, for example, in support of avoiding vessel strikes or gear entanglement. The system could also enhance general understanding of NARW ecology.

Implementation of any proposal received will be funded by a combination of the Wind and Whales Fund (see section 3.1), Vineyard Wind, and potentially other collaborators. Vineyard Wind reserves the right to not accept or fund any or all proposals received under this RFP, as described below, and respondents may be requested to contract with entities aside from Vineyard Wind.

DISCLAIMER

Vineyard Wind reserves the right to negotiate any contract or agreement that may result from proposals received through this RFP. Vineyard Wind is not obligated to enter into any agreement pursuant to this RFP. Any funding provided through the Whales and Wind Fund will be determined through a yet to be established process, in accordance with Vineyard Wind's commitments in its "83C" proposal to the Massaschusetts utilities.

3. Summary

3.1 Wind & Whales Fund

As part of its winning Section 83C proposal, Vineyard Wind has proposed a $15,000,000 investment in the "Offshore Wind Accelerator Program". The Program has three major components: (1) a $10 million Offshore Wind Industry Energy Accelerator Fund; (2) a $2 million Windward Workforce Fund; and (3) a $3 million fund for advancing innovations for marine mammal protection, "the Wind and Whales Fund".

The Wind and Whales Fund will support the development and demonstration of innovative methods and technologies to enhance protections for North Atlantic right whales (NARWs) in relation to offshore wind development in the region. It is important to develop and adapt new technologies and practices to ensure effective protection for marine mammals, in particular the NARW, as the offshore wind industry grows on the East Coast. The Vineyard Wind project is providing an opportunity to test and demonstrate new tools and methods, so they are more likely to be available for future projects, and ideally provide enhanced protections even on the first Vineyard Wind project. Such tools and methods should include technologies to better detect and monitor whales to maintain exclusion zones and protect critically endangered species such as the NARW. Methods such as a PAM network to improve awareness when NARW are present in an area has been identified as likely being particularly useful for this purpose. By supporting innovation in this field, Vineyard Wind will support the state's planning and management efforts to integrate commercial-scale offshore wind while minimizing impacts to marine mammals. The fund is also expected to produce benefits that will be applicable to wider-scale marine mammal protections, aiding existing protection efforts while combating climate change, which is a significant threat to the health of marine mammal populations.

Funding to support any work identified through this RFP (if any) may come from the Wind and Whales Fund, Vineyard Wind, and possibly from other sources. However it is not anticipated that the entire $3 million of the Whales and Wind Fund will be allocated to the PAMS program indicated here.

3.2 NGO Agreement

On January 22, 2019, Vineyard Wind, the National Wildlife Federation, the Natural Resources Defense Council, and the Conservation Law Foundation (the "NGOs") (collectively the "Parties"), entered into a groundbreaking agreement for the protection of the NARW during the construction and operation of Vineyard Winds 800MW offshore wind farm. The agreement sets forth time of year restrictions on construction during the winter and early spring. In addition, the agreement requires Vineyard Wind to conduct extensive monitoring, including acoustic and visual monitoring, and sets guidelines for noise reduction during construction.

The NGO agreement also established commitments to collaborative science through the execution of the Wind and Whales fund. The commitments are as follows:

- Plan and conduct science and science-based conservation efforts in a collaborative and transparent manner, utilizing recognized marine experts, engaging relevant stakeholders, and making results publicly available;
- Contribute to the field of marine science and make efforts to address the priorities defined by regional and state ocean planning efforts; and
- Advance understanding of the effects of offshore wind development on marine and coastal resources, the effectiveness of mitigation measures (e.g., noise attenuation, thermal detection), and strategies to reduce other stressors facing affected species(e.g., incidental fishing gear entanglement reduction),such as the North Atlantic right whale.

It is anticipated that the protocols in this agreement may provide the basis for future protection protocols for the NARW as the New England offshore wind indiustry grows. As such, the PAMs system contemplated in this RFP are intended to be supportive of a long-term, regional approach to NARW protections in the region, whether by serving to demonstrate feasibility or technology readiness and/or the first phase of a multi-phased deployment of a system that eventually covers a wider area.

4. Goals

Vineyard Wind is soliciting proposals for the development of two types of PAM systems. The first type is a ”permanent” (i.e. on-going and covering the same area) PAM system utilizing stationary and/or mobile acoustic monitoring devices to determine the presence/absence of NARWs in real-time along a transit corridor or corridors, as shown in Figure 3. The second type is for real-time PAM systems that is more mobile and can be deployed rapidly to cover different areas, such as during a DMA event or during construction. Applicants may propose either or both a permanent transit corridor or rapid deployment/mobile monitoring system. Ideally these systems would also serve to localize NARW (i.e. determine specific location of individual(s)) in the general area, as opposed to simply confirming presence/absence within a specific corridor or zone.

An important goal of this solicitation is to develop the first part of a PAM monitoring network with the intention that the network can be ultimately be expanded by Vineyard Wind, other developers, the Commonwealth, the federal government, or other stakeholders in support of the further expansion of the East Coast’s offshore wind sector. Additionally, a goal of this solicitation is to be consistent with the eNGO agreement as discussed in section 3.2. The detections from this network will be publically available to provide protected species awareness to vessels associated with offshore wind, the fishing industry, the shipping industry, academia and other stakeholders. Collected data could also prove useful for scientific research and possibly more efficiently managing fixed gear fisheries with regard to NARW as well. A third goal is to be able to deploy and leverage the PAM program on Vineyard Wind’s first project to support the first two goals, and conversly for methods and tools identified through this solicitation to allow for a more effective PAM systems on the first Vineyard Wind project than might otherwise be feasible. A fourth goal is to progress towards a minimum standard of practice for future development of the offshore wind industry, as well as enhance protections of the NARW in a way that benefits other industries and further protection of NARWs.

During construction of the Project, the PAM network is anticipated to be operated at least between November 1st and May 14th and throughout any DMAs in the turbine area. The ”permanent” PAM system may not be able to be fully deployed until the turbine project is well progressed, e,g, power and data at turbine locations. During the operations and maintenance phase of the Project, the ”permanent” PAM system will operate continuously so as to detect presence of whales in the transit

corridor. Proposals shall include any necessary development of real-time localization and deployment of an operating network with as few units as possible to fullfill the objective of localizing NARW to provide advanced warning of their presence in the corridor. Power and data connections may be available at the turbine locations, and hydrophones mounted on or near the turbines would be acceptable. So as to minimize impacts on the region's fishing industry, use of permanent buoys should be minimized, or ideally avoided. Operational deployment will need to be in advance of the anticipated start of offshore construction in September 2020 (this date is subject to change). The mobile system would be deployed during construction, either in the turbine area or to clear routes used by construction vessels and not covered by the "permanent" system. Below are the goals for each system. Applicants may submit proposals for one or both systems.

Goals for Permanent Transit Corridor Monitoring:

A permanent network of PAMs is needed to continuously monitor for NARWs within the transit corridor used by project vessels during the operation and maintenance phase of the Project. Data collected by this system will be publicly available for the purposes of both real-time protection of NARW as well as for scientific analysis. Successful proposals shall demonstrate the following capabilities:

- Deployable year round;
- Capable of operating 24 hours per day;
- Ability to monitor the entire transit route in real-time in order to determine presence of NARW within the route corridor, an area of 34.5 square miles as shown in Figure 3; and
- Ideally, also capable of localizing NARWs in real-time, regardless of location relative to transit corridor.

Goals for Rapid Deployment system:

A rapid deployment system will be necessary to monitor for NARWs during construction,either in the turbine area and/or to clear corridors used by constructoin vessels, and when Dynamic Management Areas are established by NMFS. Successful proposals shall demonstrate the following capabilities:

- Deployable within 48 hours;
- Capable of operating 24 hours per day for several weeks;
- Does not require offshore crew to operate once deployed;
- Once deployed, data to be available to the lead PSO in real time; easily deployed;
- Capable of detecting NARWs within transit routes or designated project area; and
- Ideally capable to localize NARWs in real-time, regardless of location relative to area being cleared.

5. Eligibility & Conditions

Applicants must clearly demonstrate how their proposed technology will accurately localize NARWs in an offshore wind environment. To be considered for evaluation, the Applicant must meet the minimum criteria established below:

- Eligible applications include academic, public and private entities.
- For mobile PAM technologies, Vineyard Wind will consider a technology readiness level (TRL) of 4 or higher; and for stationary PAM technologies, Vineyard Wind will consider a TRL 5 or higher. (http://files.masscec.com/TECHNOLOGY%20READINESS%20LEVELS.pdf).

- Ability to sign a Non-discloure Agreement, if necessary to allow for integrating with the Project's SCADA system or other aspects of the Project that may be commercially sensitive. All biological data generated by the PAMS system is to be publicly avialable (data formats, protocols or algoritms used by the system may remain confidential).

Additionally, successful applicants will demonstrate:

- The proposed technology can be brought to a state-of-practice.
- The proposed technology is between a TRL of 4 and 7, see requirements above.
- The technology can be validated through a proof of concept.
- Innovative PAM technology sufficient to clear designated areas, and ideally localize NARWs regardless of location relative to designated area, in real-time.
- The technology can be operational by September 2020.

6. Estimated Timeline

Estimated Timeline	Date
RFP Issue Date	May 7, 2019
Submission Deadline for Applications	June 14, 2019

Please note, all dates, other than RFP issue date, are estimated and are subject to change. Updates will be submitted via email correspondance.

7. Proposal Requirements

The Applicants must provide an electronic copy of the technical proposal and cost estimate to Vineyard Wind. Cost estimates must be submitted in Excel spreadsheet format and the technical proposal in PDF format. The proposal is limited to 10 pages not including a cover page, table of contents, references, and resumes of key personnel. The proposal should be concise, well organized, and contain the information in the order presented below. Applicants may propose either or both a permanent transit corridor or rapid deployment monitoring system.

All proposals should contain public information only, except for the cost estimate per Section 7.6. Proposals should contain no confidential information, and any proposal received which contains information marked as confidential will be returned. If an Applicant believes that confidential information would be important to an evaluation of the proposal, the proposal should contain a description of the nature of the confidential information and why it would be important for evaluating a Proposal. Confidential information may be exchanged after initial evaluation of a non-confidential proposal, and once NDAs are implemented with relevant parties.

7.1 Applicant Overview

The Applicant shall provide a brief background of their organization and description of the proposed system.

7.2 Project Objectives and Technical Scope

The Applicant shall define clear and concise objectives of the proposal with a detailed description of the proposed technology. The application shall outline the proposed improvements to existing PAM technology, if any, and the scientific/technical approach to achieving that advancement. The Applicant shall provide a description of how the proposed technology and deployment design meets the specifc goals of this RFP. The Applicant must provide a detailed maintance plan and schedule. The Applicant must also indicate the most practicable response time to correcting a system failure, targetting no more than 24-hours. Project tasks shall be clearly and concisely defined in the scope. In addition, the applicant shall specify the expected outcomes of the project.

7.3 Feasibility

The Applicant shall demonstrate the technical feasibility and readiness level of the proposed technology. This should include an evidence-based description of the capabilities of the proposed technology and a description of how the Applicant plans to achieve the technology goals. The applicant must also provide an assessment of the technical risks associated with the proposed technology and associated mitigation strategies. In addition, the applicant should identify any technological limitations that directly hinder the achievement of the goals stated in section 4 and discuss relevant, alternative technologies or methodologies that Vineyard Wind should consider.

7.4 Qualifications and Experience

The Applicant must provide a summary of qualifications and experience of both the organization and key personnel, including:

- Experience in waters offshore of Massachusetts.
- Resumes of key personnel, including institution and date of graduation for all academic degrees and a brief description of relevant work experience. Resumes shall be limited to one page.
- Relevant organization certifications or qualifications.
- Provide a list of successfully completed or in-progress projects of a similar nature.

7.5 Project Schedule

The Applicant shall submit a proposed schedule delineating dates for completion of the major project tasks. It is important that the Applicant demonstrate to Vineyard Wind that ample resources exist to meet the project schedule. If an Applicant has multiple projects underway concurrently, it must clearly show separate resources or provide convincing evidence that it can meet the schedule.

7.6 Cost Estimate

This RFP is intended to identify systems and technologies that can best achieve the stated goals, and to provide budgetary estimates of such systems and technologies in order to identify proposals which warrant further evaluation and possible selection. It is anticipated that if a proposal is selected for further evaluations then detailed costs and prices will also be discussed and negotiated. Please provide a cost estimate for each of the proposal's tasks and the expected duration of the tasks. Cost estimates must be submitted in Excel spreadsheet.

8. How to Apply

Completed proposals should be submitted via e-mail to:

Matt Robertson
Senior Manager of Environmental Affairs
mrobertson@vineyardwind.com

and

Elizabeth Hansel
Manager of Environmental Affairs
ehansel@vineyardwind.com

Application materials should be submitted as a single PDF file. “Wind and Whales Fund_PAM Network_Company/Organization Name” should appear in the subject line of the Applicants emailed. Proposals should be submitted to Vineyard Wind NO LATER THAN 5 P.M. EST ON June 14, 2019.

9. Contact Information for Questions

All questions regarding this RFP should be directed to Matt Robertson at: mrobertson@vineyardwind.com and Elizabeth Hansel at: ehansel@vineyardwind.com.

Figure 1 Lease Area

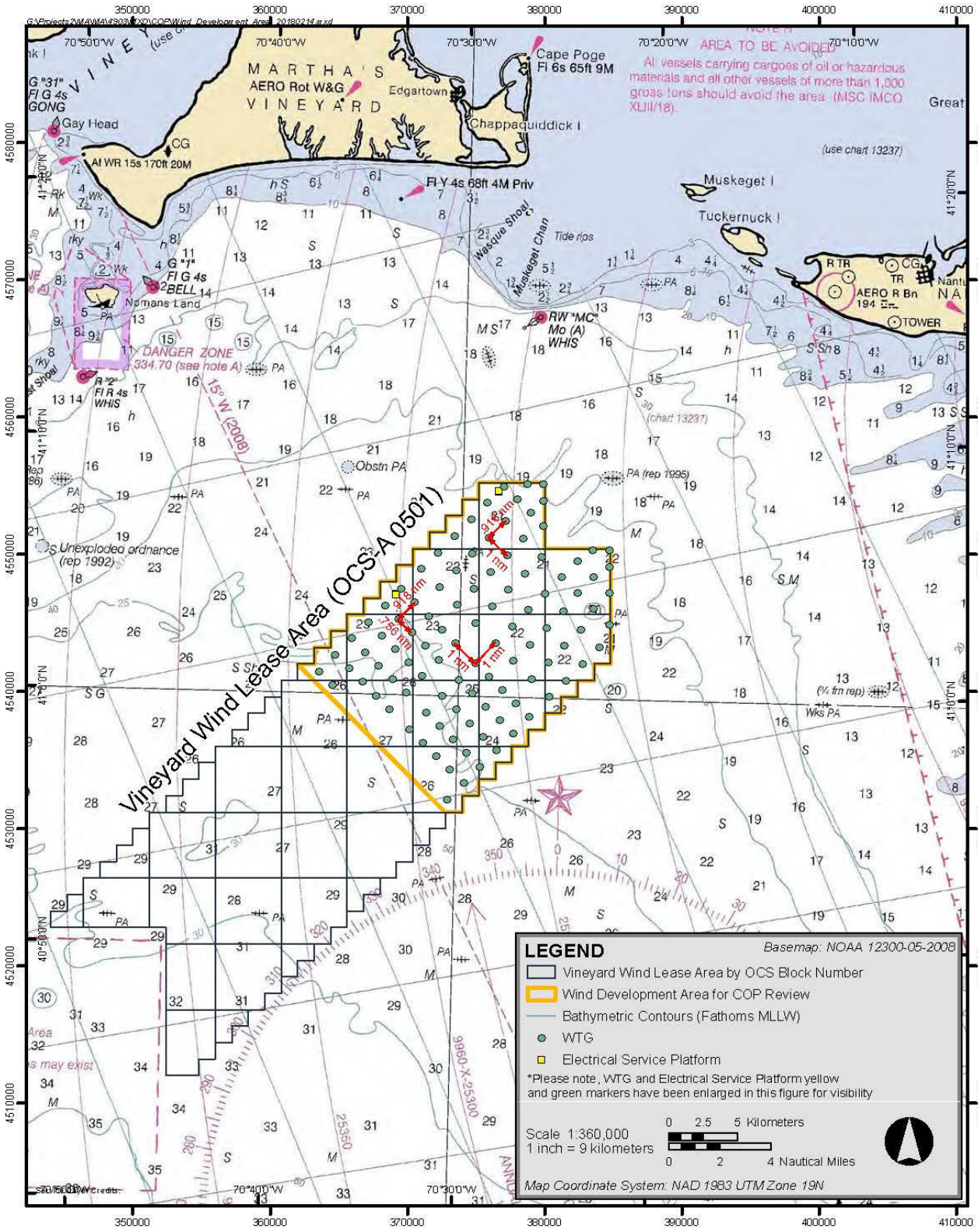


Figure 2 Wind Energy Area

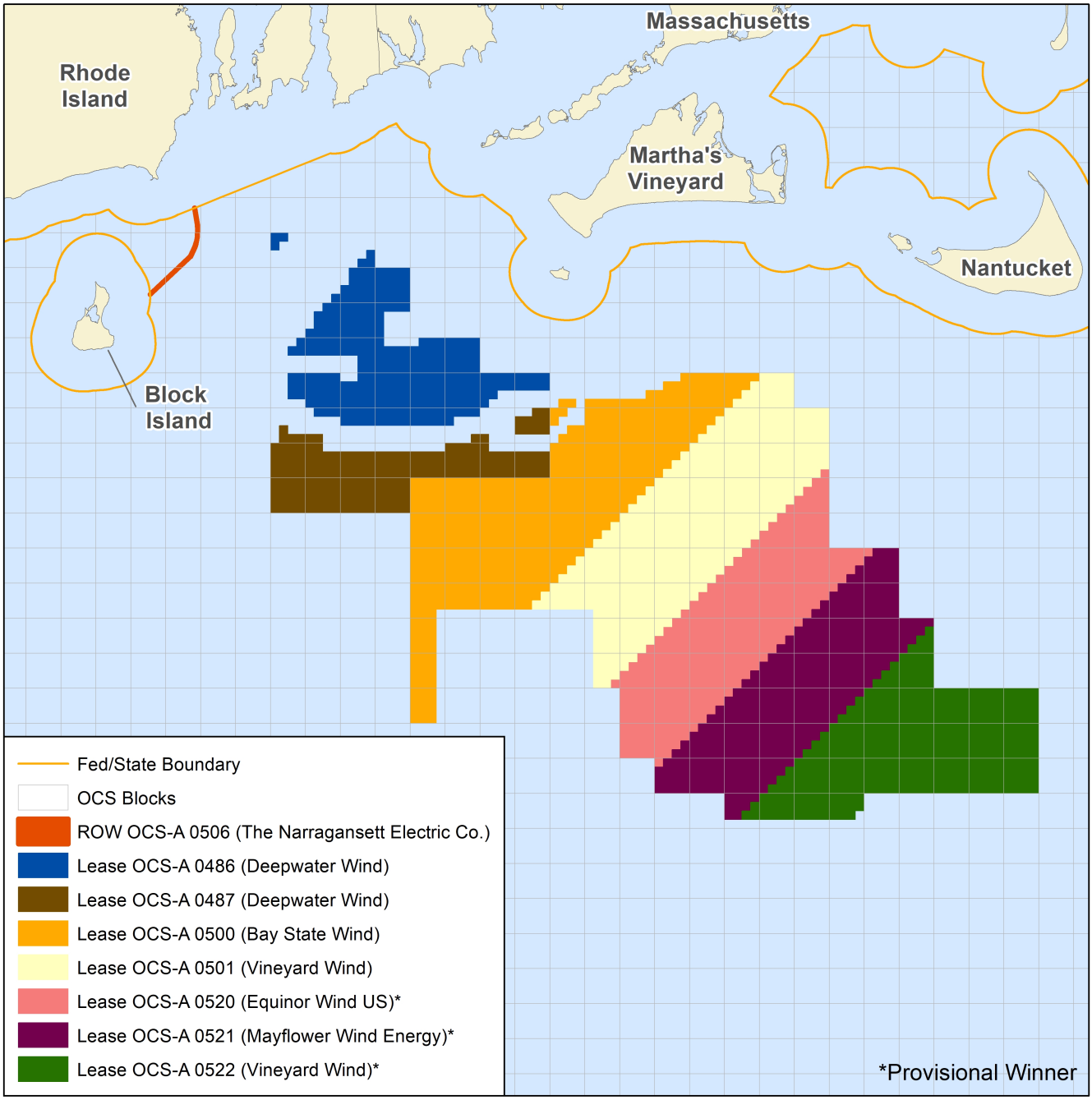


Figure 3 Transit Corridors

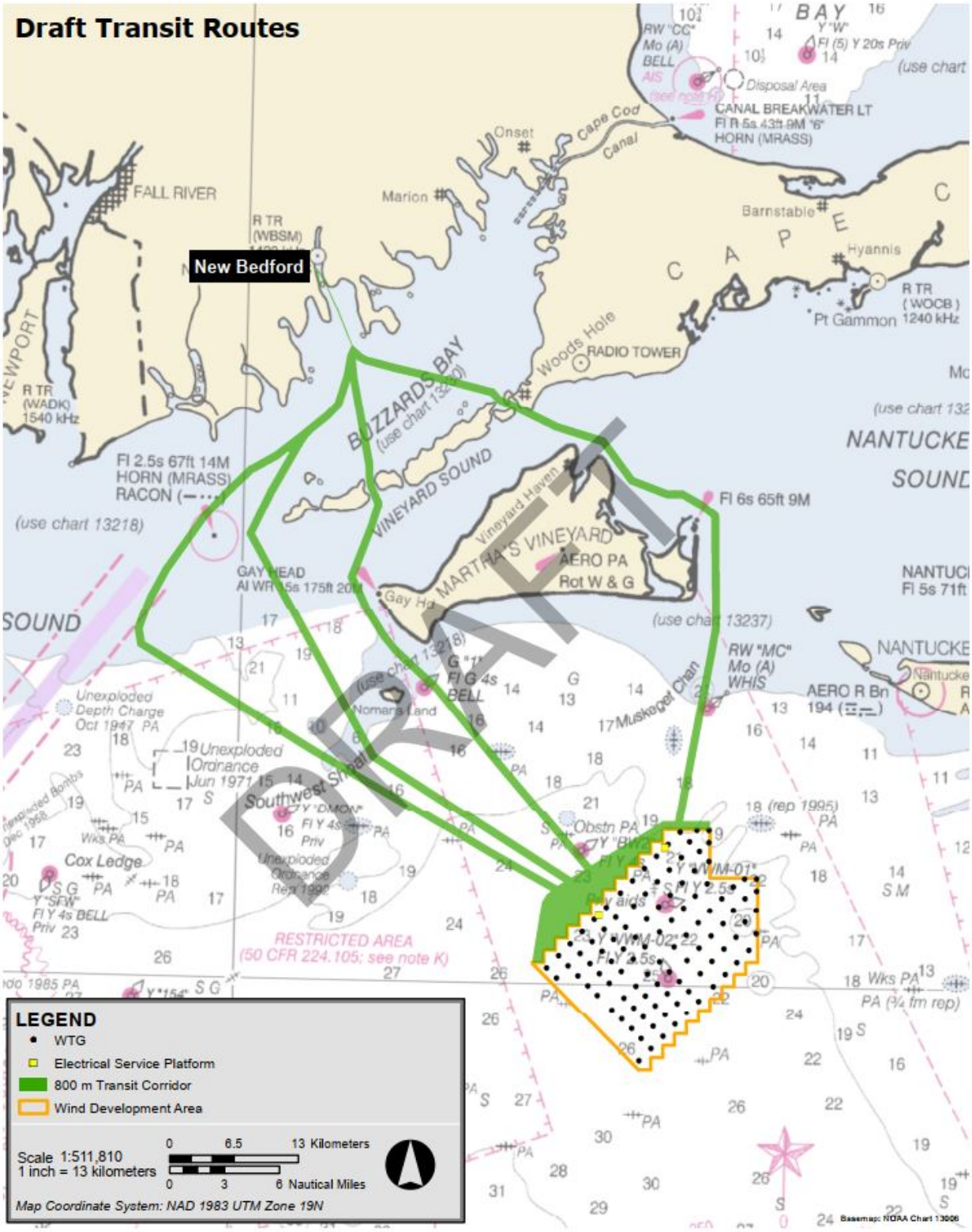
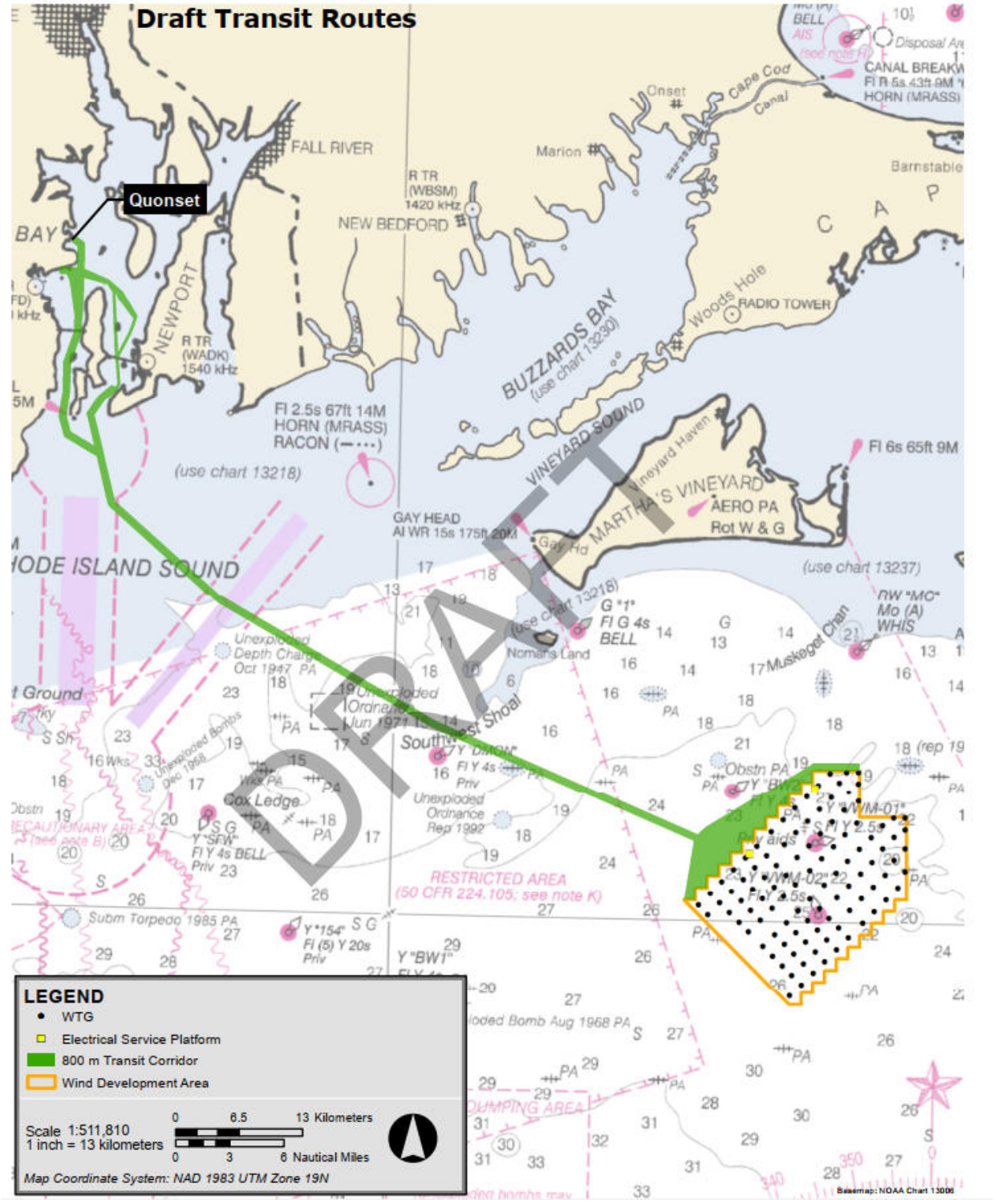


Figure 3 Transit Corridors (Cont.)



Vineyard Wind – NGO Agreement
January 22, 2019

This Agreement dated as of January 22, 2019, is made by and between VINEYARD WIND, LLC ("Vineyard Wind"), which has its principal place of business at Suite 510, Bank Plaza, 700 Pleasant Street, New Bedford, MA 02740, the NATIONAL WILDLIFE FEDERATION, the NATURAL RESOURCES DEFENSE COUNCIL, and the CONSERVATION LAW FOUNDATION (the "NGOs") (collectively the "Parties").

WHEREAS, the Parties are united in the belief that responsibly developed offshore wind power has a major role to play in America's energy future;

WHEREAS, the Parties recognize that wind energy does not have the negative climate effects of carbon emissions from other generation sources, and wind power thus helps to ameliorate impacts like ocean acidification, loss of sea ice, sea level rise, more extreme weather, and many other climate effects;

WHEREAS, the Parties are committed to working together to ensure that the development of much-needed wind electricity generation capacity off the nation's coasts will occur in a manner that avoids, minimizes, and mitigates adverse impacts on the health of our coastal and marine wildlife;

WHEREAS, the development of offshore wind energy provides a unique opportunity for offshore wind developers to collaborate with academic research institutions, government, environmental organizations, ocean user groups and other stakeholders to advance scientific research that enhances protections for the critically endangered North Atlantic right whale, including research on the effects, if any, of wind farm operations on right whale distribution and habitat use;

WHEREAS, Vineyard Wind is committed to developing offshore wind power projects in the U.S. with robust standards of environmental protection during pre-development, construction, and operations and maintenance activities, while making a meaningful contribution to science that can support the responsible development of America's vast offshore wind resources;

WHEREAS, the protection of the North Atlantic right whale is a top priority, the Parties recognize and agree that protective actions set forth herein must be done in a manner that ensures human health and safety when working in the offshore environment;

WHEREAS, while this Agreement pertains to protections for the North Atlantic right whale specifically, the Parties agree that the measures set forth herein may also provide additional protections to other marine mammals and protected species;

WHEREAS, this agreement is intended to serve as a model for similar agreements pertaining to offshore wind projects along the East Coast;

WHEREAS, the Parties agree that the commitments made herein apply specifically and solely to Vineyard Wind's first 800 MW project located in the northern portion of the lease area OCS-A-501 (the "Project Area"), and as more fully described in the Construction and Operations Plan submitted to the Bureau of Ocean Energy Management ("BOEM") dated December 19, 2017, as supplemented thereafter (the "Project").

NOW THEREFORE, in consideration of the foregoing the Parties agree as follows:

I. Protective Measures for North Atlantic Right Whales

Vineyard Wind agrees to implement the following measures for responsible offshore wind development in constructing and operating the Project.

A. Construction Activities

Table 1. Seasonal Restrictions on Pile Driving Activities

Timeframe	Mitigation Protocol
Red Period: January 1 – April 30	No pile driving
Yellow Period: November 1 – December 31; May 1 – 14	Enhanced mitigation protocol required
Green Period: May 15 – October 31	Comprehensive monitoring / clearance zone protocol required

1. Red Period: No Pile Driving

During this period of most likely presence of North Atlantic right whales, as specified in Table 1, no pile driving shall occur.

2. Yellow Period: Enhanced Mitigation Protocol for Pile Driving

During the times of likely presence of North Atlantic right whales, as specified in Table 1, an Enhanced Mitigation Protocol will be implemented during each day that pile driving is scheduled to take place. This will include:

a) Pile driving shall not be initiated at night or when the clearance zone cannot be visually monitored, as determined by the lead Protected Species Observer (hereafter, "PSO")[1] on duty. Pile driving may continue after dark only if the action began during the day and must proceed for human safety or installation feasibility[2] reasons;

b) A clearance zone for North Atlantic right whales shall extend 10,000 meters in all directions from the center of the pile. Pile driving activities shall not be initiated when there is either a visual observation or acoustic detection of one or more North Atlantic right whales within the clearance zone through (i.), (ii.), or (iii.) of this section, and shall be shut-down under either of these circumstances unless it must proceed for human safety or installation feasibility reasons.

i. Real-time passive acoustic monitoring ("PAM")[3], assuming a detection range of 10,000 meters, shall be undertaken from a vessel other than a pile driving vessel, or from a stationary unit, to avoid the hydrophone being masked by the pile driving vessel or development-related noise and to ensure that the clearance zone is clear of North Atlantic right whales. PAM shall begin at least 60 minutes prior to commencement of pile driving and shall be conducted throughout the time of pile driving activity; and

ii. There shall be vessel-based PSOs stationed at the pile driving site. There shall be a minimum of four PSOs following a two-on, two-off rotation, each responsible for scanning no more than 180° per pile driving event. Observation shall begin at least 60 minutes prior to the commencement of pile driving and shall be conducted throughout the time of pile driving activity; and

iii. Between May 1 – 14, a track-line survey fully covering the clearance zone to detect the presence of North Atlantic right whales must be completed prior to commencement of pile driving using at least one of the following methods:

[1] PSO refers to an individual with current National Marine Fisheries Service ("NMFS") certification as a Protected Species Observer.

[2] Installation feasibility refers to ensuring that the pile installation event results in a usable foundation for the wind turbine (*e.g.*, installed to the target penetration depth without refusal and with a horizontal foundation/tower interface flange). In the instance where pile driving is already started and a PSO recommends pile driving be halted, the lead engineer on duty will evaluate the following: 1) Use the site-specific soil data and the real-time hammer log information to judge whether a stoppage would risk causing piling refusal at re-start of piling; and 2) Check that the pile penetration is deep enough to secure pile stability in the interim situation, taking into account weather statistics for the relevant season and the current weather forecast. Determinations by the lead engineer on duty will be made for each pile as the installation progresses and not for the site as a whole. This information will be included in the reporting for the Project.

[3] Throughout this agreement "PAM" refers to a real-time passive acoustic monitoring system, with equipment bandwidth sufficient to detect the presence of vocalizing North Atlantic right whales.

- An aerial survey, weather permitting (based on safe flying conditions), conducted once the lead aerial observer[4] determines adequate visibility based on standardized environmental parameters (*e.g.*, glare, sea state, wind speed, etc.); or
- A vessel-based survey carried out by PSOs conducted during daylight hours.

c) Pile driving may resume upon confirmation that all North Atlantic right whales have departed the clearance zone:

i. May 1 – 14: after one day of monitoring using methods described in (b.i.), (b.ii.), and (b.iii.) of this section.

ii. November 1 – December 31: methods listed under (b.i.) and (b.ii.) of this section may be used by the lead PSO on duty to confirm that the whales have departed the 10,000 meter zone; if so, piling may commence following observance of the clearance zone monitoring protocol described in (b.i.) and (b.ii.).

3. Green Period: Comprehensive Monitoring / Clearance Zone Protocol for Pile Driving

During this period of less likely presence of North Atlantic right whales, as specified in Table 1, a Comprehensive Monitoring / Clearance Zone Protocol will be implemented during each day that pile driving is scheduled to take place. This will include:

a) Pile driving shall not be initiated at night or when the clearance zone cannot be visually monitored, as determined by the lead PSO on duty. Pile driving may continue after dark only if the action began during the day and must proceed for human safety or installation feasibility reasons; and

b) A clearance zone for North Atlantic right whales shall extend a minimum of 1,000 meters in all directions from the center of the pile. Pile driving activities shall not be initiated when there is either the visual observation or acoustic detection of one or more North Atlantic right whales within the clearance zone through (i.) and (ii.) of this section and shall be shut down under either of these circumstances unless it must proceed for human safety or installation feasibility reasons. If a shut-down is implemented, pile driving may resume upon confirmation that all North Atlantic right whales have departed the clearance zone after 60 minutes of monitoring through (i.) and (ii.) of this section.

[4] The lead aerial observer shall be selected from a roster of qualified lead aerial observers who are available for duty with 12 hours' notice. This roster to be provided by either the New England Aquarium, the Center for Coastal Studies, National Oceanic and Atmospheric Administration ("NOAA"), or other organizations recommended by the organizations listed in this sentence. The Project will use only observers from this roster to the extent they are available at the time needed to perform the monitoring.

i. Real-time PAM will be implemented at least 60 minutes prior to pile driving. PAM will be undertaken from a vessel other than the pile driving vessel, or from a stationary unit, to avoid the hydrophone being masked by the pile driving or other development-related noise; and

ii. There shall be a minimum of four PSOs stationed at the pile driving site, following a two-on, two-off rotation, each responsible for scanning no more than 180° per pile driving event. Observation will begin at least 60 minutes prior to the commencement of pile driving and shall be conducted throughout the period of pile driving activity.

4. Installation of Jacket Foundations

No more than two jacket foundations will be installed.

B. Geophysical Surveys During Construction and Post-Construction

This section does not refer to any geophysical surveys carried out as part of site assessment and characterization ("SAC") stage of offshore wind development. The Parties believe further discussion is necessary to agree upon feasible protocols for SAC surveys that would allow Vineyard Wind to meet BOEM geophysical survey requirements.

Table 2. Seasonal Restrictions on Geophysical Surveys During Construction and Post-Construction

Timeframe	Mitigation Protocol
Red Period: January 1 – May 14	No geophysical surveys with RMS sound pressure levels > 180 dB re 1 uPa at 1 meter for equipment that operates between 7 Hz and 35 kHz unless with Enhanced Mitigation Protocol
Green Period: May 15 – December 31	Comprehensive monitoring / clearance zone protocol required

1. Red Period: No Surveys or Surveys with Enhanced Mitigation Protocol

During this period, as specified in Table 2, no surveys with RMS sound pressure levels > 180 dB re 1 uPa at 1 meter for equipment that operates between 7 Hz and 35 kHz shall occur. An exception can be made for infrequent geophysical surveys that are essential during the construction and micro-siting of the Project to ensure proper installation or maintenance of the Project post-construction. In these instances, the following enhanced mitigation protocol shall be implemented:

a) A clearance zone for North Atlantic right whales shall extend 1,000 meters in all directions from the survey vessel;

b) Surveys shall not be initiated at night or when there is either a visual observation or an acoustic detection (confirmed by visual observation) of one or more North Atlantic right whales within the clearance zone and shall be shut down under either of these circumstances. After daylight hours, surveys shall be shut down following an acoustic detection only. Observation and PAM shall begin at least 60 minutes prior to commencement of the survey and shall be conducted throughout the period of the survey activity. Surveying may resume upon confirmation that all North Atlantic right whales have departed the clearance zone after 60 minutes of both visual and acoustic monitoring; and

   i. Real-time PAM shall be undertaken in a manner that avoids masking of the North Atlantic right whale vocalizations by vessel noise, including use of a system that is independent from the survey vessel if necessary; and

   ii. There shall be a minimum of four PSOs following a two-on, two-off rotation, each responsible for scanning no more than 180°.

c) Survey equipment will commence following a ramp-up procedure and will be operated at the lowest source level feasible to meet survey requirements.

2. Green Period: Comprehensive Monitoring / Clearance Zone Protocol for Surveys

During this period, as specified in Table 2, a Comprehensive Monitoring/ Clearance Zone Protocol will be implemented during all surveys with RMS sound pressure levels > 180 dB re 1 uPa at 1 meter for equipment that operates between 7 Hz and 35 kHz. This will include:

a) A clearance zone for North Atlantic right whales shall extend 500 meters in all directions from the survey vessel and, to the extent feasible, shall be extended to 1,000 meters;

b) Surveys shall not be initiated when there is either a visual observation or an acoustic detection of one or more North Atlantic right whales within the clearance zone and shall be shut down under either of these circumstances. After daylight hours, surveys shall be shut down following an acoustic detection only. Visual and acoustic surveys shall begin at least 30 minutes prior to commencement of survey activity and shall be conducted throughout the period of the activity. Surveying may resume upon confirmation that all North Atlantic right whales have departed the clearance zone after 30 minutes of visual or acoustic monitoring; and

   i. Real-time PAM shall be undertaken in a manner that avoids masking of the North Atlantic right whale vocalizations by vessel noise, including use of a system that is independent from the survey vessel if necessary; and

ii. The clearance zone shall be monitored by at least one PSO and at least two PSOs if feasible.

c) Survey equipment will commence following a ramp-up procedure and will be operated at the lowest source level feasible to meet survey requirements.

C. Vessel Speed Restrictions

All Project-associated vessels shall adhere to the following speed restrictions:

1. A mandatory speed restriction of 10 knots shall be observed within Dynamic Management Areas ("DMAs") established by National Oceanic and Atmospheric Administration ("NOAA") Fisheries, with the exception of crew transfer vessels.[5]

2. A mandatory speed restriction of 10 knots shall be observed within DMAs established by NOAA Fisheries by crew transfer vessels, unless the following procedures result in confirmation that the North Atlantic right whales are clear of the transit route and Project Area for two consecutive days:

   (a) Vessel based surveys carried out by PSOs conducted during daylight hours and real-time PAM shall be undertaken, in a manner that avoids masking of the North Atlantic right whale vocalizations by vessel noise; or

   (b) An aerial survey, weather permitting (based on safe flying conditions), conducted once the lead aerial observer[6] determines adequate visibility based on standardized environmental parameters (*e.g.*, glare, sea state, wind speed, etc.) and real-time PAM shall be undertaken, when feasible, in a manner that avoids masking of the North Atlantic right whale vocalizations by vessel noise.

[5] A crew transfer vessel is a vessel whose principle purpose is to transfer technicians who work offshore, and the supplies and small-scale components used by these technicians, to and from a port facility and their offshore work location.

[6] The lead aerial observer shall be selected from a roster of qualified lead aerial observers who are available for duty with 12 hours' notice. This roster to be provided by either the New England Aquarium, the Center for Coastal Studies, NOAA, or other organizations recommended by the organizations listed in this sentence. The Project will use only observers from this roster to the extent they are available at the time needed to perform the monitoring.

(c) Following clearance from C. 2. (a.) and (b.), vessel transits conducted within a DMA will employ at least two observers[7] aboard the vessel to visually monitor for North Atlantic right whales. If a North Atlantic right whale is spotted within or approaching the transit route, vessels shall operate at less than 10 knots until the procedures in C. 2. (a.) and (b.) result in clearance of the transit route for two consecutive days.

3. From November 1 through May 14:

(a) A 10-knot speed restriction shall be observed by all vessels, with the exception of crew transfer vessels operating within and transiting to/from the lease area and vessels operating in Nantucket Sound (which has not been demonstrated by best available science to provide consistent habitat for North Atlantic right whales).

(b) A 10-knot speed restriction shall be observed by crew transfer vessels operating within and transiting to/from the Project Area (except while in Nantucket Sound, which has not been demonstrated by best available science to provide consistent habitat for North Atlantic right whales) unless the following measures are in place:

i. At least one observer,[8] and two when personnel are available, aboard the vessel to visually monitor for North Atlantic right whales; and

ii. Real-time PAM shall be undertaken in a manner that avoids masking of the North Atlantic right whale vocalizations by vessel noise.

iii. If a North Atlantic right whale is detected as a result of the monitoring measures identified in (i.) and/or (ii.) of this section, a 10-knot speed restriction shall be in effect for the remainder of the day.

(c) To the extent that a DMA occurs between November 1-May 14 the provisions in C. 1. and 2. apply.

D. Reporting

Vineyard Wind commits to report all visual observations and acoustic detections of vocalizing North Atlantic right whales to the National Marine Fisheries Service ("NMFS") or the Coast Guard within two hours of occurrence when feasible and no later than the end of their shift.

[7] During construction the observers shall be NMFS certified PSOs. During Project operations and maintenance, the observers shall have North Atlantic right whale observer training provided by a company utilized by NMFS for PSO training or recommended by the organizations listed in in footnote 6. Two individuals shall be designated during each vessel trip to conduct monitoring.

[8] See footnote 7.

E. Underwater Noise Reduction

Vineyard Wind is committed to employing technically and commercially feasible noise reduction and attenuation measures that minimizes impacts to North Atlantic right whales and other high-priority species. Vineyard Wind will implement attenuation mitigation to reduce sound levels by a target of 12 dB. A noise attenuation technology will be implemented (*e.g.*, Noise Mitigation System [NMS], Hydro-sound Damper [HSD], Noise Abatement System [AdBm], bubble curtain, or similar), and a second back-up attenuation technology (*e.g.*, bubble curtain or similar) will be on-hand, to be used if needed given results of field verification. For the Project, Vineyard Wind will not request Level A takes of a North Atlantic Right Whale. Vineyard Wind will inform and receive input from the other Parties as it identifies noise attenuation measures and technologies to be used for the Project.

F. Additional Mitigation Strategies

In addition to the above measures designed to avoid and minimize impacts to North Atlantic right whales, Vineyard Wind commits to considering other mitigation approaches aimed at overall species protection.

II. Commitment to Collaborative Science

Vineyard Wind has made a $3 million commitment to develop and deploy technologies that ensure heightened protections for North Atlantic right whales and other marine mammals as the U.S. offshore wind industry continues to grow. Vineyard Wind commits to implement the following principles when undertaking marine science and science-based conservation efforts:

A. Plan and conduct science and science-based conservation efforts in a collaborative and transparent manner, utilizing recognized marine experts, engaging relevant stakeholders, and making results publicly available;

B. Contribute to the field of marine science and make efforts to address the priorities defined by regional and state ocean planning efforts; and

C. Advance understanding of the effects of offshore wind development on marine and coastal resources, the effectiveness of mitigation measures (*e.g.*, noise attenuation, thermal detection), and strategies to reduce other stressors facing affected species (*e.g.*, incidental fishing gear entanglement reduction), such as the North Atlantic right whale.

III. Inclusion of Protective Measures in Agency Submittals

Where Vineyard Wind seeks state and federal authorizations to conduct Project activities that may potentially affect the North Atlantic right whale, Vineyard Wind agrees to propose mitigation strategies

consistent with the protective measures set forth herein as they relate to the activity for which authorization is sought. Vineyard Wind will also inform the relevant state and federal agencies of Vineyard Wind's voluntary commitments under this Agreement. To the extent that a state or federal agency declines to adopt, for regulatory purposes, a protective measure specified herein, Vineyard Wind will nevertheless implement the measure provided it does not conflict with regulatory requirements.

IV. Modeling and Adaptive Management

The intent of this agreement is to minimize disruption of normal feeding, breeding and migratory behaviors and prevent injury to right whales. The mitigation measures of this Agreement aim to lower risk from injury to a level approaching zero and to reduce other effects caused by marine noise significantly below that estimated in BOEM's December 2018 Draft Environmental Impact Statement ("DEIS") for Vineyard Wind. The Parties' expectation is that the mitigation measures included in this agreement will meet these goals. To confirm this before construction, Vineyard Wind agrees to re-run and share with the Parties its piling noise exposure model to incorporate the execution of mitigation measures in this Agreement and the Project parameters (*e.g.*, number of monopiles, number of jackets) planned to actually be built (as opposed to the permitting envelope analyzed in the DEIS). Should the revised modeling not demonstrate that impacts from construction are reduced to the levels described in this paragraph, the Parties will consider additional mitigation measures.

While this Agreement applies only to Vineyard Wind's 800 MW project located in the northern portion of the lease area OCS-A-501, the Parties recognize that Vineyard Wind intends to propose future projects. In a good faith effort to continue to work collaboratively and evaluate lessons learned from the Project subject to this Agreement, every two years, or if one of the Parties so requests, the Parties agree to review the scientific data on the occurrence, abundance, habitat use, and conservation status of North Atlantic right whales, particularly in the vicinity of the Project Area, along with any other relevant data, including information on new noise attenuation and monitoring technologies or practices that have become available. This review will inform future projects and agreements between the Parties. To the extent that new protective measures are identified relevant to this Project, Vineyard Wind agrees to evaluate their technical and commercial feasibility and implement them if appropriate.

V. Dispute Resolution

In the event of a dispute among the Parties concerning implementation of or compliance with any aspect of this Agreement, the initiating Party or Parties shall provide the other Party or Parties with a written notice outlining the nature of the dispute and the remedy that is sought. The Parties shall meet and confer, either in person or over the telephone, to work in good faith to attempt to resolve the dispute, including by modification of the agreement if all Parties agree. If agreement on the appropriate resolution of the dispute cannot be reached, the Parties reserve their right to withdraw from the agreement as a last resort.

VI. Term of Agreement

The Parties agree that the protective measures set forth herein will remain in place for five years unless extended or modified by mutual agreement of the Parties.

[SIGNATURE PAGE TO FOLLOW]

Vineyard Wind, LLC

By: _____

Name: Erich Stephens
Chief Development Officer

Date: January 22, 2019

Natural Resources Defense Council

By:

Name: Katherine Kennedy
Senior Director, Climate & Clean Energy Program

Date: January 22, 2019

National Wildlife Federation

By:

Name: Collin O'Mara
President & Chief Executive Officer

Date: January 22, 2019
NWF ID: 1901-041

Conservation Law Foundation

By:

Name: Priscilla Brooks, Ph.D.
Vice President and Director of Ocean Conservation

Date: January 22, 2019