# Supplement to the Finding of Adverse Effect
# For the Vineyard Wind 1 Project
# Construction and Operations Plan
# March 9, 2021

The Bureau of Ocean Energy Management (BOEM) is supplementing its documentation of Finding of Adverse Effects (Supplement) revised November 13, 2020, for the Vineyard Wind Construction and Operations Plan (COP), pursuant to 36 CFR 800.11, in order to address the Vineyard Sound and Moshup's Bridge Traditional Cultural Property (TCP) (Figure 1), pursuant to 36 CFR 800.5. This historic property was identified by the South Fork Wind Farm (SFWF) lessee and their consultants during the development of the SFWF report of Visual Effects on Historic Properties (VEHP); submitted to BOEM on January 26, 2021. Resolution of all adverse effects to historic properties will be codified in a Memorandum of Agreement (MOA), pursuant to 36 CFR 800.6(c). In addition, this Supplement explains BOEM's conclusion that the wind turbine generator (WTG) recently chosen for the Vineyard Wind 1 Project (the undertaking), the General Electric (GE) Haliade-X, does not warrant any revision to the Finding of Adverse Effects.

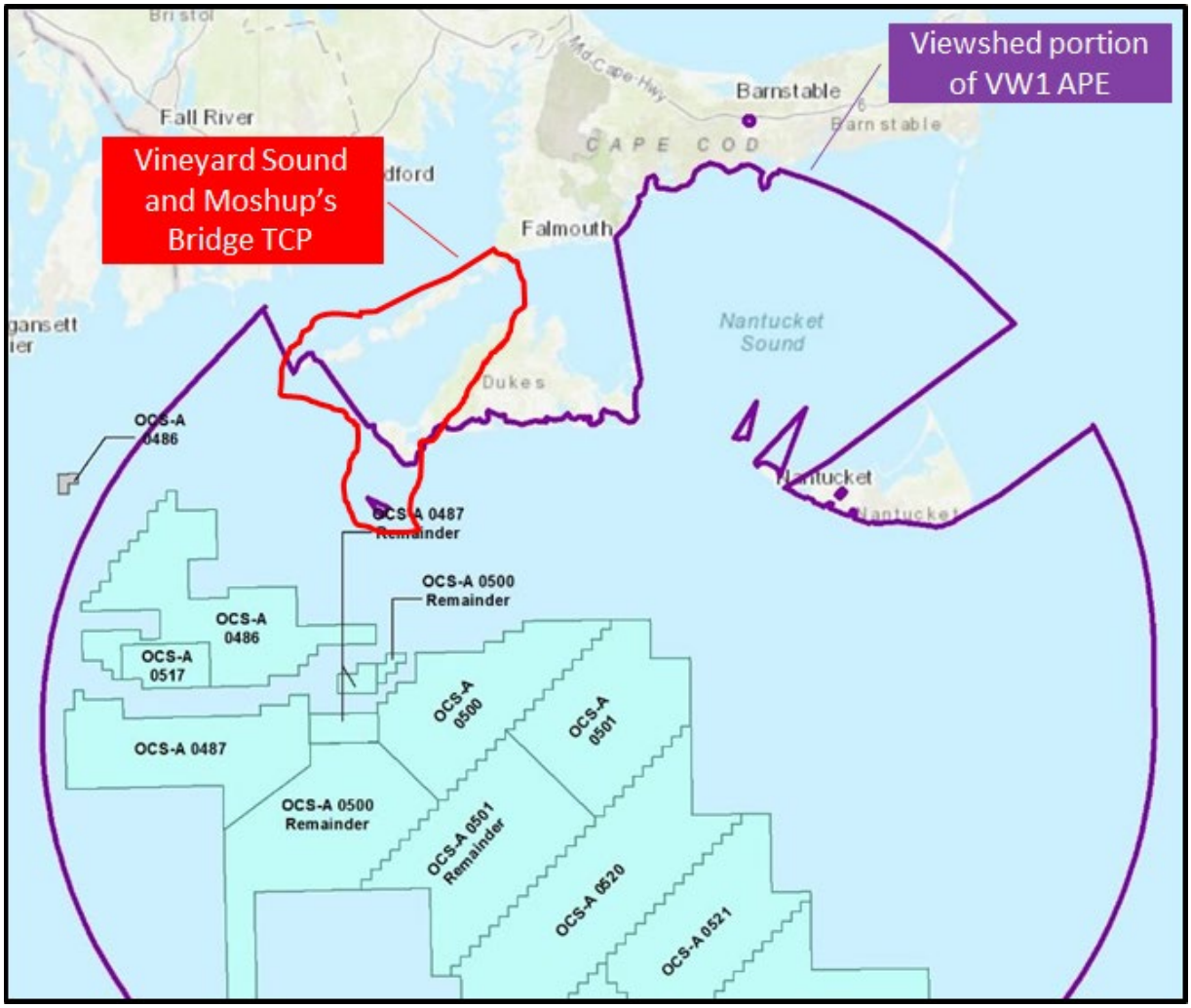



**Figure 1: Vineyard Sound and Moshup's Bridge TCP Viewshed (Red) in Relation to Vineyard Wind 1 Viewshed APE**

## 1. Description of the Undertaking

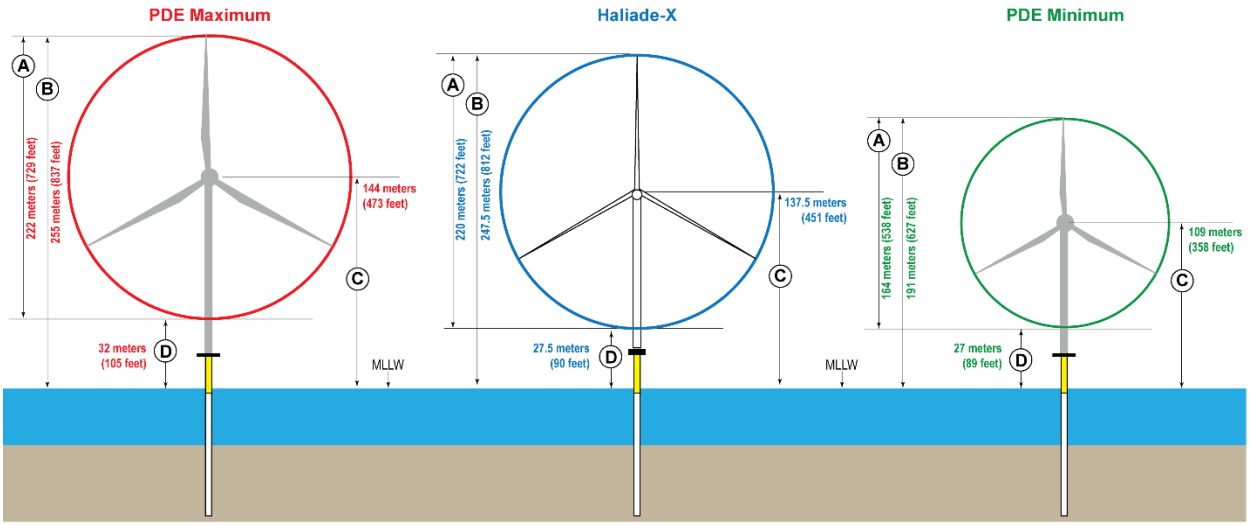
In its COP, Vineyard Wind LLC (Vineyard Wind) is proposing the construction, operation, and eventual decommissioning of an 800-MW wind energy project consisting of offshore WTGs (each placed on a foundation support structure), electrical service platforms (ESPs), an onshore substation, offshore and onshore cabling, and onshore operations and maintenance facilities. The description of the undertaking remains unchanged from and is described in greater detail with respect to the proposed activities in BOEM's Finding of Adverse Effect, available at: https://www.boem.gov/sites/default/files/documents/oil-gas-energy/Vineyard-Wind-Finding-of-Adverse-Effect.pdf.

### 1.1. Vineyard Wind's Section of the GE Haliade-X

On January 22, 2021, Vineyard Wind resubmitted its COP to BOEM, along with detailed design information concerning their selected GE Haliade-X WTG. In its letter, Vineyard Wind asserted that the selected WTG parameters fall within the project design envelope (PDE) analyzed in the Supplement to the Draft Environmental Impact Statement (SEIS), the Section 106 Finding of Adverse Effects, and the COP, along with its supporting materials. These include, but are not limited to, viewshed assessments and visual simulations, a Visual Impact Assessment (VIA), and multiple terrestrial and marine archaeological resources assessment reports. Vineyard Wind requested that BOEM resume its environmental review of the COP on that basis. Additional information on the undertaking for Vineyard Wind 1 Project is available at: https://www.boem.gov/vineyard-wind.

BOEM has independently reviewed the submitted information and has concluded that the relevant parameters of the Vineyard Wind 1 GE Haliade-X, as documented in Vineyard Wind's letter, fall within the parameters of the previously assessed PDE as presented in the SEIS and in the Finding of Adverse Effects. Although GE's website depicts maximum possible tower height parameters for the Haliade-X, the design that would be used for this particular undertaking does not utilize the maximum tower height. The maximum WTG height designed specifically for this undertaking will be reduced from 225 meters (m; 837 ft]) to 220 m (722 ft) above mean low water line at the maximum vertical extension of the WTG blade (Figure 2).

Because these parameters are fully within the previously assessed PDE, BOEM has determined that the terrestrial archaeological portion of the Area of Potential Effects (APE), the marine archaeological portion of the APE, and the viewshed portion of the APE remain adequately defined; the Section 106 undertaking adequately described; the analysis adequately conducted and documented; and the conclusions appropriately drawn. The assessments used for the COP, supporting materials, SEIS, Finding of Adverse Effects and the conclusions reached therein, remain valid. No change to the Finding of Adverse Effects is warranted, and BOEM has determined that it can resume its review under Section 106 of the National Historic Preservation Act using the existing materials.




| | PDE Maximum | Haliade-X | PDE Minimum |
|---|---|---|---|
| A = Rotor Diameter | 222 meters (729 feet) | 220 meters (722 feet) | 164 meters (538 feet) |
| B = Total Blade Tip Height above MLLW | 255 meters (837 feet) | 247.5 meters (812 feet) | 191 meters (627 feet) |
| C = Hub Height above MLLW | 144 meters (473 feet) | 137.5 meters (451 feet) | 109 meters (358 feet) |
| D = Tip Clearance during Operation Above MLLW | 32 meters (105 feet) | 27.5 meters (90 feet) | 27 meters (89 feet) |

**Figure 2: Schematic comparing dimensions and parameters of the assessed Project Design Envelope with the dimensions and parameters of the selected Vineyard Wind 1 GE Haliade-X turbine.**

## 1.2. Area of Potential Effect

BOEM defines the APE for approval of the COP to include the following geographic areas:

- The depth and breadth of the seabed potentially impacted by any bottom-disturbing activities, constituting the marine archaeological resources portion of the APE;
- The depth and breadth of terrestrial areas potentially impacted by any ground disturbing activities, constituting the terrestrial archaeological resources portion of the APE;
- The viewshed from which renewable energy structures, whether located offshore or onshore, would be visible, constituting the viewshed portion of the APE; and
- Any temporary or permanent construction or staging areas, both onshore and offshore, which may fall into any of the above portions of the APE.

For the reasons discussed in the previous section, the APE remains unchanged from and is described in greater detail with respect to the proposed activities in BOEM's Finding of Adverse Effect, available at: https://www.boem.gov/sites/default/files/documents/oil-gas-energy/Vineyard-Wind-Finding-of-Adverse-Effect.pdf.

## 2. Steps Taken to Identify Historic Properties

The steps taken to identify historic properties are described in greater detail with respect to the proposed activities in BOEM's Finding of Adverse Effect, available at: https://www.boem.gov/sites/default/files/documents/oil-gas-energy/Vineyard-Wind-Finding-of-Adverse-Effect.pdf. However, during the Section 106 consultation for another undertaking with an APE that overlaps this undertaking's APE, BOEM identified a new historic property that falls within the viewshed portion of this undertaking's APE. That historic property the subject of this Supplement.

## 2.1. NHPA Section 106 Consultations

Following resubmission of the COP on January 22, 2021, BOEM reinitiated the NHPA Section 106 process. In a letter dated February 4, 2021, BOEM transmitted the Finding of Adverse Effects for the Vineyard Wind COP to the NHPA Section 106 consulting parties for review and comment and made this documentation available for public inspection on its website. The Finding of Adverse Effects remains unchanged from its November 2020 form, when it was then transmitted and placed on BOEM's website for public inspection.

BOEM then hosted a final consultation meeting via Zoom with consulting parties on February 16, 2021. This meeting was used as an opportunity to present and describe the GE Haliade-X WTGs that have been selected for the undertaking, as well as to present information that was then known about the newly identified Vineyard Sound and Moshup's Bridge TCP. A detailed summary of the meeting and each of the consulting parties' comments can be found in Appendix A.

During a consultation with Federally recognized tribes held on February 24, 2021, between BOEM staff and the THPOs of the Mashpee Wampanoag Tribe and the Wampanoag Tribe of Gay Head (Aquinnah), the THPOs provided information on the cultural significance of Moshup to all Wampanoag People's and described his place in the oral histories of Tribes throughout New England. During this meeting, the THPOs emphasized the significance of the places associated with him and his actions to both the Mashpee Wampanoag Tribe and the Wampanoag Tribe of Gay Head (Aquinnah). Both tribes recommended that the Vineyard Sound and Moshup's Bridge TCP should be incorporated into a broader National Register of Historic Places (NRHP) TCP District that would include the Nantucket Sound TCP, the Vineyard Sound and Moshup's Bridge TCP, a TCP encompassing Nantucket Island, and any submerged landforms within the boundaries of these TCPs. Within this district, they requested each TCP have its own listing that details Moshup's activities at each location. Finally, they requested the boundaries be considered flexible to allow for future additions based on internal discussions amongst the Tribes and input from other Federally recognized Tribes. Government-to-government meetings are ongoing and will continue to discuss these issues further.

In accordance with comments from the Advisory Council on Historic Preservation (ACHP), BOEM will not make a final determination on proposed measures to avoid, minimize, and mitigate adverse effects until after the review period for the Finding of Adverse Effects and its Supplement have elapsed, so that all steps in the NHPA Section 106 process for all portions of the APE are completed. BOEM will continue consultations on appropriate means of resolving adverse effects during the 30-day review period for the Finding of Adverse Effects and its Supplement with all parties during that timeframe. At this time, BOEM has completed all steps for all other portions of the APE pursuant to 36 CFR Sections 800.3, 800.4, and 800.5.

# 3. Affected Historic Properties and Undertaking's Effects on Them

This section documents the affected elements of the Vineyard Sound and Moshup's Bridge TCP within the viewshed portion of the APE and the undertaking's effects upon it. Though the newly identified TCP falls within the Viewshed APE (see Figure 1) it does not, however, fall within the Marine Archaeological Resources APE or the Terrestrial Archaeological Resources APE of the undertaking.

## 3.1. Vineyard Sound and Moshup's Bridge TCP

As a result of BOEM's Section 106 review for another undertaking, a previously undocumented and potentially eligible TCP, the Vineyard Sound and Moshup's Bridge TCP, was identified by the THPO of the Wampanoag Tribe of Gay Head (Aquinnah). During conversations with the THPO, it was noted that

the area, located along the western side of Martha's Vineyard, contains deep cultural significance to the Aquinnah people, and is associated with the culture hero Moshup. As is recorded in numerous oral and written traditions, Moshup was a giant, teacher, leader, and transformer who was responsible for creating and transforming the lands and seas located within the Aquinnah homelands.

The TCP is located within the lands and waters that encompass Vineyard Sound, the Elizabeth Islands, the Gay Head Cliffs, and Nomans Island, and includes the associated shallow water shoals that are found along the southwestern and western shores of Martha's Vineyard.

Vineyard Sound and Moshup's Bridge TCP constitutes part of a broader cultural landscape that also includes the larger Nantucket Sound TCP and additional elements that comprise a vast culturally significant landscape. Specifically, the Vineyard Sound and Moshup's Bridge TCP is associated with Aquinnah cultural traditions that relate to the formation of the island of Noepe, Nomans Island, and their cultural and physical relationship with the Elizabeth islands. Although the Aquinnah are believed to maintain the most extensive and prominent stories of Moshup, he is a prominent cultural hero to several northeastern tribes as well, including the Mashpee Wampanoag and Mohegan tribes (Sayet 2012).

The Vineyard Sound Moshup's Bridge TCP is potentially eligible for listing in the NRHP under all four Criteria (A-D).

- Criterion A: The Vineyard Sound and Moshup's Bridge TCP is associated with ancient and historic Native American events, including exploration and settlement of Aquinnah. It is also associated with central events related to Moshup and the history of the Aquinnah Tribe as well as the formation of the land's character.
- Criterion B: The TCP is associated with Moshup, a significant figure in Aquinnah oral and written traditions.
- Criterion C: The TCP is a distinguishable and significant component of Aquinnah lifeways, cosmology, economies, traditions, beliefs, and cultural practices.
- Criterion D: The TCP has potential to yield valuable information concerning local, regional, and national prehistory and history through archaeology, ethnography, and ethnohistory. This information may be valuable for understanding Native American settlement, economies, land use and cultural practices before and after the inundation of the Vineyard Sound.

As defined in the National Park Service Bulletin *Guidelines for Evaluating and Documenting Traditional Cultural Properties,*

> [a] traditional cultural property, then, can be defined generally as one that is eligible for inclusion in the National Register because of its association with cultural practices or beliefs of a living community that a) are rooted in that community's history and b) are important in maintaining the continuing cultural identity of the community (National Park Service, Bulletin #33, 1998).

Previous analysis completed for the SFWF Project has noted that the maritime setting is an integral element of the TCP's historical and cultural significance, and the island setting of Aquinnah is centrally connected to tribal identities and understandings of their traditional and ancestral relationship to the lands and waters (EDR 2020).

At BOEM's request, Vineyard Wind prepared an addendum report assessing the visual effects of the undertaking on the Vineyard Sound and Moshup's Bridge TCP in February 2021. This study found that the maritime setting of the TCP and its viewshed would be altered through the introduction of new elements. In their analysis of the visual APE, Vineyard Wind determined that there will be an adverse

visual effect to the Vineyard Sound and Moshup's Bridge TCP. However, Vineyard Wind's analysis notes that the majority of the inland portion of the TCP will have no view to the undertaking due to topographic changes and mature vegetation. Specifically, of the Vineyard Sound and Moshup's Bridge TCP's total land area, only 4 percent of it will have potential visibility of the wind development area (WDA). The closest WTG will be located 26.4 km (16.4 mile) from the TCP. Though only a portion of the TCP will be within visibility range of the WDA, the undertaking will be visible across the seascape portion of the TCP. Specifically, the WDA will be visible between Martha's Vineyard and Nomans Island, thereby altering the inherent character of the TCP's setting (Vineyard Wind, Inc. 2021).

In addition, based on the data collected and noted in Epsilon Associates' original Historic Properties Visual Impact Assessment, it is estimated that the WDA will have 19 percent annual visibility from the Gay Head Lighthouse, which is located in Vineyard Sound and Moshup's Bridge TCP. Vineyard Wind used the lighthouse for their analysis of the TCP because it is 38.7 km (24 mi) from the closest WTG. This analysis is further explained in BOEM's Finding:

> On June 3, 2019, Vineyard Wind provided BOEM with additional analysis of the visibility of the undertaking using the algorithm presented in OCS Study BOEM 2017-037 "Visualization Simulations for Offshore Massachusetts and Rhode Island Wind Energy Area - Meteorological Report" (Appendix B). Based on Vineyard Wind's additional analysis, the undertaking would be visible from the Gay Head Light, on average, 19 percent of the time (39 percent during the day and 0.1 percent at night, when using an Aircraft Detection and Lighting System (ADLS).

These findings were confirmed in the revised Vineyard Wind Historic Properties Visual Impact Assessment and associated addendum. Other mitigating factors to visibility (not included in the 19 percent) include sea spray and low-contrast paint color, which will further reduce the visibility. In addition, while Noman's Island has visibility of the WDA due to its low elevation and lack of dense vegetation, its view of the WDA will be minimized due to distance, environmental factors, and the proposed paint color and ADLS lighting system. In addition, the WDA will only be visible from the TCP's southeast view. All other views from the TCP will remain unaffected (Epsilon Associates, Inc. 2020, Vineyard Wind, Inc. 2021, BOEM 2020).

A study comparing the cumulative effects of the Vineyard Wind 1 Project and other reasonably foreseeable offshore wind projects was completed in March 2021 using a cumulative viewshed model to quantify the total number of WTGs theoretically visible from the Vineyard Sound and Moshup's Bridge TCP during daytime and nighttime analysis. The analysis was conducted at the cliffs near Squibnocket Point. This study concluded that the undertaking comprised 9 percent of all theoretically visible WTG blade tips during daytime, and 10 percent of all theoretically visible WTG nacelle tops during nighttime. The study also analyzed the number of WTGs theoretically visible from the Vineyard Sound and Moshup's Bridge TCP using three different tiered distances (10 to 20, 20 to 30, and 30 to 40 nm). This part of the study found that the proposed undertaking's WTGs would comprise 18 percent of all WTGs visible at 10 to 20 nm, 9 percent of all WTGs visible at 20 to 30 nm, and none of the WTGs visible beyond 30 nm.

Finally, the cumulative effects report analyzed visual simulations completed by Saratoga Associates. No visual simulations were prepared specifically for the Vineyard Sound and Moshup's Bridge TCP, but the Aquinnah Cultural Center, used as a point for the Gay Head Light analysis, is within the TCP and its analysis is applicable to the TCP. However, Squibnocket Point is approximately (4.5 mi) closer to the proposed undertaking than the Aquinnah Cultural Center, and would have unobstructed ocean views of the undertaking's WTGs. When viewed from Squibnocket Point, the proposed undertaking's and other project's WTGs will be marginally larger and more prominent than if viewed from the Aquinnah Cultural Center. An observer would be able to experience panoramic views of the ocean from the bluffs at

Squibnocket Point. In clear weather, this view would include the proposed undertaking WTGs to the southeast. However, WTGs from other projects would be in between the observer and the Vineyard Wind 1 WTGs. Views from the proposed undertaking and other project WTGS from the interior of the TCP would be rare, due to screening by topography and/or other vegetation. The proposed undertaking WTGs and other offshore wind project WTGs would appear similar as the observer moves across the bluffs along Squibnocket Point. Overall, the undertaking will contribute less than one-quarter of the cumulative visual effects of offshore wind on Gay Head Light (Saratoga Associates 2020, ERM 2021).

In summary, other project WTGs would occupy the majority of the horizon line and more than three-quarters of all of the open ocean horizon visible in 124-degree southerly views from Squibnocket Point. WTGs associated with other projects are situated in front of the undertaking's WTGs. While the proposed undertaking WTGs would contribute to visual impacts on clear days by creating additional visual clutter on the southeast horizon, they would be visible less often due to weather conditions, and less visually prominent than other project WTGs due to distance and the proposed undertaking's location behind WTGs from other projects. The WTGs from the proposed undertaking and other projects would be plainly visible to an observer, but the overall view would still be dominated by sea and sky (ERM 2021).

## 4. Application of the Criteria of Adverse Effect

The Criteria of Adverse Effect under NHPA Section 106 [36 CFR 800.5(a) (1)] states that an undertaking has an adverse effect on a historic property

> when an undertaking may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the NRHP in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association…Adverse Effects may include reasonably foreseeable effects caused by the undertaking that may occur later in time, be farther removed in distance or be cumulative (36 CFR 800.5(a) (1)).

According to regulation, Adverse Effects on historic properties include, but are not limited to (36 CFR 800.5(a) (2)):

i. Physical destruction of or damage to all or part of the property;

ii. Alteration of a property, including restoration, rehabilitation, repair, maintenance, stabilization, hazardous material remediation, and provision of handicapped access, that is not consistent with the Secretary's standards for the treatment of historic properties (36 CFR part 68) and applicable guidelines;

iii. Removal of the property from its historic location;

iv. Change of the character of the property's use or of physical features within the property's setting that contribute to its historic significance;

v. Introduction of visual, atmospheric or audible elements that diminish the integrity of the property's significant historic features;

vi. Neglect of a property which causes its deterioration, except where such neglect and deterioration are recognized qualities of a property of religious and cultural significance to an Indian tribe or Native Hawaiian organization; and

vii. Transfer, lease, or sale of property out of federal ownership or control without adequate and legally enforceable restrictions or conditions to ensure long-term preservation of the property's historic significance.

## 4.1. Adverse Effects to the Vineyard Sound and Moshup's Bridge TCP

Based on the information BOEM has available from the studies conducted to identify historic properties within the viewshed APE of the proposed undertaking, and the assessment of effects upon those properties determined in consultation with the consulting parties, BOEM has found that the proposed undertaking would have a direct adverse visual effect on the newly identified Vineyard Sound and Moshup's Bridge TCP. With the introduction of new visual elements, the undertaking would affect the character of the TCP's setting that contributes to its traditional significance, thus affecting its NRHP eligibility under Criterion C. BOEM did, however, determine that due to the distance and open viewshed, the integrity of the TCP would not be so diminished as to disqualify it from NRHP eligibility. Furthermore, NRHP Criteria A, B, and D will not be affected by the potential visibility of the WDA.

The adverse effects to the viewshed of the TCP would be over approximately 30 years, as that will be the duration of time the proposed undertaking will occupy the area. For reasons discussed in Section 4.2, below, these effects are unavoidable. This application of the criteria of adverse effect and determination that the effects are direct is based on pertinent NRHP Bulletins, subsequent clarification and guidance by the National Park Service and ACHP, and other documentation, including professionally prepared viewshed assessments and computer-simulated photographs and video.

## 4.2. Conditions or Future Actions to Avoid, Minimize, or Mitigate Adverse Effects

This report only addresses the actions with respect to the newly identified Vineyard Sound and Moshup's Bridge TCP. The Finding of Adverse Effects addressed eight other mitigation conditions for approval of issuance of BOEM's permit. Vineyard Wind is proposing mitigation through the funding of a new ethnographic study of the Vineyard Sound and Moshup's Bridge TCP pursuant to a resolution of effects. This ethnographic study would include a comprehensive review of historical records and a series of four interviews knowledgeable Wampanoag tribal members for the purpose of collecting relevant information on the history of Moshup and his significance as a cultural hero to the Wampanoag people. This will include key historical events such as the creation of Moshup's Bridge, Martha's Vineyard/Noepe as well as other existing features that have been historically attributed to Moshup. The study will incorporate mapping efforts and no more than two site visits to the island to locate important features (with tribal members, if available) and conduct research and photography. Archaeological fieldwork will not be incorporated as part of this study. The study will aim to collect information to support the eligibility of Moshup's Bridge for listing in the NRHP as a TCP, including but not limited to:

1. The origin story of Moshup and his arrival at Martha's Vineyard/Noepe, including information on the creation of the island, Vineyard Sound, Moshup's Bridge, and Nomans Island. Information gathered shall include Wampanoag tradition as well as Mohegan and other tribe's traditions.

2. Distinctive cultural aspects and/or historical events attributed to Moshup including the creation of existing landforms within the eligible TCP.

3. The location and description of existing features on the Martha's Vineyard/Noepe as well as activity areas including hunting, fishing, and ceremonial locations (that are acceptable for inclusion due to cultural sensitivities) attributed to Moshup. Such information will be important to justify the boundaries of the TCP for National Register purposes.

4. History on the role of Moshup as a teacher and information on Wampanoag cultural aspects attributed to him.

5. The association of the Wampanoag's cultural beliefs and practices in relation to Moshup and how such continuing practices on Martha's Vineyard/Noepe are important to maintaining the cultural identity of the Wampanoag.

Utilizing the information compiled for the ethnographic study, the Vineyard Wind will prepare a National Register Nomination packet for the Vineyard Sound and Moshup's Bridge TCP in accordance with the National Park Service Bulletin 38, Guidelines for Evaluating and Documenting Traditional Cultural Properties as well as other relevant National Register bulletins and guidance. The nomination for the resource shall be completed as a Traditional Cultural Property for the Wampanoag, and the boundaries of the property may be refined in consultation with the Tribes, using historical and archaeological data, and the information obtained during the ethnographic study. As such, these boundaries may or may not match or include the entirety of the initial bounded eligible area. The nomination will incorporate the history of Moshup in the Wampanoag tradition, as well as extant resources that include landscape features, applicable archaeological sites, and significant activity areas and ceremonial locations as provided by the Wampanoag.

## 5. Views of the Consulting Parties

While BOEM's NHPA Section 106 consultation is ongoing, a summary of the February 16, 2021 consultation meeting is included as Appendix A.

## 6. References


BOEM. 2017. Finding of No Historic Properties Affected. Available online at https://www.boem.gov/sites/default/files/renewable-energy-program/State-Activities/HP/Vinyard-Wind-106-Findings-and-Appendix-A-to-J.pdf. Accessed August 2020.

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---. 2020. Vineyard Wind Historic Properties Visual Impact Assessment for the Vineyard Wind Offshore Wind Farm Project. June 3, 2020. Submitted to Vineyard Wind, LLC.

ERM. 2021. Historic Properties Cumulative Visual Effects Assessment for the Vineyard Wind 1 Project under NHPA Section 106 of the National Historic Preservation Act. Prepared for U.S. Department of the Interior, Bureau of Ocean Energy Management.

Saratoga Associates. 2018. Vineyard Wind Project Visual Impact Assessment. March 9, 2018.Prepared for Vineyard Wind, LLC.

---. 2020. Vineyard Wind Project Visual Impact Assessment: Addendum -1. April 14, 2020. Prepared for Vineyard Wind, LLC.

Vineyard Wind, Inc. 2021a. Vineyard Wind 1 Historic Properties Visual Impact Addendum. February 24, 2021. Epsilon Associates, Inc., Maynard, Massachusetts. Prepared for Bureau of Ocean Energy Management, Sterling, Virginia.

Vineyard Wind. 2021b. Re: Vineyard Wind 1 Project, OCS-A 501. Letter to Dr. Walter D. Cruikshank, Acting Director, BOEM from Lars Pederson Chief Executive Officer, Vineyard Wind.

**Appendix A: February 16, 2021 National Historic Preservation Act Section 106 Consultation Meeting for the Vineyard Wind 1 Offshore Project**

| February 16, 2021 National Historic Preservation Act Section 106 Consultation Meeting for the Vineyard Wind 1 Offshore Project | |
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| **Location:** Virtual Meeting | **Venue/Meeting Location:** Zoom |
| **Meeting Date:** February 16 2021 | **Meeting Time:** 10:00 p.m.—2:00 p.m. eastern |
| **Bureau of Ocean Energy Management (BOEM) Representatives:**<br>Brandi Carrier<br>Jennifer Bucatari<br>John McCarty<br>Justin Bedard<br>Meredith Lilly<br>Pedro F Meléndez-Arreaga<br>Stephen Vorkoper | **Environmental Resources Management (ERM) Representatives:**<br>Danna Allen<br>Heather Heater<br>Ben Sussman<br>Poppy Milliken<br>Kevin Malloy<br>Mary Beth Derrick<br>Patty Rusten |
| **Vineyard Wind Representatives**<br>Michael Clayton<br>Geri Edens<br>Sarah Faldetta<br>Jeff Gardner<br>Maria Harnett<br>Abbegail Nack<br>Erik Peckar<br>Chris Rodstrom<br>Kim Smith | |
| **Consulting Party Attendees:** See attached list | |
| **Summary Prepared By:** Kevin Malloy and Mary Beth Derrick (ERM) | |
| **Summary of Meeting Topics and Discussion**[1] | |
| **Welcome, Meeting Process and Introductions** | |
| Patty Rusten (ERM), the facilitator, welcomed everyone to the meeting for the Vineyard Wind 1 Offshore Project (Project) and reviewed the agenda. She explained that the purpose of the meeting was to enable consulting parties to ask questions about the Finding of Adverse Effects (FoAE), learn more about the combination of alternatives likely to be selected, to receive feedback about mitigation measures prior to completion of the Memorandum of Agreement (MoA); and to facilitate a listening session at the end of the meeting. Ms. Rusten (ERM) then introduced Brandi Carrier from BOEM. Ms. Carrier (BOEM) thanked everyone for continuing in the consultation process and acknowledged the Project's location on lands associated with the traditional stewards of the land, as well as the long-standing history with the | |

[1] A transcript of the written comments made in the Teams Chat function during the meeting can be found attached.

consulting parties and the land in question. Ms. Carrier (BOEM) then explained ERM's role in the consultation process and Ms. Rusten (ERM) provided Zoom guidelines and instructions, and facilitated introductions.

**Project updates & Revised Consultation Schedule**

Ms. Carrier (BOEM) provided a Project update including the selection of the General Electric (GE) Haliade-X turbines. She described the resubmission of the Construction and Operations Plan (COP) by Vineyard Wind on January 22, 2021, the resumption of the consultation process, and explained that no changes are required to the COP, the Supplement to the Environmental Impact Statement (SEIS) or FoAE, since the turbine parameters fell within the project design envelope (PDE) described in the documents. Ms. Carrier (BOEM) then notified the consulting parties that a new Traditional Cultural Property (TCP) (Vineyard Sound and Moshup's Bridge TCP) was identified on February 8, 2021. The new TCP falls only within the Viewshed portion of the Project APE, not the marine archaeological portion of the Project APE. The next steps for addressing the TCP include reaching out to the tribes, performing an assessment of effects, and compiling the findings within a supplement to the FoAE (Supplement). The Supplement will have its own 30-day review period. Ms. Carrier (BOEM) and Ms. Rusten (ERM) reviewed the remainder of the consultation schedule and noted this is the final Section 106 consultation meeting.

**Project Overview**

Ms. Rusten (ERM) introduced Heather Heater (ERM). Ms. Heater (ERM) described the general PDE. She explained the chosen turbine, the GE Haliade-X, and explained that it is slightly smaller than what was assessed. Ms. Heater (ERM) reminded the attendees that Project alternative likely to be selected is Alternatives C + D2 + E. She continued to summarize these alternatives in greater detail. Ms. Heater (ERM) explained that the Alternatives, as determined by the SEIS, would have similar but potentially fewer impacts than the Proposed Action. Ms. Heater (ERM) laid out the major remaining milestone dates including the Final EIS, the Record of Decision (ROD), and the execution of the MoA by the signatories.

**Finding of Adverse Effects**

Danna Allen (ERM) provided an overview of the FoAE, including the steps taken to identify historic properties and the subsequent analysis and cumulative effects of the Project on the three historic properties (Gay Head Light, Nantucket National Historic Landmark [NHL], and the Chappaquiddick Island TCP). Ms. Allen (ERM) also described past various consultations and coordination and explained that the Revised FoAE was sent out again to Consulting Parties on February 4, 2021, marking the beginning of the 30-day review process. She noted that the assessments of the terrestrial and visual APE have been completed, and all comments have been reviewed and incorporated. Ms. Allen (ERM) then discussed Submerged Ancient Landforms and shipwrecks and potential shipwrecks, and the effects on them. She concluded by summarizing the adverse effects.

**Resolution of Adverse Effects**

Ms. Carrier (BOEM) explained the collective resolution of adverse effects measures include: 1) removal of the six most northern locations (minimization); 2) application of RAL 7035 paint color (minimization); 3) install an aircraft detection and lighting system (ADLS) (minimization); 4) funding a restoration and stabilization project at Gay Head Light (mitigation); 5) funding an ethnographic study and prepare a National Register nomination package for the Chappaquiddick Island TCP (mitigation); 6) avoidance of identified shipwrecks, debris fields, and 12 submerged ancient landforms (avoidance); 7) conducting additional investigations of 19 submerged ancient landforms that can't be avoided (mitigation); and 8) avoidance or investigation and mitigation of submerged potential historic properties identified as a result of future marine archaeological resources identification surveys (avoidance or mitigation).

**Proposed Ethnographic Study Goals**

Maria Hartnett (Epsilon on behalf of Vineyard Wind) shared additional details about the proposed ethnographic study and how it would be implemented, including: 1) review of historical records and interviews with knowledgeable tribal members to gather pertinent information on the Chappaquiddick Wampanoag, present cultural practices, their historic presence on Chappaquiddick Island as well as current cultural ties to and activities on Chappaquiddick Island; and 2) drafting of a proposed National Register nomination for the TCP. The Chappaquiddick Wampanoag would review the draft Nomination prior to preparation of a Final version.

**Q&A and Listening Sessions**

The following is a compilation of the questions posed by Consulting Parties and the answers provided by subject matter experts from BOEM, ERM, and Vineyard Wind.

**Open Discussion/Q&A:**

Consulting Parties Comments and Questions:

Turbine Questions/Responses:

- **Q.** Where are the GE WTG's currently in use? Specifically, where the GE Haliade-X WTG are installed and used off-shore in an ocean environment. Dry land installation and application are not as relevant for this discussion.
- **A1.** ERM asked for clarification from the consulting party, including if they were asking about GE Haliade-X WTGs being proposed for this Project, and was the question concerning offshore and/or onshore.
- **A2.** After clarification, BOEM added that the GE Haliade-X turbine (the type that is the platform for these 12, 13, and now 14 Megawatts (MW) capacities) has been built in Rotterdam and is generating power. Some of the Dogger Bank wind farms (offshore England) will be using the GE Haliade-X 13 MW turbines, and those are already being shipped and prepared at the staging port for that project. Construction is underway, but turbine installation has not begun yet.

- **Q.** Can someone discuss how the quantitative analysis presented (e.g. percentage of total WTGs [wind turbine generators] are visible from each cultural resource) translates into conclusions on retention of integrity?
- **A.** ERM answered, stating that the quantitative data presented in the slides and the FoAE demonstrate that a relatively small percentage of WTGs would be visible from these resources. This visibility would not detract from the integrity of setting, which is only one of seven aspects of integrity, enough to preclude each resource's eligibility.

- **Q**. Minimization was mentioned with regards to six northern Turbine Placement Locations. Was this a contributing reason that VW [Vineyard Wind] has chosen to use the GE Haliade-X, for which fewer turbines are now projected to be used?
- **A**. Epsilon Associates, Inc. (on behalf of Vineyard Wind) noted that minimization was not a factor in selecting the GE Haliade-X. The removal of the six turbine locations in the north was a minimization effort. The choice to use the GE Haliade-X turbines was a decision made independently.

ADLS Questions/Responses:

- **Q.** Regarding ADLS [aircraft detection lighting systems] lighting system, does this include turning on any additional electrical platform work lighting as well? Would that lighting be illuminated constantly at night or only

when aircraft are detected and come on in conjunction with the Red flashing approach lights on the top of the WTG's? (Radar Triggered)

- **A.** BOEM stated that their expectation is that electric service platform (ESP) lights are on all the time to address marine navigation concerns. From the COP "Marine navigation lighting will consist of multiple yellow flashing lights at each turbine and on the corners of the ESPs. Yellow lights will be visible at five nautical miles ("nm") and/or two nm in accordance with consultation with the US Coast Guard ("USCG")". Which would mean they are not visible from land. BOEM asked and Vineyard Wind confirmed that this was correct. See Appendix III-N of the COP for more info.

- **Q**. When the ADLS is activated, are all of the 84 WTGs illuminated simultaneously and do they strobe?
- **A**. Vineyard Wind specified that in regards to the flashing, Federal Aviation Administration (FAA) guidance recommends that the lights illuminate and flash simultaneously in specific pattern.

- **Q**. Are there any nighttime visualization represented anywhere?
- **A**. ERM answered that Vineyard Wind prepared nighttime simulations, which are on their website and posted the web address to the chat window: https://www.boem.gov/vineyard-wind.

Submerged Landscapes and Cable Corridor Questions/Responses:

- **Q**. Can you briefly describe the G&G [geological and geophysical] processes used to delimit the extents of the unavoidable and avoidable areas with submerged ancient landform features?
- **A1.** Vineyard Wind noted that they used the geophysical data and reviewed and checked those and gave them to Gray and Pape and also reexamined them. In concert with the known Area of Potential Effects (APE), these areas with the landforms were recommended for avoidance or not.
- **A2.** Gray and Pape (on behalf of Vineyard Wind) added that they reviewed the geophysical data and were able to ascertain a vertical and horizontal APE to recommend whether they would be affected or not and Vineyard Wind used these APE to determine if they would be affected or not.

- **Q**. Is there a list or a draft list of the areas of the marine archaeological APE not yet surveyed that will be surveyed. When does BOEM anticipate when they will be surveyed? Are any of these areas in MA state waters?
- **A.** Epsilon Associates, Inc. (on behalf of Vineyard Wind) noted that there are areas where additional surveys are needed, but they are not in state waters. The Project has two main components—the Wind Development Area (WDA) and the offshore export cable corridor (OECC)—only part of the OECC falls in state waters. The marine survey is complete for the OECC that passes through state waters. The WDA is where some of the alternatives come into play. Given that it is likely that an alternative will be selected that was not previously surveyed for marine archaeological resources, it will require survey of these new turbine locations as well as inter-array cable corridors within the WDA. The entirety of this area is in federal waters. Additionally, this is why there have been comments about the possibility of needing to update the submerged paleolandforms numbers.

- **Q**. What is the selection process for determining where the cores for the 19 unavoidable submerged ancient landforms will be taken? Is there the potential for more to be collected at these areas?
- **A.** Gray and Pape (on behalf of Vineyard Wind) answered that the exact location of each of these additional cores will be determined in concert with review of the additional data. Determining the exact locations will be done

with geomorphology input and tribal input for where they should occur. This will be outlined as part of the mitigation measures.

- **Q**. The Paleolandforms adjacent to Chappaquiddick were asked to be included in Chappaquiddick TCP boundaries, why has this not been updated and documented in maps and adverse effect reports? Will these be included in additional marine archaeological work, we have not been informed as requested? One of the oldest landforms 14,000 y bp is part of Chappaquiddick TCP and listed as one of the 19 being destroyed. Nantucket Sound and Moshup legend has ancestral ties to the Chappaquiddick Tribe and all Wampanoag people and needs to be included in Chappaquiddick TCP.
- **A**. BOEM answered that, as currently defined, the boundaries of the Chappaquiddick TCP include the aerially exposed portions of Chappaquiddick Island, but not the paleolandforms features identified in Nantucket Sound and on the Outer Continental Shelf within the Project's offshore export corridor. BOEM considers the paleolandforms identified within Nantucket Sound as contributing elements to the Nantucket Sound TCP, which has cultural significance to numerous Tribes currently located within New England (i.e. the Mashpee Wampanoag, the Wampanoag of Gay Head Aquinnah, the Narragansett, the Mashantucket Pequot, the Mohegan, the Shinnecock) as well as Tribes that were forcibly relocated from the eastern seaboard, such as the Delaware. Identified paleolandforms located on the Outer Continental Shelf are also culturally significant to these Tribes and may be contributing elements to a yet-to-be-defined TCP encompassing formerly sub-aerially exposed landforms occupied by the ancestors of many Tribes prior to the end of the last Ice Age. As a result, BOEM considers the paleolandforms identified as part of the Project's marine remote sensing surveys to be contributing elements to an existing TCP (Nantucket Sound) or possibly contributing elements to a larger TCP significant to a number of Native American Tribes. Due to the association of these paleolandforms with an existing TCP and a potential multi-Tribe TCP, BOEM does not consider them part of the Chappaquiddick TCP. If additional information is available, we invite the Chappaquiddick to submit this prior to the March 5 deadline for incorporation into the development of the MoA.

- **Q.** In an earlier presentation today regarding the "submerged ancient landforms as contributing elements to the Nantucket TCP and other submerged Ancient Landforms", 19 submerged landforms have been identified as having adverse effects. What additional surveys are being conducted and when will the additional mitigation proposals be available for review?
- **A1.** Epsilon Associates, Inc. (on behalf of Vineyard Wind) answered that there are two components the OECC, and there are no alternatives being considered for the OECC. There are 13 submerged landforms that can't be avoided within the OECC. The survey has been completed, however. Many of the submerged landforms cover the whole corridor and cannot be avoided. When we turn to the WDA, the proposed action is for a certain layout. VW has also completed a full assessment for the preferred layout which identified six landforms that cannot be avoided. Now that a different layout is likely to be approved; given this, some additional survey work will need to be conducted and will include the inter-array cable layout. Some of this has already been completed and the data is being analyzed.
- **A2.** BOEM is currently working with the proposed signatories of the MoA to finalize mitigation proposals. BOEM continues to hold government-to-government consultations with Federally recognized Native American Tribes to discuss these mitigations prior to finalizing the MoA. BOEM views input from Federally recognized Native American Tribes as a vital component of our process of informed decision making.

- **Q**. Item 6 involves avoidance of shipwrecks, debris fields, and 12 submerged landforms. What is the reason the entire area comprised of the total of 31 submerged ancient landforms (the entire APE surveyed) could not be avoided? It seems that the additional survey work for the remaining impacts (19) would be very costly.
- **A1.** BOEM stated that the reason they cannot be avoided entirely is their orientation with respect to the shoreline vis-a-vis the Project's cable crossing corridor. The marine archaeological report details the location and extent of these landforms as they were surveyed and their situation with respect to the proposed Project elements. The size and location of these landforms determined whether they could or could not be avoided.
- **A2.** Epsilon Associates, Inc. (on behalf of Vineyard Wind) added that the avoidance is so challenging given their prevalence and how much they occupy of the corridor. Vineyard Wind has made some additional efforts at minimization. They've selected a cable installation tool to minimize the effects of installation. It will only be a 1 meter wide trench. In addition, at the wind farm, Vineyard Wind reduced the depth of cable burial depth to help avoid additional effects to the landforms.

- **Q**. Has there been further evaluation and research on the option of laying cable w/out burying and cement layover to avoid the destruction of 19 paleolandforms and impact on marine ecosystem? Further clarification to previous question: With the elephant in the room about planned damage to the paleolandforms, has BOEM and/or Vineyard Wind explored the option of unburied cable in and around these paleolandforms and if this is a state permitting issue, has BOEM/VW [Vineyard Wind] sought a waiver or new permit to avoid any damage to these cultural resources? Why or why not is this an option?
- **A.** Epsilon Associates, Inc. (on behalf of Vineyard Wind) noted that is important to note that there are many factors that need to be balanced when planning the export cable routes. Vineyard Wind needs several state and federal permits. There are many concerns we took into consideration for laying of these cables. One factor is not more important than another. Going through this process, many factors are considered, including multiple users of the oceans. Many are related to disturbance to marine uses. For instance, commercial fishing use in the area. Unburied cables in the area could be affected or damaged. There are also concerns to changes to the habitats from fisheries and multiple state agencies. So there are multiple requirements to keep cables buried to a certain depth to prevent damage and concern from anchoring, from fishing, and wildlife. There is concern that if an anchor was dropped right over it, it could be damaged. They also need certain temperature requirements. The burial is meant to keep the cable safe as well as other users of the ocean. Vineyard Wind has given a great deal of consideration to reducing the impact to the landforms. As mentioned earlier, this includes selection of a specific installation tool to reduce physical damage to the landform during installation down to an area less than 1 meter.

- **Q**. Has there been further consideration to create a common channel for export cables and array cables to utilize for all off-shore wind energy projects?
- **A.** BOEM answered that transmission development is complex, and a common channel or corridor was not considered for Vineyard Wind 1, specifically. BOEM has received a couple of proposals for regional transmission "backbone" systems, though one does not exist offshore in federal waters at the moment. For each of BOEM's leases, we must issue one or more non-competitive easements to shore to provide full enjoyment of the lease. With these easements, we follow industry-accepted standards for adequate spacing (e.g., the spacing necessary to repair a cable without damaging others, the spacing necessary to accommodate heat and insulation issues, etc.). Other considerations for cable corridors include the ability to bury cables, avoid obstacles, and etc. Regarding potential regional transmission systems, here are some considerations: Depending on their landfall location, different projects that might share a corridor or backbone in the future would also likely have different

interconnection points/landfall locations, so the cables for those projects could follow a similar path through an area but would diverge at some point. There are other issues to work out with shared corridors as well (e.g., which entity would be responsible for maintaining and repairing a shared cable). Last, the terrestrial landing site would need to have adequate space for necessary repairs, as well as enough capacity and infrastructure to feed and distribute the energy being supplied into the electric grid system. BOEM, including BOEM's Tribal Liaison Officer, Bill Brown, is aware of the interest in a common cable corridor through Nantucket Sound as opposed to multiple crossings. However, at this time, BOEM must review proposals that have been received. This is limited to the currently proposed crossing associated with the Vineyard Wind 1 Project.

- **Q**. Can BOEM or VW explain how they arrived at the decision to tie the paleolandforms that we have repeatedly informed you are at risk for irreversible damages are tied to the Chappaquiddick tribe and TCP are now tied to the Nantucket TCP? Can you explain why they cannot be tied to both?
- **A.** BOEM noted that the boundaries of the Nantucket Sound TCP were previously defined by the National Park Service in January 2010. Included in its determination was the recognition that of the important cultural, historical, and scientific information it has yielded and/or may be likely to yield through archeology, history, and ethnography about access to resources, patterns of settlement, mobility, and land use prior to and after 6,000 years ago as a result of the inundation of the Sound. As such, BOEM includes the paleolandforms within the previously defined Nantucket Sound TCP. In addition, as previously stated, BOEM considers the paleolandforms identified within Nantucket Sound as contributing elements to the Nantucket Sound TCP, which has cultural significance to numerous Tribes currently located within New England as well as Tribes that were forcibly relocated from the eastern seaboard, and as such BOEM does not believe it is its role or appropriate for BOEM to assign TCPs to one group or another.

<u>Cumulative and Map Questions/Responses:</u>

- **Q**. Are visual simulations available for the entire collection of contiguous lease areas? This seems critical to understanding the magnitude of cumulative effects.
- **A.** ERM answered that Vineyard Wind prepared, and the Historic Properties Cumulative Visual Effects Analysis includes, simulations from Aquinnah, South Beach, and Madaket Beach that show both the Vineyard Wind Project, as well as other projects visible within the same panoramic frame. These simulations are available on BOEM's website for the Project https://www.boem.gov/vineyard-wind.

- **Q.** Have visual simulations or viewshed visual impact projections been created which show all proposed wind energy projects off the coast of New England, simultaneously?
- **A.** ERM clarified that Vineyard Wind prepared simulations from locations representative of the historic properties within Vineyard Wind 1's APE. Those simulations included all WTGs from all New England projects potentially visible from those locations. All wind developers are asked to produce the same type of cumulative effects simulations illustrating all proposed projects present within their respective affected viewsheds. Thus, viewpoints not affected by Vineyard Wind 1 (but potentially affected by other projects) were not simulated as part of this effort, but may be as part of other projects, depending on the visual APE of those other projects.

- **Q**. Can a map be generated that denotes State boundary vs Federal water reflective of the VW1 Project? That would include showing the OECC, and where the new survey areas are located?
- **A.** BOEM answered that a map can be made if one is not already available to be sent.

- **Q.** Is there a map that shows the EOCC's final route within State waters and the locations of the shipwrecks and debris, and the paleolandforms that will be avoided and, in the latter case, mitigated?
- **A.** BOEM said they would take for action working with ERM to prepare this map and will email it to all parties except MHC; a hard copy will be sent to MHC. Later in the meeting, BOEM pointed to Appendix N of the Marine Archaeology Report. The last two pages of Appendix N provide two single-page overview maps of the archaeological features in the OECC and WDA, respectively and may already provide what is being requested.

- **Q**. Affected historic properties slides did not include summary of archaeological reconnaissance survey for land-side cable routes & substations. What about resolution of any AE's [adverse effects] to terrestrial archaeological resources w/in the HDD exit pit and terrestrial cable routes (e.g. Post-Review Discoveries Plan development and implementation)?
- **A.** BOEM answered that a summary of the historic properties identification and evaluation reports prepared for the Project were located in Table 2 of the Finding of Adverse Effects, which is on page 16 of that document. At present, no terrestrial archaeological sites have been identified within that portion of the APE. The SEIS also contained a discussion of the substation expansion area and the findings of Vineyard Wind's field efforts. This can be found in Section 3.9.2.1 of the SEIS. A post-review discoveries plan will be prepared as part of the development of the MoA. Additionally, preliminary protections of post-review discoveries already exist both in BOEM's regulations as well as in the lease.

Mitigation Questions/Responses:

- **Q**. Under item 7 of "Resolution: Mitigation" the suggestion of a "Professional report of results suitable for technical audiences." be generated. Can a report be generated in layman's terms so more people could understand the results?
- **A.** BOEM clarified that Vineyard Wind has committed to working with Native American Tribes in the development of the mitigation to resolve adverse effects to ancient landform features. BOEM appreciates the suggestion of including a report or deliverable in layman's terms so more people can understand the results and will discuss the incorporation of this suggestion into the final mitigation proposal.

- **Q**. The ethnographic study must now include the full data submitted about the new TCP, the Moshup's Bridge and identify the full connection to the TCP to the Chappaquiddick TCP and the Chappaquiddick tribe. Can this be added to the scope of the study?
- **A.** BOEM answered that Vineyard Wind has committed to working with the Chappaquiddick to further develop the scope of the ethnographic study so that it is reflective of the tribe's cultural affiliation to this historic property. The information incorporated into the study would be reflected in the National Register Nomination Package resulting from the study. However, as discussed above, the newly identified TCP is not part of the Chappaquiddick TCP, and will not be included in that study. If an adverse effect is found to the newly identified TCP, BOEM will continue consultation, seeking ways to resolve that adverse effect, pursuant to 36 CFR 800.6.

TCP Comments/Questions/Responses:

- **Q.** The Chappaquiddick Wampanoag Tribe expressed concerns about the TCP study, including concerns that the Chappaquiddick TCP needed a more comprehensive study because it should qualify for the NRHP under Criterions A, B, C, and D, and not solely A. They added that they were displeased with the answers from the

meeting and wanted more clarification on the new TCP. They feel that the timeline to review the Ethnographic Study as well as the new TCP does not give enough time for a meaningful conversation and formally requested a formal consultation between them, BOEM, and Vineyard Wind.

- **A.** BOEM clarified that the identification and assessment of effects to the Chappaquiddick Island TCP was conducted based on information provided by the state recognized Chappaquiddick Wampanoag Tribe and information collected by Vineyard Wind's consultants as part of the historic properties visual effects assessment. Information provided by the Chappaquiddick Wampanoag Tribe included a list of culturally significant locations on Chappaquiddick Island and the cultural activities that take place at those locations. BOEM's FoAE uses the information provided by the state recognized Chappaquiddick Wampanoag Tribe to assess the National Register eligibility of the TCP and the applicable National Register criteria. BOEM does not believe a comprehensive TCP study was necessary to assess the National Register of Historic Places eligibility of the TCP in order to determine whether or not the TCP was a historic property. The proposed ethnographic study mitigation will be developed with input from the Chappaquiddick Wampanoag Tribe as stakeholders and, based on the results of that engagement, could incorporate additional information provided by the Chappaquiddick Wampanoag tribal organization to better define the National Register eligibility of the TCP. BOEM invited the tribe to make a more detailed statement during the listening session so they could more clearly understand their concerns. Additionally, they consulting parties are also invited to provide comments in writing so that BOEM can properly address them. BOEM reiterated that the newly identified TCP has not yet been shared with anyone; BOEM just found out about it recently.

- **Q.** Who submitted the information on Moshup's Bridge and what lessee party is referred to? This information impacts all Wampanoag people and all data is requested to be submitted to the Chappaquiddick Wampanoag Tribe and should have been consulted previous to this sec [Section] 106 meeting. Moshup's Bridge and Vineyard Sound are part of Moshup legend and Wampanoag tradition and has ancestral ties to the Chappaquiddick Wampanoag Tribe and needs to be included in Chappaquiddick TCP, as any impacts to these TCP impact the Chappaquiddick Wampanoag Tribe.
- **A.** BOEM clarified that the Vineyard Sound-Moshup's Bridge TCP was identified by consultants conducting cultural resource investigations for another offshore wind project in the region. It was identified and defined based on the results of a review of publicly available literature and websites and interviews with representatives from Native American Tribes in the region. While TCPs can have significance to multiple groups, BOEM is not in a position to assign TCPs to one group or another. Individuals or groups are welcome to submit information to BOEM as to why an identified TCP is significant to their community but BOEM will not combine or amalgamate TCPs identified by consulting parties, that is not BOEM's role in consultations, nor does BOEM believe this is appropriate. Publicly available information about the Vineyard Sound-Moshup's Bridge TCP will be included in the supplement to the FoAE submitted to consulting parties for review and BOEM welcome's comments on its supplement to the FoAE.

- **Q.** Both versions of the findings of effects demonstrate how valuable the input from the Chappaquiddick tribe has been in the Section 106 process and the outstanding Ethnographic Study will only expand and enhance the value of the Chappaquiddick Island as a TCP. Nonetheless, as we were just informed in today's consultation process by BOEM, the infrastructure is on order and on its way under the presumption that the Project has already been approved and will be constructed. This flies in the face of the Section 106 process. Why have a Section 106 consultation? For these reasons, the MoA must include compensatory damages and mitigation relief

to the Chappaquiddick tribe just has it has already done with other stakeholders with other TCPs. BOEM and VW must not discriminate against the tribe.

- **A:** BOEM clarified that they were not talking about Vineyard Wind, when answering the question about the existing GE WTGs. That was another project off England that has ordered structural components. So, this is not the case for this particular Project. The GE Haliade-X turbine was built in Rotterdam and are used off of Dogger Bank in England. Not currently used offshore of the U.S.

- **Q.** The additional identified TCPs are contributing elements to a larger district designation, which encompasses all of Nantucket Sound, Vineyard Sound and Chappaquiddick. Would BOEM assist with nomination towards this end?
- **A.** BOEM reiterated how they appreciated the additional information that the TCPs discussed during today's meetings contribute to a larger TCP district. BOEM would be happy to discuss the possibility of defining a larger TCP district that incorporates the TCPs discussed during this meeting. However, due to the current Vineyard Wind 1 National Historic Preservation Act (NHPA) Section 106 review schedule BOEM would not be able to complete any efforts to identify and define a larger TCP before the conclusion of the Vineyard Wind 1 NHPA Section 106 review. As the identification of a larger TCP district could have impacts on multiple projects, we suggest discussing the potential for defining this larger TCP district on a programmatic level during government-to-government consultations. We would like to have a standalone discussion of this topic to cover it in more detail.

Review Time Comments/Questions/Responses:

- **Q.** I am a little concerned about the limited time to review the actual draft agreement. Does BOEM feel its draft will meet the needed formatting requirements with minimal need for revision?
- **A.** BOEM intends to incorporate the earlier comments provided by the Advisory Council on Historic Preservation (ACHP) and the State Historic Preservation Office (SHPO) during the prior consultation meetings, and will build on that in preparing the draft. BOEM will also hold a live editing session with the signatories.

- **Q.** Why is it that the needed time for thorough evaluation of traditional cultural properties is not being weighted in importance over BOEM and Vineyard Winds projected timeline? We ask BOEM and Justin Bedard to open these discussions with all Tribes.
- **A.** BOEM answered that they did not know yet why the affiliated Tribes did not raise the existence of this TCP for BOEM's awareness prior to this point in the nearly three-year long consultation process. Tribes have many reasons for not wanting to share protected and sensitive information. BOEM needs to consult with the affiliated tribes, and will take whatever time is required to do so prior to reaching a decision on the Project and to fulfill their responsibilities under Section 106.

**Listening Session**

- *Discussion questions posed by BOEM:*
    - *Are there specific modifications to the proposed mitigation measures that could make them more effective?*
    - *How does any recommended modification to the proposed mitigation measures serve to more effectively resolve adverse effects?*

- *Is there anything else that BOEM should consider when working with the signatories to finalize the mitigation measures for the MoA?*

- **Comment—**The Moshup oral histories are collectively maintained by the Wampanoag Tribes. They are related to how he lived on the mainland before on Noepe. The coastal mainland is related to those histories. Looking at the Programmatic agreement, BOEM taking lead on nominating the area as a larger district will be beneficial for other projects coming down the pipe. We heard in 2018 that testing of the paleosoils, they wouldn't be able to have a shared corridor. Now we are at the point that the Project is moving forward, but there is no time to nominate the district, before issuance of the EIS. I think if BOEM includes it in the Programmatic Agreement it would be helpful moving forward and assist our decision making processes in the future.
- **Comment—**I wanted to reiterate my comment from before that the draft document have a sufficient amount of time to ensure it is in working order. Drafting an agreement doc, and putting pen to document, and establishing the language can be a stumbling block. Though I'm confident BOEM can do it, I want to make sure that enough time is given for everyone to draft it and everyone can digest it. It will be the tool moving forward. I'm not trying to be a harbinger. I just want to encourage you to use the templates and guidance documents.
- **Comment —**I feel like the tribal members are not being given enough time to review these things. This relates to our oral histories. When we say why something isn't known why something isn't presented, BOEM and Vineyard Wind should step in when there wasn't funding from the last administration. The Chappaquiddick Wampanoag tribe was not originally consulted and we are the closest tribe to the cable. When some of these questions are being brought up, they are saying they aren't important. When we talk about an ethnographic study, that's after the fact, and it's never talked about that they are being destroyed. When we are talking about Moshup legend, we are talking about Moshup sitting on Nantucket and smoking his pipe, and the ash formed Nantucket Island. There are some basic big holes that are happening, when non-indigenous groups are using the Moshup legend to confirm eligibility. We also want to state that the siloing of the tribes is highly disrespectful and it doesn't allow the state recognized tribes or federally recognized tribes, should be given enough time. How can Nantucket TCP not include Chappaquiddick TCP? That is BOEM deciding. These paleolandforms are being used by non-indigenous groups to prove they're significant. We are requesting another consultation session along with government-to-government consultation.
- **Comment—**One of the things that I know that I've heard that I'm concerned about, and this is just the first project, the issue is about that shared corridor—and two or maybe three years ago, I had asked BOEM to come to a meeting in DC that I called with multiple tribes. There are six units. This is just one windfarm. I don't know how you expect to have all those windfarms go through Nantucket Sound. Though this may not have anything to do with VW path, it does bring into question what will happen in the future. One of my concerns is that Nantucket was already declared a TCP and I do not believe that it was given the respect due a TCP, and I'm not saying that was deliberate, but regardless you are tearing through it. You are going to be digging it up. It's not the first time. What we are asking is, how do we minimize that destruction? I want to be very clear for what I am asking. Because we all know, avoid, minimize, mitigate. After a couple of times, mitigation is going to be fruitless. I don't know the answer to it and I don't know if you have the answer to it or anything can be done. I would ask that BOEM begin to look at that shared corridor if you have not, and put limits on it. It will definitely come up in the future. We can say that we need to look at them individually but if you are wise, we need to look at our actions in totality.
- **Comment—**Regarding the cable corridor and the inter-array cables. This is another reason that we have been consistently asking for a plan or a drawing with a common corridor, if these are to move forward off the coast of New England. We are going to have a series of cables that will look very much like a net. The amount of

disturbance in the wind energy area alone, what I'm referring to is simply the lease area, all of that is an impacted area. I've also not heard any reference of the research conducted by Paulette Steve's. I would like to know if that was even reviewed as part of the consideration, not only for VW I but many of the projects under way.

- **Comment—**This is something that has been on going with BOEM. Initially their testing was limited to the overall lease areas. We lacked the foresight because it's a whole different way of conducting section 106. These things have been brought up for a long time. BOEM has a responsibility to address the cumulative impacts of all the lease areas. I think we've maintained our concerns with a disruption to the interior of the sound. I have to agree with Bettina. I do not know that it has ever been sufficiently addressed. When Nantucket sound was nominated, there was very detailed information about how it should be treated. Something needs to be done to address those concerns moving forward, as the cumulative impacts are still unknown to us. These TCPs and submerged landscapes, 19 are going to be impacted, and I think a couple projects are going to come through the sound. I just want to echo that.
- **Comment—**I wanted to follow up in solidarity with the other tribal members on the call. It seems pertinent to recognize that Vineyard Wind withdrew their proposal and we started up again where we left off. That seems like preferential treatment being given to VW and not the consulting parties. I don't understand why this Section 106 process wouldn't be started with weighted consideration given to the concerns about the submerged landscapes and the archaeology. I feel like it should be advocated more by BOEM. I would say environmental impacts have been cut short and there should be additional time, seeing as the process was abruptly stopped and restarted. Finally, with all the concern about destroying 19 landforms, and Nantucket Sound is an actual protected TCP, I would like to know why BOEM and Vineyard Wind thought it appropriate to run through 19 paleolandforms. That doesn't seem acceptable to us and compensatory has been taken off the table. I do not know if that will change with the current administration but it seems like VW has been given preferential treatment.
- **Comment—**I would like to support the other tribal consulting parties and their concerns. Also in respect to the wind turbine generators, why the choice has been made. This is a 30 year mature market in Europe and why we would change to an unproven technology. I haven't heard any reasons. All we hear is that it is roughly the same size, and will be secured to the floor. We don't see it as, "all is well".

**Review Of Next Steps To Be Taken**

Ms. Rusten (ERM) thanked everyone for participating. She reviewed the next steps and upcoming dates on the consultation schedule, including timing for the MoA and ROD.

Ms. Carrier (BOEM) thanked everyone for their comments and participation and stated the comments and questions will be brought to the BOEM decision makers.

Ms. Rusten (ERM) adjourned the meeting.

**Appendix B: Memorandum from Vineyard Wind to BOEM regarding Visibility of Project Structures, June 3, 2019**

# MEMORANDUM

Date: June 3, 2019

To: Meredith Lilley, BOEM

From: Maria Hartnett, Epsilon

**Subject: Vineyard Wind, Visibility and April 10, 2019 Finding of Adverse Effect**

As we have discussed, BOEM's April 10, 2019 Finding of Adverse Effect for the Vineyard Wind Project Construction and Operations Plan ("the Finding") overstates the visibility of the project on the Nantucket Historic District National Historic Landmark and the Gay Head Lighthouse. This memo provides a more accurate interpretation of the visibility data contained in the Visual Impact Assessment (VIA) included as Appendix III-H.a of the Construction and Operations Plan (COP) and the effect of Vineyard Wind's proposed mitigation measures to substantially mitigate the visibility of the project.

**Nantucket Historic District National Historic Landmark**

Section 4.2 of the Finding states that elements will be visible at the Nantucket Historic District National Historic Landmark up to 68% of the time (all hours of the year). This overstates the conclusions of the VIA for the following reasons:

- The Finding appears to reference Table 2 of the VIA, which summarizes visibility measurements from the Nantucket Airport meteorological station. In those measurements, visibilities greater than 10 statute miles are still reported as 10 miles[1]. Therefore, given that the nearest shoreline vantage point is more than 14 statute miles away from the single nearest WTG, it is reasonable to conclude that the project will be obscured from coastal vantage points more frequently than identified in Table 2. [VIA Section 4.3]
- The on land visibility measurements do not account for wind and wave induced sea spray and salts. The presence of sea spray and salts in the air over the ocean affects visibility but is not accounted for in Table 2. Therefore, calculated visibilities should be considered conservative since they do not account for this light-reducing factor. [VIA Section 4.3]

[1] Airports provide visibility data for the benefit of pilots, who are only interested in whether visibility is limited to less than ten miles.

- The ocean elements of the Project can be visible from only a small fraction of the Nantucket Historic District National Historic Landmark. Views of Project ocean elements will be blocked by intervening terrain and vegetation for the vast majority of Nantucket, including the entirety of the historic harbor and town. Where visible, most ocean elements will be much farther than 14 miles away. [VIA Figure 5]

- At over 14 miles from shore there is no land-based vantage point that will view an entire Wind Turbine Generator (WTG). Some portion of each of the structures will always fall below the visible horizon, and the presence of waves further reduces the portion of structures visible. [VIA Section 4.2]

- Even when and where visible, the ocean elements of the Project will not affect the overall character of the resource. The perceived width of the WTG tower at over 14 miles distance would be roughly equivalent to viewing a pencil from 100 feet away. Similarly, the perceived width of the blade would be roughly equivalent to viewing a coffee straw at the same distance. [VIA Section 6.2]

Importantly, Vineyard Wind's proposed actions will substantially mitigate the visibility of the ocean elements.

- Subject to approval from BOEM and the FAA, Vineyard Wind will install and use an Automatic Detection and Lighting System (ADLS) to reduce nighttime lighting and thus minimize nighttime visibility of the ocean-based project elements. Such a lighting system will only be activated a tiny fraction of the time (estimated at less than 4 hours/year). Accordingly, nighttime lighting will be almost completely eliminated, and in the absence of lighting, the Project will not be visible from shore at night.

- Vineyard Wind will paint the WTGs using an off-white / grey color, to reduce contrast with the sea and sky and thus minimize daytime visibility of the ocean-based project elements. The conservative threshold for visibility as used in Table 2 of the VIA is "the greatest distance at which an observer can just see a **black** object viewed against the horizon sky". [VIA, Appendix C Section 4.2] The WTGs will not be black; instead, the neutral off-white color will be highly compatible with the hue, saturation and brightness of the background sky. [VIA Section 6.2] This lack of contrast between the structures and the background means that the percentage of the time the structures might be visible is greatly reduced.

**Gay Head Lighthouse**

Similarly, the Findings overstate the conclusions of the VIA regarding impacts to Gay Head Lighthouse on Martha's Vineyard. The Gay Head Lighthouse is located on the extreme western tip of Martha's Vineyard; it is approximately 24 statute miles from the nearest Project ocean element (a WTG on the western edge of the wind array). The Findings state "it is estimated that the ocean view from the Gay Head Lighthouse

to the south and the west will be obstructed by the new ocean-founded visual elements proposed in the COP up to 76% of the time." Notably:

- At no time will ocean view be "obstructed." The location of the WDA more than 23 km (14 miles) offshore eliminates all foreground, mid-ground, and even near background views from visually sensitive public resources and population centers. [VIA Section 8.0] Objects in the far background should not be characterized as obstructions.

- Gay Head Lighthouse is 24 statute miles from any Project ocean elements; basing visual impact conclusions on the frequency of 10-mile visibility greatly overestimates how often structures could be visible.

- As previously explained for Nantucket, visibility measurements do not account for sea spray and salts, some portion of the structures will always fall below the visible horizon, and the presence of waves further reduces the portion of structures visible.

- The use of ADLS will virtually eliminate nighttime visibility, and the lack of contrast between the structures and the background mean that the daytime percentage of the time the structures might be visible is greatly reduced.

**Times Potentially Visible**

During our call on Thursday afternoon May 30, you requested an update to the VIA Table 2 separating daytime and nighttime visibility. Table A below provides that update, with seasons and daytime hours as-defined in VIA Appendix C Section2.0.

**Table A: Frequency of Reported Visibility Ranges from Martha's Vineyard and Nantucket Airports (Not Equivalent to Visibility of the Project from the Shoreline)**

| Percentage of Time Airport Visibility is 10 Statute Miles or Greater | | | | | | |
|---|---|---|---|---|---|---|
| Location | Time | Winter | Spring | Summer | Fall | Annual |
| Martha's Vineyard Airport | Day | 80% | 82% | 80% | 84% | 81% |
| | Night* | 0% | 0% | 0% | 0% | 0% |
| | Total | 40% | 41% | 40% | 42% | 41% |
| Nantucket Airport | Day | 71% | 71% | 69% | 76% | 72% |
| | Night* | 0% | 0% | 0% | 0% | 0% |
| | Total | 35% | 36% | 35% | 38% | 36% |

*Unlit objects will not be visible at >10 miles at night. The use of ADLS reduces expected nighttime lighting to less than 4 hours/year, which is <0.1% of annual nighttime hours and is rounded to 0% in this table.

However, for the reasons discussed above, the percentages in Table A should not be taken as times when project structures will be visible.

BOEM addressed one key limitation of the airport data – the fact that airports don't report visibility greater than 10 statute miles – in OCS Study BOEM 2017-037 "Visualization Simulations for Offshore Massachusetts and Rhode Island Wind Energy Area - Meteorological Report." In Section 4.2 of that study, BOEM presents a method to calculate visibility distances past 10 statute miles using relative humidity data. BOEM developed the method by performing a regression analysis of Martha's Vineyard visibility and relative humidity observations.

Table B below applies the methodology from the BOEM study to Martha's Vineyard and Nantucket airport data. For Martha's Vineyard, Table B shows the amount of time visibility is greater than 24 miles (the distance from Gay Head Lighthouse to the closest Project structures). For Nantucket, Table B shows the amount of time visibility is greater than 14.7 miles (the distance from the **closest** Nantucket locations to the closest Project structures – all other Nantucket locations are further away).

**Table B: Visibility Estimates using Algorithm in BOEM 2017-037**

| Percentage of Time Visibility is 14.7 Statute Miles or Greater for Nantucket, 24 Statute Miles or Greater for Martha's Vineyard using BOEM Methodology | | | | | | |
|---|---|---|---|---|---|---|
| Location | Time | Winter | Spring | Summer | Fall | Annual |
| Martha's Vineyard (Gay Head Lighthouse) | Day | 46% | 44% | 28% | 37% | 39% |
| | Night* | 0% | 0% | 0% | 0% | 0% |
| | Total | 23% | 22% | 14% | 19% | **19%** |
| Nantucket (Closest Point on Nantucket Historic District National Historic Landmark) | Day | 60% | 52% | 36% | 54% | 50% |
| | Night* | 0% | 0% | 0% | 0% | 0% |
| | Total | 30% | 26% | 18% | 27% | **25%** |

*Unlit objects will not be visible at >10 miles at night. The use of ADLS reduces expected nighttime lighting to less than 4 hours/year, which is 0.1% of annual nighttime hours and is rounded to 0% in this table.

Table B shows that, on average for all conditions, project structures **might** be visible 19% of the time from Gay Head Lighthouse, and **might** be visible 25% of the time from the **closest** location on Nantucket. Again, because of sea spray, low-contrast paint color, and other factors, the actual amount of time structures would be visible is lower.

**Conclusion and Request**

Taking into consideration the fact that the visual impacts are less than what is stated in the Finding, and the proposed mitigation substantially reduces the visual impacts, we respectfully request that BOEM clarify that the structures will not be visible most of the time, and that the Project would result in minimal change to landscape conditions for viewers along the Martha's Vineyard and Nantucket coastlines [VIA, Section 8.0].