

CUMULATIVE HISTORIC RESOURCES VISUAL EFFECTS ANALYSIS – MAYFLOWER WIND PROJECT

Prepared for

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ABSTRACT

The Bureau of Ocean Energy Management (BOEM) requested that ICF prepare a cumulative historic resources visual effects analysis (CHRVEA) for the Mayflower Wind Project (Project). The Project has the potential to contribute to the cumulative visual effects on historic properties in combination with the potential effects of other proposed actions, most specifically other offshore wind energy development activities proposed in offshore wind lease areas adjacent to the Project. Where BOEM has determined that the Project has the potential to result in adverse visual effects on historic properties from offshore Project components, this CHRVEA analyzes further where the effects of other reasonably foreseeable development activities may be additive to those of the Project, resulting in cumulative effects. In considering the potential for cumulative visual effects of the Project on historic properties, the CHRVEA assists BOEM in complying with Section 106 of the National Historic Preservation Act (NHPA), as amended (at 54 United States Code 306108), and its implementing regulations (36 Code of Federal Regulations [CFR] 800). This includes meeting the requirements of NHPA Section 110(f) for protecting National Historic Landmarks (NHL), pursuant to 36 CFR 800.10.

The Analysis of Visual Effects to Historic Properties (AVEHP) report prepared specific to the Project and updated in August, September, and December 2022, identified historic properties in the visual Area of Potential Effects (APE), the area within which adverse visual effects could result from wind turbine generator (WTG) installation. The AVEHP recommended potential adverse effects on one historic property resulting from the proposed offshore Project components (Construction and Operations Plan [COP] Appendix S; Mayflower Wind 2022). BOEM, in review of the AVEHP, determined the Project would result in adverse effects on the following three historic properties in Massachusetts that were either previously determined eligible for listing or listed on the National Register of Historic Places (NRHP).

1. Nantucket Historic District NHL, Nantucket, Massachusetts (NRHP-listed, NHL-listed)
2. Chappaquiddick Island Traditional Cultural Property (TCP) (determined eligible as an NRHP TCP)
3. Nantucket Sound TCP (determined eligible as an NRHP TCP)

Cumulative visibility of the WTGs and other offshore wind energy development activities is anticipated to intensify the level of adverse effect on three of these historic properties: Nantucket Historic District NHL, Chappaquiddick Island TCP, and Nantucket Sound TCP. WTGs associated with the Project would represent 12.66 to 17.36 percent of the total WTGs visible from these properties, and WTGs associated with other offshore wind energy development activities would represent 82.64 to 87.34 percent of the total WTGs visible from these properties. As such, the proposed Project is a relatively small-scale development compared to other developments planned nearby, including Vineyard Wind Northeast (formerly Liberty Wind; OCS-A 0522), Beacon Wind (OCS-A 0520), Vineyard Wind 1 (OCS-A 0501), New England Wind (OCS-A 0534), Bay State Wind (OCS-A 0500), Sunrise Wind (OCS-A 0487), South Fork Wind (OCS-A 0517), and Revolution Wind (OCS-A 0486).

The conclusions herein are ICF's recommendations regarding the Project's WTGs' incremental contribution to cumulative visual effects on historic properties when combined with past, present, and reasonably foreseeable offshore wind energy development activities in the visual APE for this Project. These recommendations are provided to inform BOEM's determination of Project effects on historic properties and consultation on any effects found. Where BOEM has made its determination in the *Finding of Adverse Effect for the Mayflower Wind Construction and Operations Plan*, this determination is expressed consistently in the CHRVEA. While Section 106 consultation is ongoing among BOEM, the Massachusetts State Historic Preservation Officer, the Advisory Council on Historic Preservation, federally recognized Tribes, and other identified consulting parties on the Project, final determinations remain with BOEM in accordance with 36 CFR 800. This includes ongoing consultation with Native American Tribal Nations that may identify properties of traditional cultural and religious significance in the APE.

CONTENTS

1	INTRODUCTION	1
1.1	Project Background.....	1
2	AREA OF POTENTIAL EFFECTS AND HISTORIC PROPERTIES IDENTIFIED	5
3	CUMULATIVE VISUAL EFFECTS ANALYSIS	7
3.1	Modeling Viewshed and Cumulative Wind Turbine Generator Visibility.....	7
3.2	Cumulative Visual Simulations	11
3.3	Weather and Atmospheric Conditions	12
3.4	Visual Effects	12
	Nighttime Lighting	15
4	CUMULATIVE EFFECTS CONSIDERATIONS SPECIFIC TO NATIONAL HISTORIC LANDMARKS AND THE NATIONAL HISTORIC PRESERVATION ACT SECTION 106 PROCESS	16
4.1	Nantucket Historic District NHL	17
5	CONCLUSION	18
6	PERSONNEL	19
7	REFERENCES CITED	19

APPENDICES

Appendix A	Description, Historic Character, and Basis for National Register of Historic Places Eligibility of the Traditional Cultural Properties with Adverse Effects from the Project
Appendix B	Memorandum: Mayflower Wind – Visual Impact Assessment Cumulative Simulations – Methods and Assumptions, August 25, 2022
Appendix C	Mayflower Wind Cumulative Visual Simulations
Appendix D	Key Personnel Resumes

FIGURES

Figure 1	Area of Potential Effects for visual effects analysis within the maximum distance for potential visibility of Project facilities	2
Figure 2	Area of Potential Effects with affected historic properties—Martha’s Vineyard and Chappaquiddick Island	3
Figure 3	Area of Potential Effects with affected historic properties – Nantucket Island	4

Figure 4	Wind turbine generator locations for cumulative visual simulations across the adjacent Bureau of Ocean Energy Management Lease Areas	9
Figure 5	Dimensions for wind turbine generators proposed for the Project (1,066 feet)	10

TABLES

Table 1	Summary of historic properties experiencing adverse effects from the Project	6
Table 2	Maximum-case scenario numbers of wind turbine generators modeled for the Project and other offshore wind projects for the cumulative visual analysis.....	8
Table 3	Estimated visibility to 10 nautical miles and 20 nautical miles from Nantucket and Martha’s Vineyard	12
Table 4	Historic properties and wind turbine generator visibility	14
Table 5	Summary of number of theoretically visible wind turbines by project from historic properties.....	14

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1 INTRODUCTION

This cumulative historic resources visual effects analysis (CHRVEA) assesses the contribution of the Mayflower Wind Project (the Project) to cumulative visual effects on historic properties. Cumulative effects on historic properties are the incremental effects that the Project could have when added to other past, present, or reasonably foreseeable future actions, regardless of which agency or person undertakes the actions (40 Code of Federal Regulations [CFR] 1508.7). Where the Bureau of Ocean Energy Management (BOEM) has determined that the Project has the potential to result in adverse visual effects on historic properties, this CHRVEA analyzes further where the effects of other reasonably foreseeable development activities may be additive to those of the Project, resulting in cumulative effects. The CHRVEA focuses on cumulative visual effects on historic properties.

1.1 Project Background

BOEM is the lead federal agency responsible for the decision on whether to approve, approve with modifications, or disapprove the Project's construction and operations plan (COP) pursuant to 43 United States Code (U.S.C.) 1332(3). To further inform that decision, BOEM requested that ICF prepare a CHRVEA to assist in BOEM's compliance with Section 106 of the National Historic Preservation Act (NHPA), as amended (54 U.S.C. 306108), and its implementing regulations (36 CFR 800).

In the COP Mayflower Wind Energy, LLC (Mayflower Wind) proposes to develop a commercial-scale offshore wind energy facility in BOEM Lease Area OCS-A 0521 (Lease Area) with up to 149 wind turbine generators (WTGs) and offshore substation platforms (OSPs), interarray cables linking the WTGs to the OSPs, offshore export cables, sea-to-shore transitions, onshore export cables, onshore substation, onshore high-voltage direct-current converter station, transmission lines, points of interconnection, and any onshore facilities for construction and operation. Mayflower Wind plans to construct the Project by 2030.

In addition to the proposed Project, BOEM has identified 10 types of actions that could result in cumulative effects on the human environment, including historic properties: (1) other offshore wind energy development activities; (2) undersea transmission lines, gas pipelines, and other submarine cables (e.g., telecommunications); (3) tidal energy projects; (4) marine minerals use and ocean-dredged material disposal; (5) military use; (6) marine transportation; (7) fisheries use and management; (8) global climate change; (9) oil and gas activities; and (10) onshore development activities, such as onshore wind turbines, telecommunications towers, planned projects in town master plans, and railroad/railroad station improvements.

Of the above actions, the visual effects from other offshore wind energy development activities in BOEM offshore wind lease areas adjacent to the Project (Figure 1) pose the greatest potential for cumulative effects on historic onshore properties when combined with those identified for the Project (Figure 2 and Figure 3). The following discussion presents the reasonably foreseeable cumulative visual effects associated with other offshore wind energy development activities and the Project.

2 AREA OF POTENTIAL EFFECTS AND HISTORIC PROPERTIES IDENTIFIED

Visual effects from the Project have the potential to adversely affect historic properties in the Area of Potential Effects (APE) that BOEM has defined for the Project (BOEM 2023b). The APE encompasses the viewshed from which renewable energy structures would be visible, whether offshore or onshore (Figure 1, Figure 2, and Figure 3). The APE for visual effects analysis for the Project includes onshore coastal areas of Massachusetts and Rhode Island. Development of the visual APE for offshore Project components begins with a boundary of 43 miles radial distance from the Lease Area, which is the approximate maximum theoretical distance—a distance that does not factor in certain environmental factors such as weather or environmental conditions—at which the WTGs could be visible (COP Appendix S:2-1; Mayflower Wind 2022). Geographic information system (GIS) analysis and subsequent field investigation delineated the visual APE for offshore Project components methodically through a series of steps, beginning with the maximum theoretical distance at which wind turbine generators (WTGs) could be visible. This was determined by first considering the visibility of a WTG from the water level to the tip of an upright rotor blade at a height of 1,066 feet (325 meters). The analysis then accounted for how distance and Earth curvature impede visibility as the distance increases between the viewer and WTGs (i.e., by a 43-mile distance, even blade tips would be below the sea level horizon line). The mapping effort then removed all areas with obstructed views toward WTGs, such as those views impeded by intervening topography, vegetation, and structures. Areas with unobstructed views of offshore Project elements then constituted the APE. Based on this analysis, the visual APE for offshore Project components is defined as portions of the preliminary APE (PAPE), which includes areas determined by the modeling to have views toward the offshore Project components and that are located within 1 mile (1.6 kilometers) of the southern shorelines of Martha's Vineyard and Nantucket (COP Appendix S; Mayflower Wind 2022). Generally, the offshore visual APE includes the islands of Nantucket, Tuckernuck, Muskeget, Martha's Vineyard, Chappaquiddick, and Nomans Land.

Cumulative visual effects associated with the Project in combination with other planned offshore wind energy development activities in adjacent BOEM offshore wind lease areas were assessed within the APE. Effects on historic properties outside the APE were not assessed.

The APE for visual effects for the Project was previously analyzed for Project-specific visual effects on historic properties in the analysis of visual effects on historic properties (AVEHP) for onshore and offshore Project elements (COP Appendices S and S.1; Mayflower Wind 2022). Beyond visual effects from WTGs, the AVEHP did not identify adverse visual effects on historic properties from other Project facilities, such as the onshore substation locations or associated overhead grid connections. The AVEHP recommended a finding of adverse effect on the Nantucket Historic District National Historic Landmark (NHL; COP Appendix S; Mayflower Wind 2022). In review of the AVEHP, BOEM determined that the undertaking would also result in adverse effects on the Nantucket Sound Traditional Cultural Property (TCP) and the Chappaquiddick Island TCP. Table 1 provides a summary of these adversely affected historic properties. BOEM reviewed the AVEHP and will review information and comments received from consulting parties and meetings to determine effects on all historic properties identified in the APE.

Table 1 Summary of historic properties experiencing adverse effects from the Project

MHC ID	Historic Property	Location	NRHP Eligibility	Distance to the nearest Project WTG
NAN.D, NAN.F	Nantucket Historic District (Includes Nantucket Island, Tuckernuck Island, and Muskeget Island)	Nantucket, MA	NRHP-Listed 11/13/1966; NHL Designated 11/13/1966	23.4 miles
EDG.907, NAN.939, FAL.973, MAS.916	Nantucket Sound TCP	Offshore Massachusetts	Determine eligible as an NRHP TCP 1/4/2010	25.1 miles
N/A	Chappaquiddick Island TCP	██████████, MA	Determine eligible as an NRHP TCP 2019	30.8 miles

Source: COP Appendix S; Mayflower Wind 2022.

MA = Massachusetts; MHC ID = Massachusetts Historical Commission resource identification number; NHL = National Historic Landmark; NRHP = National Register of Historic Places; TCP = Traditional Cultural Property; WTG = wind turbine generator

Visual effects on historic properties tend to especially risk the alteration of characteristics that qualify a property for inclusion in the National Register of Historic Places (NRHP) when these effects diminish integrity of setting, feeling, or association of that property. The National Park Service (NPS) defines *setting*, *feeling*, and *association* as follows (NPS 1997).

1. Setting is the physical environment of a historic property and refers to the character of the place in which the property played its historical role. The physical features that constitute the setting of a historic property can be either natural or human made, including such elements as topographic features, vegetation, human-made features/landscape structures, and relationships between buildings and other features or open space. These features and their relationships are considered between the property and its outside surroundings as well as inside the boundaries of the property.
2. Feeling is a property's expression of the aesthetic or historic sense of a particular period of time. It results from the presence of physical features that, taken together, convey the property's historic character. A historic property retaining original design, materials, workmanship, and setting might relate the feeling of its historic period of significance—its historic feel.
3. Association is the direct link between an important historic event or person and a historic property. A property retains association if it is the place where the event or activity occurred and is sufficiently intact to convey that relationship to an observer. Like feeling, association requires the presence of physical features that convey a property's historic character.

The AVEHP identified 17 historic properties in the portion of the visual APE for offshore Project components. This number includes previously identified historic properties, three TCPs, and newly identified potential historic properties on Martha's Vineyard. However, only 14 of 17 properties have a potential view of the Project. These properties were identified as having character-defining or potentially character-defining ocean views that could potentially contribute to the property's significance, including significant open seaward views that support the integrity of the maritime setting. The AVEHP recommended a finding of adverse effect on one historic property in the visual APE for offshore Project components, the Nantucket Historic District NHL. BOEM, in its review of the AVEHP, confirmed this adverse effect and determined that there would also be visual adverse effects on the Nantucket Sound TCP and Chappaquiddick Island TCP.

Appendix A, *Description, Historic Character, and Basis for National Register of Historic Places Eligibility of the Traditional Cultural Properties with Adverse Effects from the Project*, provides the description, historic character, and basis for NRHP eligibility of the two TCPs with adverse effects from the Project. Section 4.1, *Nantucket Historic District NHL*, of this report provides the description, historic character, and basis for NRHP eligibility for the NHL. Figure 2 and Figure 3 show the locations of each property within the APE.

This CHRVEA specifically analyzes cumulative adverse effects on historic properties where BOEM has determined adverse visual effects could result from the offshore Project components. In addition to the proposed Project WTGs, this CHRVEA assesses where the WTGs proposed for other planned offshore wind energy development activities may combine with the Project to produce cumulative visual effects on historic properties in the APE.

3 CUMULATIVE VISUAL EFFECTS ANALYSIS

Modeling for the AVEHP mapped the maximum area of potential onshore visibility to the Project WTGs within which historic properties may occur. This area established the APE for the visual effects analysis (COP Appendix S; Mayflower Wind 2022). Modeling for the CHRVEA established the maximum potential number and positioning of the Project WTGs and other offshore wind projects' WTGs cumulatively visible from the Nantucket Historic District NHL, Nantucket Sound TCP, and Chappaquiddick Island TCP.

3.1 Modeling Viewshed and Cumulative Wind Turbine Generator Visibility

Modeling viewshed and WTG visibility is a multi-step process. The method applied for initial Project-level viewshed modeling is described in the following summary from the AVEHP (COP Appendix S:2-1 and 2-3; Mayflower Wind 2022):

The process began with creating three digital elevation models (DEM) reflecting the maximum areas within which the Project could potentially be seen and contribute a level of visual change within an existing setting. Maximum design heights and bare earth topography (i.e., no benefit of screening from intervening vegetation or other structures) were used to develop preliminary viewsheds showing locations where the Project components could potentially be visible. The maximum extent of the offshore viewshed modeling was set at 43 mi (69.2 km), the limit of visibility based on the curvature of the earth at sea level with a viewer perspective of 6.6 ft (2 m)...One DEM was established for the offshore Project components...The DEM was used to establish an initial list of historic properties that was further refined during desktop analysis and field investigation. Selected historic properties were visited during field survey to ground truth the limits of Project visibility, to assess the existing visual character and setting for each, and to identify a subset of representative historic properties to be included in the VIA as KOPs.

In a second step, three digital surface models (DSMs) were built to identify areas of potential visibility that consider screening from vegetation and buildings as well as the topography and maximum design conditions. The three DSMs that were produced included one for the offshore Project components and one each for the onshore substations under consideration, Lawrence Lynch (preferred) and Cape Cod Aggregates (alternate). The resultant area of potential Project visibility is defined as the area of potential visual impact (APVI) in the VIA (see COP Appendix T, Visual Impact Assessment).

In a final step, the PAPE was delineated based on a field assessment of visibility for a large number of KOPs within the APVI...for the offshore and onshore Project area...Therefore the landward extent of the offshore PAPE is defined as the portion of the APVI that falls within 1 mi (1.6 km) of the southern

shorelines of the islands...The PAPE also includes those offshore portions of the TCPs located within the APVI...

The AVEHP also reviewed field photographs and visual simulations from select key observation points (KOPs) to assess potential Project visibility at various viewing distances, times of day, times of year, viewing elevations, weather conditions, and local contexts. The visualizations provided a more accurate and realistic impression of Project visibility than the geographic extent of theoretical visibility presented in the computer-based viewshed analysis (COP Appendix S:Attachments 3 and 4; Mayflower Wind 2022).

Cumulative effects modeling was based on technical specifications and Project layouts or layout criteria provided by BOEM for potential locations where WTGs for the Project and all other offshore wind lease areas (within 43 miles around the Project) could be visible from historic properties (Figure 4). The cumulative WTG visibility assessment considered the combined, simultaneous visibility from the APE of potentially visible WTG locations on offshore wind lease area grids associated with Vineyard Wind Northeast (OCS-A 0522), Beacon Wind (OCS-A 0520), Vineyard Wind 1 (OCS-A 0501), New England Wind (OCS-A 0534), Bay State Wind (OCS-A 0500), Sunrise Wind (OCS-A 0487), South Fork Wind (OCS-A 0517), and Revolution Wind (OCS-A 0486). Turbines are counted as “visible” if the computer model determines a single point on the component would be seen from a ground location at each historic property. In addition to height of the viewer at each property, the analysis also considered height of the WTGs, earth curvature, and distance between the historic property and WTGs. WTG height varied among the Project, which proposes WTGs with a blade tip height of 1,066 feet, and the other offshore wind energy development activities, which propose WTGs with blade tip heights ranging from 837 to 1,171 feet (maximum blade tip elevation above flat sea surface) (Table 2; Figure 5). This maintains consistency with the “reasonably foreseeable future offshore WTGs” analyzed in the *Mayflower Wind Project Draft Environmental Impact Statement* (BOEM 2023a).

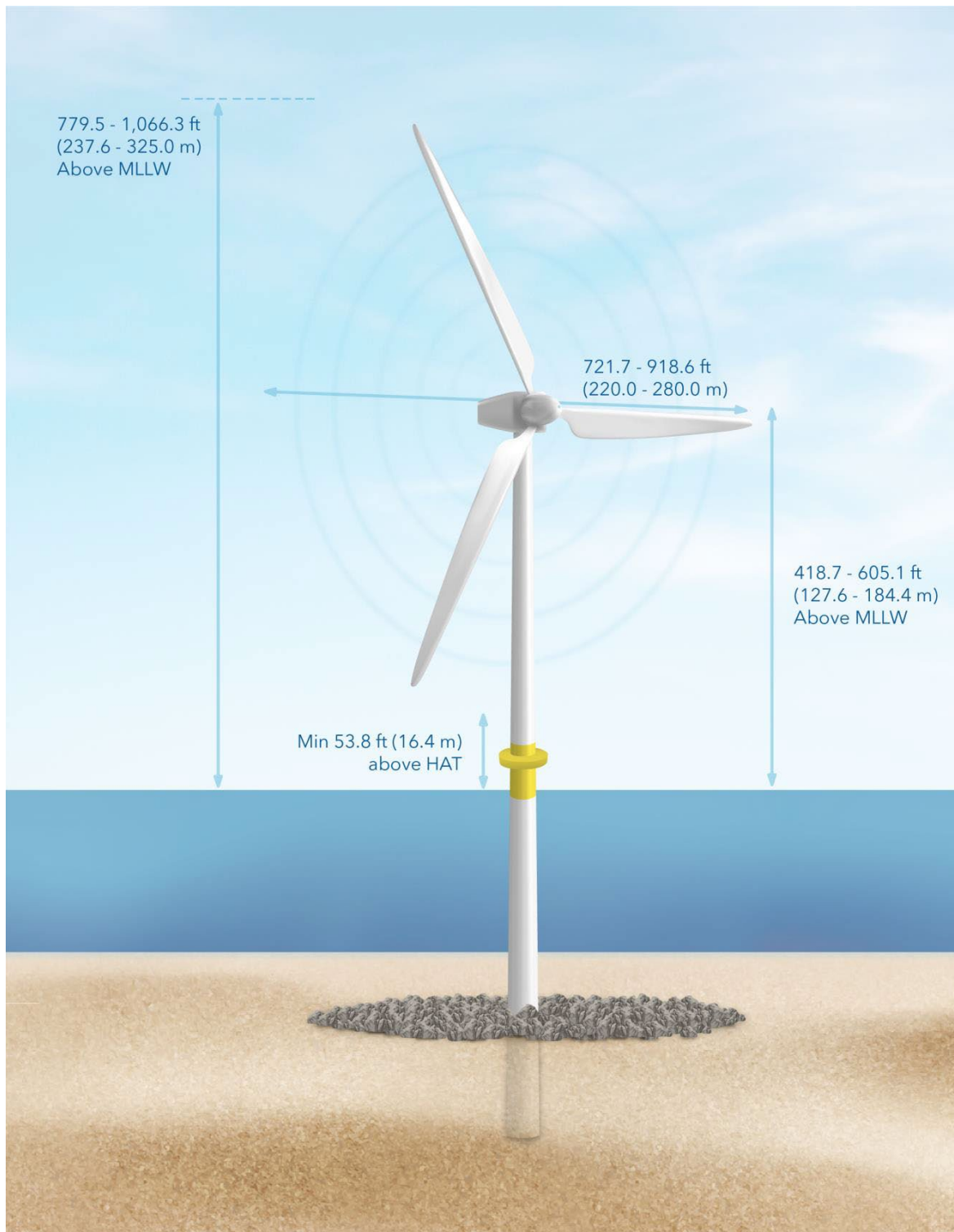
Table 2 Maximum-case scenario numbers of wind turbine generators modeled for the Project and other offshore wind projects for the cumulative visual analysis¹

Offshore Wind Project	Height of WTGs	Number of WTGs (Maximum-Case Scenario)
Bay State Wind	853 feet	169
Beacon Wind	1,086 feet	157
Vineyard Wind Northeast ^a	1,171 feet	139
Mayflower Wind	1,066 feet	149
New England Wind	1,047 feet	120
Revolution Wind	873 feet	103
South Fork Wind	853 feet	18
Sunrise Wind	968 feet	131
Vineyard Wind 1	837 feet	77
Total number of WTGs in maximum-case scenario:		1,063

Source: Appendix B, *Memorandum: Mayflower Wind – Visual Impact Assessment Cumulative Simulations – Methods and Assumptions*.

^a Formerly Liberty Wind. This project is listed as Liberty Wind in the cumulative visual simulations.

¹ These numbers are consistent with the heights and maximum numbers of WTGs analyzed in the cumulative simulations developed by Mayflower Wind (see Appendices B and C).



Source: COP Volume I, Section 3.3.2; Mayflower Wind 2022.

Note: WTG dimensions used for the cumulative visual simulations varied by project, with wind turbine blade tip height ranging from 837 to 1,171 feet.

Figure 5 **Dimensions for wind turbine generators proposed for the Project (1,066 feet)**

3.2 Cumulative Visual Simulations

The modeling of cumulative visual effects also involved creating cumulative visual simulations from KOPs based on five construction scenarios (Appendix B, Memorandum: *Mayflower Wind – Visual Impact Assessment Cumulative Simulations – Methods and Assumptions*, and Appendix C, *Mayflower Wind Cumulative Visual Simulations*). The visual simulations were created using three dimensional models of the WTGs and OSPs and developed using the geo-referenced, measured photos obtained for the Mayflower Wind Visual Impact Assessment (COP Appendix T; Mayflower Wind 2022). The simulations integrate the built infrastructure in scale based on the distances of structures from a total of eight KOPs: five KOPs on Nantucket Island; an additional nighttime simulation for one of these KOPs (Cisco Beach); and two KOPs on Martha’s Vineyard. The development of the simulations is explained in an accompanying memorandum (Appendix B):

Simulations were created using Autodesk’s 3ds Max Design program. Three dimensional (3D) models of the above ground/sea surface structures (e.g., WTGs/OSPs) were created on each of the locations. Visual simulations are developed using the same geo-referenced, measured photos obtained for the Mayflower Wind Visual Impact Assessment (COP Appendix T). The simulations integrate the built infrastructure in scale based on the distances of structures from the KOP. For the purposes of the cumulative impact simulations, the existing 3D Model for the Mayflower Wind Project was expanded to incorporate the structures to be construction within the additional lease areas in the WEA. Geographic Information System (GIS) files provided by BOEM supplied the positions for wind generation turbines (WTGs) for each project, and where data were publicly available, the location of planned Offshore Substation Platforms (OSPs) 1 for each project. OSP locations were not available for all projects. Details regarding the height of blade tip and hub above mean sea level (MSL), rotor diameter, and color were provided to Mayflower Wind by BOEM in the RFI.

Using the known location of where the measured, geo-referenced photo was taken, as well as the height of the camera (ground elevation plus eye height), a camera in the program was created at this location using a 2 inch (50 millimeter; mm) focal length.

Night conditions were simulated for the Cisco Beach KOP to reflect potential cumulative nighttime visibility. Lighting was established in the model to be consistent with the BOEM April 28, 2021 Guidelines for Lighting and Marking of Structures Supporting Renewable Energy Development. The Cumulative Effect nighttime simulation was developed in a manner consistent with that for the Mayflower Wind VIA (AECOM 2022:2).

Appendix C presents cumulative visual simulations that illustrate theoretical visibility of WTGs associated with the Project in combination with those of other foreseeable projects. These visual simulations are modeled based on the KOPs positioned at locations with representative views. These representative views are not intended to be located at all elements of historic properties, or even directly at historic properties, but are rather situated at approximate locations to provide open views toward WTGs, considering the distance of historic properties from the maximum possible build-out of all WTG locations modeled in the offshore wind lease areas for the Project and other offshore wind energy development activities (Appendix B). BOEM requested that the simulations be created at eight specific KOPs and time periods (i.e., nighttime and daytime were both present for Cisco Beach KOP), as described in Appendix B.

The visual simulations include five development construction scenarios plus existing conditions for the eight chosen KOPs. These scenarios are defined in Appendix B as follows:

- **Scenario 1:** 2023–2025 Project Construction (Vineyard Wind, South Fork Wind, Revolution Wind, Sunrise Wind, and New England Wind).
- **Scenario 2:** Mayflower Wind Project Construction with prior 2023–2025 Project Construction (from Scenario 1).

- **Scenario 3:** 2024–2030 Project Construction (New England Wind II, Liberty Wind, Beacon Wind and Bay State Wind) with prior 2023–2025 Project Construction (Vineyard Wind, South Fork Wind, Revolution Wind, Sunrise Wind and New England Wind) and Mayflower Wind Project Construction.
- **Scenario 4 (full Buildout):** 2023–2025 Project Construction (Vineyard Wind, South Fork Wind, Revolution Wind, Sunrise Wind and New England Wind) and 2024–2030 Project Construction (New England Wind II, Liberty Wind, Beacon Wind and Bay State Wind) without Mayflower Wind Project Construction.
- **Scenario 5:** Mayflower Wind without other foreseeable planned activities.

These simulations illustrate realistic views of potential WTGs and OSPs from land areas associated with the adversely affected historic properties onshore Nantucket Island (Nantucket Historic District NHL) and offshore Nantucket Island (Nantucket Sound TCP) and Martha’s Vineyard (Chappaquiddick Island TCP). The simulations include the maximum Project buildout with combined views that also include the maximum known buildouts for the WTGs and OSPs for the other projects in the geographic analysis area.

3.3 Weather and Atmospheric Conditions

Although not considered in the delineation of the APE, meteorological and atmospheric conditions, such as low cloud cover, fog, or haze, may affect visibility of the Project from the APE. The Visual Impact Analysis (VIA) (COP Appendix T, Section 5.1.3; Mayflower Wind 2022) presents data from the BOEM Meteorological Report (COP Appendix T, Section 5.1.3; Mayflower Wind 2022), which documents visibility from Nantucket and Martha’s Vineyard. In the BOEM report (COP Appendix T, Section 5.1.3; Mayflower Wind 2022), hourly surface observations were evaluated to determine meteorological condition, visibility, wind speed, and direction. Table 3 presents the average number of days where there is clear visibility out to 10 nautical miles (11.5 miles) and 20 nautical miles (23 miles) from Nantucket and Martha’s Vineyard for at least 50 percent and 75 percent of the daylight hours. Based on the data presented, visibility greater than 20 nautical miles (23 miles) is expected to occur less than 30 percent of the time (COP Appendix S:2-3; Mayflower Wind 2022).

Table 3 Estimated visibility to 10 nautical miles and 20 nautical miles from Nantucket and Martha’s Vineyard

Location	Percent (%) of Daylight Hours	Estimated Days per Year >10 nm Visibility	Estimated Days per Year >20 nm Visibility
Nantucket (multiple sites)	50	171	80
	75	103	40
Martha’s Vineyard (multiple sites)	50	207	113
	75	117	50

Source: COP Appendix S; Mayflower Wind 2022.
nm = nautical mile

3.4 Visual Effects

This CHRVEA analyzes how the adverse visual effects from the Project—which BOEM has determined for the Nantucket Historic District NHL, Nantucket Sound TCP, and Chappaquiddick Island TCP—have the potential to result in additive cumulative visual effects in combination with the other reasonably foreseeable offshore wind energy development activities.

In parallel with the AVEHP process, the VIA (COP Appendix T; Mayflower Wind 2022) methodology included an extensive collection of baseline information to help analyze the relationship between the existing physical landscape and seascape conditions, identify KOPs, and characterize the sensitivity to change by the key viewers, also called receptors. The baseline data provide a framework that describes existing conditions and allows proposed changes to be measured and evaluated for potential impacts. The results of the historic property background research and input by a qualified architectural historian informed the identification of the KOPs. The selection of KOPs for field investigation were intended to address a broad range of uses and settings in support the VIA, as well as the significant views or character-defining features of potentially affected historic properties to support this analysis (COP Appendix S, page 2-21; Mayflower Wind 2022).

This CHRVEA uses the modeling of the Project viewshed and cumulative WTG visibility within that viewshed to inform this analysis. The analysis considers the importance of maritime setting to the integrity of the Nantucket Historic District NHL, Nantucket Sound TCP, and Chappaquiddick Island TCP from the vantage of significant seaward views that could include the Project's WTGs and the WTGs of other planned offshore wind energy development activities. The locations and heights of OSPs associated with all other reasonably foreseeable offshore wind projects were not available during the development of this analysis and are, therefore, not included. The modeling quantifies the total number of WTGs that are theoretically visible from the historic properties and the distance at which they may be visible. Based on these factors, this CHRVEA analyzes the level of effect on the integrity of the Nantucket Historic District NHL, Nantucket Sound TCP, and Chappaquiddick Island TCP.

A Project may cause cumulative visual effects on historic properties when combined with the effects of other past, present, or reasonably foreseeable future actions. This may occur where there is intervisibility between the Project viewshed and the viewshed of other actions. The area of intervisibility is the geographic extent of the intersection of Project visibility with the visibility of another action (an offshore wind project). The potential Project WTG locations in the Mayflower Wind Lease Area (OCS-A 0521) have the potential for intervisibility with other WTG locations to be installed in the adjoining lease areas, located northwest and southeast of Mayflower Wind, including Vineyard Wind Northeast (OCS-A 0522), Beacon Wind (OCS-A 0520), Vineyard Wind 1 (OCS-A 0501), New England Wind (OCS-A 0534), Bay State Wind (OCS-A 0500), Sunrise Wind (OCS-A 0487), South Fork Wind (OCS-A 0517), and Revolution Wind (OCS-A 0486). These projects could be constructed from 2023 through 2030, with up to four projects simultaneously under construction from 2023 to 2027 (BOEM 2023a: Appendix B).

The full 2030 build-out of all projects in the geographic analysis area includes up to 1,063 WTGs among the Project and eight other projects. The maximum number of potential visible WTGs were assessed from points within the NHL and TCPs that represented southern locations that would have the greatest potential for views of offshore wind structures. For the Chappaquiddick Island TCP, this analysis was conducted from Wasque Point at the southern tip of the island. For the Nantucket Sound TCP, the analysis was completed from the southern tip of the TCP boundary, which reached the northwestern edge of Esther Island, located just west of Nantucket Island. For the Nantucket Historic District NHL, the analysis was completed from just northwest of Madaket Beach.

Table 4 summarizes distances from the NHL and TCPs to the nearest WTGs associated with the Project and other offshore wind projects. Table 5 provides the maximum number of potentially visible WTGs (up to the blade tip) from the NHL and TCPs based on reasonably foreseeable offshore wind energy development activities. Not all potential WTGs from the Project and other reasonably foreseeable offshore wind energy development activities would be visible from all areas within the NHL and TCPs. WTGs would begin to disappear from view at locations with increased distance due to Earth curvature, where potential development locations within the offshore wind lease areas extend south-southwestward and north-northwestward.

Table 4 Historic properties and wind turbine generator visibility

Historic Property	Total Number of Potentially Visible WTGs (blade tips) from the Property (including the Project WTGs)	Distance from the Property to the Nearest Potentially Visible WTG for Mayflower Wind and Other Offshore Wind Projects
Nantucket Historic District NHL	743 WTGs (17.36 percent are Mayflower Wind)	23.4 miles to nearest Mayflower Wind WTG and 14.8 miles to the nearest potential WTG location for other wind energy development activities (Vineyard Wind 1)
Nantucket Sound TCP	744 WTGs (17.33 percent are Mayflower Wind)	25.1 miles to nearest Mayflower Wind WTG and 14.3 miles to the nearest potential WTG location for other wind energy development activities (Vineyard Wind 1)
Chappaquiddick Island TCP	679 WTGs (12.66 percent are Mayflower Wind)	30.8 miles to nearest Mayflower Wind WTG and 14.7 miles to the nearest potential WTG location for other wind energy development activities (Bay State Wind)

Table 5 Summary of number of theoretically visible wind turbines by project from historic properties

Historic Property	Number of Theoretically Visible Wind Turbines (Based on WTG Blade Tip Visibility)									
	Bay State Wind	Beacon Wind	Liberty Wind	Mayflower Wind	New England Wind	Revolution Wind	South Fork Wind	Sunrise Wind	Vineyard Wind 1	Total
Nantucket Historic District NHL	119	119	127	129	119	21	0	32	77	743
Nantucket Sound TCP	119	119	124	129	119	24	0	33	77	744
Chappaquiddick Island TCP	133	95	13	86	118	83	0	74	77	679

Based on these results, the Project would incrementally add to the cumulative visual effects on the Nantucket Historic District NHL, Nantucket Sound TCP, and Chappaquiddick Island TCP when combined with the effects of other past, present, or reasonably foreseeable future actions. This intervisibility and related adverse effects would apply for daytime visibility. As presented in Table 4, the Project WTG locations represent 12.66 to 17.36 percent of the total WTGs that are potentially visible from the Nantucket Historic District NHL, Nantucket Sound TCP, and Chappaquiddick Island TCP in the cumulative build-out scenario of offshore wind energy developments in the area. For this reason, the Project WTGs would foreseeably be surrounded by other offshore wind energy development activities that would constitute 82.64 to 87.34 percent of the total WTGs potentially visible from the three historic properties on WTG build-out from all development activities.

The Project WTGs would serve as background development amid the more numerous WTGs of other offshore wind energy development activities visible from the historic properties as the other activities reach build-out. The WTGs of other offshore wind energy development activities would be readily noticeable to and would draw the attention of the casual observer at the historic properties (Sullivan et al.

2013). Sullivan et al. (2013) found in general that offshore wind facilities tend to be a major focus of visual attention at distances up to 10 miles and were only noticeable to casual observers at distances of up to almost 18 miles. To inform determinations of adverse and cumulative visual effects, BOEM reviewed the AVEHP's list of historic properties assessed as likely to be adversely affected by the Project. BOEM will further review all information and comments provided by consulting parties in correspondence and at meetings. The Nantucket Historic District NHL, Nantucket Sound TCP, and Chappaquiddick Island TCP, which were determined to be adversely affected, retain a maritime setting and this setting contributes to their NRHP eligibility. Views from these properties offer significant seaward views that support the integrity of the maritime setting and vantage points with the potential for open views from each property toward the WTGs (COP Appendix S; Mayflower Wind 2022).

BOEM has determined the Project would have visual adverse effects on the Nantucket Historic District NHL, Nantucket Sound TCP, and Chappaquiddick Island, which have direct views of WTGs. Cumulative visibility of the Project and other offshore wind energy development activities is anticipated to intensify the level of adverse effects on these three historic properties. Specifically, the Project would contribute approximately 12.66 to 17.36 percent of the cumulative adverse effects, owing to the location and intensity of the foreseeable build-out attributable to other offshore wind energy development activities.

The AVEHP found that the Project would not adversely affect the remaining historic properties in the portion of the visual APE for offshore Project components with potential views of the Project (COP Appendix S; Mayflower Wind 2022). BOEM agrees with this assessment, finding no adverse effects on any of the other 14 historic properties identified in the visual APE beyond the Nantucket Historic District NHL, Nantucket Sound TCP, and Chappaquiddick Island TCP. BOEM will further review all information and comments provided by consulting parties in correspondence and at meetings.

Nighttime Lighting

The assessment of effects on historic properties also considered the potential visibility of offshore wind structures at nighttime. Lighting used for aviation navigation is placed on the highest point of the turbine nacelle, which is located up to 605 feet above sea level for Mayflower Wind (Figure 5). Therefore, the potential visibility of WTG nacelles represents the maximum number of potentially visible WTGs as nighttime. The use of Aircraft Detection Lighting Systems (ADLS) for Mayflower Wind will reduce expected nighttime lighting to less than 5 minutes per year and unlit portions of the structures will not be visible based on the distances between the resources and the Lease Area. Therefore, nighttime aircraft lighting is not expected to contribute to adverse effects on these historic properties (COP Appendix S:3-3; Mayflower Wind 2022). For other projects in the geographic analysis area, the use of ADLS or a similar system would greatly reduce the amount of time that aviation lights located on nacelles would be active, thus reducing the visibility of WTGs at nighttime. Therefore, Table 6 provides the maximum number of potentially visible WTG nacelles from the NHL and TCPs if all aviation lights for all projects were active at the same time.

Additionally, NPS has indicated during consultation for other offshore wind projects that a dark nighttime sky should be assumed to be a character-defining feature of certain resource types, including lighthouses, light stations, and observatories, and resources associated with historic events that may have occurred at night, such as battlefields. The Nantucket Historic District NHL fits this resource type as it includes resources like the Sankaty Head Light that meet these parameters. The aviation navigation lights on the WTG nacelles associated with the Project have the potential to adversely affect the Nantucket Historic District NHL, Nantucket Sound TCP, and Chappaquiddick Island TCP. With the use of ADLS or related systems, the number of WTGs visible at nighttime would be reduced, and potential visual effects on historic properties would be also limited by visibility conditions, as described in Section 3.3. However, BOEM has determined the Project could have cumulative adverse effects on the Nantucket Historic

District NHL, Nantucket Sound TCP, and Chappaquiddick Island, which have direct views of WTG navigation lights associated with the Project and other offshore wind energy development activities.

Based on the visibility of potential construction vessels at nighttime, as described in the AVEHP, BOEM has determined that nighttime lighting from vessels would not result in adverse effects on historic properties (COP Appendix S, page 3-1; Mayflower Wind 2022):

The larger construction vessels will be a visible feature within the maximum theoretical area of nacelle visibility. The majority of construction is expected to occur during daylight hours, but nighttime activity may also occur. Construction vessels will have nighttime lights in accordance with United States Coast Guard (USCG) regulations. During dawn and dusk periods, particularly on cloudy days, work lights may be required for worker safety as well as to improve visibility on construction vessels. Work lights are generally downward directed and would not typically be oriented horizontally where visibility on shore would be increased...

The COP provides the overall dimension of marine vessels, the number of vessels, number of trips, and the number of days on the water per vessel type. None of the vessels exceed 328 ft (100 m) in height including all structures on the vessel. The vessels with the greatest number of trips during construction are smaller support vessels. Once on site in the Lease Area, the vessels will be mostly obscured by the curvature of the earth; some diffuse light may be visible on the horizon at night. Along the ECCs during installation of the export cables, vessels will be visible as they transit through Muskeget Channel, in particular.

Overall, there would be no cumulative visual effects or other short-term lighting visibility from vessels during construction or decommissioning, area lighting during construction, or other activities that could arise cumulatively during construction and decommissioning, should they occur after dark. For visual simulations of nighttime lighting from the Project and other offshore wind energy development activity WTGs, see Appendix C.

4 CUMULATIVE EFFECTS CONSIDERATIONS SPECIFIC TO NATIONAL HISTORIC LANDMARKS AND THE NATIONAL HISTORIC PRESERVATION ACT SECTION 106 PROCESS

The NPS, which administers the NHL program for the Secretary of the Interior (Secretary), describes NHLs and requirements for NHLs as follows.

National Historic Landmarks (NHL) are designated by the Secretary under the authority of the Historic Sites Act of 1935, which authorizes the Secretary to identify historic and archaeological sites, buildings, and objects which “possess exceptional value as commemorating or illustrating the history of the United States.” Section 110(f) of the NHPA requires that Federal agencies exercise a higher standard of care when considering undertakings that may directly and adversely affect NHLs. The law requires that agencies, “to the maximum extent possible, undertake such planning and actions as may be necessary to minimize harm to such landmark.” In those cases when an agency’s undertaking directly and adversely affects an NHL, or when Federal permits, licenses, grants, and other programs and projects under its jurisdiction or carried out by a state or local government pursuant to a Federal delegation or approval so affect an NHL, the agency should consider all prudent and feasible alternatives to avoid an adverse effect on the NHL. (NPS 2021)

NHPA Section 110(f) applies specifically to NHLs. BOEM is implementing the special set of requirements for protecting NHLs and for compliance with NHPA Section 110(f) at 36 CFR 800.10, which, in summary, requires the following.

1. Requires the agency official, to the maximum extent possible, to undertake such planning and actions as may be necessary to minimize harm to any NHL that may be directly and adversely affected by an undertaking.

2. Requires the agency official to request the participation of the ACHP in any consultation conducted under 36 CFR 800.6 to resolve adverse effects to NHLs.
3. Further directs the agency to notify the Secretary of any consultation involving an NHL and to invite the Secretary to participate in consultation where there may be an adverse effect.

The AVEHP identified one NHL in the visual APE for the Project: the Nantucket Historic District. BOEM has determined this property would be adversely affected by the Project (COP Appendix S; Mayflower Wind 2022).

According to NPS (NPS 2021), when an undertaking directly and adversely affects an NHL, the federal agency “should consider all prudent and feasible alternatives to avoid an adverse effect on the NHL.” When these alternatives “appear to require undue cost or to compromise the undertaking’s goals and objects, the agency must balance those goals and objectives with the intent of section 110(f).” This includes considerations of “(1) the magnitude of the undertaking’s harm to the historical, archaeological, and cultural qualities of the NHL; (2) the public interest in the NHL and in the undertaking as proposed, and, (3) the effect a mitigation action would have on meeting the goals and objectives of the undertaking” (NPS 2021).

Prudent and feasible alternatives to avoid adverse effects from the Project on the NHL and planning to the maximum extent possible necessary to minimize harm to NHLs, are presented and addressed in BOEM’s draft Memorandum of Agreement. Given the location of the Project Lease Area and the number of WTGs and OSPs proposed, BOEM determined that all feasible alternatives would result in adverse visual effects on the NHL. The only alternative that BOEM was able to identify that avoids any Project effects was the no-action alternative. BOEM has determined that, where Project-specific adverse effects are unavoidable at NHLs, cumulative adverse effects from the Project in combination with other reasonably foreseeable wind projects in adjacent leases would also be unavoidable. Further details on the NHL follows and concludes with cumulative effects information.

4.1 Nantucket Historic District NHL

The AVEHP describes the Nantucket Historic District NHL as follows (COP Appendix S:3-7; Mayflower Wind 2022).

Nantucket Historic District is located 22.3 mi (35.9 km) north of the Lease Area. Nantucket Historic District includes Tuckernuck Island, Muskeget Island and Nantucket Island. Nantucket Island is a well-preserved New England seaport which retains intact buildings dating to the eighteenth and nineteenth century, when the whaling industry provided the primary source of commerce in the town...Economic decline on the island is largely responsible for the survival of excellent and intact architectural resources from the Colonial, Federal, Greek Revival, and Victorian periods. Preservation of these resources, and the island’s location off the coast of Cape Cod, led to its additional significance as an early vacation resort, which has proved a challenge to the protection of the island as a resource. Tuckernuck Island contains a small collection of nineteenth and twentieth century buildings. Like Nantucket, it is largely known for its nineteenth century architecture and benefited from the rise of the whaling industry. Muskeget Island is largely devoid of structures with only one building, a circa 1910 former USCG boathouse, which is used as a summer residence. Topography of the Historic District includes dense residential development from the era of whaling and more currently, as a tourist destination, grassy public parcels, and lawns, as well as undeveloped barren areas with grasslands, heathlands and salt marshes, scrub oak, deciduous trees, and barrens of pitch pine barrens that are up to 40 feet (12.2 m) tall.

Nantucket Historic District was determined to be an NHL on November 13, 1966 and listed in the NRHP on November 19, 1966. On October 16, 2012, the NHL nomination was updated, and the historic district boundaries were expanded from just Nantucket Island to include all Tuckernuck and Muskeget Islands as well. The district is significant under NRHP Criterion A/NHL Criterion 1 for its association with the

whaling industry in New England; NRHP Criterion C/NHL Criterion 4 for the array of well-preserved resources reflecting a range of architectural styles and eras; and NRHP Criterion D for important cultural and historical data it has yielded or may yield. The period of significance begins in 1650 with the origination of the whaling industry and extends until its demise in 1849 then spans to 1975 to include the period in which it emerged and thrived as a summer resort and the decline of the whaling industry (Chase-Herrill, 2012). Character-defining features of Nantucket Historic District include the collection of well-preserved buildings from Colonial, Federal, Greek Revival, and Victorian periods; the maritime setting of the district as an important whaling center with a high concentration of buildings, both simple and elaborate, oriented toward shorelines, harbors, and ocean vistas; and unobstructed views of the ocean from locations throughout the island. As a collection of resources that are united historically and aesthetically by plan and physical development, setting is an important character-defining feature of the historic district's integrity.

Although neither the original or updated NHL nominations contain a list of contributing and non-contributing resources within the district, a list is maintained by the Nantucket Historical Commission. The list contains 3,782 properties within the viewshed that are classified as either contributing, non-contributing, or some combination (conceivably for properties with more than one building that may fall in both categories). As described in Section 2.2.2, 1,822 properties within the PAPE are contributing, 1,108 are non-contributing, and 852 properties are either vacant or uncategorized.

The introduction of the WTGs and OSPs into the seascape horizon of the NHL-listed Nantucket Historic District would result in an adverse visual effect on the viewshed and setting. Simulated conditions, particularly along the south shore of the island at historic locations and KOPs, revealed potential moderate visual changes from some areas of the district, and moderate to major visual changes in other places, such as Cisco Beach and the Hummock Pond Road Bike Path. The intensity of the visual effects depends on blade movement, differing atmospheric conditions, and lighting. Based on this assessment, the introduction of offshore Project components would result in a change to the unobstructed ocean viewshed of the district and would potentially compromise the setting of the district and its contributing resources, which is one of its key character-defining features. Therefore, the Project would result in an adverse effect on Nantucket Historic District (COP Appendix S:3-7; Mayflower Wind 2022).

Cumulatively, the maximum theoretically visible number of Mayflower Wind Project WTGs visible from the Nantucket Historic District is 129, with another 614 WTGs visible from other future offshore wind projects. Most WTGs would be at distances of over 23 miles from the NHL. WTGs would appear clustered across the sea and horizon in the daytime. The cumulative visual simulations for the NHL are included in Appendix C. Therefore, the Project would result in a cumulative adverse effect on the Nantucket Historic District.

5 CONCLUSION

This CHRVEA concludes that the Project would have a cumulative adverse effect on the three historic properties: the Nantucket Historic District NHL, Nantucket Sound TCP, and Chappaquiddick Island TCP. The NHL and TCPs would retain their maritime setting, which contributes to their NRHP eligibility, and they would continue to offer significant seaward views that support the integrity of the maritime setting; those seaward views include vantage points with the potential for an open view from each property toward the WTGs (COP Appendix S; Mayflower Wind 2022).

Cumulative visibility of the WTGs and other offshore wind energy development activities, including construction and operation, is anticipated to intensify the level of adverse effects on the three historic properties. The Project would contribute approximately 12.66 to 17.36 percent of the cumulative adverse effects, owing to the location and intensity of the Project and foreseeable build-out attributable to other offshore wind energy development activities.

The conclusions here are recommendations by ICF regarding the WTGs’ incremental contribution to cumulative visual effects on historic properties when combined with past, present, and reasonably foreseeable offshore wind energy development activities in the APE for this Project. These recommendations are provided to inform BOEM’s determination of Project effects on historic properties and consultation on any effects found. Where BOEM has made its determination in the *Finding of Adverse Effect for the Mayflower Wind Construction and Operations Plan*, this determination is expressed consistently in the CHRVEA. While Section 106 consultation is ongoing among BOEM, State Historic Preservation Officers, the Advisory Council on Historic Preservation, Native American Tribal Nations, and other identified consulting parties on the Project, final determinations and findings remain with BOEM in accordance with 36 CFR 800. This includes ongoing consultation with Native American Tribal Nations that may identify additional properties of traditional cultural and religious significance in the APE.

6 PERSONNEL

This study was co-authored by the following key personnel: Secretary of the Interior–qualified professional architectural historian Maureen McCoy, MA and MSHP, and Secretary of the Interior–qualified professional archaeologist Karen Crawford, MA and RPA. Resumes of the report co-authors can be found in Appendix D, *Key Personnel Resumes*.

7 REFERENCES CITED

- Bureau of Ocean and Energy Management (BOEM). 2023a. *Mayflower Wind Project Draft Environmental Impact Statement*.
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APPENDIX A

**Description, Historic Character, and Basis for National Register of
Historic Places Eligibility of the Traditional Cultural Properties with
Adverse Effects from the Project**

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As part of the Cumulative Historic Resources Visual Effects Analysis (CHRVEA) the following description, photograph of historic character, and basis for the NRHP eligibility of the two traditional cultural properties (TCPs) that could be adversely affected by the Project are summarized and provided below (COP Appendix S; Mayflower Wind 2022).

Nantucket Sound TCP is located [REDACTED] of the Lease Area... [REDACTED]

[REDACTED] The shoreline features coastal vegetation and native grasses as well as areas of rocky cliffs and sandy shoreline, while inland are salt marshes, scrub oaks, deciduous trees, dense brush.

Nantucket Sound was determined to be eligible for listing in the NRHP on January 4, 2010 as a TCP and as an historic and archaeological property associated with and has the potential to yield valuable information about the Native American exploration and settlement of Cape Cod and the Islands (Shull, 2010). The resource is significant “under Criterion A [REDACTED]

[REDACTED] Criterion B [REDACTED]

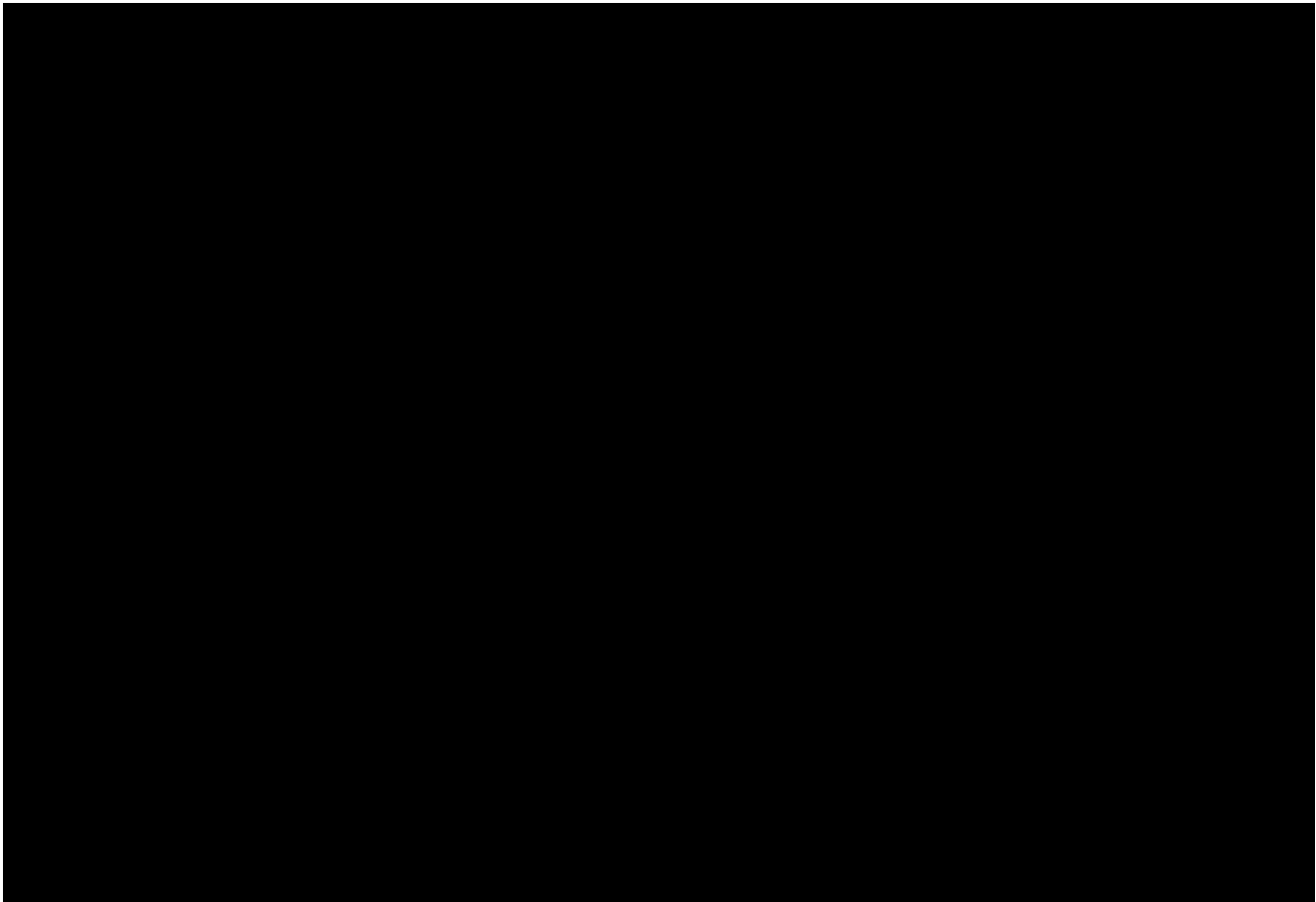
[REDACTED] Criterion C [REDACTED]

[REDACTED] Criterion D [REDACTED]

[REDACTED] (Shull, 2010).”

Setting is a key characteristic feature of Nantucket Sound, particularly under Criterion A. The importance of the setting and views to the ocean were described in the Wampanoag Tribal Historic Preservation Officer’s September 17, 2009 opinion letter:

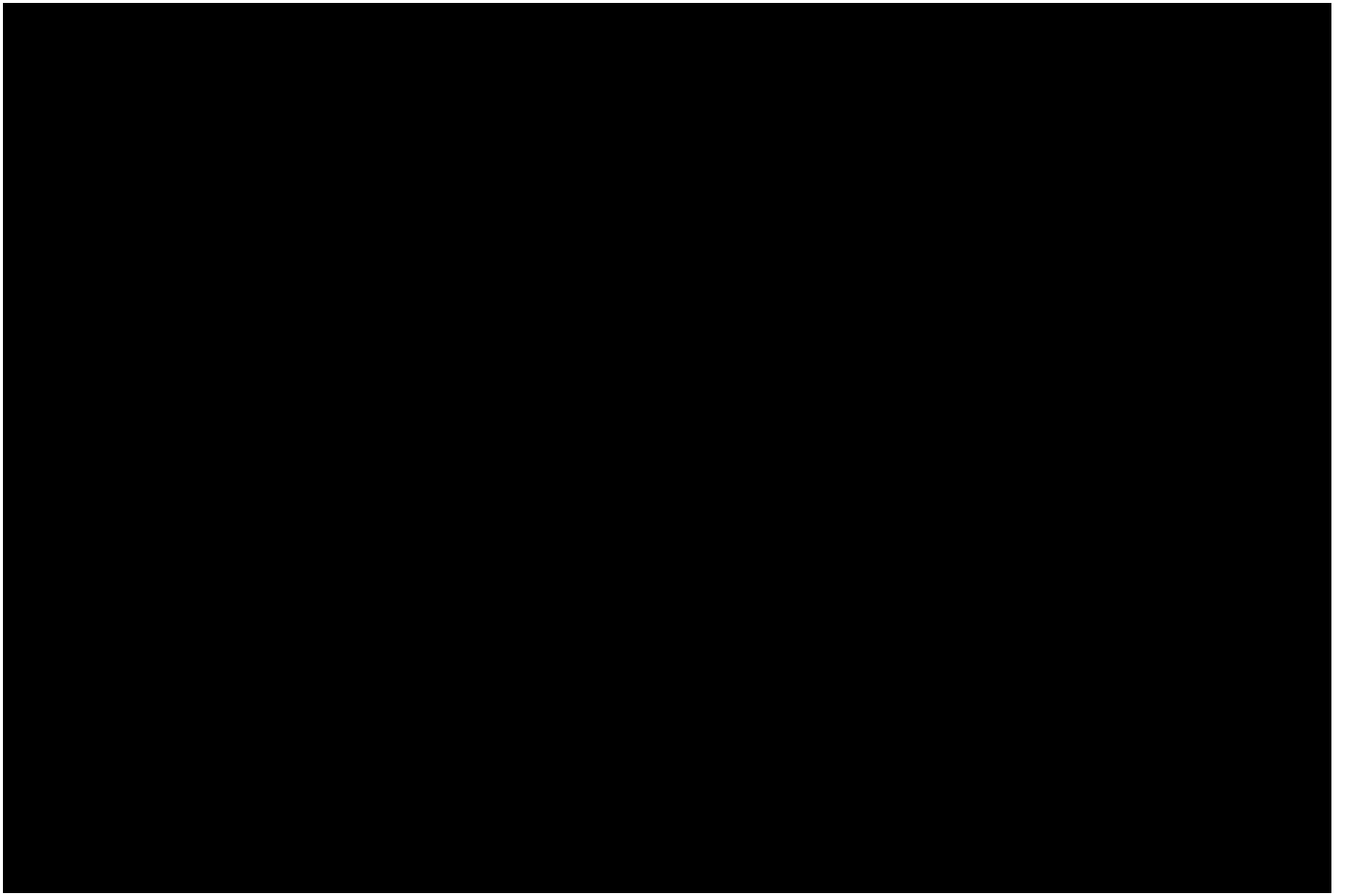
[REDACTED] (COP Appendix S; Mayflower Wind 2022:3-9).



Chappaquiddick Island TCP is located [REDACTED] the Lease Area. Chappaquiddick Island is at [REDACTED] (Epsilon Associates, Inc., 2020). The landscape of this undeveloped island is largely scrub oak, pitch pines, oak trees, and red cedars that are up to approximately 20 ft (6.1 m) tall....The Chappaquiddick branch of the Wampanoag Indian Tribe inhabited the island into the nineteenth century and currently are settled on a 100-acre (40 ha) reservation within the island's brush land interior (Chappaquiddick Tribe, 2022). In May and June 2019, the non-federally recognized Chappaquiddick Wampanoag Tribe notified BOEM of potential impacts to Chappaquiddick Island resulting from the Vineyard Wind project (BOEM, 2019). As a result, Chappaquiddick Island was determined by BOEM to be potentially eligible for listing in the NRHP as a TCP. [REDACTED]

[REDACTED] . The Island is considered eligible under Criterion A [REDACTED] (BOEM, 2021a). [REDACTED]

[REDACTED] (BOEM, 2021a). (COP Appendix S; Mayflower Wind 2022:3-10-3-11).



APPENDIX B

**Memorandum: Mayflower Wind – Visual Impact Assessment
Cumulative Simulations – Methods and Assumptions, August 25, 2022**

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Mayflower Wind EIS
Cumulative Visual Effects Analysis for the
General Visual Environment and Historic Resources
Request for Information Memo
04/24/2022

I. Simulation Recommendations

Cumulative effects simulations should portray the foreseeable future condition (BOEM authorized development as well as other development approved by other jurisdictions) as accurately as possible illustrating how individual projects contribute to the incremental changes to the viewshed that may occur over a defined timeframe. In addition to cumulative visual effects assessment to seascapes, landscapes, and the general public, this approach also supports the methodology used for assessing cumulative effects to historic properties. The information is also instrumental during Tribal consultations when explaining incremental changes to the viewshed and how a particular project fits into the overall context of the leasing area.

1. Conduct an intervisibility assessment to verify those projects that may contribute to the changes to the offshore ocean character within the viewshed study area associated with the Mayflower Wind project.

- Potential contributors include:
 - Vineyard Wind 1 OCS-A 0501
 - South Fork Wind OSC-A 0517
 - Revolution Wind OCS-A 0486
 - Sunrise Wind OCS-A 0487
 - Vineyard Wind OCS-A 0522
 - Beacon Wind OCS-A 0520
 - New England Wind OCS-A 0534 & OCS-A 0501
 - Bay State Wind OCS-A 0500

2. Simulation sequencing and relevant information: The goal for CE simulations is to illustrate incremental change using the most accurate information available for wind turbine generators (WTG) and offshore substation platforms (OSP) sizing and layout configurations. Color RAL 9010 (Pure White) should be used for simulating all project WTGs other than the proposed action, unless otherwise mentioned under Section II. The proposed action's WTGs shall also be simulated using RAL 9010 unless described otherwise in the COP. RAL 1023 shall be used for the bases of the WTGs. See [April 28, 2021 Guidelines for Lighting and Marking of Structures Supporting Renewable Energy Development for more details.](#)

Also reference [April 28, 2021 Guidelines for Lighting and Marking of Structures Supporting Renewable Energy Development](#) for lighting details for simulating effects at night.

The following summarizes the information to use for projects depending on the project's status or phase of project development, and a list of those projects thought to fit the description.

- BOEM authorized projects: simulate decision in the ROD,
 - Model of WTG,
 - Maximum height and width of WTGs and OSPs,

- Final WTG and OSP layout configuration
- Projects under BOEM review and project information that has been disclosed to the public, or is scheduled for disclosure before the planned date for releasing the Mayflower Wind Draft EIS:
 - Maximum height and width of WTGs and OSPs as proposed in the COP VIA (use the taller wind turbine scenario for those projects that simulate shorter and taller wind turbine alternatives),
 - Proposed WTG and OSP layout configuration
- Lease areas where project information not yet submitted or not released to the public:
 - 853 feet height at tip of blade,
 - 492 feet hub height
 - 722 feet rotor diameter
 - Maximum build out configuration scenario (1 nautical mile x 1 nautical mile)
 - With OSP locations unknown, assume WTGs for all foundation positions.
- 3. Assume monopile substructure for all projects.
- 4. Simulations should include:
 - A 124° horizontal by 55° vertical panoramic field-of-view to replicate the human field-of-view. If the project occupies an area that exceeds the 124° x 55° field-of-view, then more than one simulation may be needed to capture the sequence of successive viewing from left to right.
 - A second series of simulation panels by cropping the panoramic human-field-of-view to a sequence (one or more) equivalent 50-mm focal length photos to account for accurate depth of perception.
- 5. Simulations to include three views that characterize the stationary view (person without viewing with turning his/her head) and successive viewing (viewer standing in the same location turning his/her head from left to right).
- 6. In addition to the customary information (e.g., location name and coordinates, weather conditions, humidity, temperature, direction of view, camera elevation, distance to the nearest and farthest WTG with a graphic illustrating feet and percent visible of each, etc.), please include the following for each lease covered within the simulations:
 - WTG blades position should be oriented in full frontal view in the prevailing direction toward the KOP (use the WTG in the center of the viewing direction from the KOP to set the prevailing direction for all WTGs to face)
 - Locator map insert illustrating:
 - the viewer orientation at each KOP,
 - cone of view from the KOP,
 - number and configuration of WTGs and OSPs (color-coded) within the different leases
 - color code the individual projects represented in the simulation with a unique color signature,
 - delineate the WTGs seen from the KOP apart from those unseen using an arc that separates the two, and screen back those that are unseen.
 - Table listing each project within view in the simulation listing:
 - Project name

- Year forecasted for development
 - Number of wind turbines on the project
 - Number of wind turbines within view (produced by lessee from the simulated results)
 - Closest and farthest wind turbine (produced by lessee from the simulated results)
 - Information regarding the camera used including:
 - Camera type and brand,
 - Lens type, brand, and focal length
7. Prepare a total of five cumulative effects simulations per key observation point in the sequence described below would accomplish the objective of illustrating incremental effects (scheduling based on Ocean Wind Foreseeable Planned Activities Scenario):
- 1) 2023 - 2025 Project Construction:
- a. Vineyard Wind North (2023)
 - 837 feet height at WTG tip of blade
 - 473 feet hub height
 - 729 feet rotor diameter

OSS: 148 feet wide by 230 feet long by 218 feet high
 - b. South Fork Wind (2023)
 - 853 feet height at WTG tip of blade
 - 492 feet hub height
 - 722 feet rotor diameter

OSS: (unknown) feet wide by (unknown) feet long by 200 feet high
 - c. Revolution (2023)
 - 873 feet height at WTG tip of blade
 - 512 feet hub height
 - 722 feet rotor diameter

OSS: 217 feet wide by 322 feet long by 220 feet high
 - d. Sunrise
 - 968 WTG Ht.
 - 574 feet at hub height
 - 787 feet rotor diameter

OSS: 262 feet wide by 328 feet long by 197 feet high
 - e. New England Wind (OCS-A 0534 and OCS-A-0501) (2024)
 - 1,047 feet height at WTG tip of blade
 - 630 feet hub height
 - 837 feet rotor diameter

OSS: 148 feet wide by 230 feet long by 230 feet high

OSS: 197 feet wide by 328 feet long by 230 feet high
- 2) Mayflower Wind Construction (2025) added
- 1,066 feet height at WTG of blade.

- 605 feet at hub height
- 919 feet rotor diameter

OSS: As described in the COP

3) 2024 – 2030 Project Construction added after constructing Mayflower Wind

a. New England Wind Phase II (OCS-A-0534) (2026)

- 1,171 feet height at WTG tip of blade
- 702 feet at hub height
- 935 feet rotor diameter

b. Liberty Wind (2025 – 2030)

- 853 feet height at WTG tip of blade
- 492 feet at hub height
- 722 feet rotor diameter

c. Beacon Wind (2025 – 2030)

- 1,086 feet height at WTG tip of blade (HAT)
- 594 feet at hub height (HAT)
- 984 feet rotor diameter

OSS: 230 ft wide x 410 feet long x 417 ft high HAT (crane ht.), base 105 feet above HAT

d. Bay State (2025 – 2030)

- 853 feet height at WTG tip of blade.
- 492 feet at hub height
- 722 feet rotor diameter

4) Full buildout scenario of lease areas without Mayflower Wind

5) Mayflower Wind without other foreseeable planned activities

8. Include a brief narrative on the simulation that explains the assumptions used for producing each simulation.
9. The developer should submit a written description for developing the simulations that incorporates the above information, identifies proposed KOPs, and provides sample simulation templates for BOEM to review for completeness and readability.
10. BOEM will review the developer's recommendation and schedule a work session with the developer to finalize the cumulative effect simulation strategy before the developer produces the simulations.
11. Final delivery format: Please provide the simulations in a single package, as well as individual sheets in PDF, and JPEG format.

II. Key Observation Points

BOEM recommends producing CE simulations at the following Mayflower Wind KOPs: Massachusetts

- Nantucket Historic District
 1. 2-N NCF Sanford Farm Barn (inland view, backlit condition)
 2. 6-N (Tom Nevers Beach) (beach view, backlit condition)

3. 12-N (Cisco Beach - Clear) (beach view, backlit condition)
 4. 12-N (Cisco Beach - Nighttime)
Reference [April 28, 2021 Guidelines for Lighting and Marking of Structures Supporting Renewable Energy Development](#) for lighting details for simulating effects at night.
 5. 16-N Head of Plains (beach view, frontlit condition) (NOTE TO MAYFLOWER: the distance to the nearest wind turbine noted on the simulation needs correcting)
 6. 22-N Madaket Beach Sunset
- Martha's Vineyard
 7. MV Wasque Point
 8. 16-MV Squibnocket Beach

MEMORANDUM

Subject

Mayflower Wind – Visual Impact Assessment Cumulative Simulations – Methods and Assumptions

Prepared for:

Jennifer Flood,
Mayflower Wind

Date

8/25/22

Prepared by:

John Qoyawayma,
Nancy Palmstrom,
AECOM

Project Number

60620428

Project Name

Mayflower Wind

CC:

Kristen Durocher

AECOM Technical Services, Inc. (AECOM) has prepared the following documentation regarding the methods and assumptions used to develop Visual Impact Assessment cumulative simulations per the Bureau of Ocean Energy Management (BOEM) Request for Information (RFI) dated March 9, 2022 updated on April 24, 2022, and as further modified based on subsequent discussions and clarifications with BOEM and ICF.

1 Objective

Cumulative visual simulations were developed at the request of BOEM to support the assessment of cumulative visual impacts for the Mayflower Wind Environmental Impact Statement (EIS) being prepared by third party contractor, ICF, for BOEM. A series of scenarios were simulated to reflect the progressive development of the lease areas within the Rhode Island-Massachusetts Wind Energy Area (WEA).

2 Work Scope Summary

AECOM developed visual simulations (including five development scenarios plus existing [pre-development] conditions for eight (8) key observation points (KOPs). The simulated scenarios as specified in the BOEM RFI included:

- **Scenario 1:** 2023 - 2025 Project Construction (Vineyard Wind, South Fork Wind, Revolution Wind, Sunrise Wind and New England Wind)
- **Scenario 2:** Mayflower Wind Project Construction **with** prior 2023 – 2025 Project Construction (from Scenario 1)
- **Scenario 3:** 2024 – 2030 Project Construction (New England Wind II, Liberty Wind, Beacon Wind and Bay State Wind) **with** prior 2023 – 2025 Project Construction (Vineyard Wind, South Fork Wind, Revolution Wind, Sunrise Wind and New England Wind) **and** Mayflower Wind Project Construction
- **Scenario 4** (full Buildout): 2023 - 2025 Project Construction (Vineyard Wind, South Fork Wind, Revolution Wind, Sunrise Wind and New England Wind) **and** 2024 – 2030 Project Construction (New England Wind II, Liberty Wind, Beacon Wind and Bay State Wind) **without** Mayflower Wind Project Construction.
- **Scenario 5** Mayflower Wind without other foreseeable planned activities

BOEM requested cumulative simulations be developed at the following Mayflower Wind KOP in Massachusetts:

- Nantucket Historic District
 - 2-N NCF Sanford Farm Barn
 - 6-N Tom Nevers Beach
 - 12-N Cisco Beach (Clear)
 - 12-N Cisco Beach (Nighttime)
 - 16-N Head of Plains
 - 22-N Madaket Beach Sunset
- Martha's Vineyard

- 1-MV Wasque Point
- 16-MV Squibnocket Beach

3 Methods and Assumptions

The following summarizes the methods used for the development of the cumulative simulations, including relevant assumptions used in the development of the simulations.

A. Simulation Development

Simulations were created using Autodesk's 3ds Max Design program. Three dimensional (3D) models of the above ground/sea surface structures (e.g., WTGs/OSPs) were created on each of the locations. Visual simulations are developed using the same geo-referenced, measured photos obtained for the Mayflower Wind Visual Impact Assessment (COP Appendix T). The simulations integrate the built infrastructure in scale based on the distances of structures from the KOP. For the purposes of the cumulative impact simulations, the existing 3D Model for the Mayflower Wind Project was expanded to incorporate the structures to be construction within the additional lease areas in the WEA. Geographic Information System (GIS) files provided by BOEM supplied the positions for wind generation turbines (WTGs) for each project, and where data were publicly available, the location of planned Offshore Substation Platforms (OSPs)¹ for each project. OSP locations were not available for all projects. Details regarding the height of blade tip and hub above mean sea level (MSL), rotor diameter, and color were provided to Mayflower Wind by BOEM in the RFI.

Using the known location of where the measured, geo-referenced photo was taken, as well as the height of the camera (ground elevation plus eye height), a camera in the program was created at this location using a 2 inch (50 millimeter; mm) focal length.

Night conditions were simulated for the Cisco Beach KOP to reflect potential cumulative nighttime visibility. Lighting was established in the model to be consistent with the BOEM April 28, 2021 Guidelines for Lighting and Marking of Structures Supporting Renewable Energy Development. The Cumulative Effect nighttime simulation was developed in a manner consistent with that for the Mayflower Wind VIA (COP Appendix T).

B. Structure Visibility

Proximity (or Distance) Obscurity Rings

For each KOP, AECOM determined the proximity or distance obscurity rings for each project based on the specified WTG sizes used for simulation. Obscurity rings were identified for both the hub and tip of blade. These rings shown on the simulated condition regional maps reflect the theoretical visibility based on structure height, camera elevation, and the earth's curvature from each respective KOP. Screening by land, vegetation and/or other structures are not considered.

OSP Visibility

AECOM completed a separate obscurity analysis to determine visibility for OSPs for each of the WEA lease areas; results are reported in Attachment 2. For this analysis, AECOM used the maximum OSP structure height as provided by BOEM, the camera elevation at the KOP, and distance to the structures. Attachment 2 reports the distance to the nearest and farthest OSP from the KOP and the maximum obscured height of a structure at the reported distance from the KOP. Where the OSP height is less than the calculated maximum obscured height, the OSP would not be visible from the KOP. Visible OSPs are identified in green text within Attachment 2.

C. Assumptions

Various assumptions were made in the development of the simulations which are summarized below.

¹ May also be abbreviated OSS for Offshore Substation by certain projects; OSP is used generically throughout this memorandum to reflect these offshore substation structures.

- For offshore simulations, the viewpoint of the camera was set to the middle of the WTG/OSP arrays at full build out conditions. Therefore, for certain of the development scenarios simulated, the image may not appear centered on the visible WTG arrays.
- Scenarios simulated were specified by BOEM, including the approximate dates of development.
- Monopile structures were assumed for all projects.
- Structure colors:
 - Color RAL 9010 (Pure White) was used for simulating all project WTGs.
 - Color RAL 9010 (Pure White) was used for simulating the proposed action (Mayflower Wind Project) WTGs.
 - Color RAL 1023 was used for the bases of the WTGs.
- Structure sizes (see Attachment 1 for simulated structure heights)
 - For projects previously approved by BOEM – the simulated structures are consistent with the Record of Decision (ROD) issued by BOEM (i.e., model of WTG, maximum height and width of WTGs and OSPs, and final WTG/OSP layout configuration).
 - For projects under BOEM review and project information that has been disclosed to the public, or is scheduled for disclosure before the planned date for releasing the Mayflower Wind Draft EIS:
 - Maximum height and width of WTGs and OSPs as proposed in the COP VIA (using the taller wind turbine scenario for those projects that simulate shorter and taller wind turbine alternatives) were used,
 - Proposed WTG and OSP layout configuration were used
 - For projects where project information is not yet submitted or not released to the public, default values for height at the tip of blade, hub height and rotor diameter were provided by BOEM for use.
- BOEM provided GIS files of the layout of WTGs and OSPs for the WEA lease areas via email on May 2, 2022.
- Where the location of the OSPs are not known, WTGs were included for all foundation positions.
- The light source for the simulation was set to mimic the angle of the sun per NOAA sources for date and time of the photograph.
- A 124° horizontal by 55° vertical panoramic field-of-view was requested where possible with the available photos to replicate the human field-of-view. For all simulations, 124° horizontal was achieved, but limitations in photo availability kept the vertical view to 40°.
- WTG blade orientations at the center of the view are in full frontal view directly facing the KOP. Blades to the left and right will face the same compass direction. Thus, as distance from the center increases to the left and right, there will be increasing visibility of the nacelles.
- Where land obscures a portion of the view to certain lease areas or portions of lease areas, the potential number of structures visible has been adjusted downward to reflect the screening provided by intervening land.
- Per July 5, 2022 comments and teleconference, the light turquoise colors of the water for the Cisco Beach KOP were noted by BOEM/ICF to be inconsistent with this region of the Atlantic Ocean and potentially resulting in increased contrasts between backlit (center of view) WTG color values and ocean colors. The hue of the water was changed to more reflect the Atlantic Ocean greys.
- The reporting of the potential number of structures visible includes both WTG and OSP positions were simulated for a given lease area. However, because the OSPs reduced platform elevation, the OSPs may be obscured from view. See Item B above for additional details regarding OSPs.
- The reporting of potential numbers of structures visible does not consider complete or partial screening by other WTGs located closer to the viewer.
- Per BOEM, lighting for nighttime simulations was based on BOEM's April 28, 2021 Guidelines for Lighting and Marking of Structures Supporting Renewable Energy Development.

D. Data Simulation Presentation

A draft simulation package for one development scenario and KOP was submitted to BOEM/ICF for review. Comments were received and discussed during a July 5, 2022 teleconference, the type and order of simulations was clarified and the number of “existing conditions” images was downsized to just one full panoramic. The

simulation package was revised and resubmitted for BOEM/ICF review on July 11, 2022, and Mayflower received further comments from ICF on July 12, 2022. AECOM updated the reviewed simulation package based on comments received, and proceeded with the development of the balance of the simulations.

Simulations have been provided in zipfile packages for by KOP, and include existing conditions plus the five development scenarios. Each scenario is presented in a single pdf file which contains the following.

Page 1 - Existing conditions full panoramic photo with human field of view matchlines, 50 mm matchlines and the following additional information:

- A regional map inset with a yellow cone reflecting the photo field of view, and the middle of the yellow cone reflecting the angle of view from the KOP.
- A site map inset showing the location of the KOP in the broader landscape setting with an arrow indicating the angel of view from the KOP
- Four inset tables
 - Project View – specifying the horizontal field of view in degrees, vertical field of view in degrees, and for the simulated scenario: the distance to the nearest WTG for simulated conditions in ft (km), distance to the furthest visible WTG, the potential number of structures (WTG and/or OSPs) visible and the potential number of structures not visible.
 - Photograph and Site – specifying the time of photograph, date of photograph, landscape, seascape, ocean setting, viewing direction in degrees, the latitude and longitude of the photograph, and lighting direction and condition.
 - Environment – specifying the temperature in °F, humidity as a %, wind direction and speed in mph, and weather condition at the time the photograph was taken.
 - Camera – specifying the camera elevation in ft/m, camera type, lens focal length, ISO, Fstop, shutter speed in seconds and exposure bias.

Page 2 – Simulated conditions full panoramic photo with human field of view matchlines, 50mm matchlines and color coded horizontal bars reflecting the extensive of each lease area development visible in the photograph, along with a color coded graphic and table which provide the following information:

- A schematic drawing of a scaled WTG for each project which identifies the rotor diameter, tip of blade elevation above MSL, hub elevation above MSL, along with the horizon line elevation to reflect the portion of the WTG that would be visible above the horizon line. Note areas not visible are shaded in light blue gray.
- A table which reports the year forecasted for development, number of structures in the lease area, number of structures (WTGs and OSPs) within view of the KOP, distance to the closest structure, and distance to the furthest structure.

Page 3 – Simulated conditions for the human field of view (124°) with 50 mm matchlines and color coded horizontal bars reflecting the extensive of each lease area development visible in the photograph and the following additional information:

- A regional map inset with a yellow cone reflecting the photo field of view, and the middle of the yellow cone reflecting the angle of view from the KOP. This map provides the location of all lease areas within the WEA, and foundation positions based on the 1 nm x 1 nm grid positions.
 - Foundation positions are color coded for visiblity with dark gray representing visibility of portions of the WTG at or below the hub height, light gray to reflect visibility of the blades only, and pale gray to reflect positions that are not visible from the KOP.
 - Proximity or distance obscurity rings are shown for each lease area based on the hub height and blade tip height of the WTGs for each respective project.
- A site map inset showing the location of the KOP in the broader landscape setting with an arrow indicating the angel of view from the KOP
- Four inset tables
 - Project View – specifying the horizontal field of view in degrees, vertical field of view in degrees, and for the simulated scenario: the distance to the nearest WTG for simulated conditions in ft (km), distance to the furthest visible WTG, the potential number of structures (WTG and/or OSPs) visible and the potential number of structures not visible.

- Photograph and Site – specifying the time of photograph, date of photograph, landscape, seascape, ocean setting, viewing direction in degrees, the latitude and longitude of the photograph, and lighting direction and condition.
- Environment – specifying the temperature in °F, humidity as a %, wind direction and speed in mph, and weather condition at the time the photograph was taken.
- Camera – specifying the camera elevation in ft/m, camera type, lens focal length, ISO, Fstop, shutter speed in seconds and exposure bias.

Pages 4 through 6 - Simulated conditions for the 50 mm view (27° vertical / 40° horizontal) with matchlines and color coded horizontal bars reflecting the extensive of each lease area development visible in the photograph.

E. Data Delivery

Final simulations are provided via Aconex transmittal with eight zip files (one for each KOP/simulated condition). Each zip file will contain the high resolution simulations for five development scenarios including existing conditions.

ATTACHMENT 1
Mayflower Wind EIS
Cumulative Visual Effects Analysis
Simulated WTG Specifications

Projects for Simulation include the following:

- Vineyard Wind North (2023)
 - 837 feet height at WTG tip of blade
 - 473 feet hub height
 - 729 feet rotor diameter
 - OSS: 148 feet wide by 230 feet long by 218 feet high
- South Fork Wind (2023)
 - 853 feet height at WTG tip of blade
 - 492 feet hub height
 - 722 feet rotor diameter
 - OSS: Size Unknown
- Revolution (2023)
 - 873 feet height at WTG tip of blade
 - 512 feet hub height
 - 722 feet rotor diameter
 - OSS: 217 feet wide by 322 feet long by 220 feet high
- Sunrise
 - 968 WTG Ht.
 - 574 feet at hub height
 - 787 feet rotor diameter
 - OSS: 262 feet wide by 328 feet long by 197 feet high
- New England Wind (OCS-A 0534 and OCS-A-0501) (2024)
 - 1,047 feet height at WTG tip of blade
 - 630 feet hub height
 - 837 feet rotor diameter
 - OSS: 148 feet wide by 230 feet long by 230 feet high
 - OSS: 197 feet wide by 328 feet long by 230 feet high
- Mayflower Wind
 - 1,066 feet height at WTG of blade
 - 605 feet at hub height
 - 919 feet rotor diameter
 - OSS: As described in the COP
- Liberty Wind (2025 – 2030)
 - 1,171 feet height at WTG tip of blade
 - 702 feet at hub height
 - 935 feet rotor diameter
- Beacon Wind (2025 – 2030) – [Heights adjusted to MSL for 3D Model]
 - 1,086 feet height at WTG tip of blade (HAT)
 - 594 feet at hub height (HAT)
 - 984 feet rotor diameter
 - OSS: 230 ft wide x 410 feet long x 417 ft high HAT (crane ht.), base 105 feet above HAT
- Bay State Wind (2025 – 2030)
 - 853 feet height at WTG tip of blade.
 - 492 feet at hub height
 - 722 feet rotor diameter

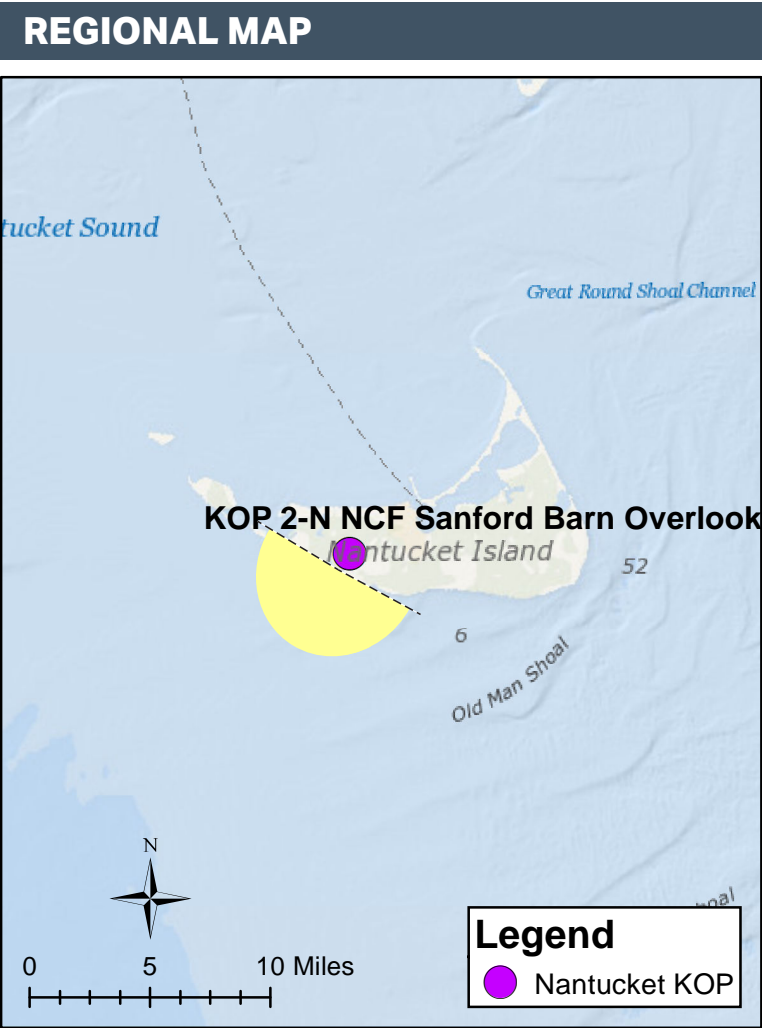
APPENDIX C

Mayflower Wind Cumulative Visual Simulations

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PANORAMIC PHOTOGRAPH - EXISTING CONDITIONS

1



MATCH LINES define visual simulation detail areas

A-B is shown on pages 2-3
AA-AB is shown on page 4
BB-BC is shown on page 5
CC-CD is shown on page 6

PROJECT VIEW

Horizontal Field of View: 182°	Furthest Visible WTG: 62 mi / 100 km
Vertical Field of View: 40°	Potential Number of Structures Visible: 237
Nearest WTG: 17 mi / 27 km	Potential Number of Structures Not Visible: 212

PHOTOGRAPH AND SITE

Time of photograph: 10:54AM	Viewing direction: South (230°)
Date of photograph: 6-26-20	Latitude: 41.265608°N
L/SCA: Ocean beach	Longitude: 70.150001°W
	Lighting Direction: Backlit diffused

ENVIRONMENT

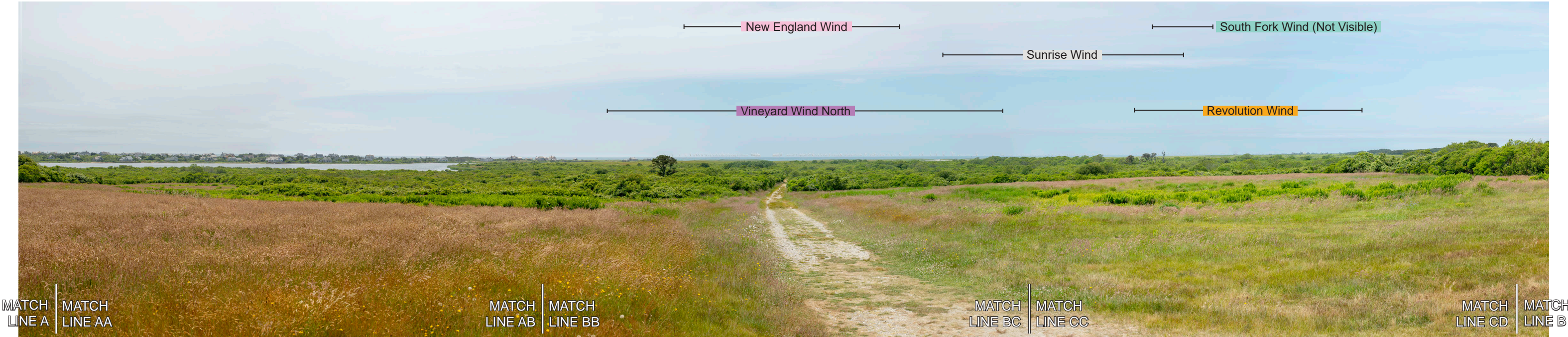
Temperature: 68° F
Humidity: 81%
Wind Dir & Speed: S 12 mph
Weather Condition: Hazy

CAMERA

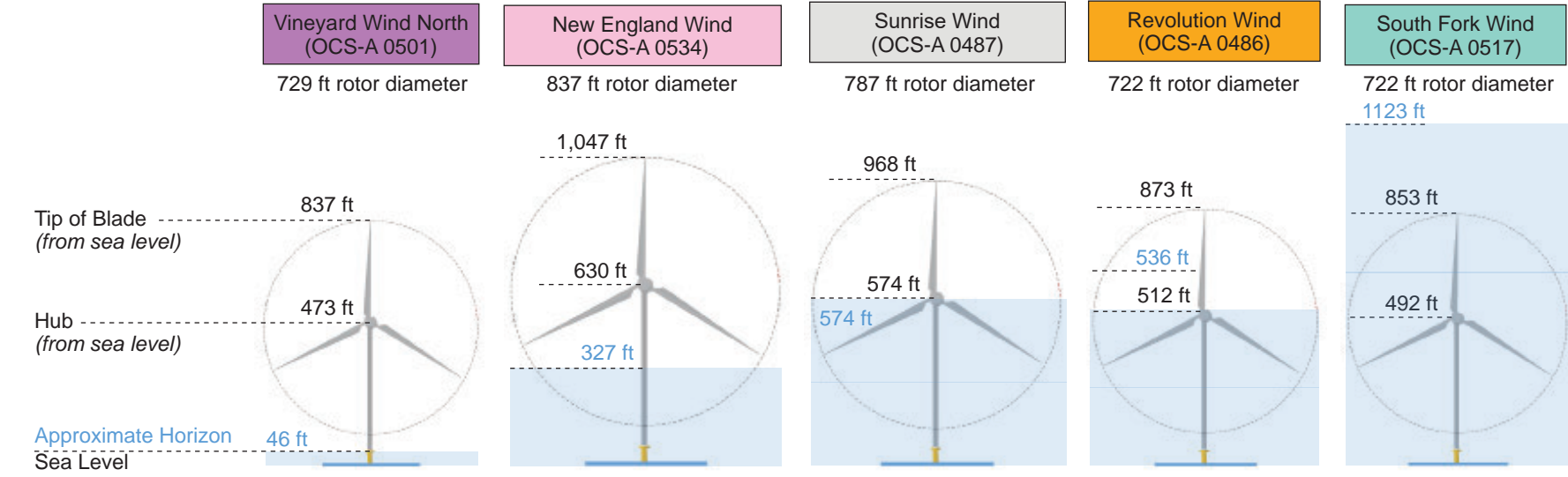
Camera Elevation: 50 ft /15.2 m
Nikon D4
Nikon 50mm
ISO: 100
Fstop: f/7.1
Shutter: 1/1250 sec
Exposure bias: -0.7 step

SIMULATED CONDITIONS

2



VISIBILTY OF CLOSEST TURBINES



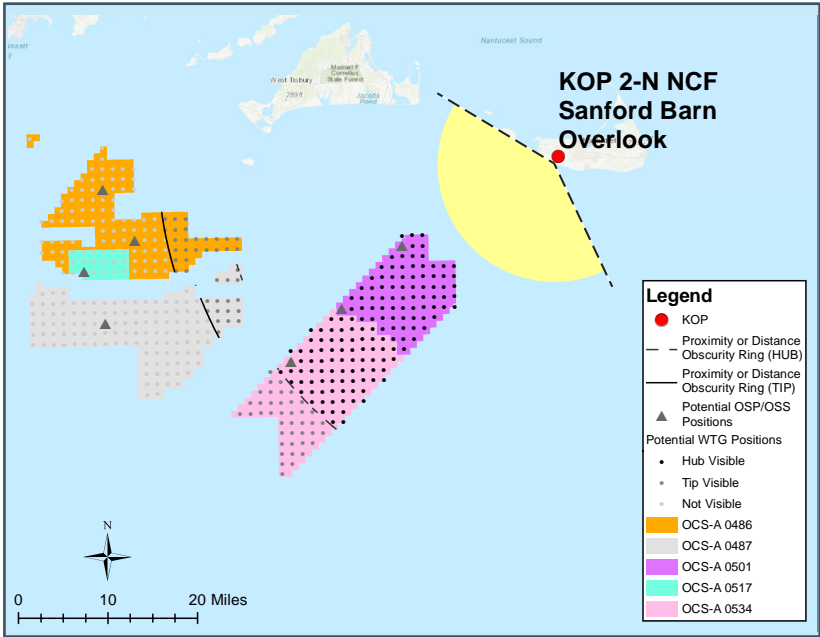
Year Forecasted for Development	2023	2024 Phase II 2026	2025	2023	2023
Number of Structures in Lease Area	77	120	131	103	18
Number of Structures within View of KOP	77	120	16	24	0
Distance to Closest Structure	17 mi (27 km)	31 mi (50 km)	38 mi (61 km)	37 mi (60 km)	50 mi (80 km)
Distance to Furthest Structure	30 mi (48 km)	47 mi (76 km)	62 mi (100 km)	59 mi (95 km)	56 mi (90 km)

SIMULATED CONDITIONS

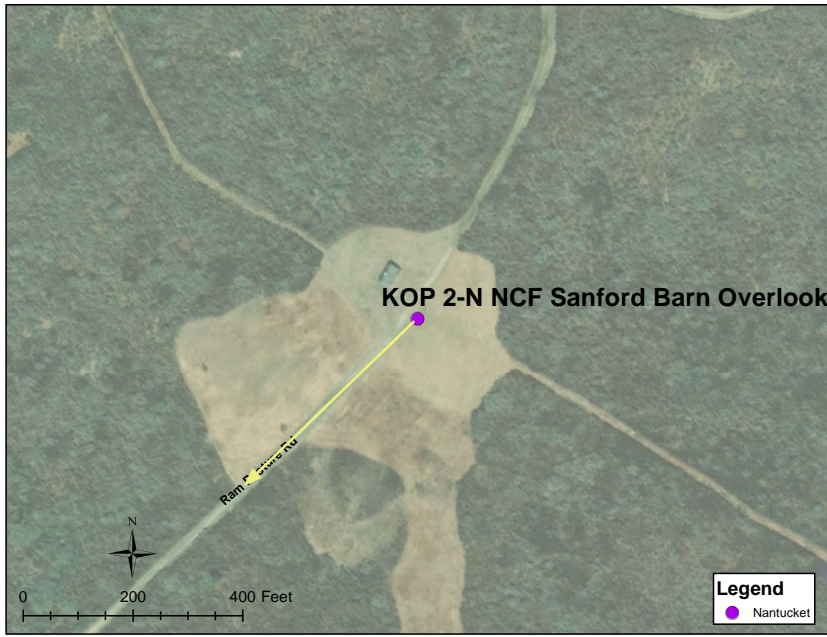
3



REGIONAL MAP



SITE MAP



PROJECT VIEW

Horizontal Field of View: 124°	Furthest Visible WTG: 62 mi / 100 km
Vertical Field of View: 40°	Potential Number of Structures Visible: 237
Nearest WTG: 17 mi / 27 km	Potential Number of Structures Not Visible: 212

PHOTOGRAPH AND SITE

Time of photograph: 10:54AM	Viewing direction: South (194°)
Date of photograph: 6-26-20	Latitude: 41.265608°N
L/SCA: Ocean beach	Longitude: 70.150001°W
	Lighting Direction: Backlit diffused

ENVIRONMENT

Temperature: 68° F
Humidity: 81%
Wind Dir & Speed: S 12 mph
Weather Condition: Hazy

CAMERA

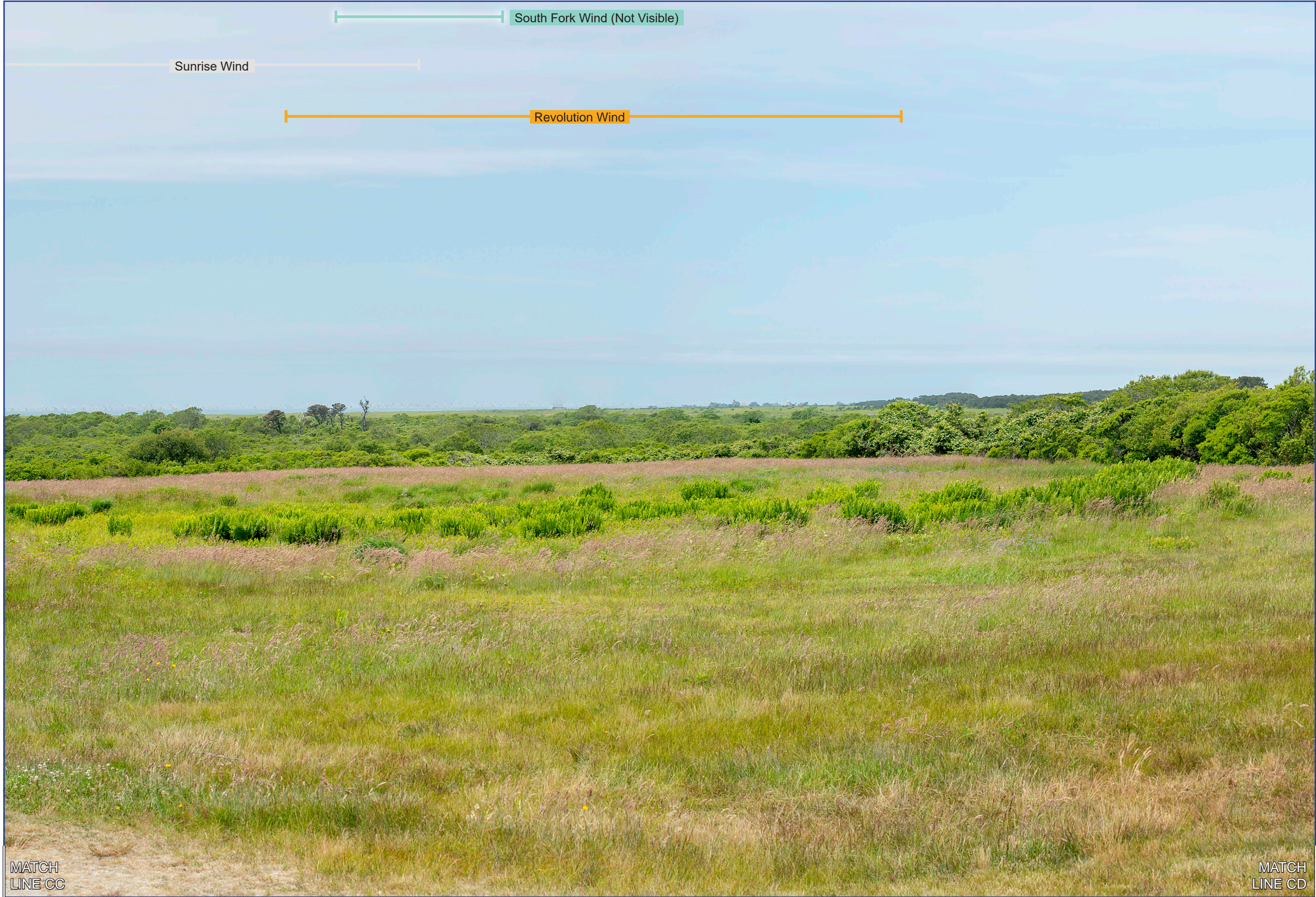
Camera Elevation: 50 ft / 15.2 m
Nikon D4
Nikon 50mm
ISO: 100
Fstop: f/7.1
Shutter: 1/1250 sec
Exposure bias: -0.7 step



The page should viewed at 11" x 17" approximately 15" from viewer's eyes .



The page should viewed at 11" x 17" approximately 15" from viewer's eyes .



MATCH
LINE BC

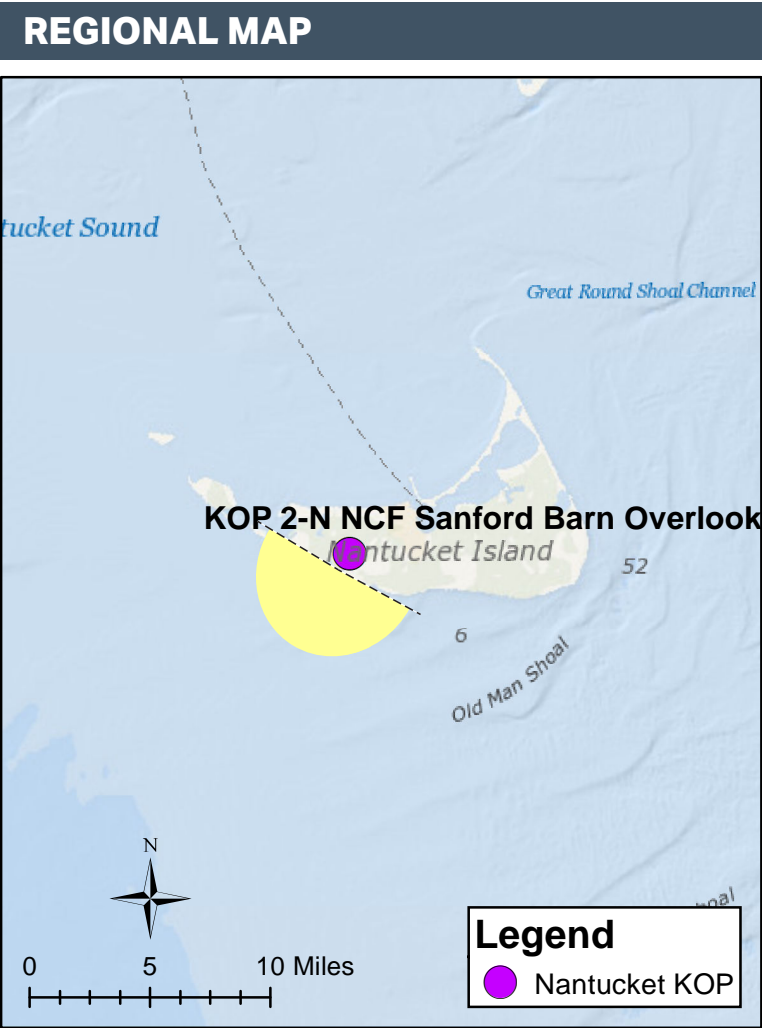
MATCH
LINE CC

MATCH
LINE CD

MATCH
LINE B

PANORAMIC PHOTOGRAPH - EXISTING CONDITIONS

1



MATCH LINES define visual simulation detail areas

A-B is shown on pages 2-3
AA-AB is shown on page 4
BB-BC is shown on page 5
CC-CD is shown on page 6

PROJECT VIEW

Horizontal Field of View: 182°	Furthest Visible WTG: 62 mi / 100 km
Vertical Field of View: 40°	Potential Number of Structures Visible: 379
Nearest WTG: 17 mi / 27 km	Potential Number of Structures Not Visible: 219

PHOTOGRAPH AND SITE

Time of photograph: 10:54AM	Viewing direction: South (230°)
Date of photograph: 6-26-20	Latitude: 41.265608°N
L/SCA: Ocean beach	Longitude: 70.150001°W
	Lighting Direction: Backlit diffused

ENVIRONMENT

Temperature: 68° F
Humidity: 81%
Wind Dir & Speed: S 12 mph
Weather Condition: Hazy

CAMERA

Camera Elevation: 50 ft /15.2 m
Nikon D4
Nikon 50mm
ISO: 100
Fstop: f/7.1
Shutter: 1/1250 sec
Exposure bias: -0.7 step

SIMULATED CONDITIONS

2



VISIBILTY OF CLOSEST TURBINES

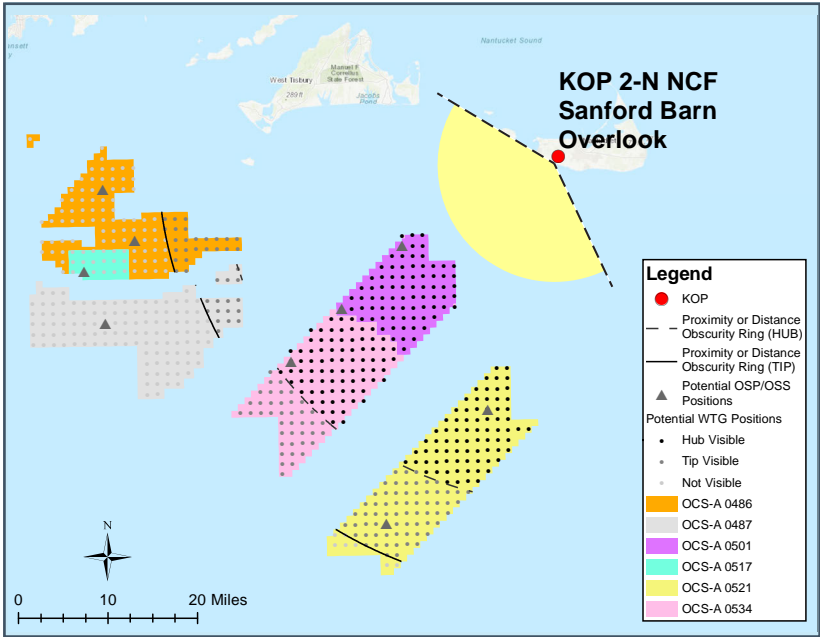
	Mayflower Wind (OCS-A 0521)	Vineyard Wind North (OCS-A 0501)	New England Wind (OCS-A 0534)	Sunrise Wind (OCS-A 0487)	Revolution Wind (OCS-A 0486)	South Fork Wind (OCS-A 0517)	
	919 ft rotor diameter	729 ft rotor diameter	837 ft rotor diameter	787 ft rotor diameter	722 ft rotor diameter	722 ft rotor diameter	
Tip of Blade (from sea level)	1,066 ft	837 ft	1,047 ft	968 ft	873 ft	1123 ft 853 ft	
Hub (from sea level)	605 ft	473 ft	630 ft	574 ft	536 ft 512 ft	492 ft	
Approximate Horizon	165 ft	46 ft	327 ft	574 ft			
Sea Level							
Year Forecasted for Development	2025	2023	2024 Phase II 2026	2025	2023	2023	
Number of Structures in Lease Area	149	77	120	131	103	18	
Number of Structures within View of KOP	142	77	120	16	24	0	
Distance to Closest Structure	24 mi (39 km)	17 mi (27 km)	31 mi (50 km)	38 mi (61 km)	37 mi (60 km)	50 mi (80 km)	
Distance to Furthest Structure	49 mi (79 km)	30 mi (48 km)	47 mi (76 km)	62 mi (100 km)	59 mi (95 km)	56 mi (90 km)	

SIMULATED CONDITIONS

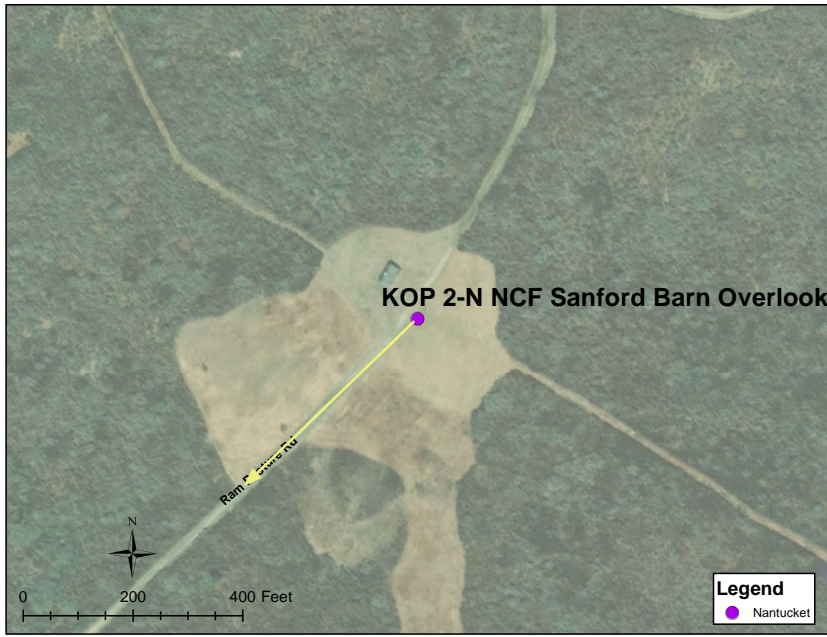
3



REGIONAL MAP



SITE MAP



PROJECT VIEW

Horizontal Field of View: 124°	Furthest Visible WTG: 62 mi / 100 km
Vertical Field of View: 40°	Potential Number of Structures Visible: 379
Nearest WTG: 17 mi / 27 km	Potential Number of Structures Not Visible: 219

ENVIRONMENT

Temperature: 68° F
Humidity: 81%
Wind Dir & Speed: S 12 mph
Weather Condition: Hazy

PHOTOGRAPH AND SITE

Time of photograph: 10:54AM	Viewing direction: South (194°)
Date of photograph: 6-26-20	Latitude: 41.265608°N
L/SCA: Ocean beach	Longitude: 70.150001°W
	Lighting Direction: Backlit diffused

CAMERA

Camera Elevation: 50 ft / 15.2 m
Nikon D4
Nikon 50mm
ISO: 100
Fstop: f/7.1
Shutter: 1/1250 sec
Exposure bias: -0.7 step



MATCH
LINE A

MATCH
LINE AA

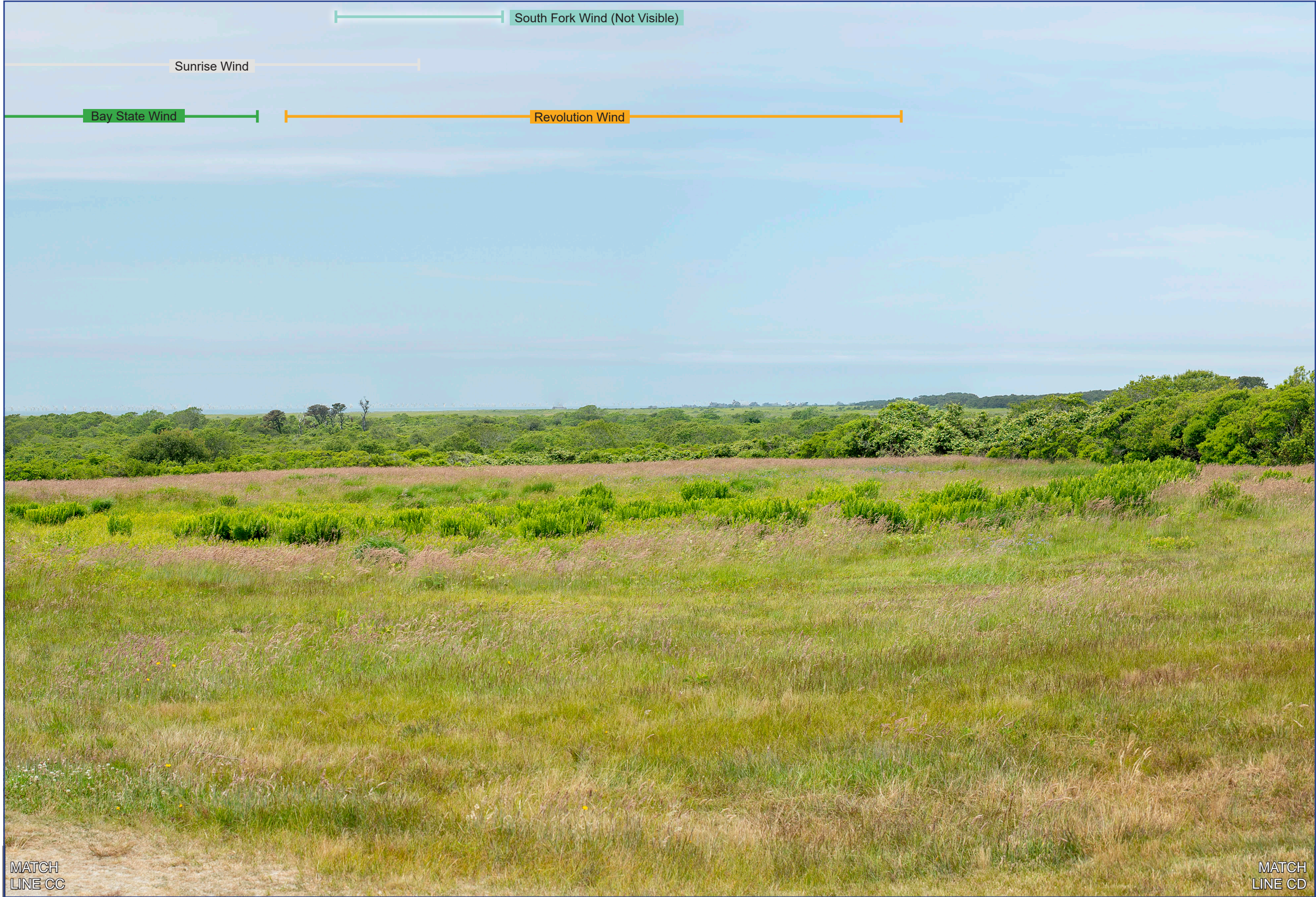
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LINE AB

MATCH
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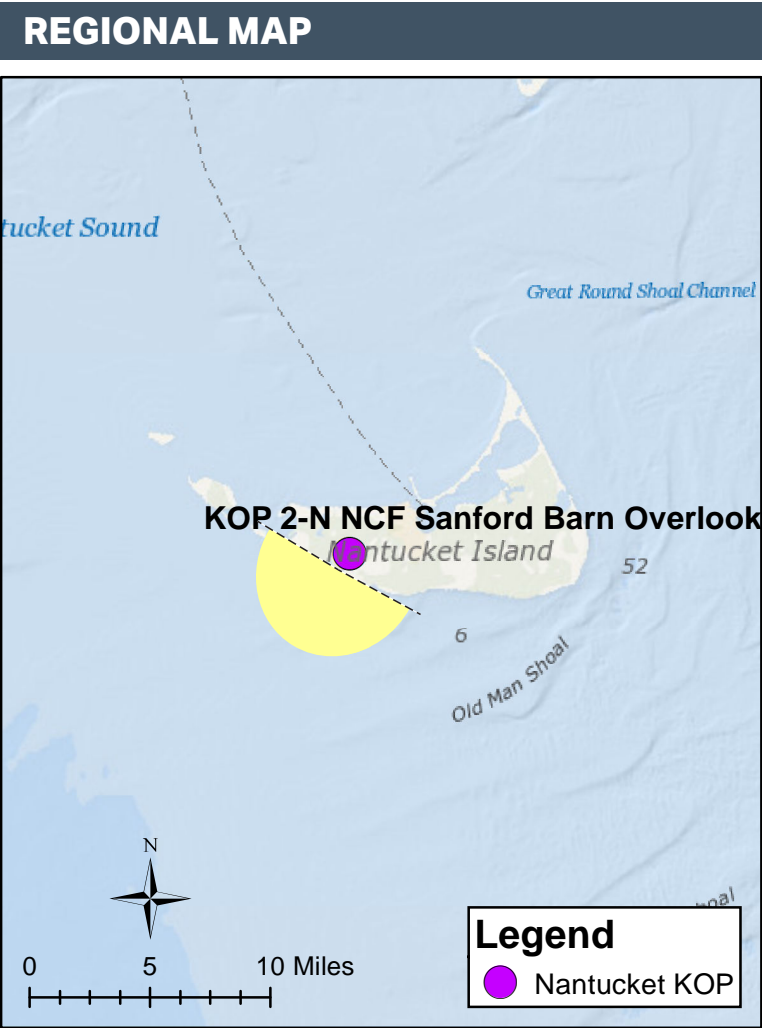


MATCH
LINE BC MATCH
LINE CC

MATCH
LINE CD MATCH
LINE B

PANORAMIC PHOTOGRAPH - EXISTING CONDITIONS

1



MATCH LINES define visual simulation detail areas

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PROJECT VIEW

Horizontal Field of View: 182°	Furthest Visible WTG: 49 mi / 79 km
Vertical Field of View: 40°	Potential Number of Structures Visible: 392
Nearest WTG: 20 mi / 33 km	Potential Number of Structures Not Visible: 73

PHOTOGRAPH AND SITE

Time of photograph: 10:54AM	Viewing direction: South (230°)
Date of photograph: 6-26-20	Latitude: 41.265608°N
L/SCA: Ocean beach	Longitude: 70.150001°W
	Lighting Direction: Backlit diffused

ENVIRONMENT

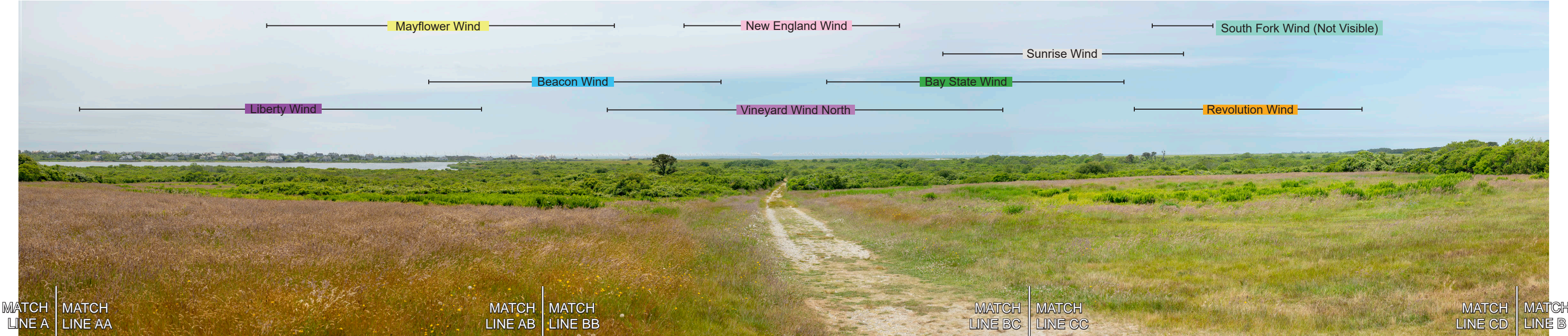
Temperature: 68° F
Humidity: 81%
Wind Dir & Speed: S 12 mph
Weather Condition: Hazy

CAMERA

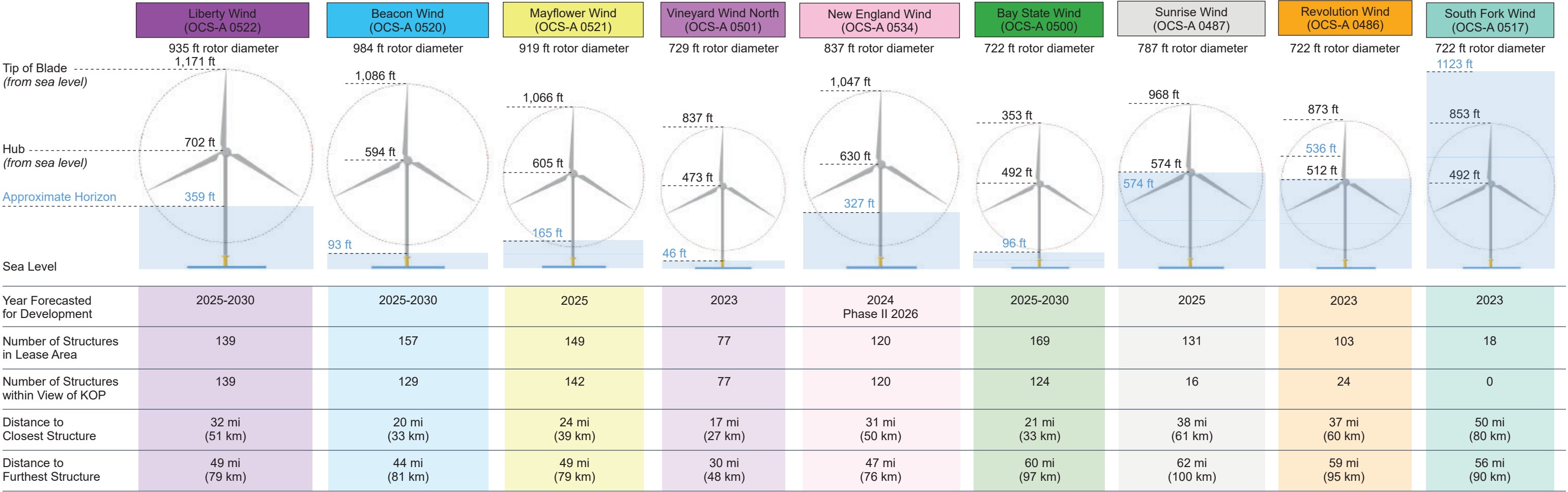
Camera Elevation: 50 ft /15.2 m
Nikon D4
Nikon 50mm
ISO: 100
Fstop: f/7.1
Shutter: 1/1250 sec
Exposure bias: -0.7 step

SIMULATED CONDITIONS

2

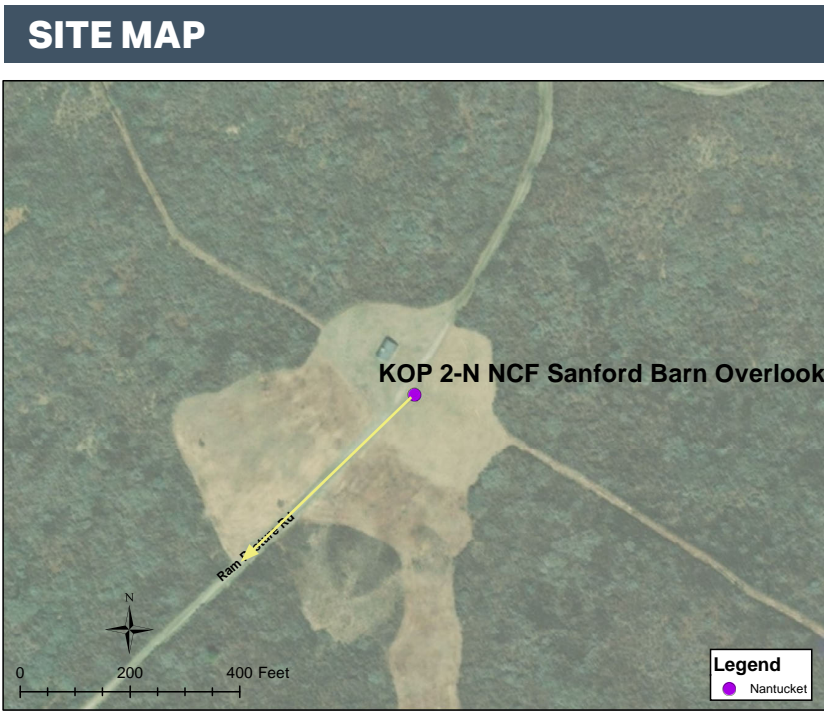
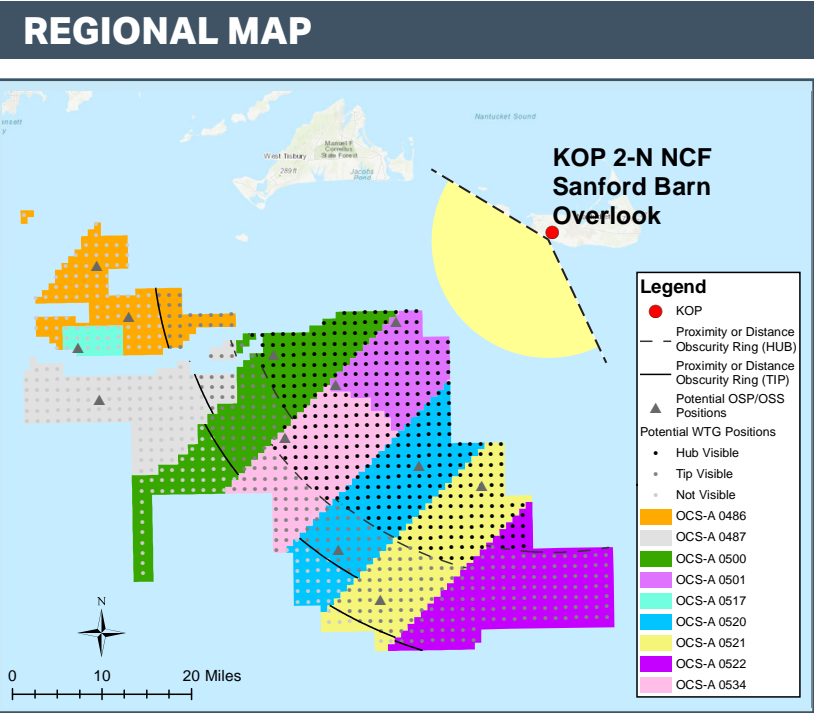
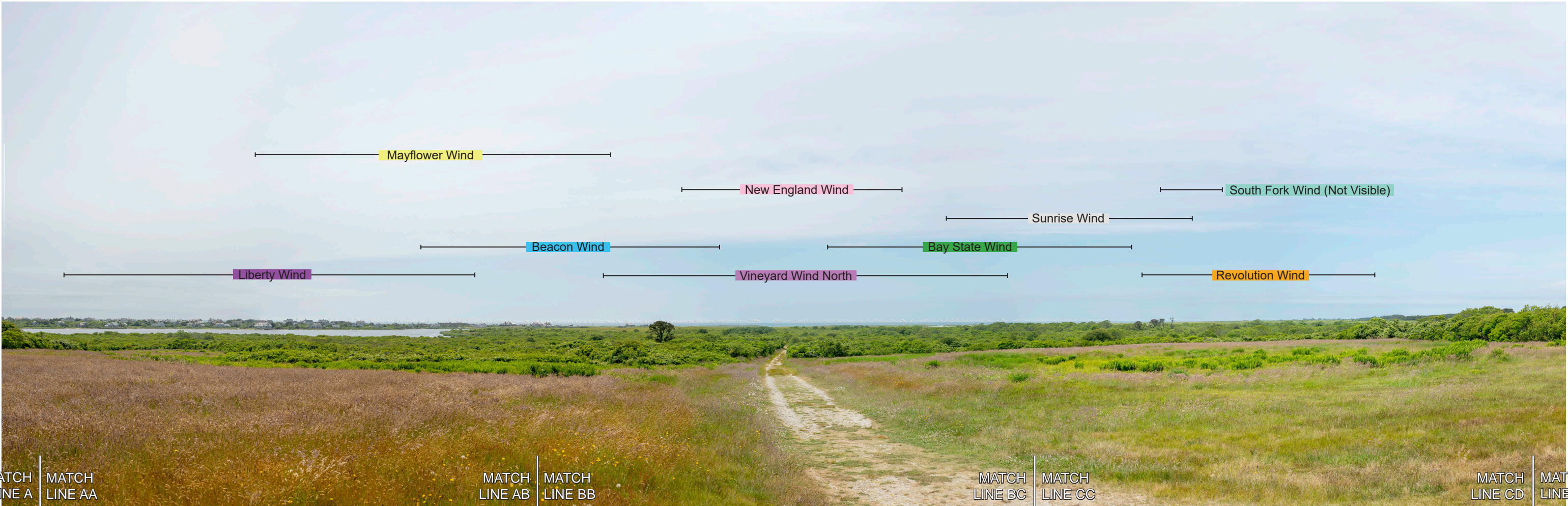


VISIBILTY OF CLOSEST TURBINES



SIMULATED CONDITIONS

3



PROJECT VIEW

Horizontal Field of View: 124°	Furthest Visible WTG: 49 mi / 79 km
Vertical Field of View: 40°	Potential Number of Structures Visible: 392
Nearest WTG: 20.mi / 33 km	Potential Number of Structures Not Visible: 73

ENVIRONMENT

Temperature: 68° F
Humidity: 81%
Wind Dir & Speed: S 12 mph
Weather Condition: Hazy

PHOTOGRAPH AND SITE

Time of photograph: 10:54AM	Viewing direction: South (194°)
Date of photograph: 6-26-20	Latitude: 41.265608°N
L/SCA: Ocean beach	Longitude: 70.150001°W
	Lighting Direction: Backlit diffused

CAMERA

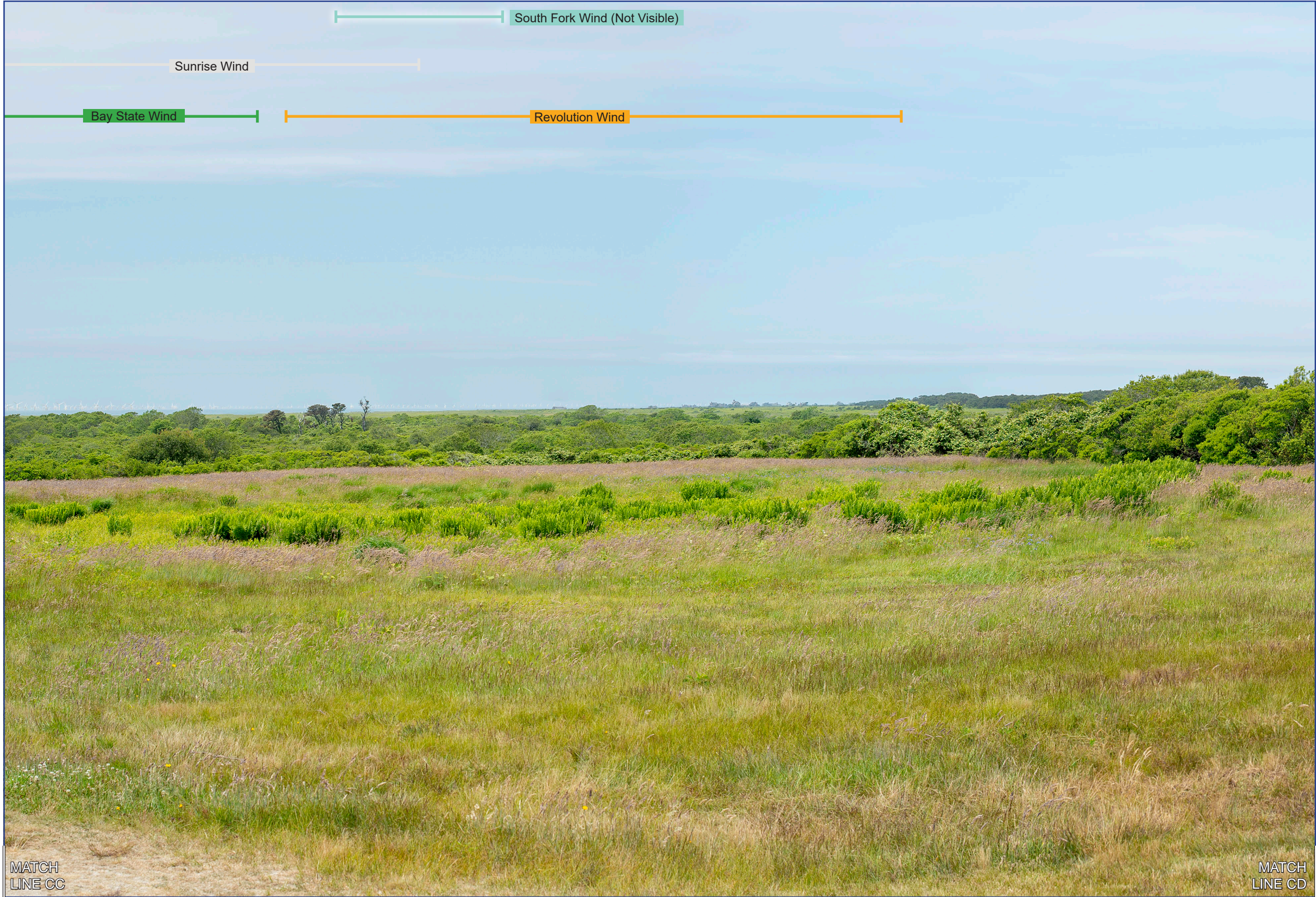
Camera Elevation: 50 ft / 15.2 m
Nikon D4
Nikon 50mm
ISO: 100
Fstop: f/7.1
Shutter: 1/1250 sec
Exposure bias: -0.7 step



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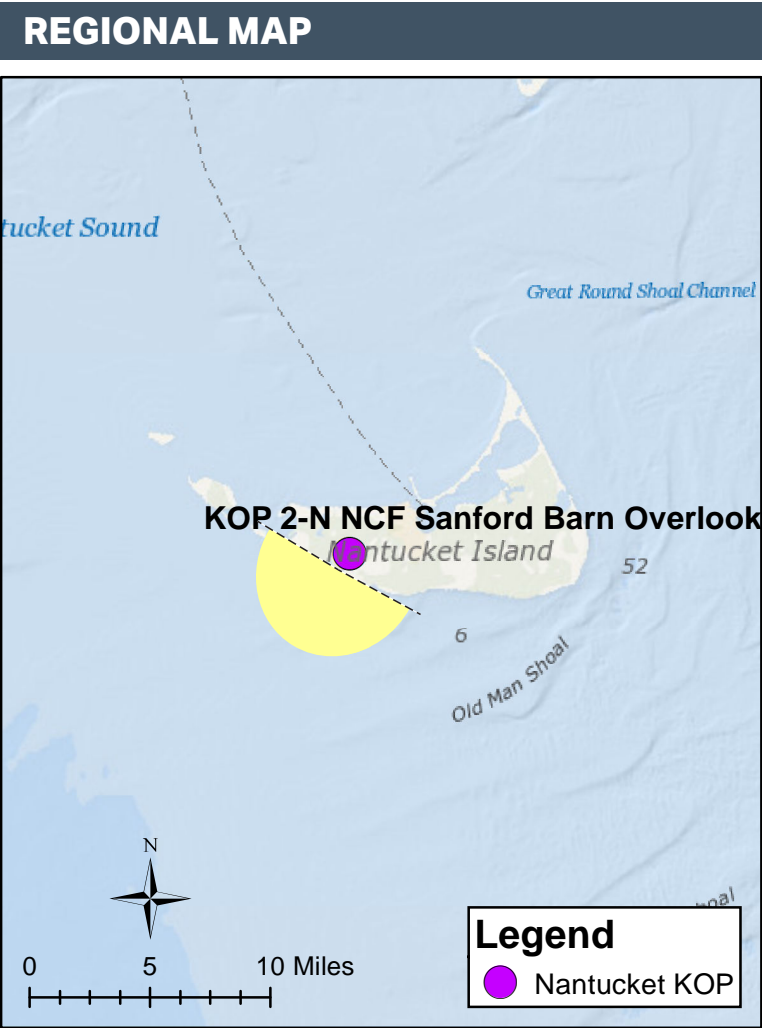
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PANORAMIC PHOTOGRAPH - EXISTING CONDITIONS

1



MATCH LINES define visual simulation detail areas

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- CC-CD is shown on page 6

PROJECT VIEW

Horizontal Field of View: 182.3°	Furthest Visible WTG: 60 mi / 96 km
Vertical Field of View: 40°	Potential Number of Structures isible: 534
Nearest WTG: 20 mi / 33 km	Potential Number of Structures Not Visible: 80

PHOTOGRAPH AND SITE

Time of photograph: 10:54 AM	Viewing direction: South (230°)
Date of photograph: 6-26-20	Latitude: 41.265608°N
L/SCA: Ocean beach	Longitude: 70.150001°W
	Lighting Direction: Backlit diffused

ENVIRONMENT

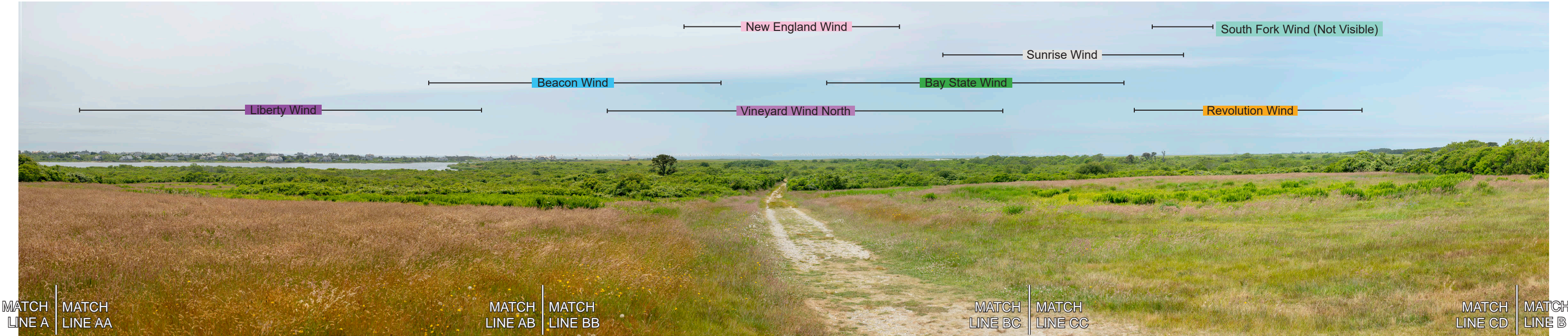
Temperature: 68° F
Humidity: 81%
Wind Dir & Speed: S 12 mph
Weather Condition: Hazy

CAMERA

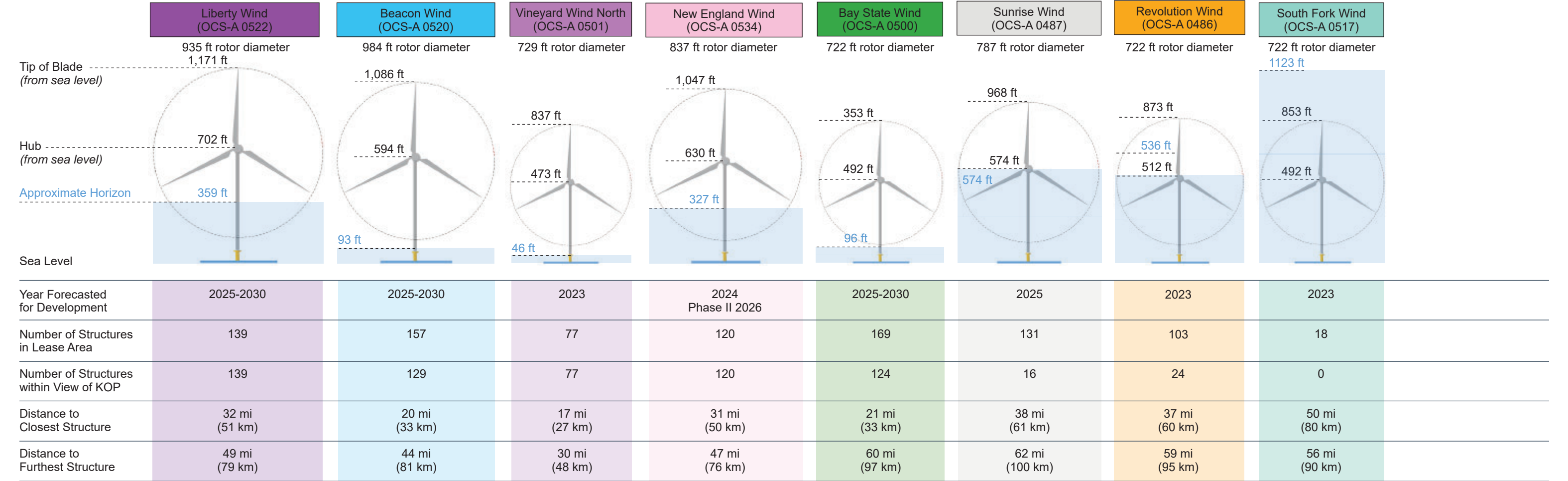
Camera Elevation: 50 ft /15.2 m
Nikon D4
Nikon 50mm
ISO: 100
Fstop: f/7.1
Shutter: 1/1250 sec
Exposure bias: -0.7 step

SIMULATED CONDITIONS

2

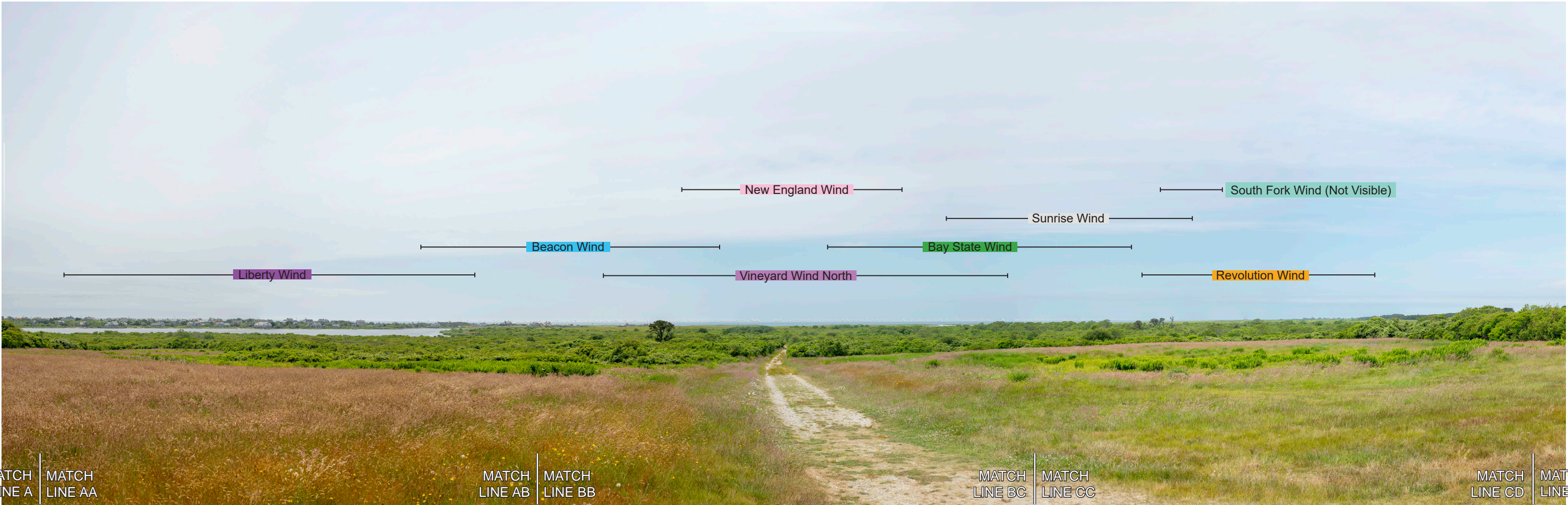


VISIBILTY OF CLOSEST TURBINES

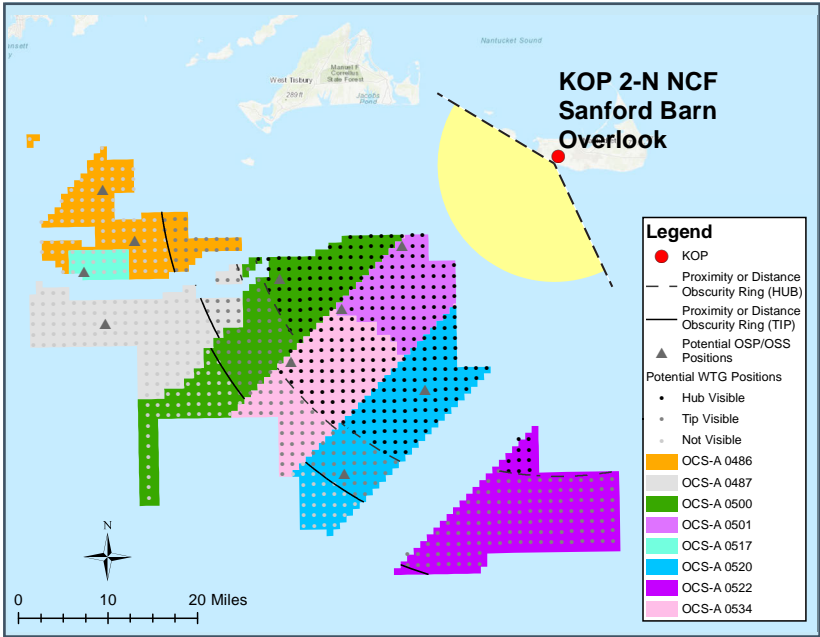


SIMULATED CONDITIONS

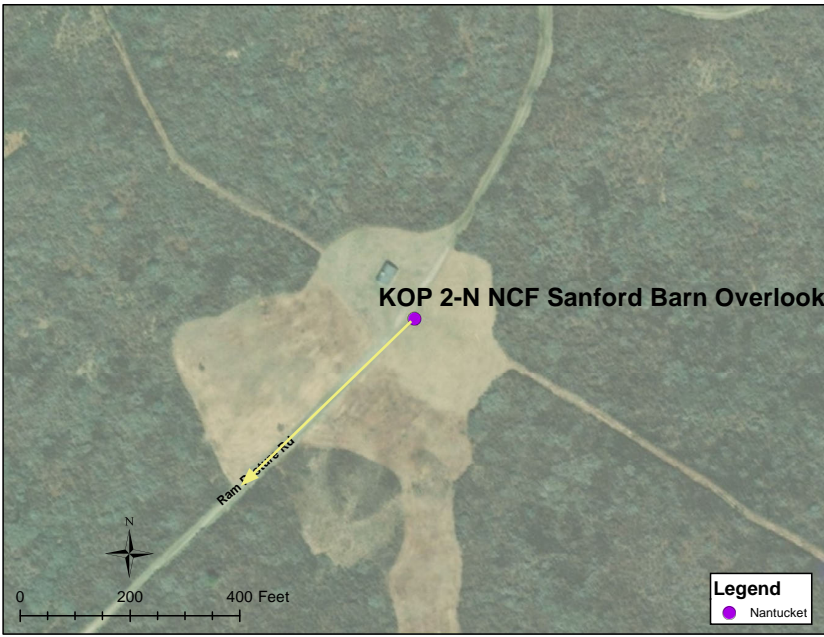
3



REGIONAL MAP



SITE MAP



PROJECT VIEW

Horizontal Field of View: 182.3°	Furthest Visible WTG: 60 mi / 96 km
Vertical Field of View: 40°	Potential Number of Structures isible: 534
Nearest WTG: 20 mi / 33 km	Potential Number of Structures Not Visible: 80

ENVIRONMENT

Temperature: 68° F
Humidity: 81%
Wind Dir & Speed: S 12 mph
Weather Condition: Hazy

PHOTOGRAPH AND SITE

Time of photograph: 10:54 AM	Viewing direction: South (194°)
Date of photograph: 6-26-20	Latitude: 41.265608°N
L/SCA: Ocean beach	Longitude: 70.150001°W
	Lighting Direction: Backlit diffused

CAMERA

Camera Elevation: 50 ft / 15.2 m
Nikon D4
Nikon 50mm
ISO: 100
Fstop: f/7.1
Shutter: 1/1250 sec
Exposure bias: -0.7 step



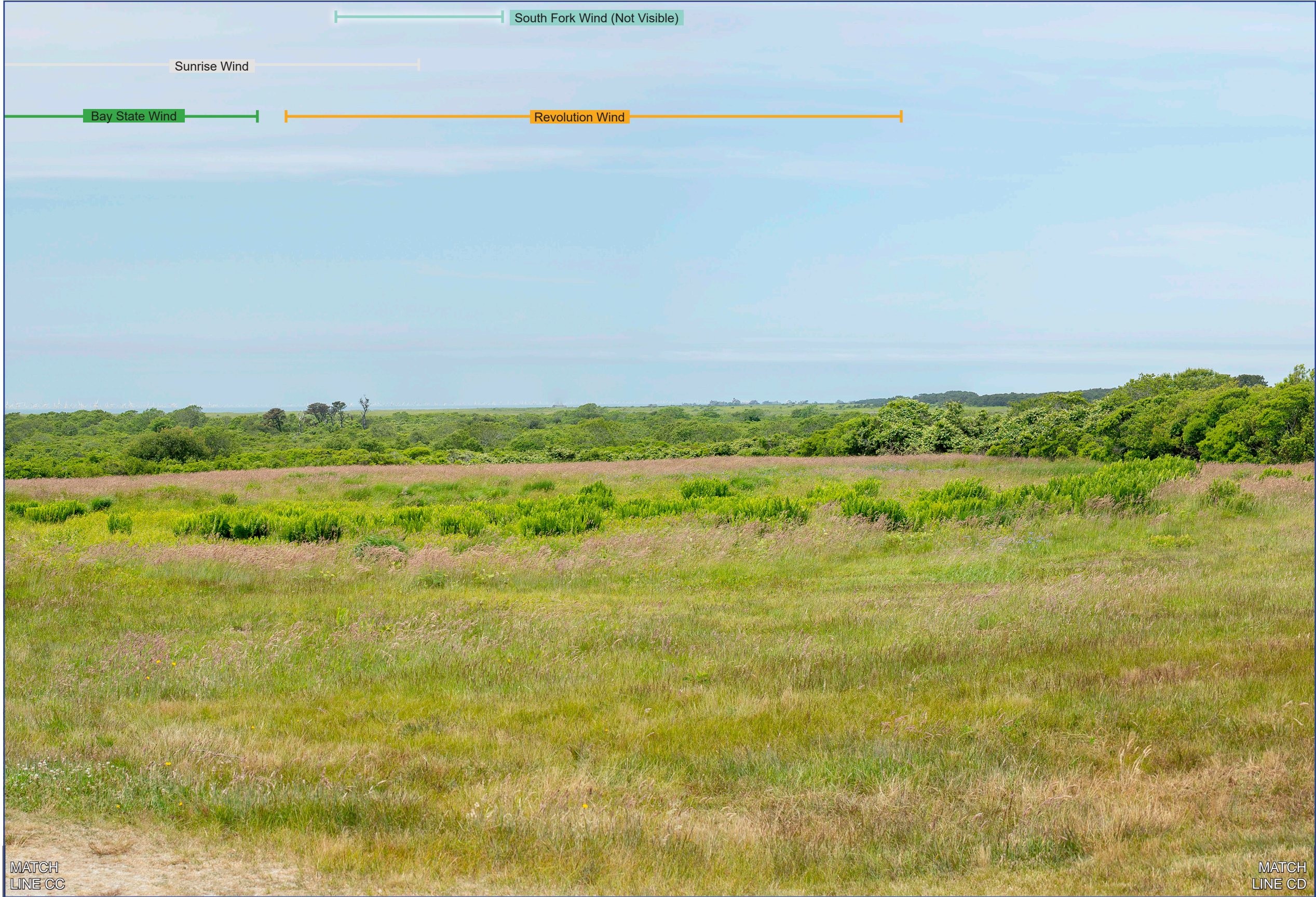
MATCH
LINE A

MATCH
LINE AB

MATCH
LINE BB



The page should viewed at 11" x 17" approximately 15" from viewer's eyes .

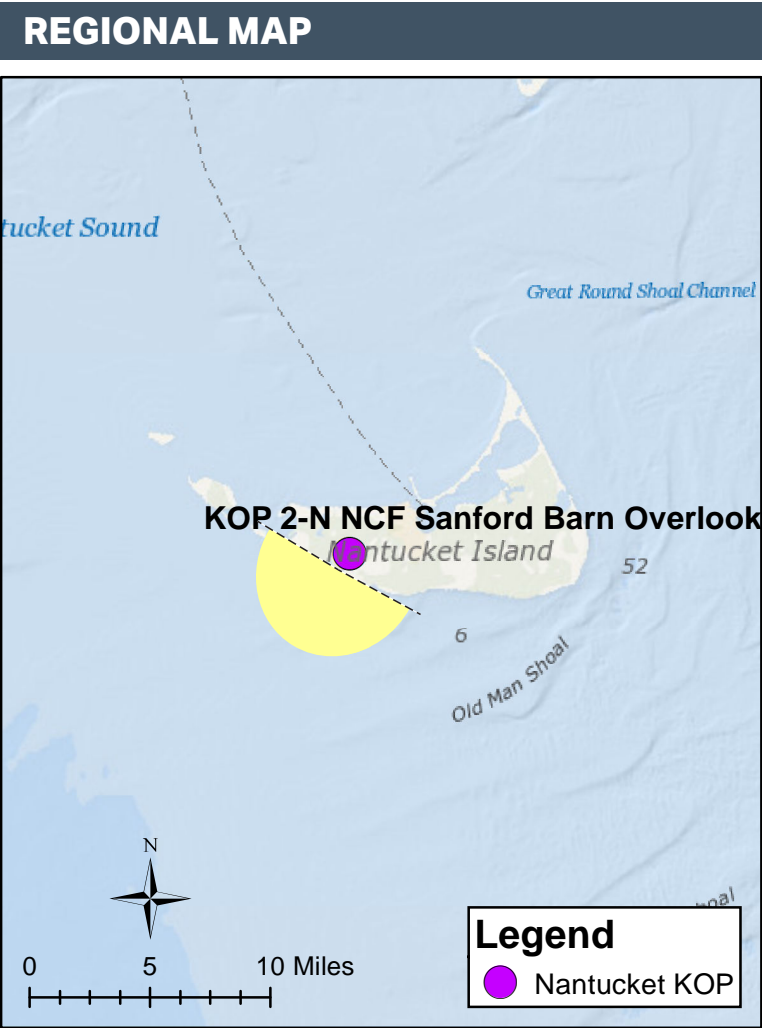


MATCH
LINE BC MATCH
LINE CC

MATCH
LINE CD MATCH
LINE B

PANORAMIC PHOTOGRAPH - EXISTING CONDITIONS

1



MATCH LINES define visual simulation detail areas

A-B is shown on pages 2-3
AA-AB is shown on page 4
BB-BC is shown on page 5
CC-CD is shown on page 6

PROJECT VIEW

Horizontal Field of View: 182.3°	Furthest Visible WTG: 62.4 mi / 100.42 km
Vertical Field of View: 39.6°	Potential Number of WTGs Visible: 629
Nearest WTG: 17 mi / 27.35 km	Potential Number of WTGs Not Visible: 285

PHOTOGRAPH AND SITE

Time of photograph: 10:54 AM	Viewing direction: South (194°)
Date of photograph: 6-26-20	Latitude: 41.265608°N
L/SCA: Ocean beach	Longitude: 70.150001°W
	Lighting Direction: Backlit diffused

ENVIRONMENT

Temperature: 68° F
Humidity: 81%
Wind Dir & Speed: S 12 mph
Weather Condition: Hazy

CAMERA

Camera Elevation: 50.5 ft / 15.4 m
Nikon D4
Nikon 50mm
ISO: 100
Fstop: f/7.1
Shutter: 1/1250 sec
Exposure bias: -0.7 step

SIMULATED CONDITIONS

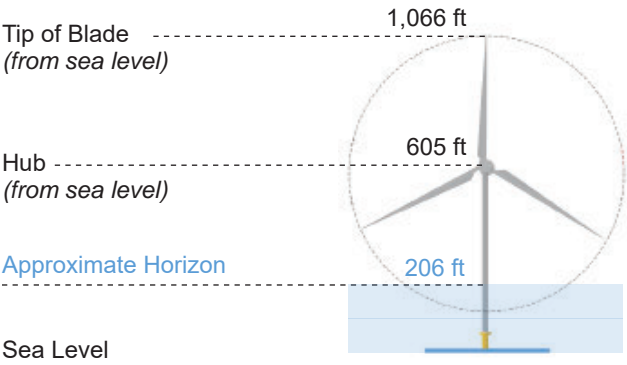
2



VISIBILTY OF CLOSEST TURBINES

Mayflower Wind
(OCS-A 0521)

919 ft rotor



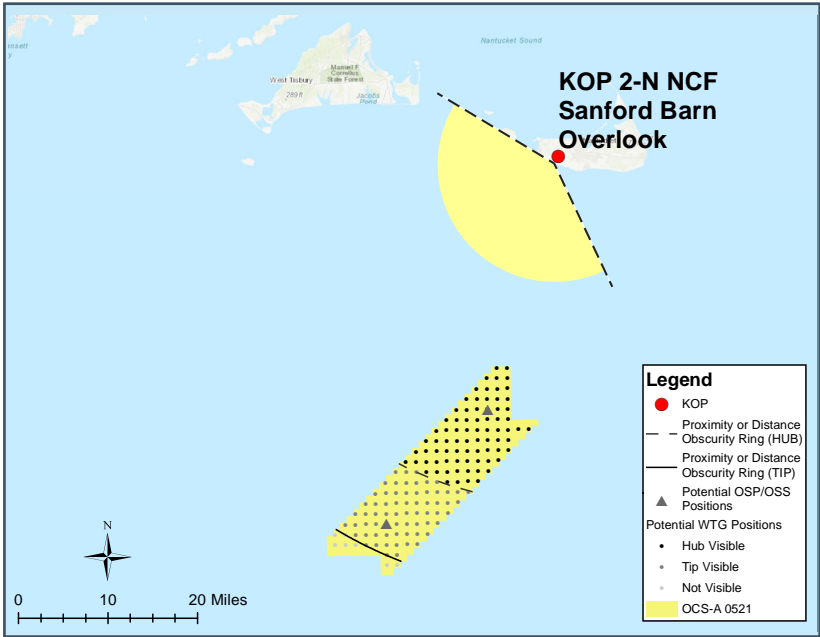
Year Forecasted for Development	2025	
Number of Structures in Lease Area	149	
Number of Structures within View of KOP	142	
Distance to Closest Structure	24.4 mi (39.26 km)	
Distance to Furthest Structure	50.3 mi (80.95 km)	

SIMULATED CONDITIONS

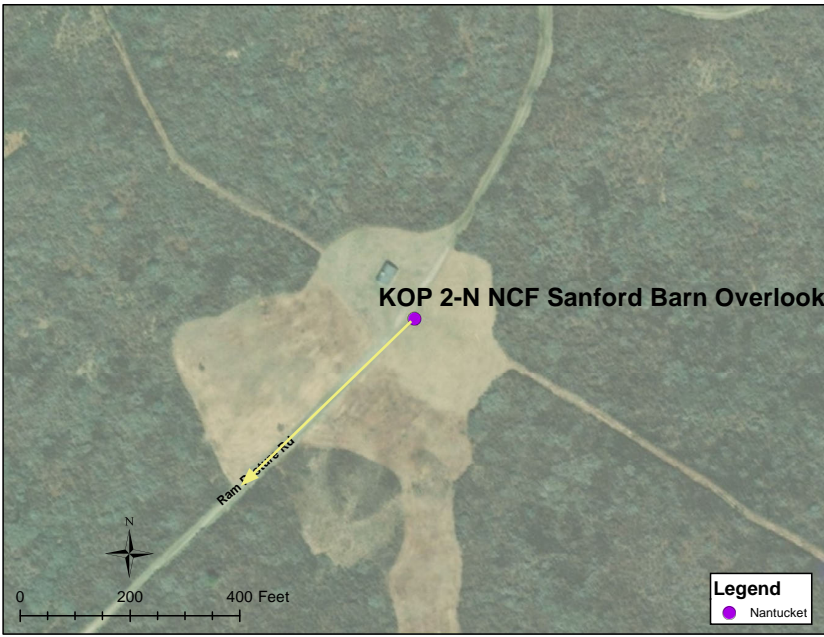
3



REGIONAL MAP



SITE MAP



PROJECT VIEW

Horizontal Field of View: 124°	Furthest Visible WTG: 62.4 mi / 100.42 km
Vertical Field of View: 39.6°	Potential Number of WTGs Visible: 629
Nearest WTG: 17 mi / 27.35 km	Potential Number of WTGs Not Visible: 285

ENVIRONMENT

Temperature: 68° F
Humidity: 81%
Wind Dir & Speed: S 12 mph
Weather Condition: Hazy

PHOTOGRAPH AND SITE

Time of photograph: 10:54 AM	Viewing direction: South (194°)
Date of photograph: 6-26-20	Latitude: 41.265608°N
L/SCA: Ocean beach	Longitude: 70.150001°W
	Lighting Direction: Backlit diffused

CAMERA

Camera Elevation: 50.5 ft / 15.4 m
Nikon D4
Nikon 50mm
ISO: 100
Fstop: f/7.1
Shutter: 1/1250 sec
Exposure bias: -0.7 step



MATCH
LINE A

MATCH
LINE AB

MATCH
LINE BB



MATCH
LINE AB

MATCH
LINE BB

MATCH
LINE BC

MATCH
LINE CC



MATCH
LINE BC

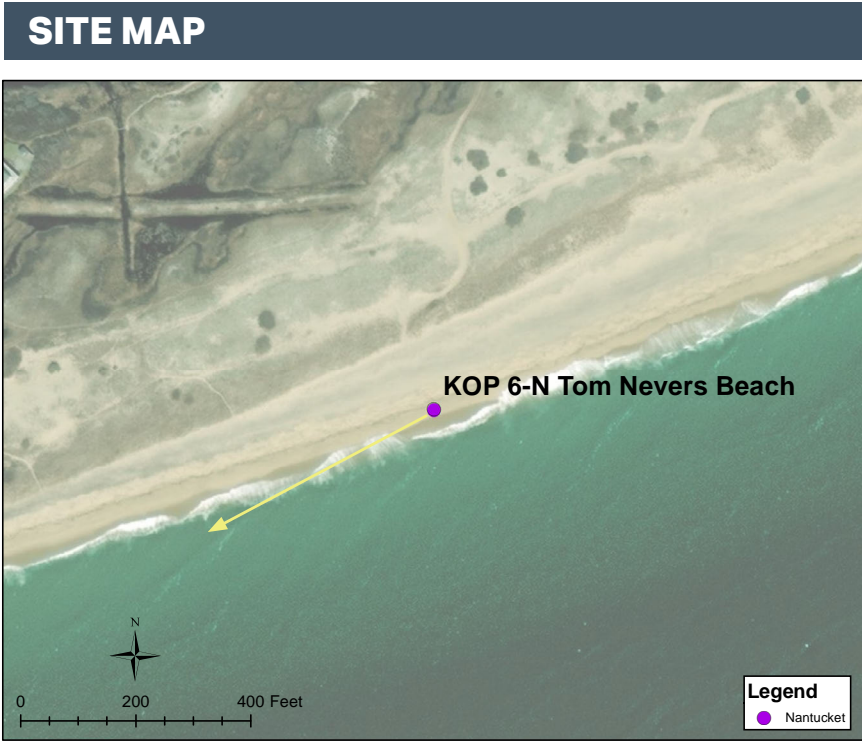
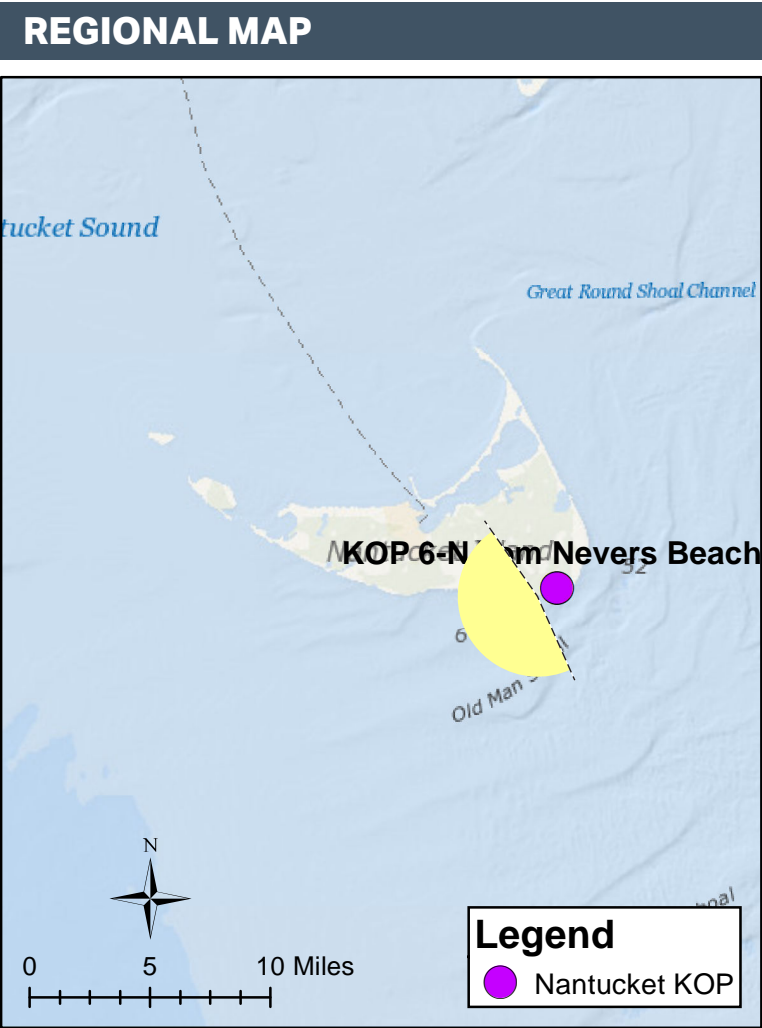
MATCH
LINE CC

MATCH
LINE CD

MATCH
LINE B

PANORAMIC PHOTOGRAPH - EXISTING CONDITIONS

1



MATCH LINES define visual simulation detail areas

A-B is shown on pages 2-3
AA-AB is shown on page 4
BB-BC is shown on page 5
CC-CD is shown on page 6

PROJECT VIEW

Horizontal Field of View: 169°	Furthest Visible WTG: 70 mi / 113 km
Vertical Field of View: 40°	Potential Number of Structures Visible: 136
Nearest WTG: 23 mi / 37 km	Potential Number of Structures Not Visible: 313

PHOTOGRAPH AND SITE

Time of photograph: 8:44AM	Viewing direction: South (242°)
Date of photograph: 6-27-20	Latitude: 41.244577°N
L/SCA: Ocean Beach, Open Ocean, Dunes	Longitude: 69.985046°W
	Lighting Direction: Sidelit diffused

ENVIRONMENT

Temperature: 68° F
Humidity: 90%
Wind Dir & Speed: S 10 mph
Weather Condition: Partly Cloudy

CAMERA

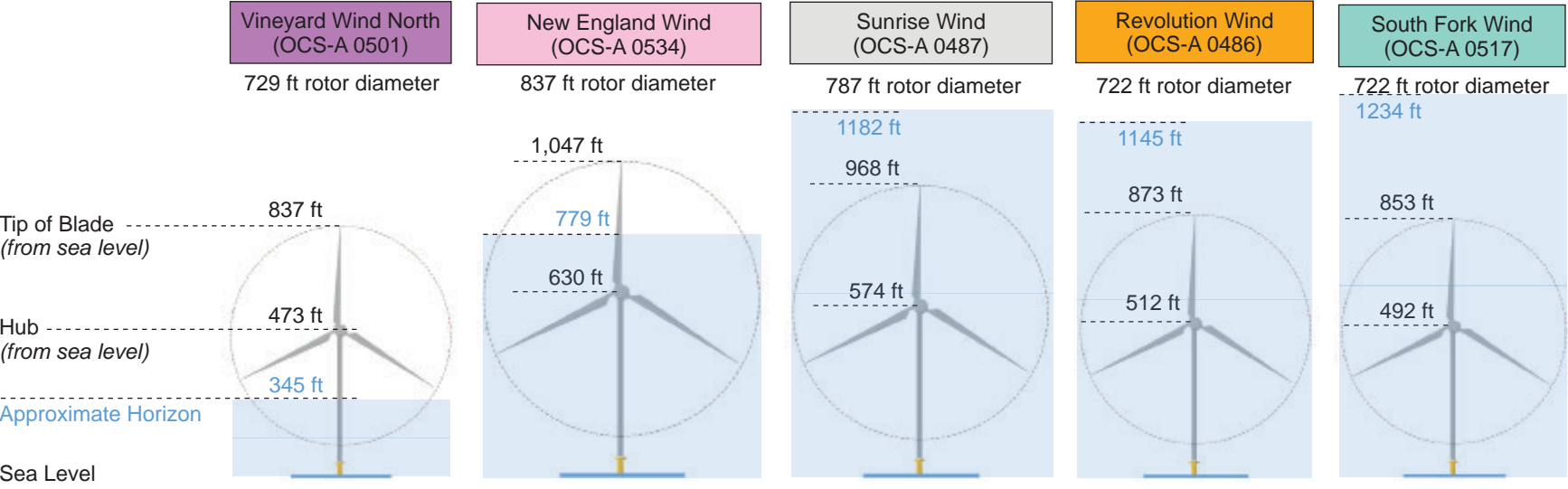
Camera Elevation: 6.5 ft / 1.7 m
Nikon D4
Nikon 50mm
ISO: 100
Fstop: f/7.1
Shutter: 1/1250 sec
Exposure bias: -0.7 step

SIMULATED CONDITIONS

2



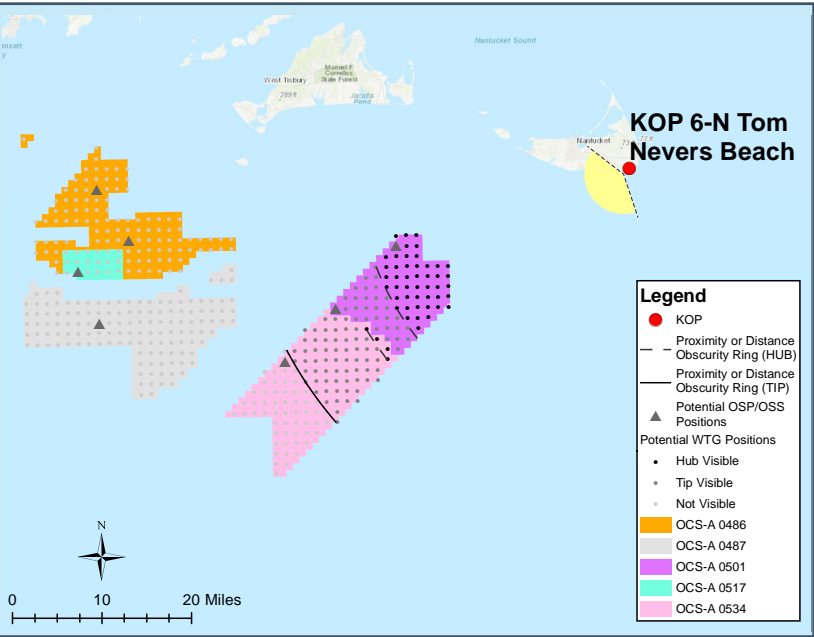
VISIBILTY OF CLOSEST TURBINES



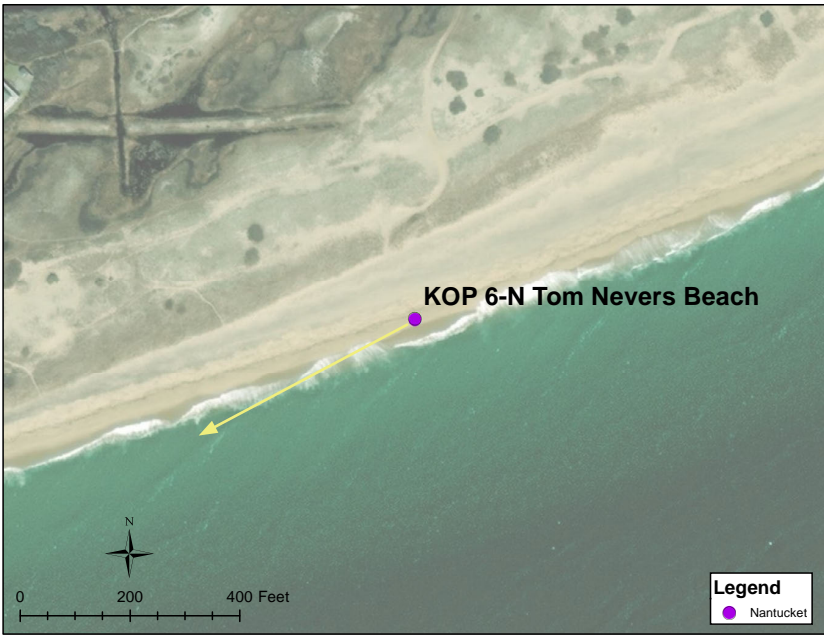
Year Forecasted for Development	2023	2024 Phase II 2026	2025	2023	2023	
Number of Structures in Lease Area	77	120	131	103	18	
Number of Structures within View of KOP	71	65	0	0	0	
Distance to Closest Structure	23 mi (37 km)	38 mi (61 km)	46 mi (74 km)	45 mi (73 km)	47 mi (75 km)	
Distance to Furthest Structure	36 mi (59 km)	52 mi (84 km)	70 mi (113 km)	109 mi (95 km)	64 mi (103 km)	



REGIONAL MAP



SITE MAP



PROJECT VIEW

Horizontal Field of View: 124°	Furthest Visible WTG: 70 mi / 113 km
Vertical Field of View: 40°	Potential Number of Structures Visible: 136
Nearest WTG: 23 mi / 37 km	Potential Number of Structures Not Visible: 313

PHOTOGRAPH AND SITE

Time of photograph: 8:44AM	Viewing direction: South (242°)
Date of photograph: 6-27-20	Latitude: 41.244577°N
L/SCA: Ocean Beach, Open Ocean, Dunes	Longitude: 69.985046°W
	Lighting Direction: Sidelit diffused

ENVIRONMENT

Temperature: 68° F
Humidity: 90%
Wind Dir & Speed: S 10 mph
Weather Condition: Partly Cloudy

CAMERA

Camera Elevation: 6.5 ft /1.7 m
Nikon D4
Nikon 50mm
ISO: 100
Fstop: f/7.1
Shutter: 1/1250 sec
Exposure bias: -0.7 step



MATCH
LINE A

MATCH
LINE AA

MATCH
LINE AB

MATCH
LINE BB

The page should viewed at 11" x 17" approximately 15" from viewer's eyes .



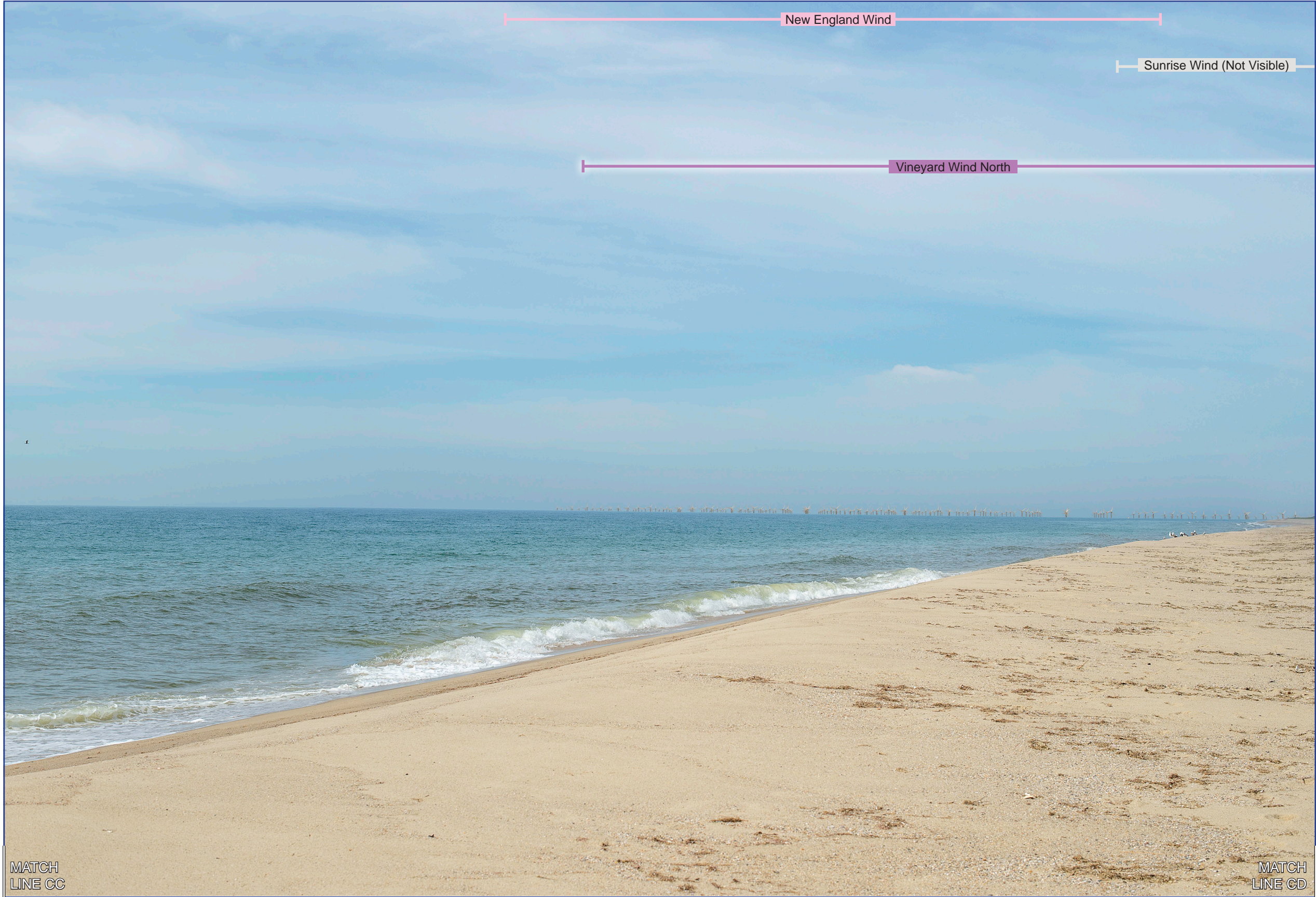
MATCH
LINE AB

MATCH
LINE BB

MATCH
LINE BC

MATCH
LINE CC

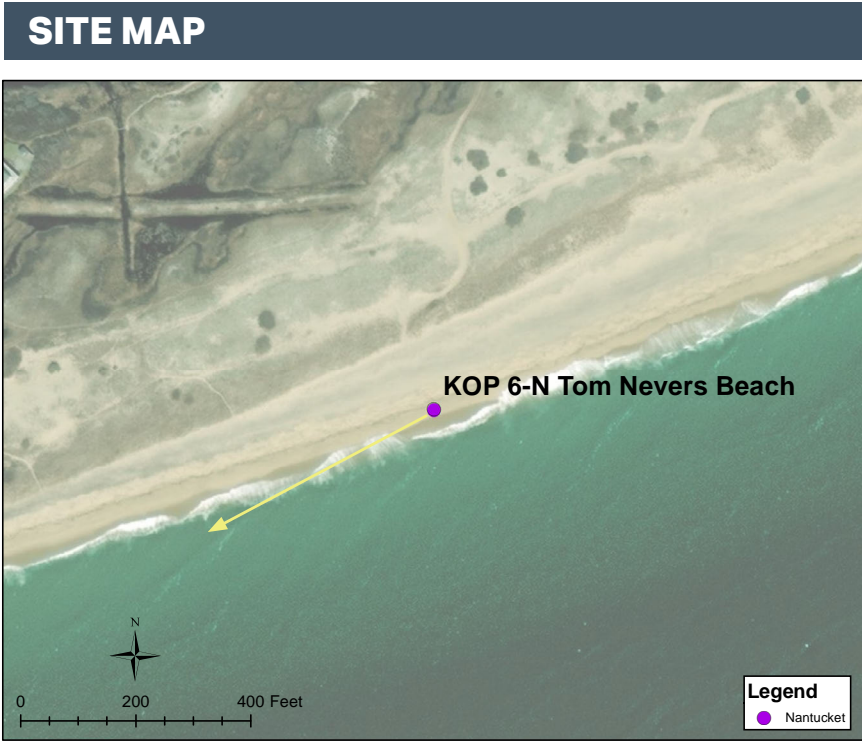
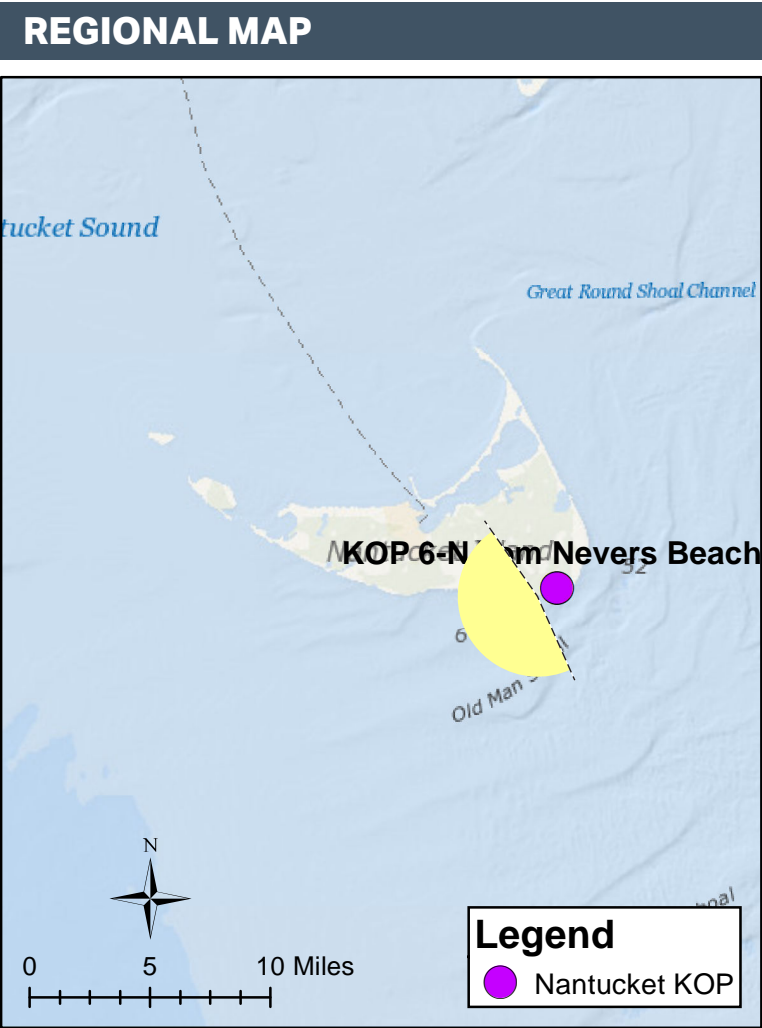
The page should viewed at 11" x 17" approximately 15" from viewer's eyes .



The page should viewed at 11" x 17" approximately 15" from viewer's eyes .

PANORAMIC PHOTOGRAPH - EXISTING CONDITIONS

1



MATCH LINES define visual simulation detail areas

A-B is shown on pages 2-3

AA-AB is shown on page 4

BB-BC is shown on page 5

CC-CD is shown on page 6

PROJECT VIEW

Horizontal Field of View: 169°	Furthest Visible WTG: 70 mi / 113 km
Vertical Field of View: 40°	Potential Number of Structures Visible: 228
Nearest WTG: 23 mi / 37 km	Potential Number of Structures Not Visible: 370

PHOTOGRAPH AND SITE

Time of photograph: 8:44AM	Viewing direction: South (242°)
Date of photograph: 6-27-20	Latitude: 41.244577°N
L/SCA: Ocean Beach, Open Ocean, Dunes	Longitude: 69.985046°W
	Lighting Direction: Sidelit diffused

ENVIRONMENT

Temperature: 68° F
Humidity: 90%
Wind Dir & Speed: S 10 mph
Weather Condition: Partly Cloudy

CAMERA

Camera Elevation: 6.5 ft / 1.7 m
Nikon D4
Nikon 50mm
ISO: 100
Fstop: f/7.1
Shutter: 1/1250 sec
Exposure bias: -0.7 step

SIMULATED CONDITIONS

2

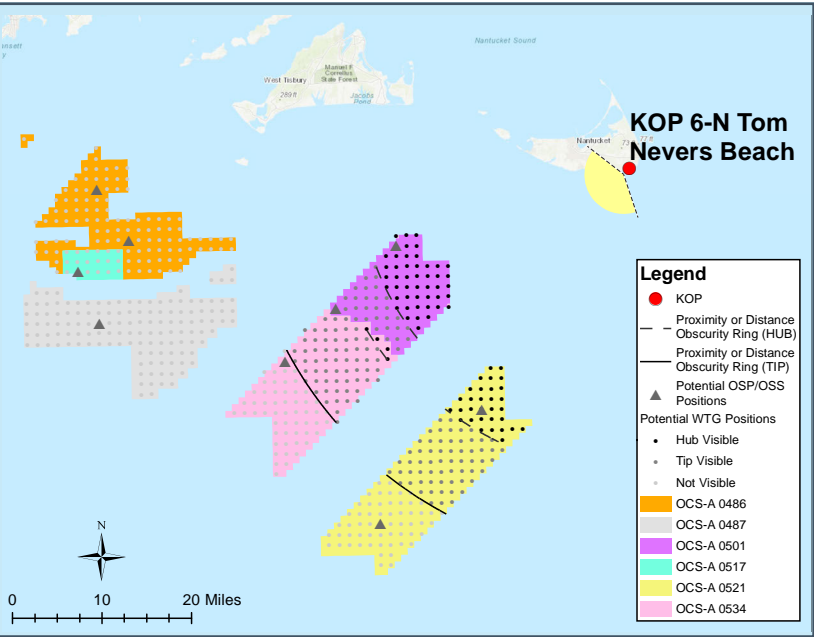


VISIBILTY OF CLOSEST TURBINES

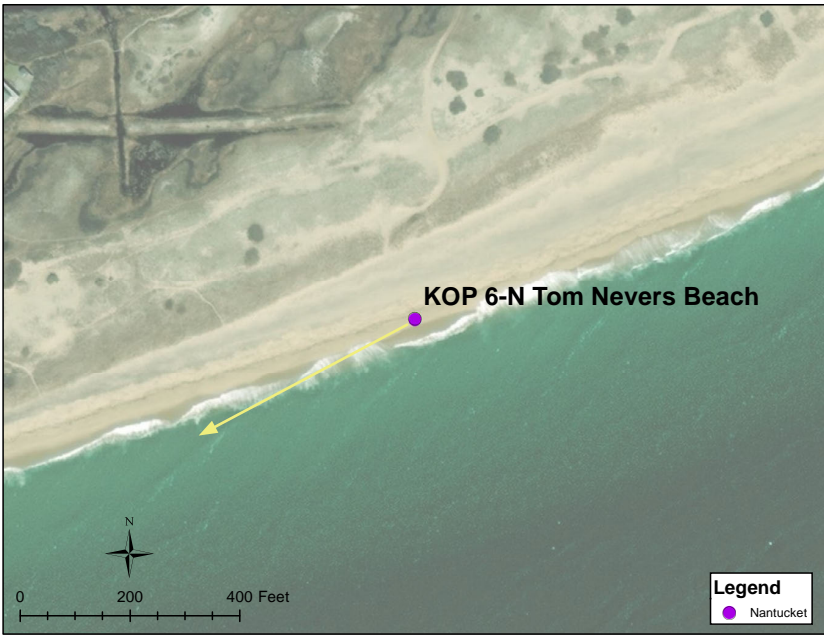
	Mayflower Wind (OCS-A 0521)	Vineyard Wind North (OCS-A 0501)	New England Wind (OCS-A 0534)	Sunrise Wind (OCS-A 0487)	Revolution Wind (OCS-A 0486)	South Fork Wind (OCS-A 0517)	
	919 ft rotor diameter	729 ft rotor diameter	837 ft rotor diameter	787 ft rotor diameter	722 ft rotor diameter	722 ft rotor diameter	
Tip of Blade (from sea level)	1,066 ft	837 ft	1,047 ft	1182 ft	1145 ft	1234 ft	
Hub (from sea level)	605 ft	473 ft	630 ft	968 ft	873 ft	853 ft	
Approximate Horizon	345 ft	250 ft	779 ft	574 ft	512 ft	492 ft	
Sea Level							
Year Forecasted for Development	2025	2023	2024 Phase II 2026	2025	2023	2023	
Number of Structures in Lease Area	149	77	120	131	103	18	
Number of Structures within View of KOP	92	71	65	0	0	0	
Distance to Closest Structure	26 mi (43 km)	23 mi (37 km)	38 mi (61 km)	46 mi (74 km)	45 mi (73 km)	47 mi (75 km)	
Distance to Furthest Structure	54 mi (87 km)	36 mi (59 km)	52 mi (84 km)	70 mi (113 km)	109 mi (95 km)	64 mi (103 km)	



REGIONAL MAP



SITE MAP



PROJECT VIEW

Horizontal Field of View: 124°	Furthest Visible WTG: 70 mi / 113 km
Vertical Field of View: 40°	Potential Number of Structures Visible: 228
Nearest WTG: 23 mi / 37 km	Potential Number of Structures Not Visible: 370

PHOTOGRAPH AND SITE

Time of photograph: 8:44AM	Viewing direction: South (242°)
Date of photograph: 6-27-20	Latitude: 41.244577°N
L/SCA: Ocean Beach, Open Ocean, Dunes	Longitude: 69.985046°W
	Lighting Direction: Sidelit diffused

ENVIRONMENT

Temperature: 68° F
Humidity: 90%
Wind Dir & Speed: S 10 mph
Weather Condition: Partly Cloudy

CAMERA

Camera Elevation: 6.5 ft / 1.7 m
Nikon D4
Nikon 50mm
ISO: 100
Fstop: f/7.1
Shutter: 1/1250 sec
Exposure bias: -0.7 step



MATCH
LINE A

MATCH
LINE AA

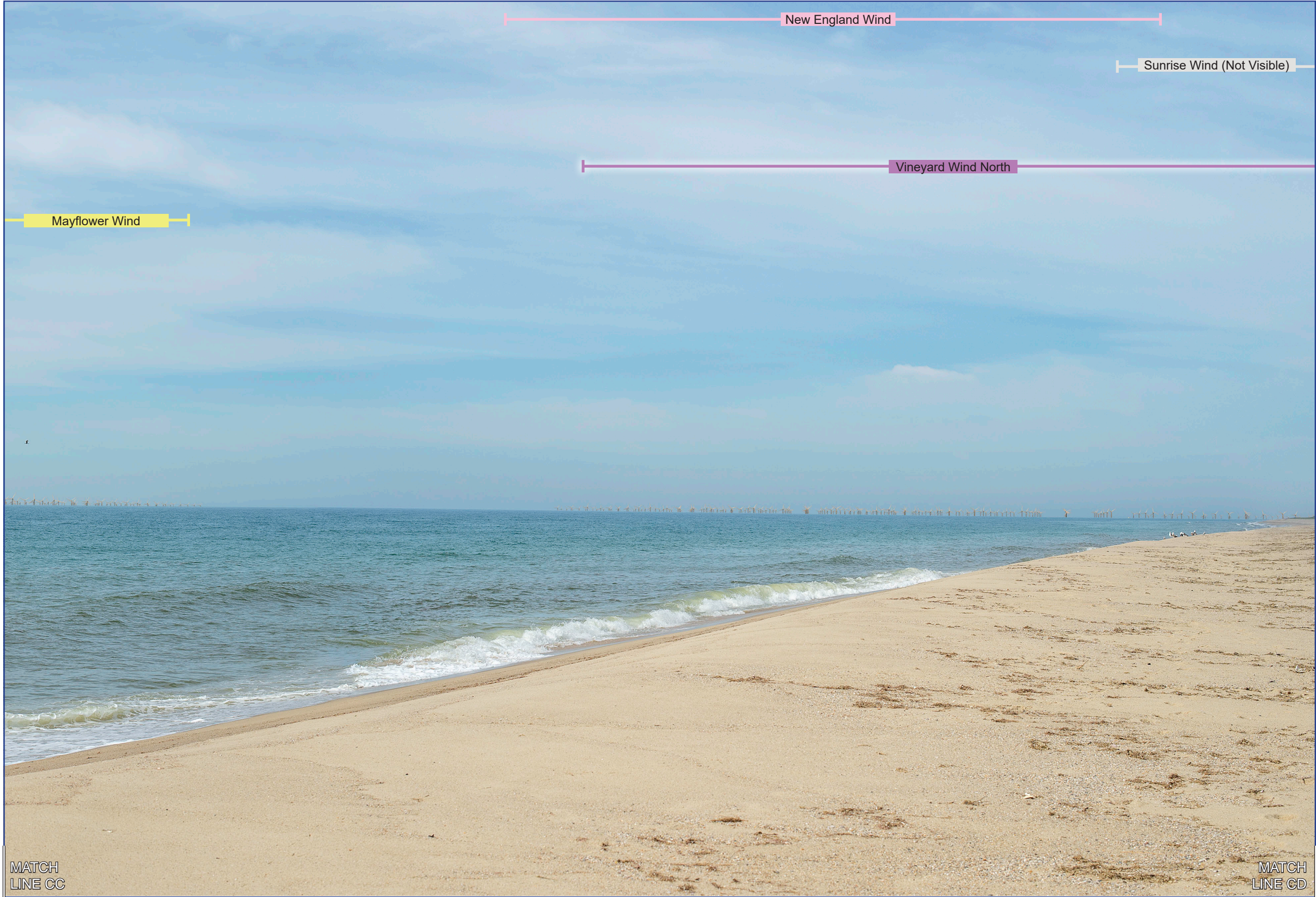
MATCH
LINE AB

MATCH
LINE BB

The page should viewed at 11" x 17" approximately 15" from viewer's eyes .



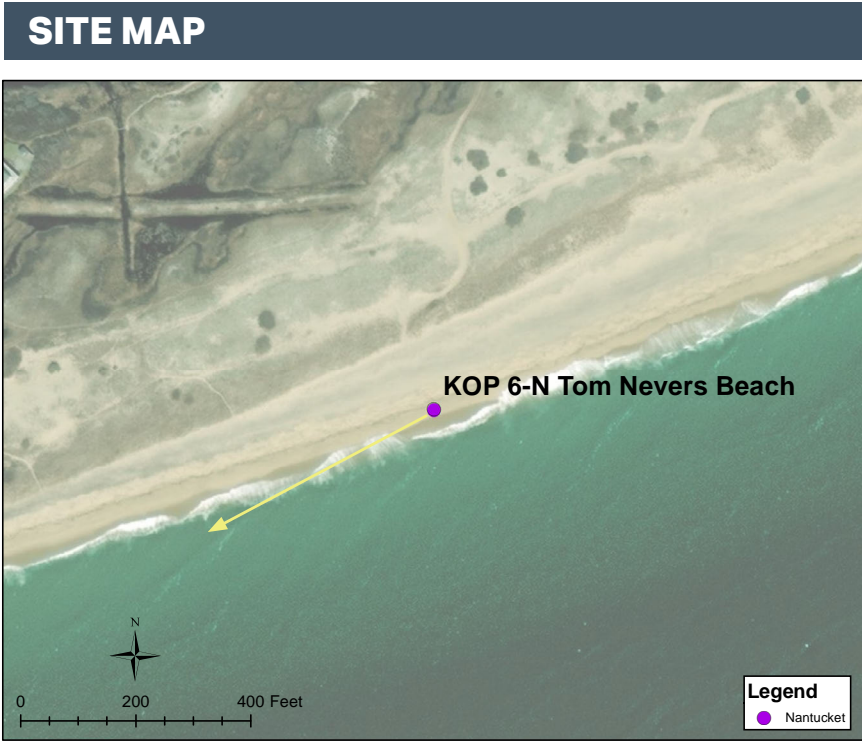
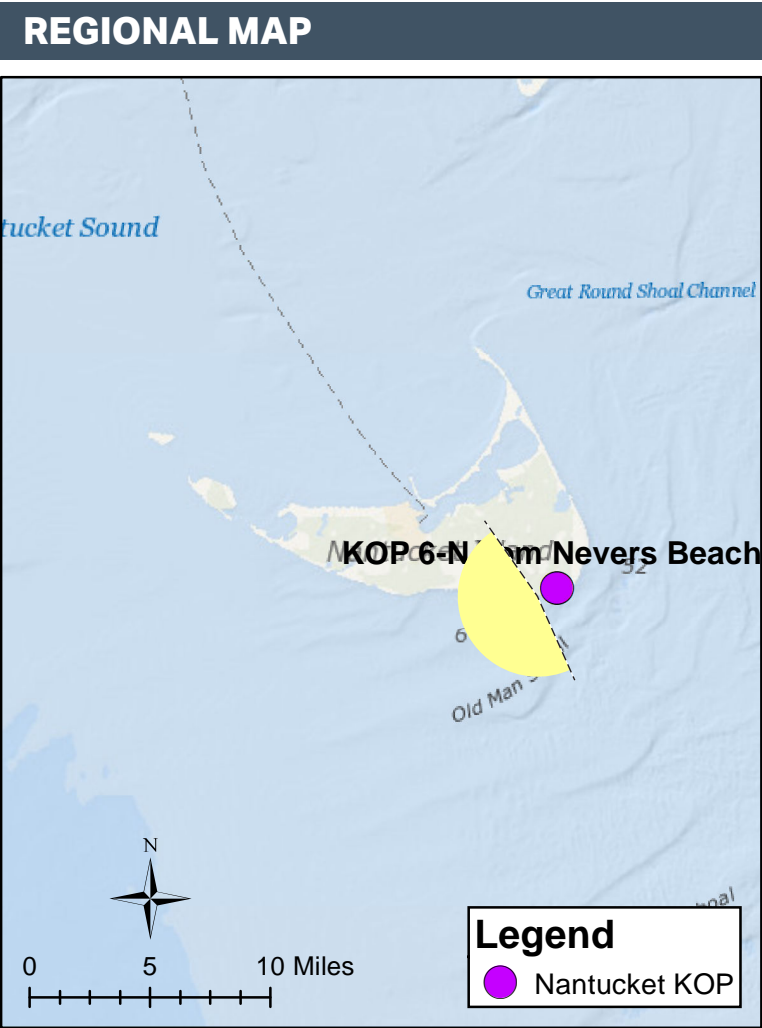
The page should viewed at 11" x 17" approximately 15" from viewer's eyes .



The page should viewed at 11" x 17" approximately 15" from viewer's eyes .

PANORAMIC PHOTOGRAPH - EXISTING CONDITIONS

1



MATCH LINES define visual simulation detail areas

- A-B is shown on pages 2-3
- AA-AB is shown on page 4
- BB-BC is shown on page 5
- CC-CD is shown on page 6

PROJECT VIEW

Horizontal Field of View: 169°	Furthest Visible WTG: 70 mi / 113 km
Vertical Field of View: 40°	Potential Number of WTGs Visible: 463
Nearest WTG: 23 mi / 37 km	Potential Number of WTGs Not Visible: 600

PHOTOGRAPH AND SITE

Time of photograph: 8:44AM	Viewing direction: South (242°)
Date of photograph: 6-27-20	Latitude: 41.244577°N
L/SCA: Ocean Beach, Open Ocean, Dunes	Longitude: 69.985046°W
	Lighting Direction: Sidelit diffused

ENVIRONMENT

Temperature: 68° F
Humidity: 90%
Wind Dir & Speed: S 10 mph
Weather Condition: Partly Cloudy

CAMERA

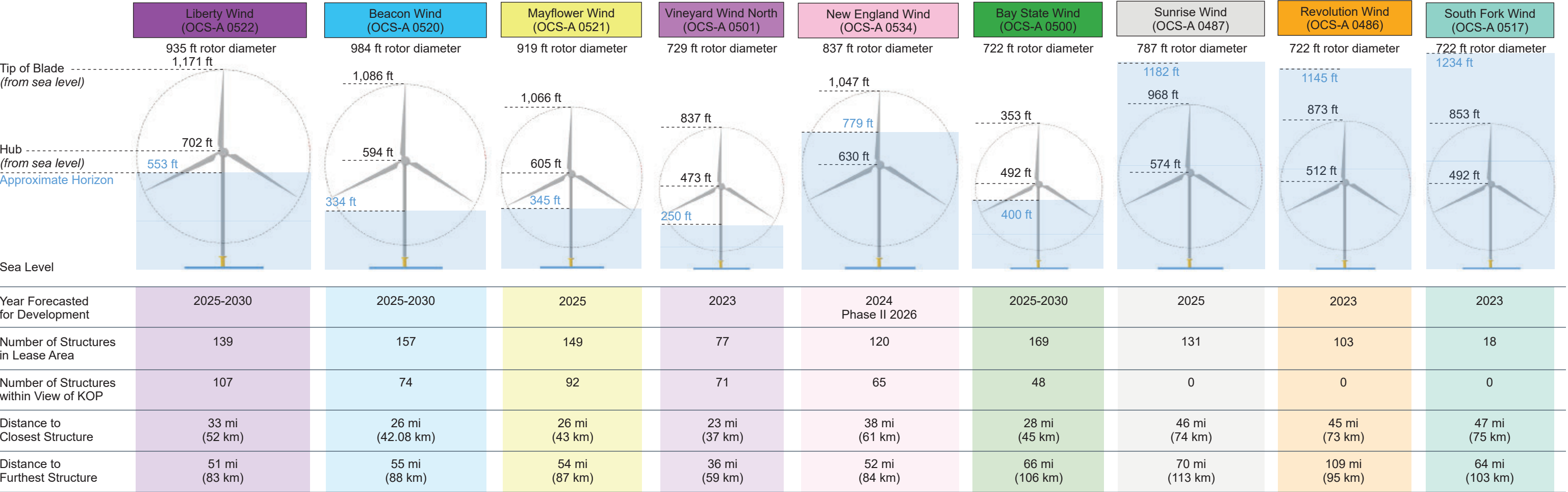
Camera Elevation: 6.5 ft / 1.7 m
Nikon D4
Nikon 50mm
ISO: 100
Fstop: f/7.1
Shutter: 1/1250 sec
Exposure bias: -0.7 step

SIMULATED CONDITIONS

2

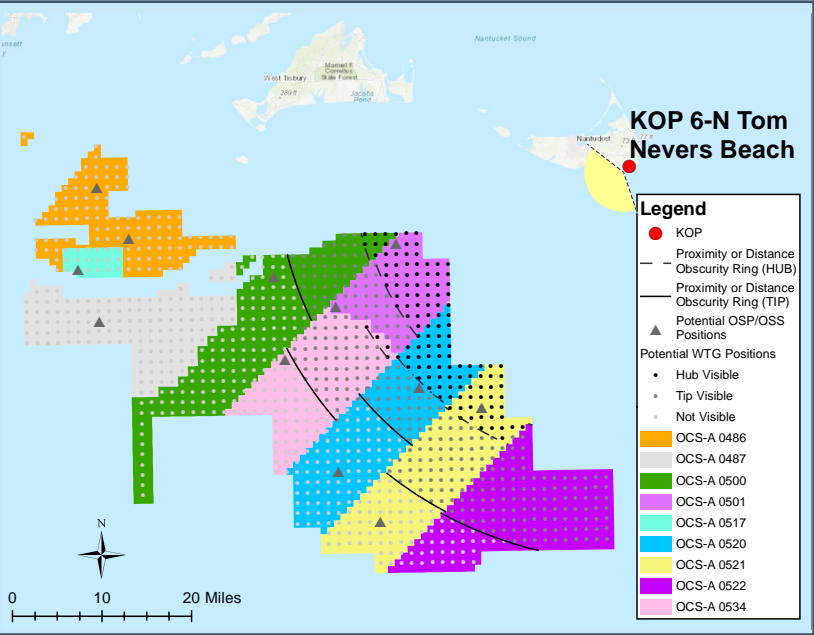


VISIBILTY OF CLOSEST TURBINES





REGIONAL MAP



SITE MAP



PROJECT VIEW

Horizontal Field of View: 124°	Furthest Visible WTG: 70 mi / 113 km
Vertical Field of View: 40°	Potential Number of WTGs Visible: 463
Nearest WTG: 23 mi / 37 km	Potential Number of WTGs Not Visible: 600

ENVIRONMENT

Temperature: 68° F
Humidity: 90%
Wind Dir & Speed: S 10 mph
Weather Condition: Partly Cloudy

PHOTOGRAPH AND SITE

Time of photograph: 8:44AM	Viewing direction: South (242°)
Date of photograph: 6-27-20	Latitude: 41.244577°N
L/SCA: Ocean Beach, Open Ocean, Dunes	Longitude: 69.985046°W
	Lighting Direction: Sidelit diffused

CAMERA

Camera Elevation: 6.5 ft /1.7 m
Nikon D4
Nikon 50mm
ISO: 100
Fstop: f/7.1
Shutter: 1/1250 sec
Exposure bias: -0.7 step



MATCH
LINE A

MATCH
LINE AA

MATCH
LINE AB

MATCH
LINE BB

The page should viewed at 11" x 17" approximately 15" from viewer's eyes .



MATCH
LINE AB

MATCH
LINE BB

MATCH
LINE BC

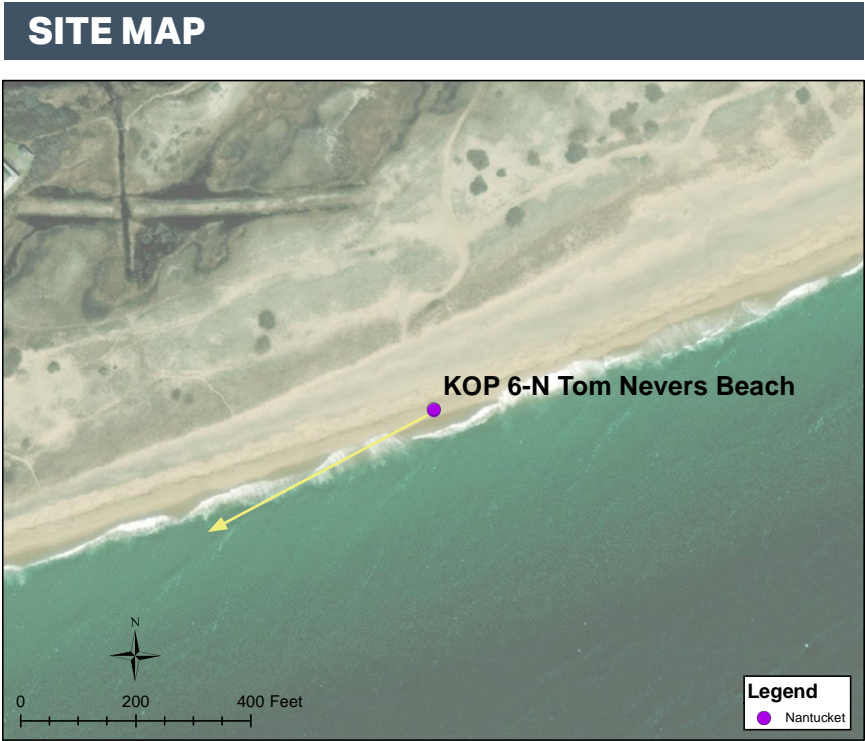
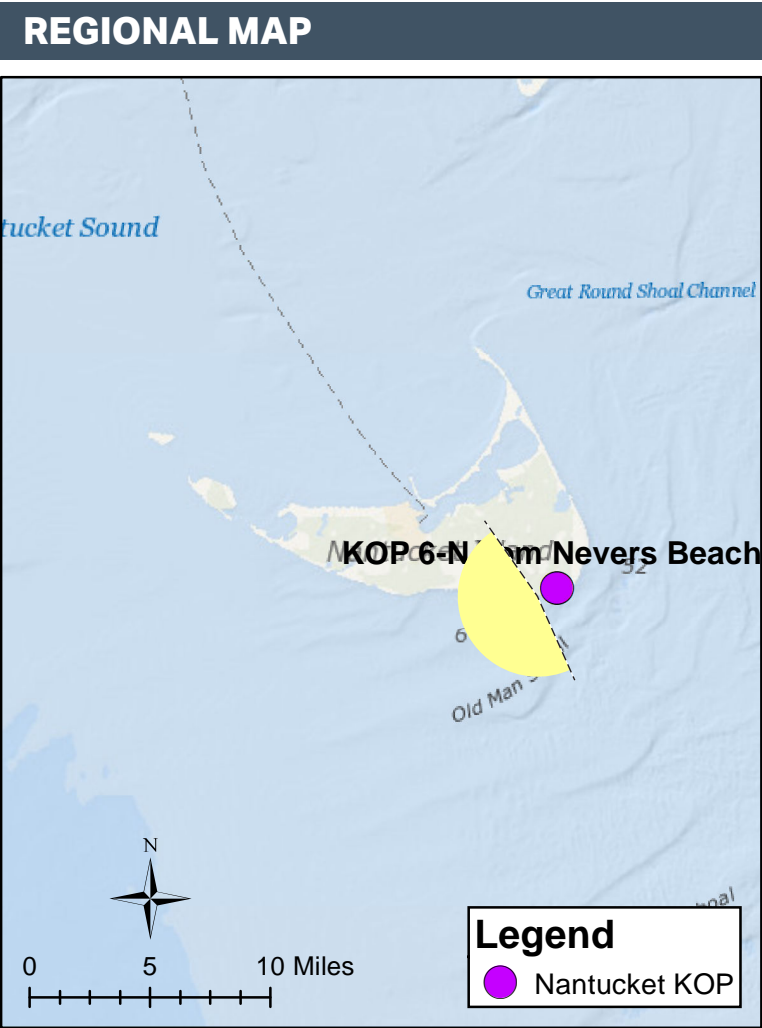
MATCH
LINE CC



The page should viewed at 11" x 17" approximately 15" from viewer's eyes .

PANORAMIC PHOTOGRAPH - EXISTING CONDITIONS

1



MATCH LINES define visual simulation detail areas

A-B is shown on pages 2-3
AA-AB is shown on page 4
BB-BC is shown on page 5
CC-CD is shown on page 6

PROJECT VIEW

Horizontal Field of View: 169°	Furthest Visible WTG: 70 mi / 113 km
Vertical Field of View: 40°	Potential Number of Structures Visible: 365
Nearest WTG: 23 mi / 37 km	Potential Number of Structures Not Visible: 549

PHOTOGRAPH AND SITE

Time of photograph: 8:44AM	Viewing direction: South (242°)
Date of photograph: 6-27-20	Latitude: 41.244577°N
L/SCA: Ocean Beach, Open Ocean, Dunes	Longitude: 69.985046°W
	Lighting Direction: Sidelit diffused

ENVIRONMENT

Temperature: 68° F
Humidity: 90%
Wind Dir & Speed: S 10 mph
Weather Condition: Partly Cloudy

CAMERA

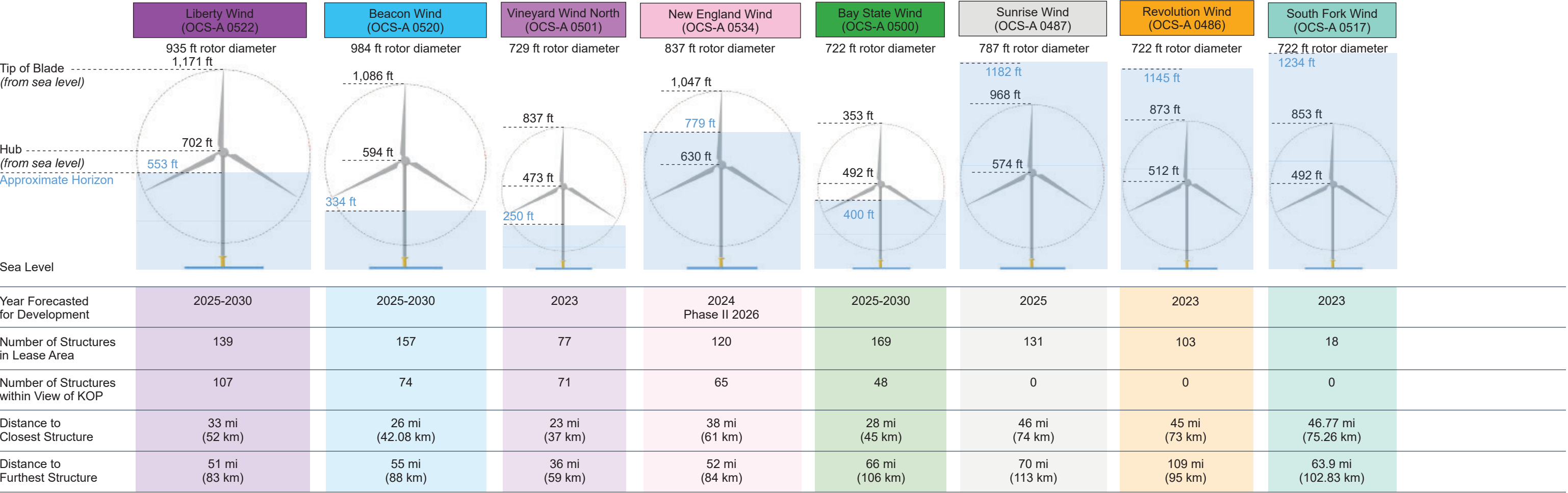
Camera Elevation: 6.5 ft / 1.7 m
Nikon D4
Nikon 50mm
ISO: 100
Fstop: f/7.1
Shutter: 1/1250 sec
Exposure bias: -0.7 step

SIMULATED CONDITIONS

2

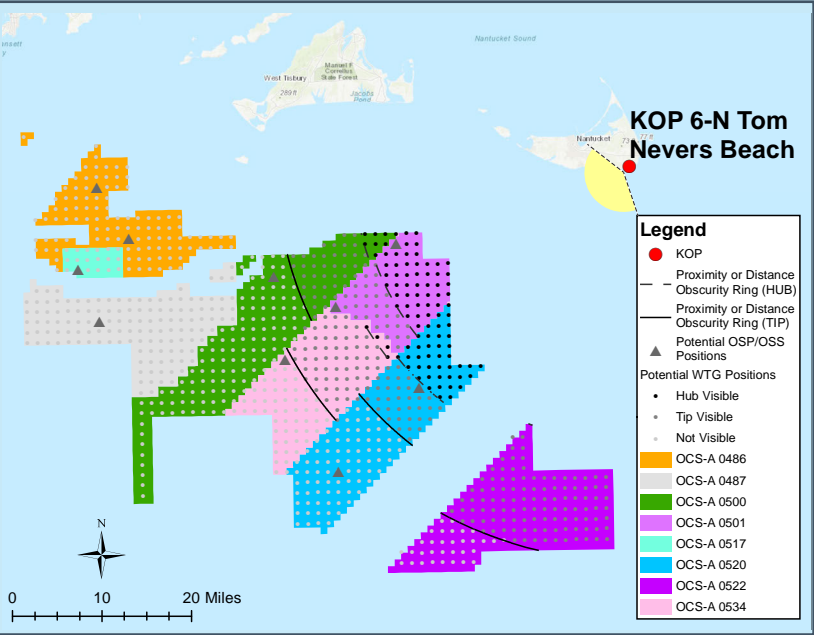


VISIBILTY OF CLOSEST TURBINES





REGIONAL MAP



SITE MAP



PROJECT VIEW

Horizontal Field of View: 124°	Furthest Visible WTG: 70 mi / 113 km
Vertical Field of View: 40°	Potential Number of WTGs Visible: 371
Nearest WTG: 23 mi / 37 km	Potential Number of WTGs Not Visible: 543

ENVIRONMENT

Temperature: 68° F
Humidity: 90%
Wind Dir & Speed: S 10 mph
Weather Condition: Partly Cloudy

PHOTOGRAPH AND SITE

Time of photograph: 8:44AM	Viewing direction: South (242°)
Date of photograph: 6-27-20	Latitude: 41.244577°N
L/SCA: Ocean Beach, Open Ocean, Dunes	Longitude: 69.985046°W
	Lighting Direction: Sidelit diffused

CAMERA

Camera Elevation: 6.5 ft / 1.7 m
Nikon D4
Nikon 50mm
ISO: 100
Fstop: f/7.1
Shutter: 1/1250 sec
Exposure bias: -0.7 step



The page should viewed at 11" x 17" approximately 15" from viewer's eyes .



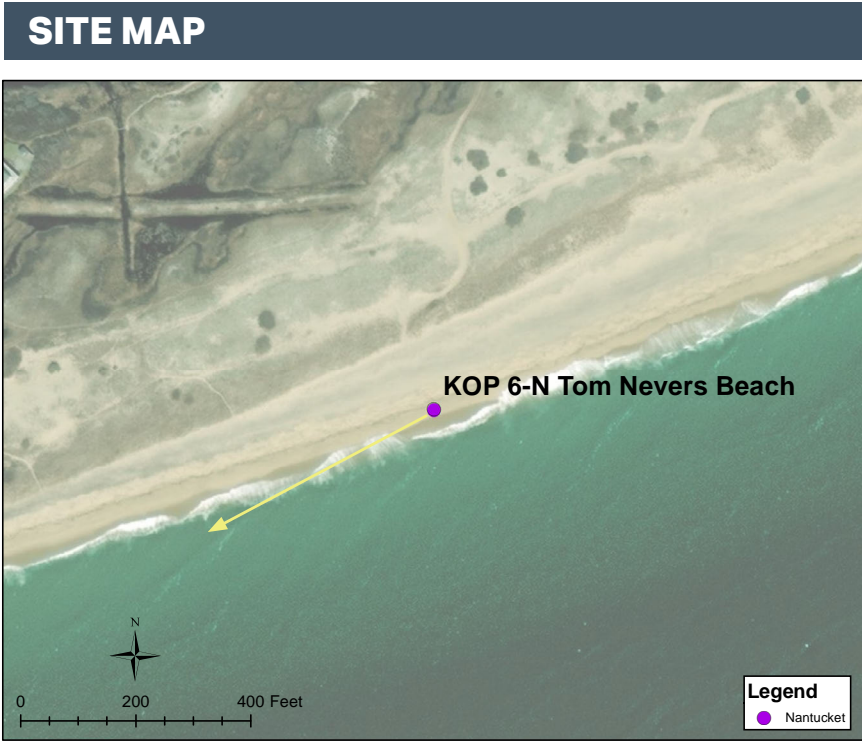
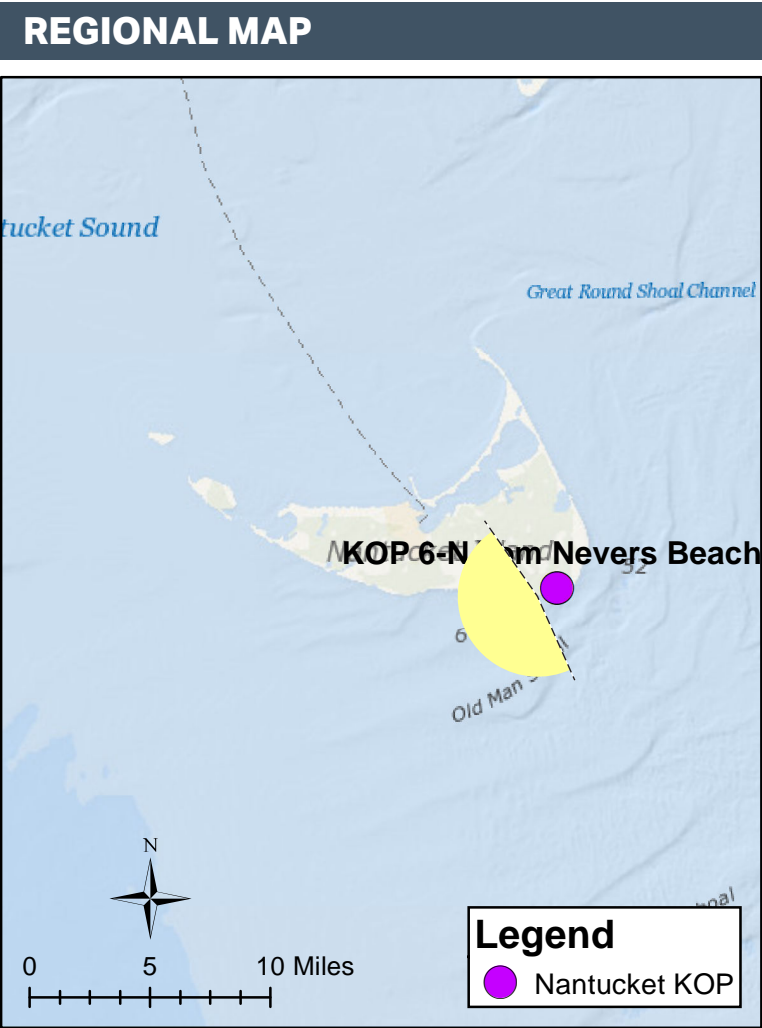
The page should viewed at 11" x 17" approximately 15" from viewer's eyes .



The page should viewed at 11" x 17" approximately 15" from viewer's eyes .

PANORAMIC PHOTOGRAPH - EXISTING CONDITIONS

1



MATCH LINES define visual simulation detail areas

A-B is shown on pages 2-3

AA-AB is shown on page 4

BB-BC is shown on page 5

CC-CD is shown on page 6

PROJECT VIEW

Horizontal Field of View: 169°	Furthest Visible WTG: 54 mi / 87 km
Vertical Field of View: 40°	Potential Number of Structures Visible: 92
Nearest WTG: 26 mi / 43 km	Potential Number of Structures Not Visible: 57

PHOTOGRAPH AND SITE

Time of photograph: 8:44AM	Viewing direction: South (242°)
Date of photograph: 6-27-20	Latitude: 41.244577°N
L/SCA: Ocean Beach, Open Ocean, Dunes	Longitude: 69.985046°W
	Lighting Direction: Sidelit diffused

ENVIRONMENT

Temperature: 68° F
Humidity: 90%
Wind Dir & Speed: S 10 mph
Weather Condition: Partly Cloudy

CAMERA

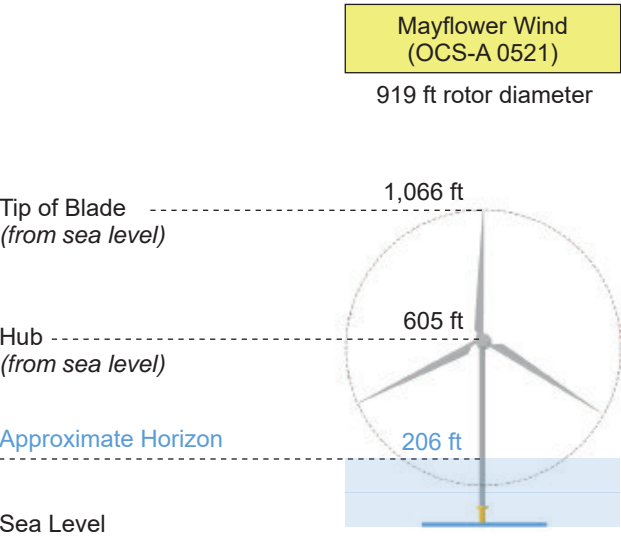
Camera Elevation: 6.5 ft / 1.7 m
Nikon D4
Nikon 50mm
ISO: 100
Fstop: f/7.1
Shutter: 1/1250 sec
Exposure bias: -0.7 step

SIMULATED CONDITIONS

2



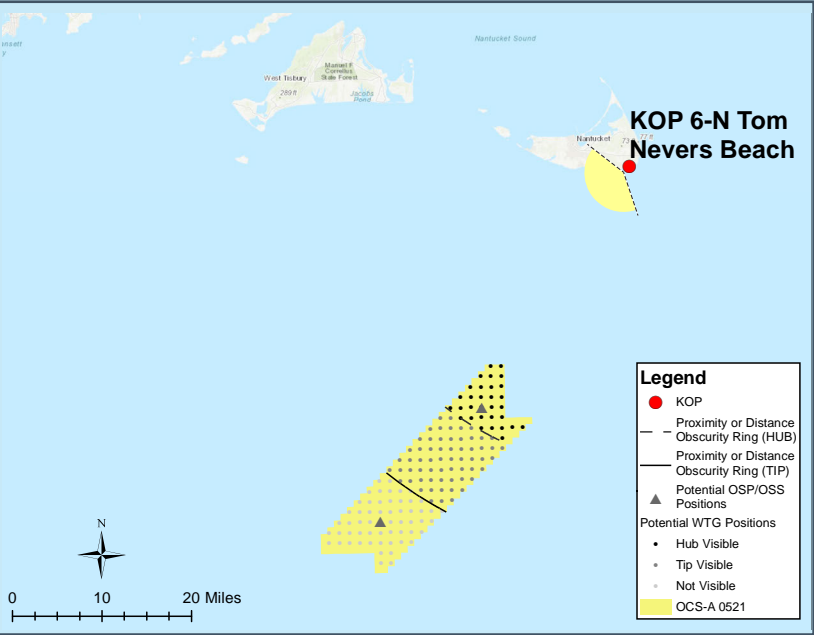
VISIBILTY OF CLOSEST TURBINES



Year Forecasted for Development	2025
Number of Structures in Lease Area	149
Number of Structures within View of KOP	92
Distance to Closest Structure	26 mi (43 km)
Distance to Furthest Structure	54 mi (87 km)



REGIONAL MAP



SITE MAP



PROJECT VIEW

Horizontal Field of View: 124°	Furthest Visible WTG: 54 mi / 87 km
Vertical Field of View: 40°	Potential Number of WTGs Visible: 92
Nearest WTG: 26 mi / 43 km	Potential Number of WTGs Not Visible: 57

PHOTOGRAPH AND SITE

Time of photograph: 8:44AM	Viewing direction: South (242°)
Date of photograph: 6-27-20	Latitude: 41.244577°N
L/SCA: Ocean Beach, Open	Longitude: 69.985046°W
Ocean, Dunes	Lighting Direction: Sidelit diffused

ENVIRONMENT

Temperature: 68° F
Humidity: 90%
Wind Dir & Speed: S 10 mph
Weather Condition: Partly Cloudy

CAMERA

Camera Elevation: 6.5 ft / 1.7 m
Nikon D4
Nikon 50mm
ISO: 100
Fstop: f/7.1
Shutter: 1/1250 sec
Exposure bias: -0.7 step



MATCH
LINE A

MATCH
LINE AA

MATCH
LINE AB

MATCH
LINE BB



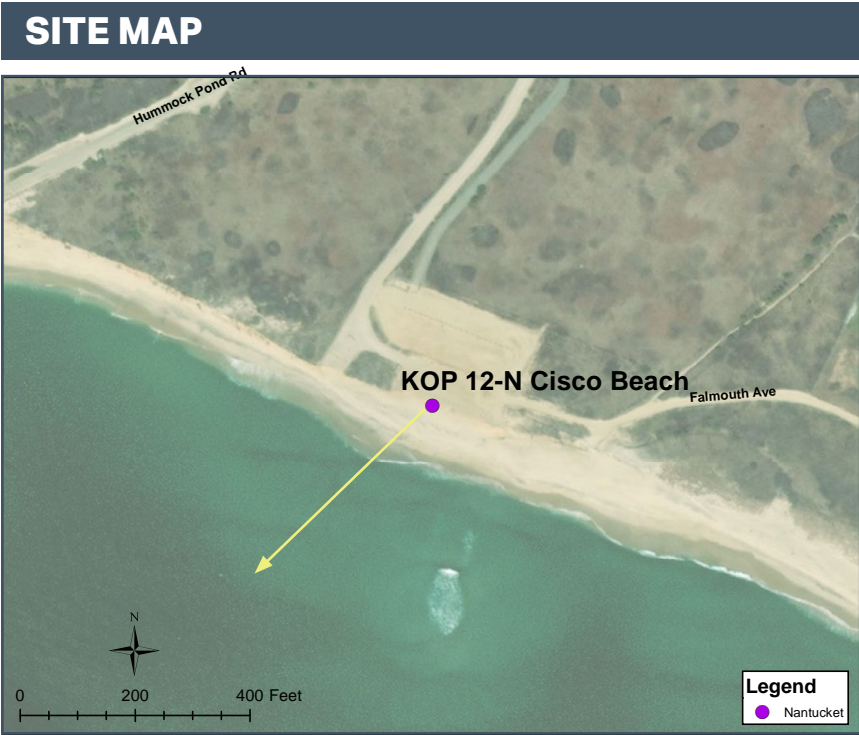
The page should viewed at 11" x 17" approximately 15" from viewer's eyes .



The page should viewed at 11" x 17" approximately 15" from viewer's eyes .

PANORAMIC PHOTOGRAPH - EXISTING CONDITIONS

1



MATCH LINES define visual simulation detail areas

- A-B is shown on pages 2-3
- AA-AB is shown on page 4
- BB-BC is shown on page 5
- CC-CD is shown on page 6

PROJECT VIEW

Horizontal Field of View: 193.2°	Furthest Visible WTG: 46 mi / 74 km
Vertical Field of View: 40°	Potential Number of Structures Visible: 577
Nearest WTG: 16 mi / 26 km	Potential Number of Structures Not Visible: 337

PHOTOGRAPH AND SITE

Time of photograph: 1:25PM	Viewing direction: South (226°)
Date of photograph: 8-20-20	Latitude: 41.252490°N
L/SCA: Open Ocean, Ocean Beach, Dunes, Salt Ponds/Tidal Marsh, Residential	Longitude: 70.154080°W
	Lighting Direction: Backlit diffused

ENVIRONMENT

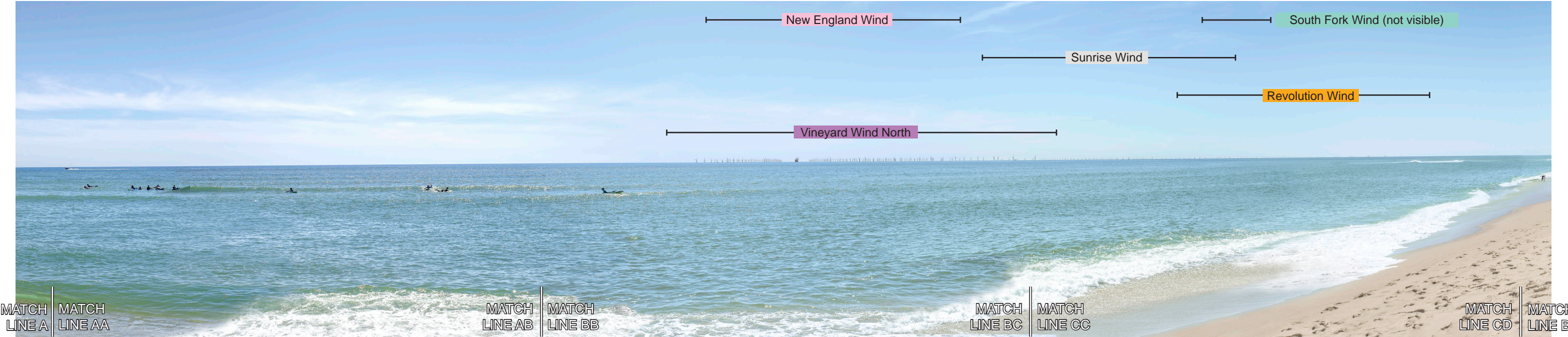
Temperature: 61° F
Humidity: 90%
Wind Dir & Speed: N 6 mph
Weather Condition: Partly Cloudy

CAMERA

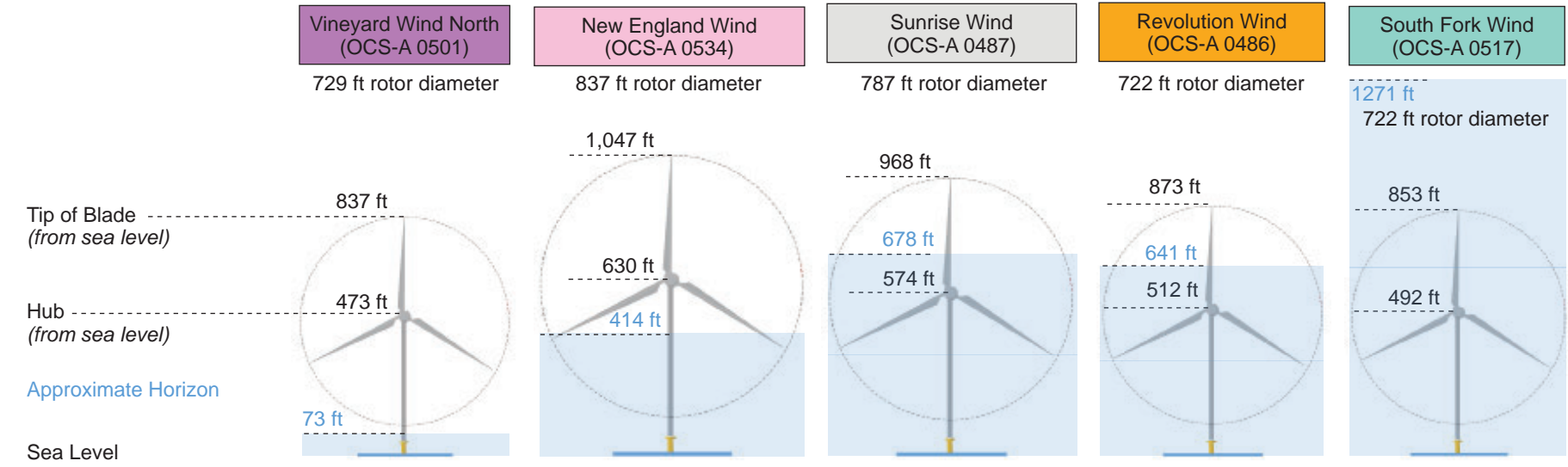
Camera Elevation: 23.0 ft / 7.0 m
Nikon D4
Nikon 50mm
ISO: 100
Fstop: f/7.1
Shutter: 1/1250 sec
Exposure bias: -0.7 step

SIMULATED CONDITIONS

2



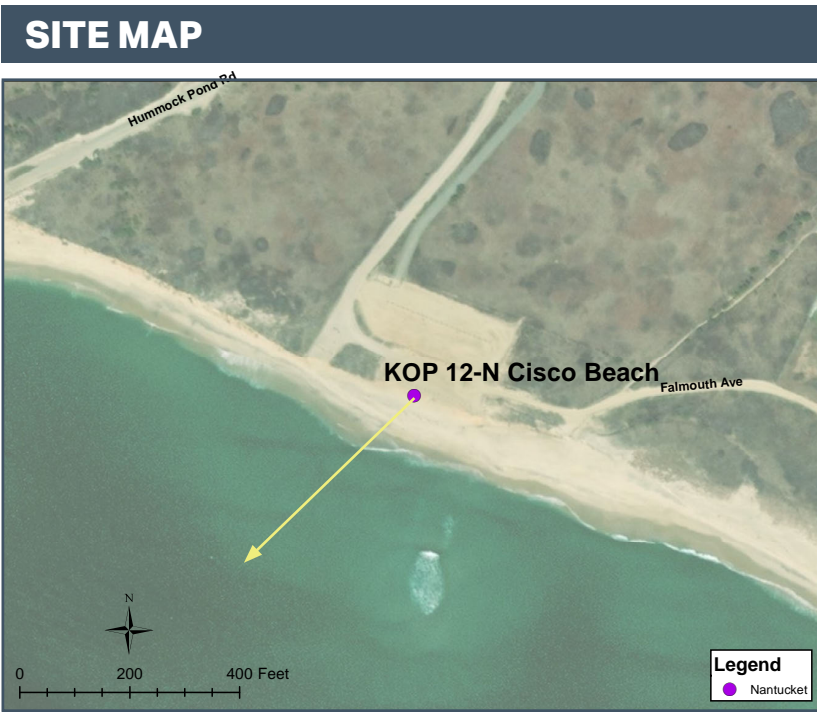
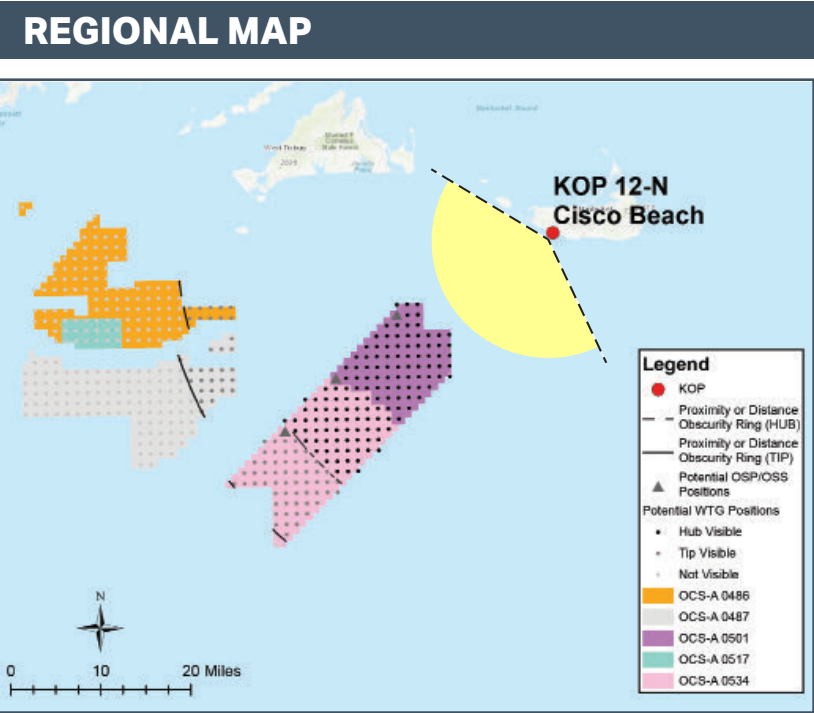
VISIBILTY OF CLOSEST TURBINES



Year Forecasted for Development	2023	2024 Phase II 2026	2025	2023	2023	
Number of Structures in Lease Area	77	120	131	103	18	
Number of Structures within View of KOP	77	118	22	10	0	
Distance to Closest Structure	16 mi (26 km)	31 mi (49 km)	38 mi (61 km)	38 mi (61 km)	49 mi (79.46 km)	
Distance to Furthest Structure	29 mi (47 km)	48 mi (78 km)	62 mi (100 km)	59 mi (95 km)	56 mi (89 km)	

SIMULATED CONDITIONS

3



PROJECT VIEW

Horizontal Field of View: 124°	Furthest Visible WTG: 46 mi / 74 km
Vertical Field of View: 40°	Potential Number of Structures Visible: 577
Nearest WTG: 16 mi / 26 km	Potential Number of Structures Not Visible: 337

PHOTOGRAPH AND SITE

Time of photograph: 1:25PM	Viewing direction: South (226°)
Date of photograph: 8-20-20	Latitude: 41.252490°N
L/SCA: Open Ocean, Ocean Beach, Dunes, Salt Ponds/Tidal Marsh, Residential	Longitude: 70.154080°W
	Lighting Direction: Backlit diffused

ENVIRONMENT

Temperature: 61° F
Humidity: 90%
Wind Dir & Speed: N 6 mph
Weather Condition: Partly Cloudy

CAMERA

Camera Elevation: 23.0 ft / 7.0 m
Nikon D4
Nikon 50mm
ISO: 100
Fstop: f/7.1
Shutter: 1/1250 sec
Exposure bias: -0.7 step



MATCH
LINE A

MATCH
LINE AA

MATCH
LINE AB

MATCH
LINE BB

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The page should viewed at 11" x 17" approximately 15" from viewer's eyes .



MATCH
LINE BC

MATCH
LINE CD

MATCH
LINE B

The page should viewed at 11" x 17" approximately 15" from viewer's eyes .

PANORAMIC PHOTOGRAPH - EXISTING CONDITIONS

1



MATCH LINES define visual simulation detail areas

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PROJECT VIEW

Horizontal Field of View: 193°	Furthest Visible WTG: 46 mi / 74 km
Vertical Field of View: 40°	Potential Number of Structures Visible: 577
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PHOTOGRAPH AND SITE

Time of photograph: 1:25PM	Viewing direction: South (226°)
Date of photograph: 8-20-20	Latitude: 41.252490°N
L/SCA: Open Ocean, Ocean Beach, Dunes, Salt Ponds/Tidal Marsh, Residential	Longitude: 70.154080°W
	Lighting Direction: Backlit diffused

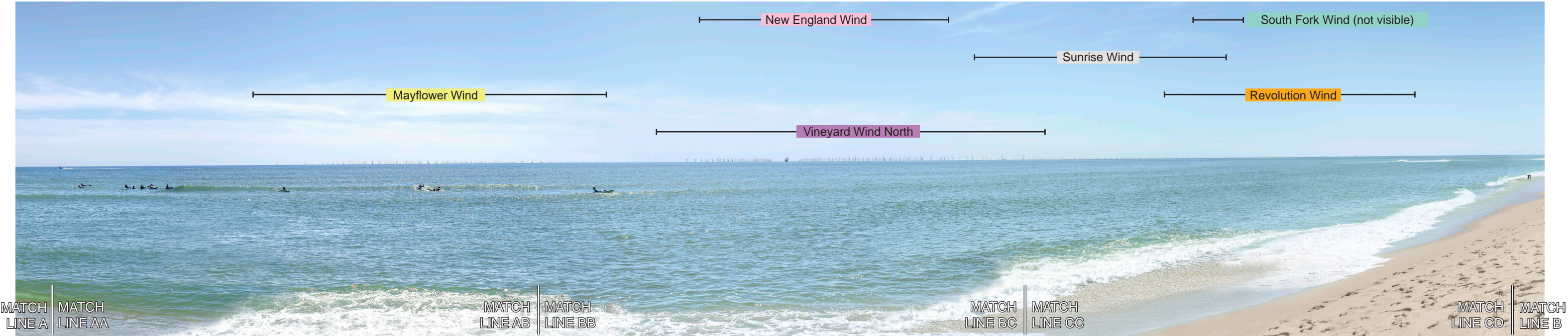
ENVIRONMENT

Temperature: 61° F
Humidity: 90%
Wind Dir & Speed: N 6 mph
Weather Condition: Partly Cloudy

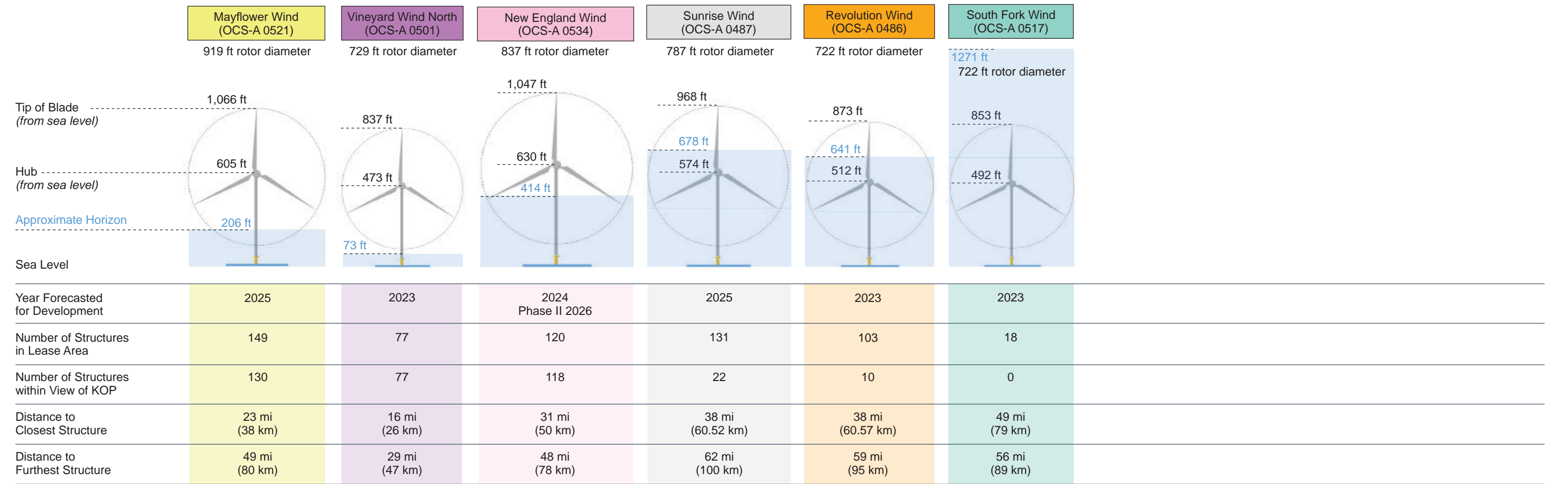
CAMERA

Camera Elevation: 23.0 ft / 7.0 m
Nikon D4
Nikon 50mm
ISO: 100
Fstop: f/7.1
Shutter: 1/1250 sec
Exposure bias: -0.7 step

SIMULATED CONDITIONS2

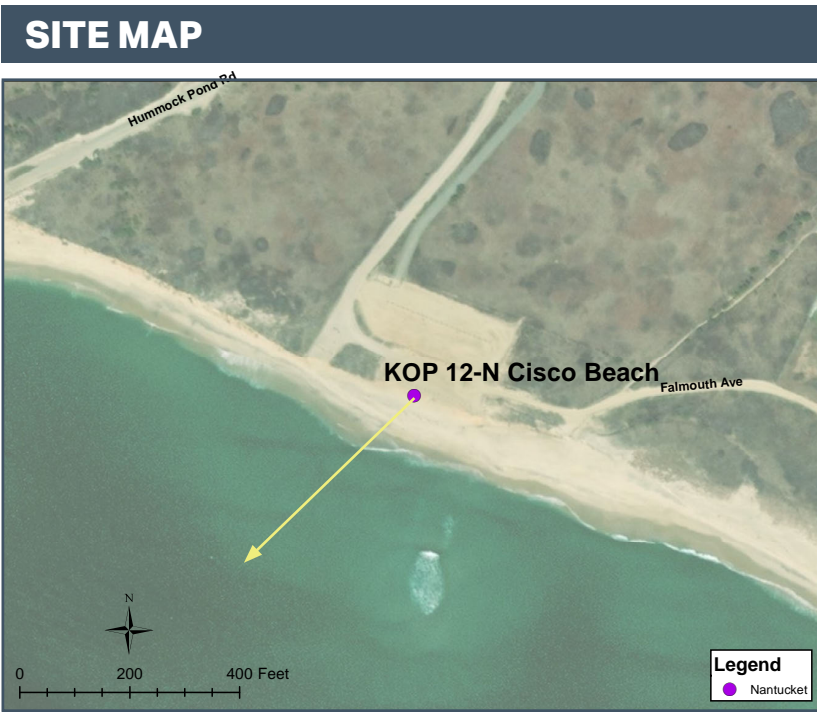
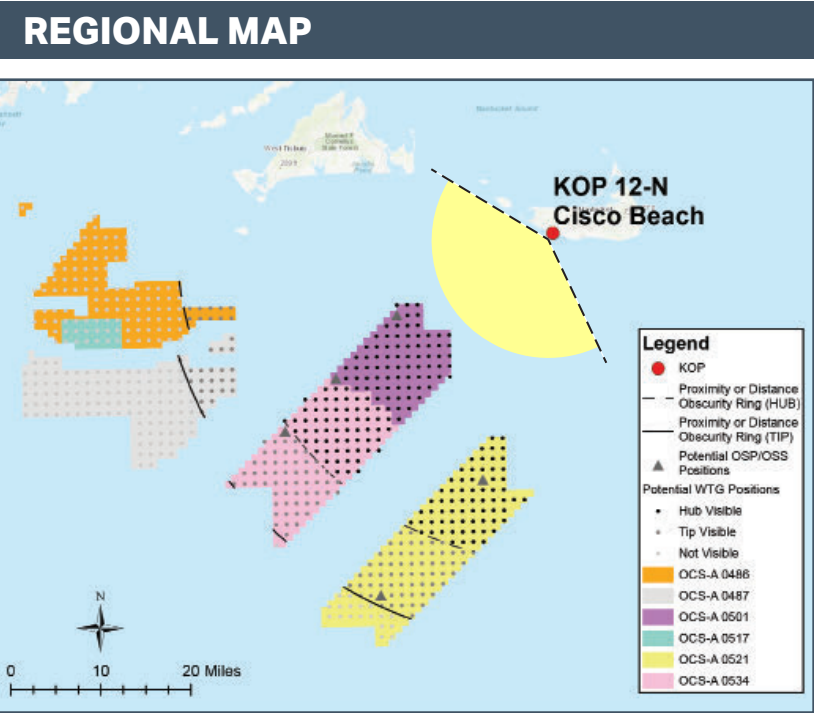


VISIBILTY OF CLOSEST TURBINES



SIMULATED CONDITIONS

3



PROJECT VIEW

Horizontal Field of View: 124°	Furthest Visible WTG: 46 mi / 74 km
Vertical Field of View: 40°	Potential Number of Structures Visible: 577
Nearest WTG: 16.2 mi / 26 km	Potential Number of Structures Not Visible: 337

ENVIRONMENT

Temperature: 61° F
Humidity: 90%
Wind Dir & Speed: N 6 mph
Weather Condition: Partly Cloudy

PHOTOGRAPH AND SITE

Time of photograph: 1:25PM	Viewing direction: South (226°)
Date of photograph: 8-20-20	Latitude: 41.252490°N
L/SCA: Open Ocean, Ocean Beach, Dunes, Salt Ponds/Tidal Marsh, Residential	Longitude: 70.154080°W
	Lighting Direction: Backlit diffused

CAMERA

Camera Elevation: 23.0 ft / 7.0 m
Nikon D4
Nikon 50mm
ISO: 100
Fstop: f/7.1
Shutter: 1/1250 sec
Exposure bias: -0.7 step



The page should viewed at 11" x 17" approximately 15" from viewer's eyes .



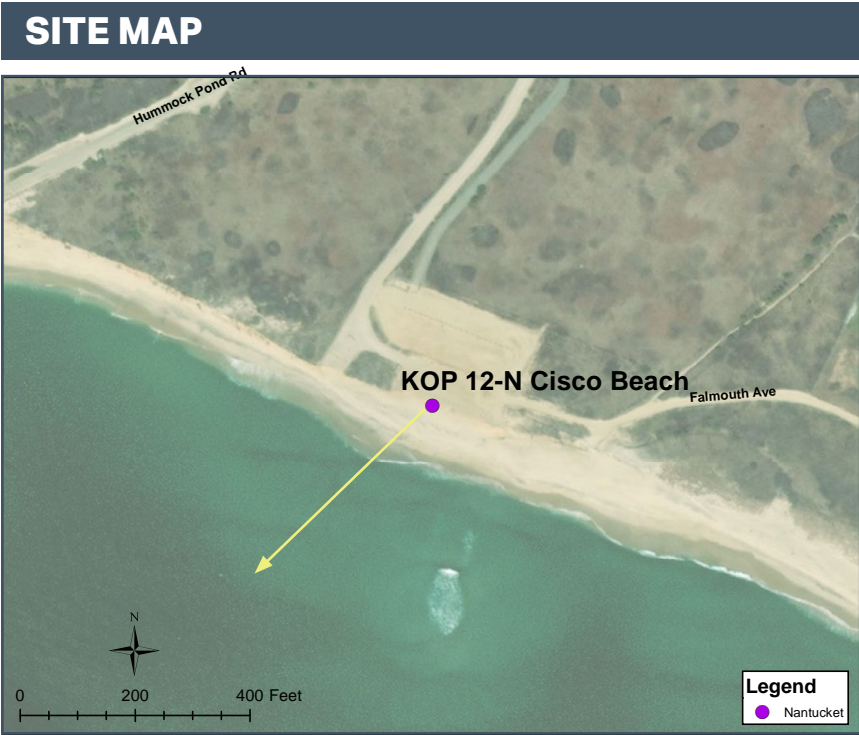
The page should viewed at 11" x 17" approximately 15" from viewer's eyes .



The page should viewed at 11" x 17" approximately 15" from viewer's eyes .

PANORAMIC PHOTOGRAPH - EXISTING CONDITIONS

1



MATCH LINES define visual simulation detail areas

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PROJECT VIEW

Horizontal Field of View: 193°	Furthest Visible WTG: 46 mi / 74 km
Vertical Field of View: 40°	Potential Number of Structures Visible: 577
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PHOTOGRAPH AND SITE

Time of photograph: 1:25PM	Viewing direction: South (226°)
Date of photograph: 8-20-20	Latitude: 41.252490°N
L/SCA: Open Ocean, Ocean Beach, Dunes, Salt Ponds/Tidal Marsh, Residential	Longitude: 70.154080°W
	Lighting Direction: Backlit diffused

ENVIRONMENT

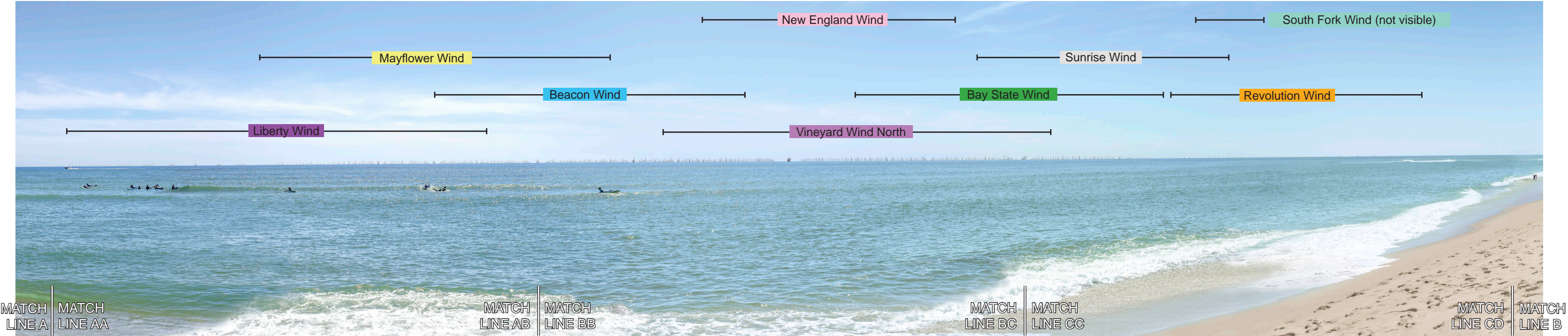
Temperature: 61° F
Humidity: 90%
Wind Dir & Speed: N 6 mph
Weather Condition: Partly Cloudy

CAMERA

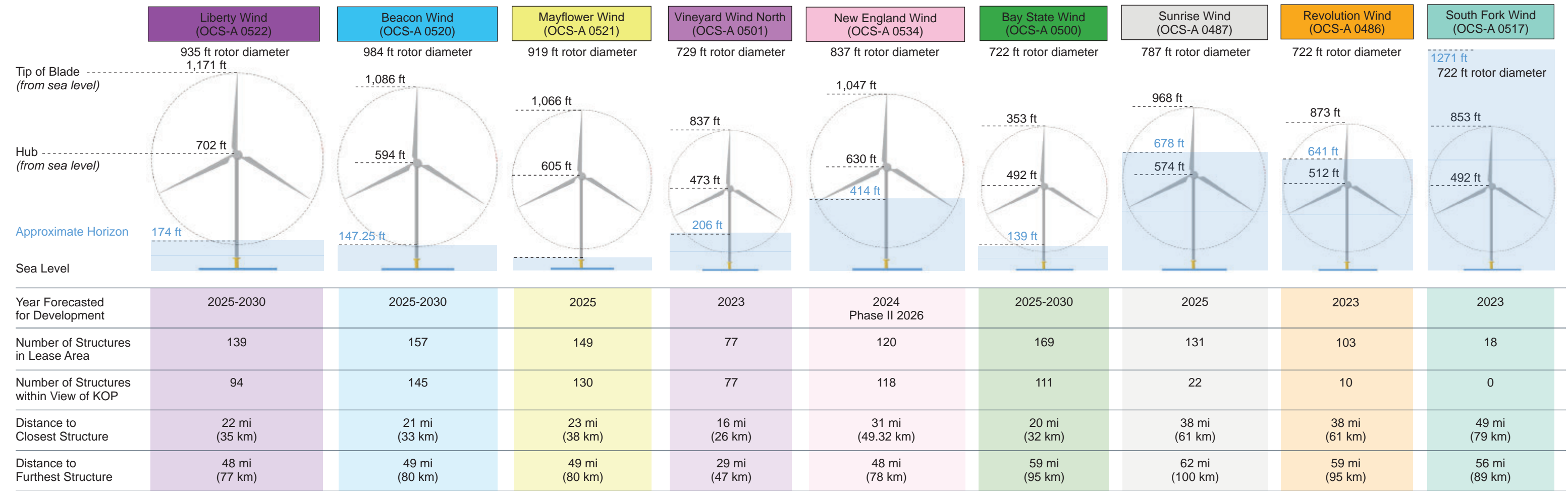
Camera Elevation: 23.0 ft / 7.0 m
Nikon D4
Nikon 50mm
ISO: 100
Fstop: f/7.1
Shutter: 1/1250 sec
Exposure bias: -0.7 step

SIMULATED CONDITIONS

2



VISIBILTY OF CLOSEST TURBINES

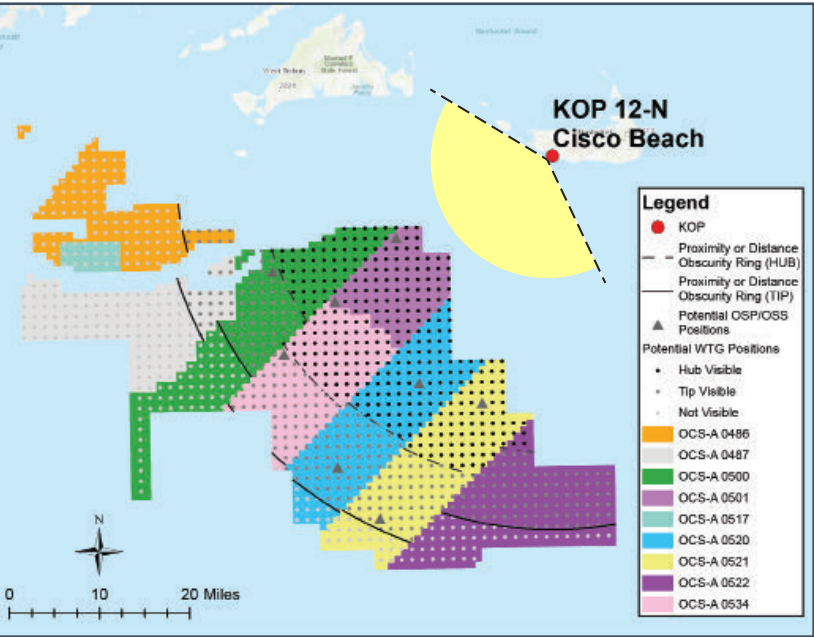


SIMULATED CONDITIONS

3



REGIONAL MAP



SITE MAP



PROJECT VIEW

Horizontal Field of View: 124°	Furthest Visible WTG: 46 mi / 74 km
Vertical Field of View: 40°	Potential Number of Structures Visible: 577
Nearest WTG: 16 mi / 26 km	Potential Number of Structures Not Visible: 337

PHOTOGRAPH AND SITE

Time of photograph: 1:25PM	Viewing direction: South (226°)
Date of photograph: 8-20-20	Latitude: 41.252490°N
L/SCA: Open Ocean, Ocean Beach, Dunes, Salt Ponds/Tidal Marsh, Residential	Longitude: 70.154080°W
	Lighting Direction: Backlit diffused

ENVIRONMENT

Temperature: 61° F
Humidity: 90%
Wind Dir & Speed: N 6 mph
Weather Condition: Partly Cloudy

CAMERA

Camera Elevation: 23.0 ft / 7.0 m
Nikon D4
Nikon 50mm
ISO: 100
Fstop: f/7.1
Shutter: 1/1250 sec
Exposure bias: -0.7 step



The page should viewed at 11" x 17" approximately 15" from viewer's eyes .



The page should viewed at 11" x 17" approximately 15" from viewer's eyes .



MATCH
LINE BC

MATCH
LINE CC

MATCH
LINE CD

MATCH
LINE B

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PANORAMIC PHOTOGRAPH - EXISTING CONDITIONS

1



MATCH LINES define visual simulation detail areas

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CC-CD is shown on page 6

PROJECT VIEW

Horizontal Field of View: 193°	Furthest Visible WTG: 46 mi / 74 km
Vertical Field of View: 40°	Potential Number of Structures Visible: 577
Nearest WTG: 16.2 mi / 26 km	Potential Number of Structures Not Visible: 337

PHOTOGRAPH AND SITE

Time of photograph: 1:25PM	Viewing direction: South (226°)
Date of photograph: 8-20-20	Latitude: 41.252490°N
L/SCA: Open Ocean, Ocean Beach, Dunes, Salt Ponds/Tidal Marsh, Residential	Longitude: 70.154080°W
	Lighting Direction: Backlit diffused

ENVIRONMENT

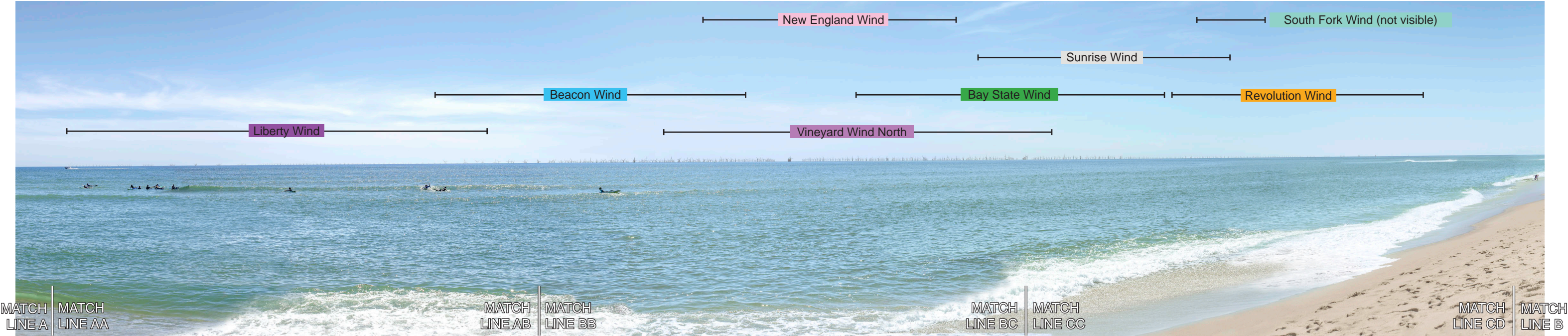
Temperature: 61° F
Humidity: 90%
Wind Dir & Speed: N 6 mph
Weather Condition: Partly Cloudy

CAMERA

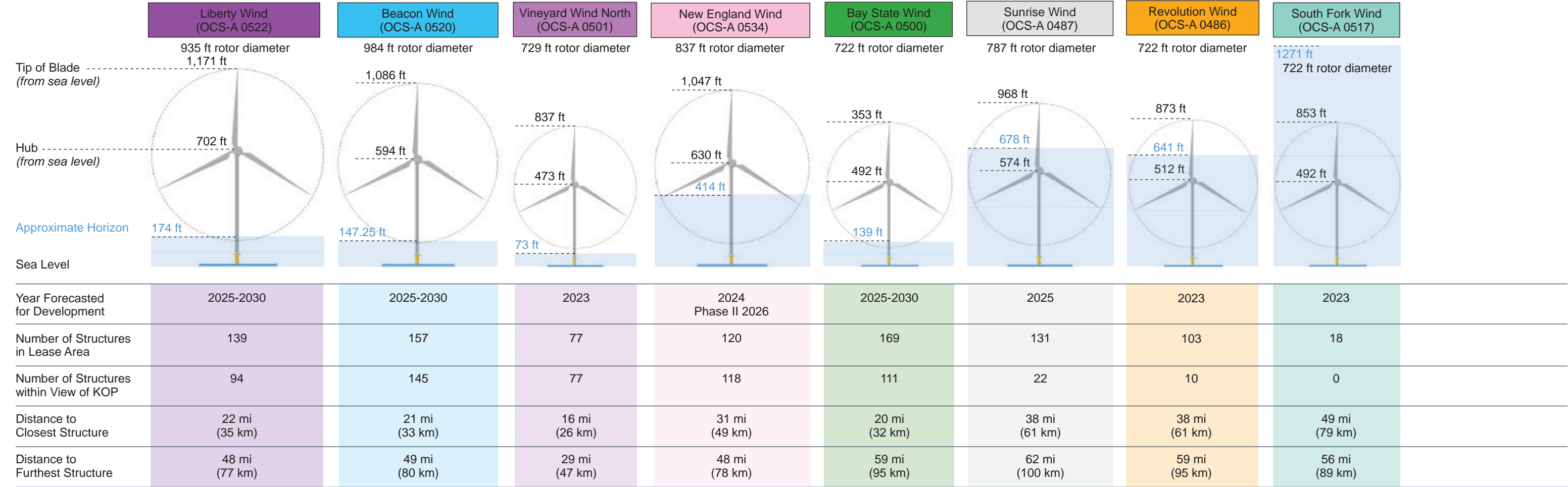
Camera Elevation: 23.0 ft / 7.0 m
Nikon D4
Nikon 50mm
ISO: 100
Fstop: f/7.1
Shutter: 1/1250 sec
Exposure bias: -0.7 step

SIMULATED CONDITIONS

2

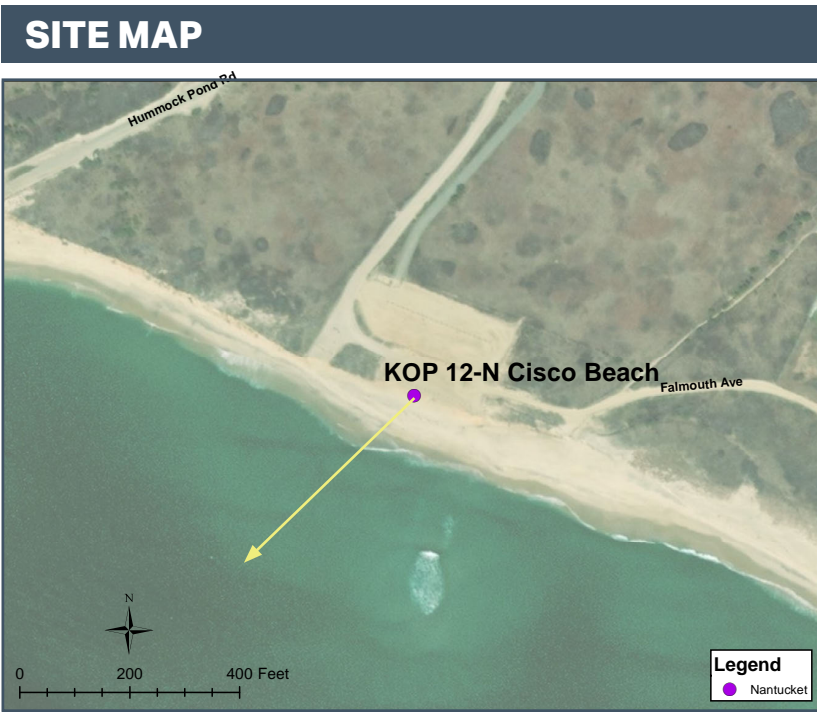
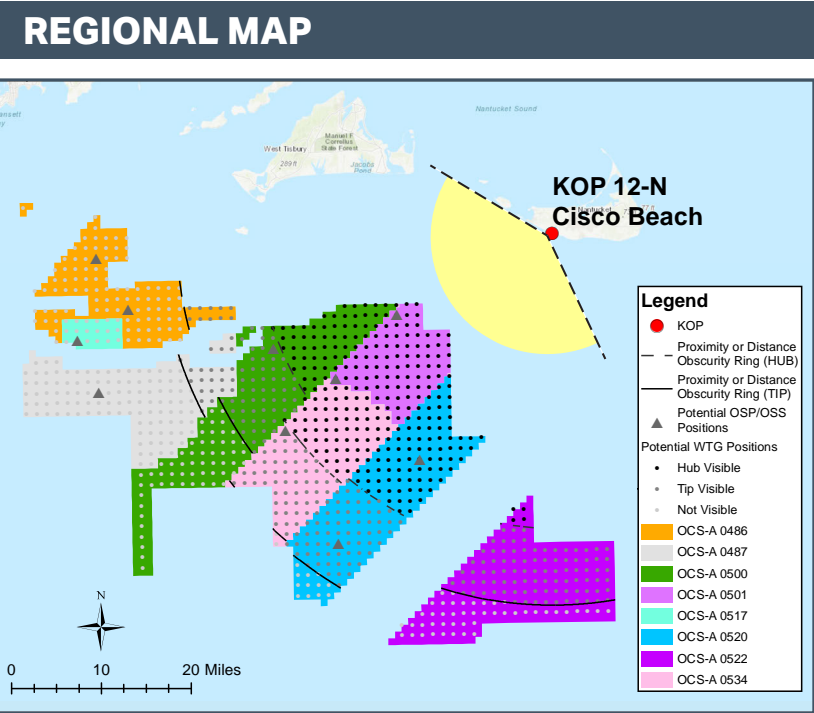


VISIBILTY OF CLOSEST TURBINES



SIMULATED CONDITIONS

3



PROJECT VIEW

Horizontal Field of View: 124°	Furthest Visible WTG: 46 mi / 74 km
Vertical Field of View: 40°	Potential Number of Structures Visible: 577
Nearest WTG: 16 mi / 26 km	Potential Number of Structures Not Visible: 337

ENVIRONMENT

Temperature: 61° F
Humidity: 90%
Wind Dir & Speed: N 6 mph
Weather Condition: Partly Cloudy

PHOTOGRAPH AND SITE

Time of photograph: 1:25PM	Viewing direction: South (226°)
Date of photograph: 8-20-20	Latitude: 41.252490°N
L/SCA: Open Ocean, Ocean Beach, Dunes, Salt Ponds/Tidal Marsh, Residential	Longitude: 70.154080°W
	Lighting Direction: Backlit diffused

CAMERA

Camera Elevation: 23.0 ft / 7.0 m
Nikon D4
Nikon 50mm
ISO: 100
Fstop: f/7.1
Shutter: 1/1250 sec
Exposure bias: -0.7 step



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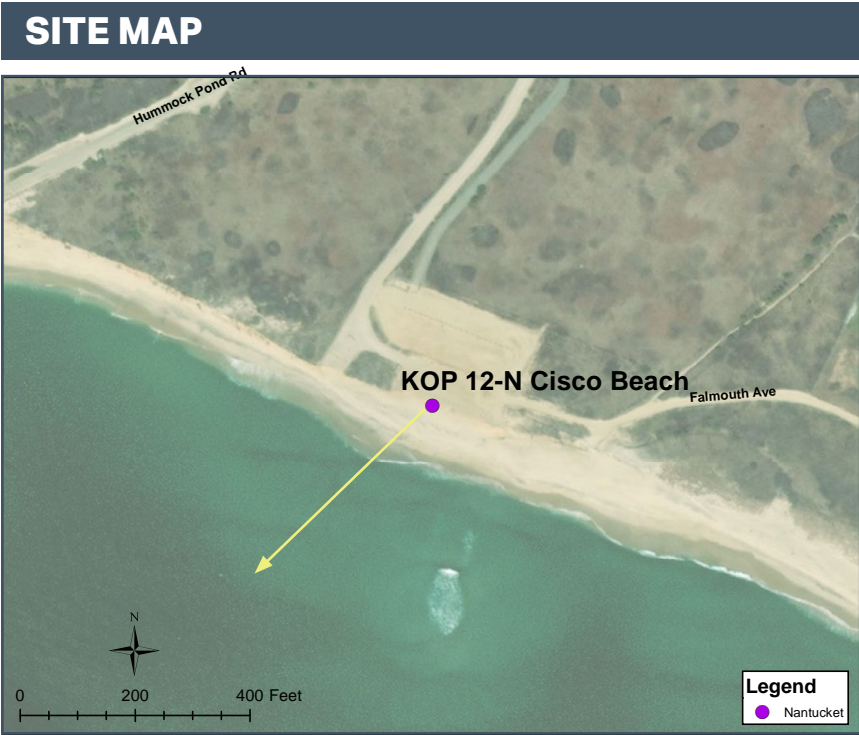
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PANORAMIC PHOTOGRAPH - EXISTING CONDITIONS

1



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PROJECT VIEW

Horizontal Field of View: 193°	Furthest Visible WTG: 46 mi / 74 km
Vertical Field of View: 40°	Potential Number of Structures Visible: 577
Nearest WTG: 16 mi / 26 km	Potential Number of Structures Not Visible: 337

PHOTOGRAPH AND SITE

Time of photograph: 1:25PM	Viewing direction: South (226°)
Date of photograph: 8-20-20	Latitude: 41.252490°N
L/SCA: Open Ocean, Ocean Beach, Dunes, Salt Ponds/Tidal Marsh, Residential	Longitude: 70.154080°W
	Lighting Direction: Backlit diffused

ENVIRONMENT

Temperature: 61° F
Humidity: 90%
Wind Dir & Speed: N 6 mph
Weather Condition: Partly Cloudy

CAMERA

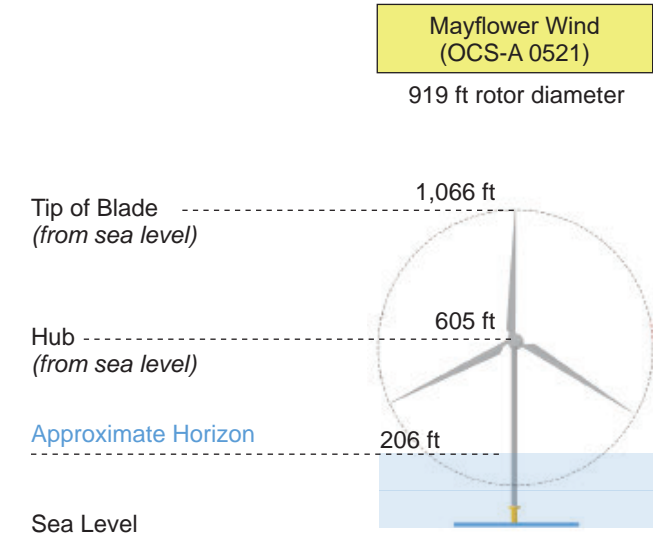
Camera Elevation: 23.0 ft / 7.0 m
Nikon D4
Nikon 50mm
ISO: 100
Fstop: f/7.1
Shutter: 1/1250 sec
Exposure bias: -0.7 step

SIMULATED CONDITIONS

2



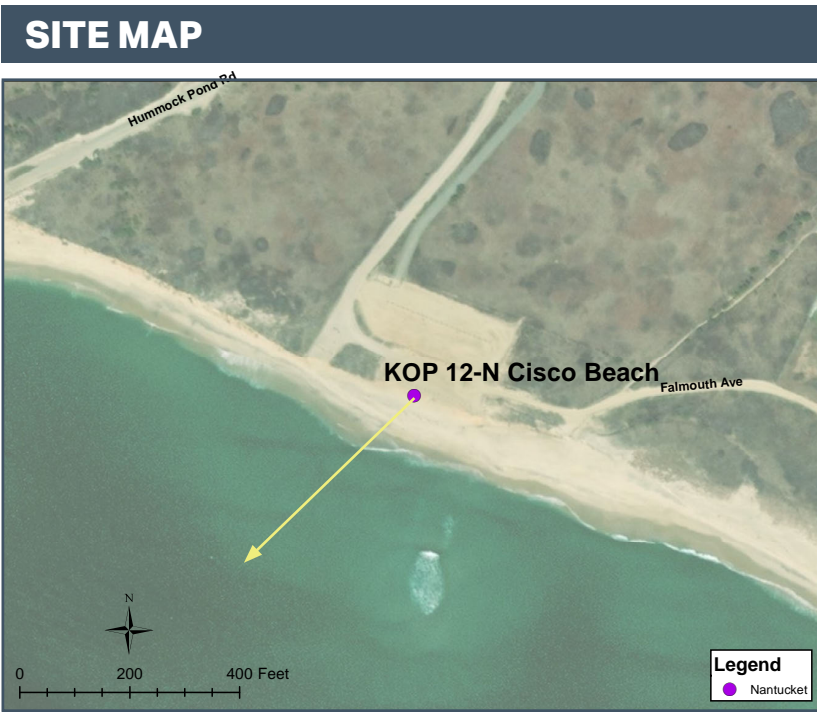
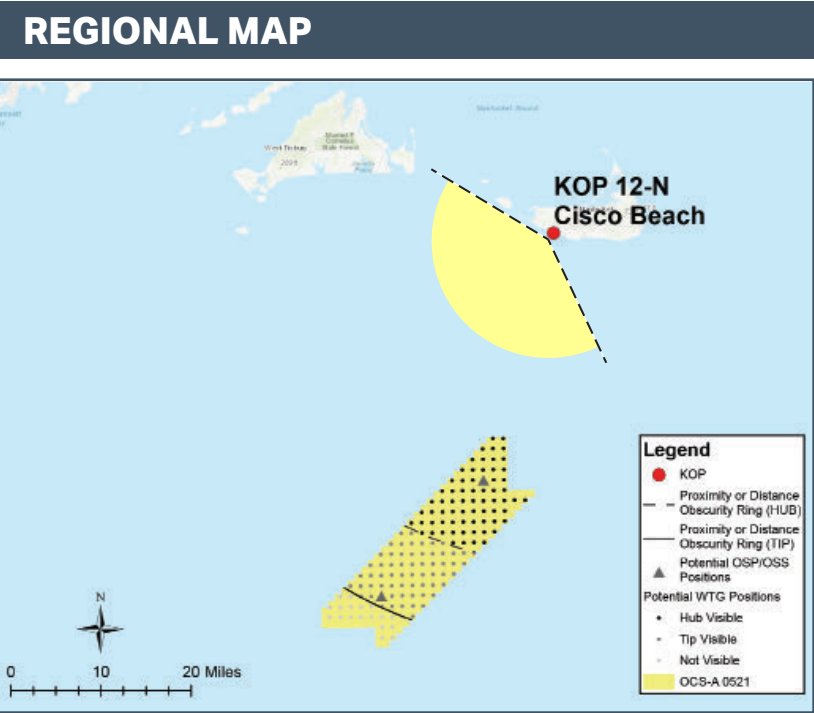
VISIBILTY OF CLOSEST TURBINES



Year Forecasted for Development	2025	
Number of Structures in Lease Area	149	
Number of Structures within View of KOP	130	
Distance to Closest Structure	23 mi (38 km)	
Distance to Furthest Structure	49 mi (80 km)	

SIMULATED CONDITIONS

3



PROJECT VIEW

Horizontal Field of View: 124°	Furthest Visible WTG: 46 mi / 74 km
Vertical Field of View: 40°	Potential Number of Structures Visible: 577
Nearest WTG: 16 mi / 26 km	Potential Number of Structures Not Visible: 337

ENVIRONMENT

Temperature: 61° F
Humidity: 90%
Wind Dir & Speed: N 6 mph
Weather Condition: Partly Cloudy

PHOTOGRAPH AND SITE

Time of photograph: 1:25PM	Viewing direction: South (226°)
Date of photograph: 8-20-20	Latitude: 41.252490°N
L/SCA: Open Ocean, Ocean Beach, Dunes, Salt Ponds/Tidal Marsh, Residential	Longitude: 70.154080°W
	Lighting Direction: Backlit diffused

CAMERA

Camera Elevation: 23.0 ft / 7.0 m
Nikon D4
Nikon 50mm
ISO: 100
Fstop: f/7.1
Shutter: 1/1250 sec
Exposure bias: -0.7 step



MATCH
LINE A

MATCH
LINE AA

MATCH
LINE AB

MATCH
LINE BB

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The page should viewed at 11" x 17" approximately 15" from viewer's eyes .



MATCH
LINE BC

MATCH
LINE CC

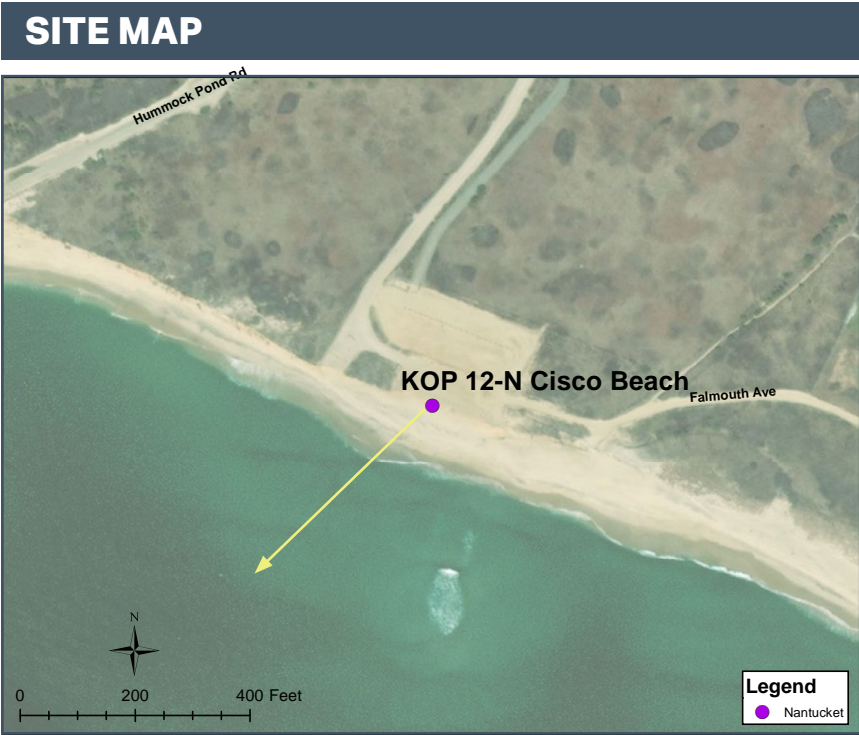
MATCH
LINE CD

MATCH
LINE B

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PANORAMIC PHOTOGRAPH - EXISTING CONDITIONS

1



MATCH LINES define visual simulation detail areas

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Nearest WTG: 16 mi / 26 km	Potential Number of Structures Not Visible: 337

PHOTOGRAPH AND SITE

Time of photograph: 9:00PM	Viewing direction: South (226°)
Date of photograph: 8-20-20	Latitude: 41.252490°N
L/SCA: Open Ocean, Ocean Beach, Dunes, Salt Ponds/Tidal Marsh, Residential	Longitude: 70.154080°W
	Lighting Direction: Backlit diffused

ENVIRONMENT

Temperature: 61° F
Humidity: 90%
Wind Dir & Speed: N 6 mph
Weather Condition: Partly Cloudy

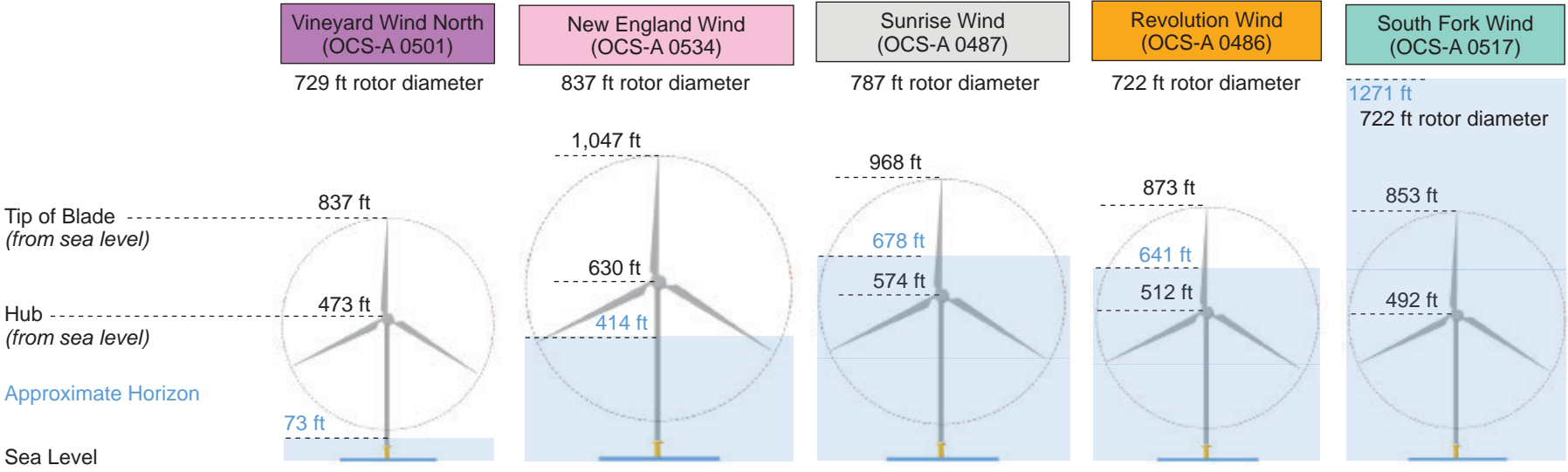
CAMERA

Camera Elevation: 23.0 ft / 7.0 m
Nikon D4
Nikon 50mm
ISO: 100
Fstop: f/7.1
Shutter: 1/1250 sec
Exposure bias: -0.7 step

SIMULATED CONDITIONS2



VISIBILTY OF CLOSEST TURBINES



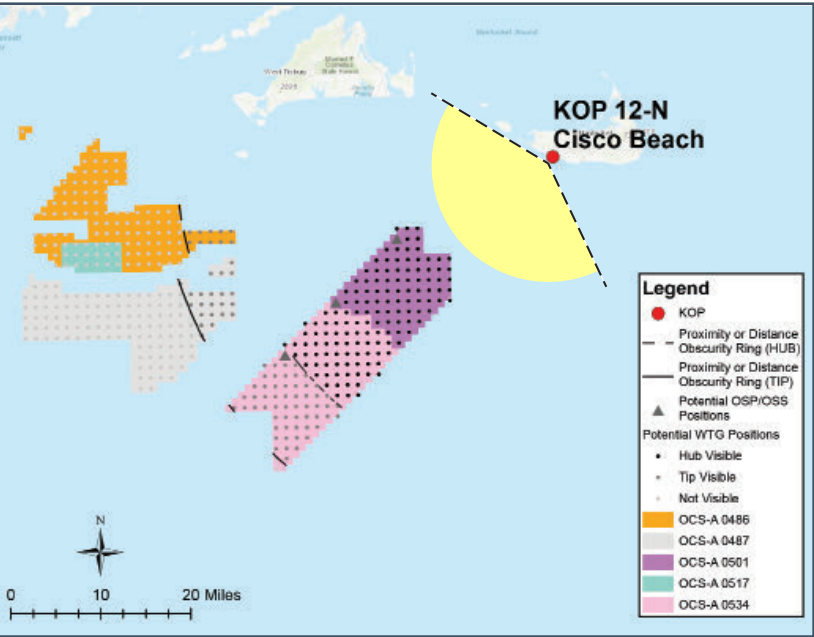
Year Forecasted for Development	2023	2024 Phase II 2026	2025	2023	2023
Number of Structures in Lease Area	77	120	131	103	18
Number of Structures within View of KOP	77	118	22	10	0
Distance to Closest Structure	16 mi (26 km)	31 mi (49 km)	38 mi (61 km)	38 mi (61 km)	49 mi (79 km)
Distance to Furthest Structure	29 mi (47 km)	48 mi (78 km)	62 mi (100 km)	59 mi (95 km)	56 mi (89 km)

SIMULATED CONDITIONS

3



REGIONAL MAP



SITE MAP



PROJECT VIEW

Horizontal Field of View: 124°	Furthest Visible WTG: 46 mi / 74 km
Vertical Field of View: 40°	Potential Number of Structures Visible: 577
Nearest WTG: 16 mi / 26 km	Potential Number of Structures Not Visible: 337

PHOTOGRAPH AND SITE

Time of photograph: 1:25PM	Viewing direction: South (226°)
Date of photograph: 8-20-20	Latitude: 41.252490°N
L/SCA: Open Ocean, Ocean Beach, Dunes, Salt Ponds/Tidal Marsh, Residential	Longitude: 70.154080°W
	Lighting Direction: Backlit diffused

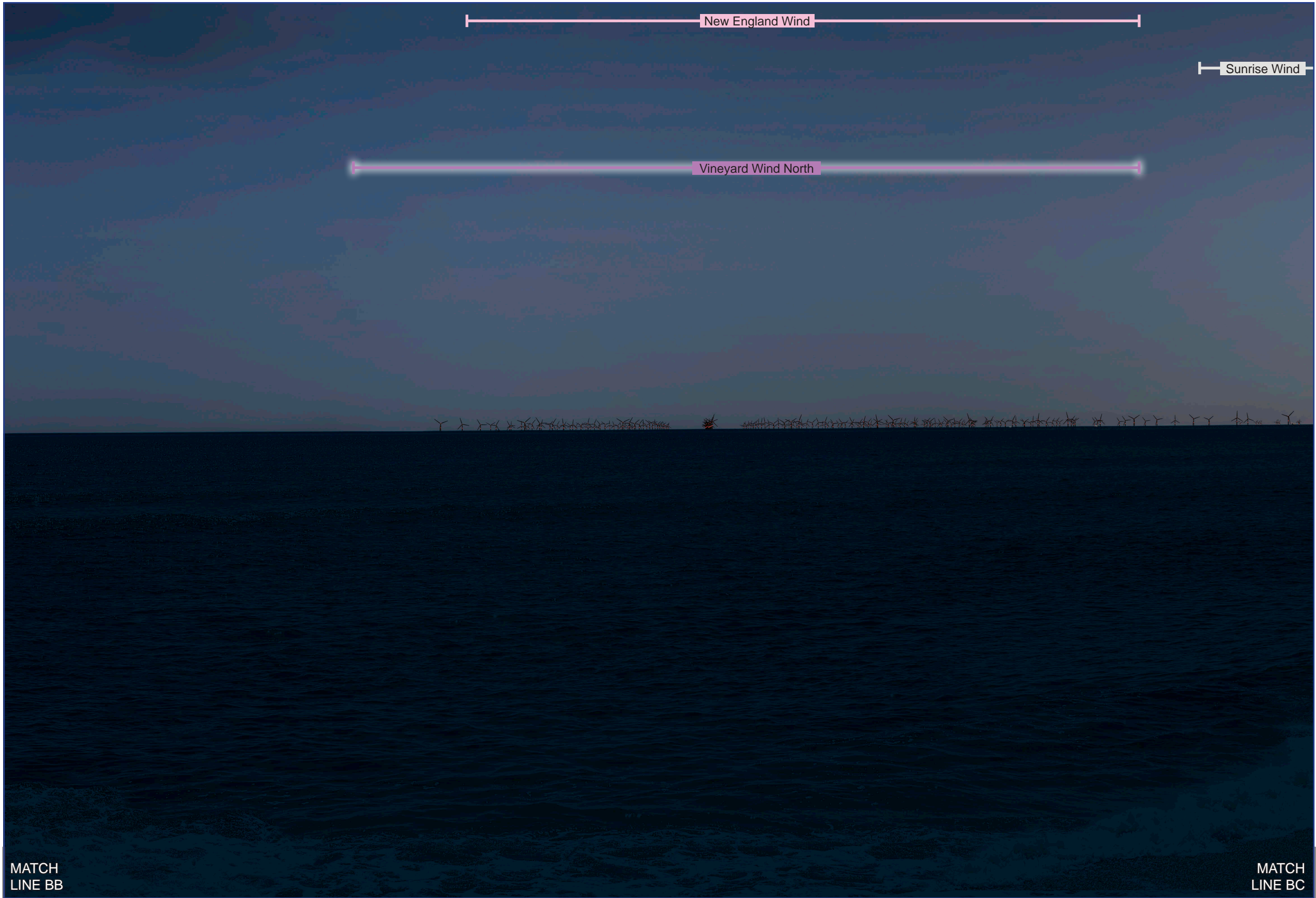
ENVIRONMENT

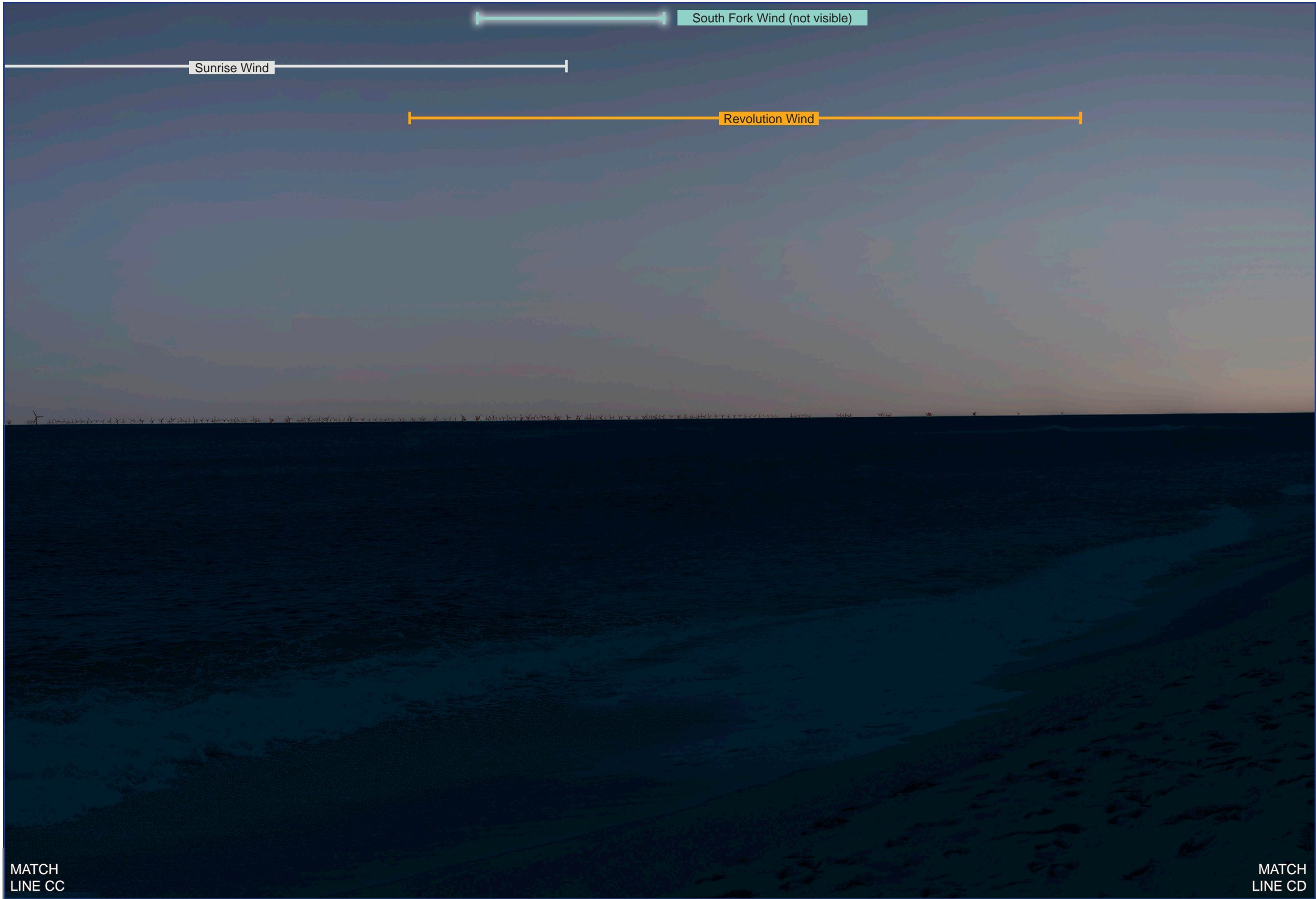
Temperature: 61° F
Humidity: 90%
Wind Dir & Speed: N 6 mph
Weather Condition: Partly Cloudy

CAMERA

Camera Elevation: 23.0 ft / 7.0 m
Nikon D4
Nikon 50mm
ISO: 100
Fstop: f/7.1
Shutter: 1/1250 sec
Exposure bias: -0.7 step



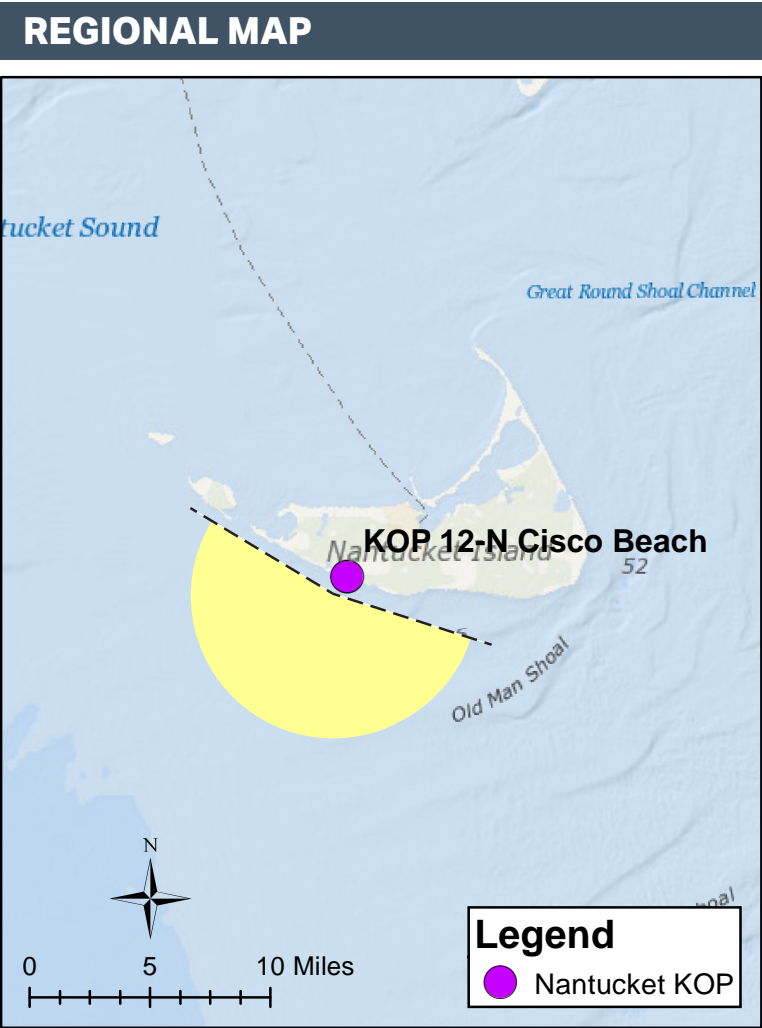




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PANORAMIC PHOTOGRAPH - EXISTING CONDITIONS

1



MATCH LINES define visual simulation detail areas

A-B is shown on pages 2-3
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BB-BC is shown on page 5
CC-CD is shown on page 6

PROJECT VIEW

Horizontal Field of View: 193°	Furthest Visible WTG: 46 mi / 74 km
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Nearest WTG: 16 mi / 26 km	Potential Number of Structures Not Visible: 337

PHOTOGRAPH AND SITE

Time of photograph: 9:00PM	Viewing direction: South (226°)
Date of photograph: 8-20-20	Latitude: 41.252490°N
L/SCA: Open Ocean, Ocean Beach, Dunes, Salt Ponds/Tidal Marsh, Residential	Longitude: 70.154080°W
	Lighting Direction: Backlit diffused

ENVIRONMENT

Temperature: 61° F
Humidity: 90%
Wind Dir & Speed: N 6 mph
Weather Condition: Partly Cloudy

CAMERA

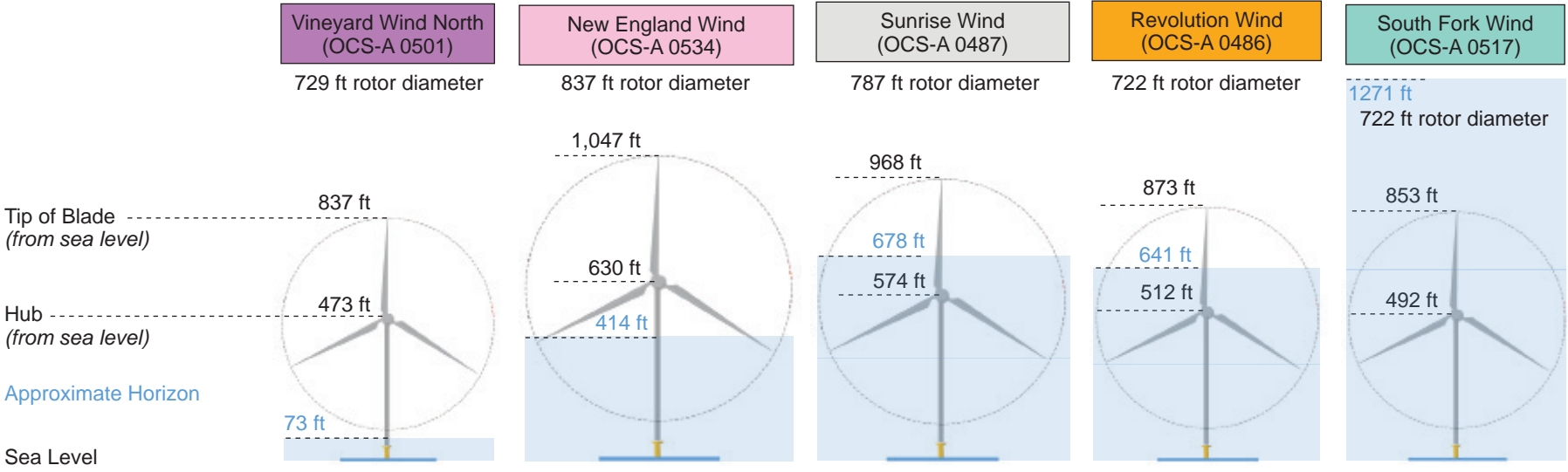
Camera Elevation: 23.0 ft / 7.0 m
Nikon D4
Nikon 50mm
ISO: 100
Fstop: f/7.1
Shutter: 1/1250 sec
Exposure bias: -0.7 step

SIMULATED CONDITIONS

2



VISIBILTY OF CLOSEST TURBINES



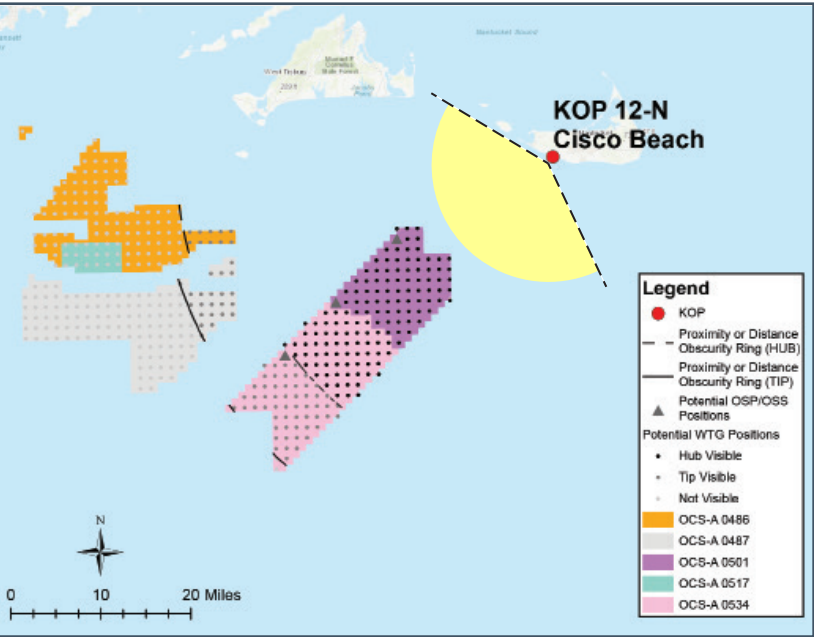
Year Forecasted for Development	2023	2024 Phase II 2026	2025	2023	2023	
Number of Structures in Lease Area	77	120	131	103	18	
Number of Structures within View of KOP	77	118	22	10	0	
Distance to Closest Structure	16 mi (26 km)	31 mi (49 km)	38 mi (61 km)	38 mi (61 km)	49 mi (79 km)	
Distance to Furthest Structure	29 mi (47 km)	48 mi (78 km)	62 mi (100 km)	59 mi (95 km)	56 mi (89 km)	

SIMULATED CONDITIONS

3



REGIONAL MAP



SITE MAP



PROJECT VIEW

Horizontal Field of View: 124°	Furthest Visible WTG: 46 mi / 74 km
Vertical Field of View: 40°	Potential Number of Structures Visible: 577
Nearest WTG: 16 mi / 26 km	Potential Number of Structures Not Visible: 337

PHOTOGRAPH AND SITE

Time of photograph: 1:25PM	Viewing direction: South (226°)
Date of photograph: 8-20-20	Latitude: 41.252490°N
L/SCA: Open Ocean, Ocean Beach, Dunes, Salt Ponds/Tidal Marsh, Residential	Longitude: 70.154080°W
	Lighting Direction: Backlit diffused

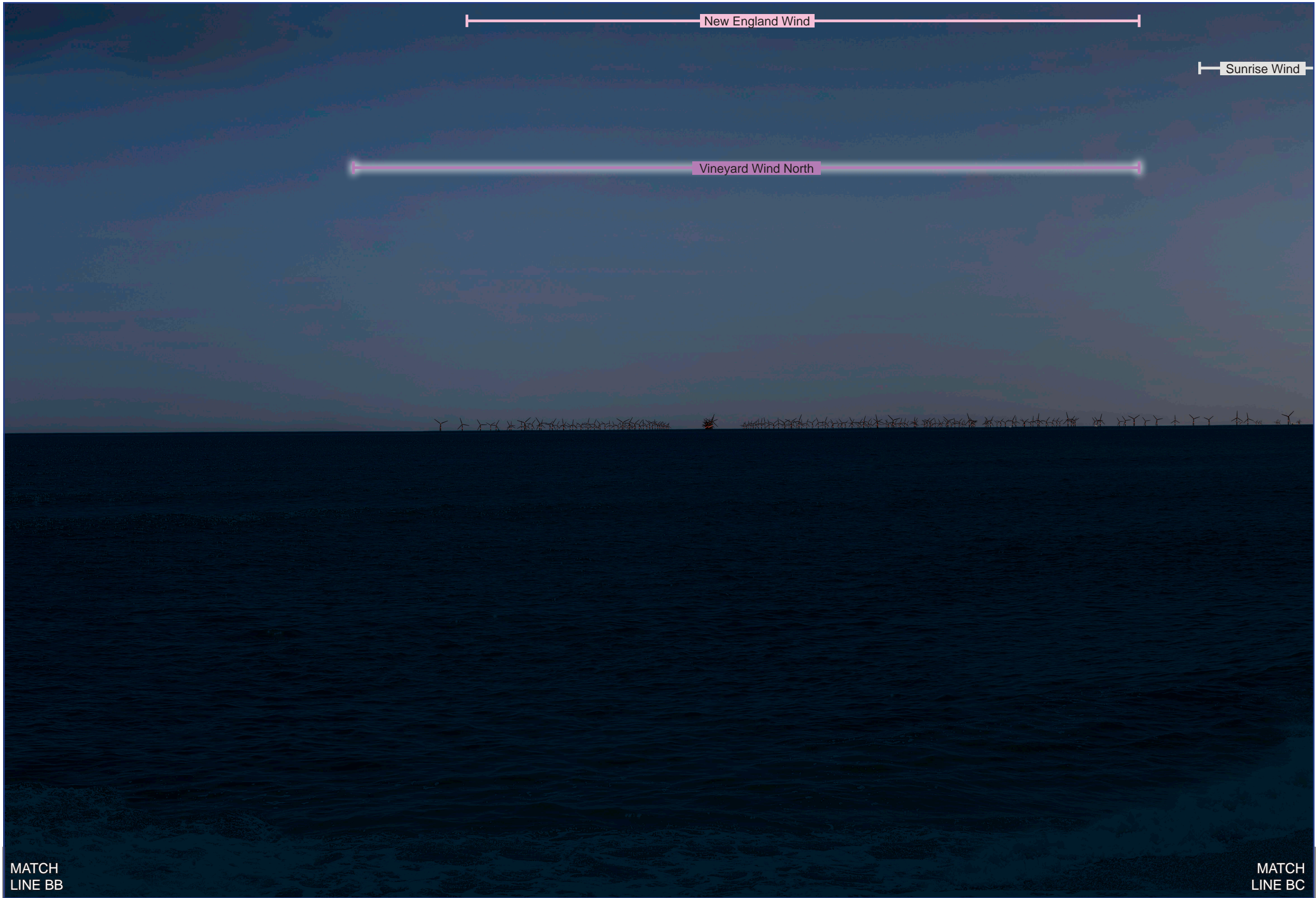
ENVIRONMENT

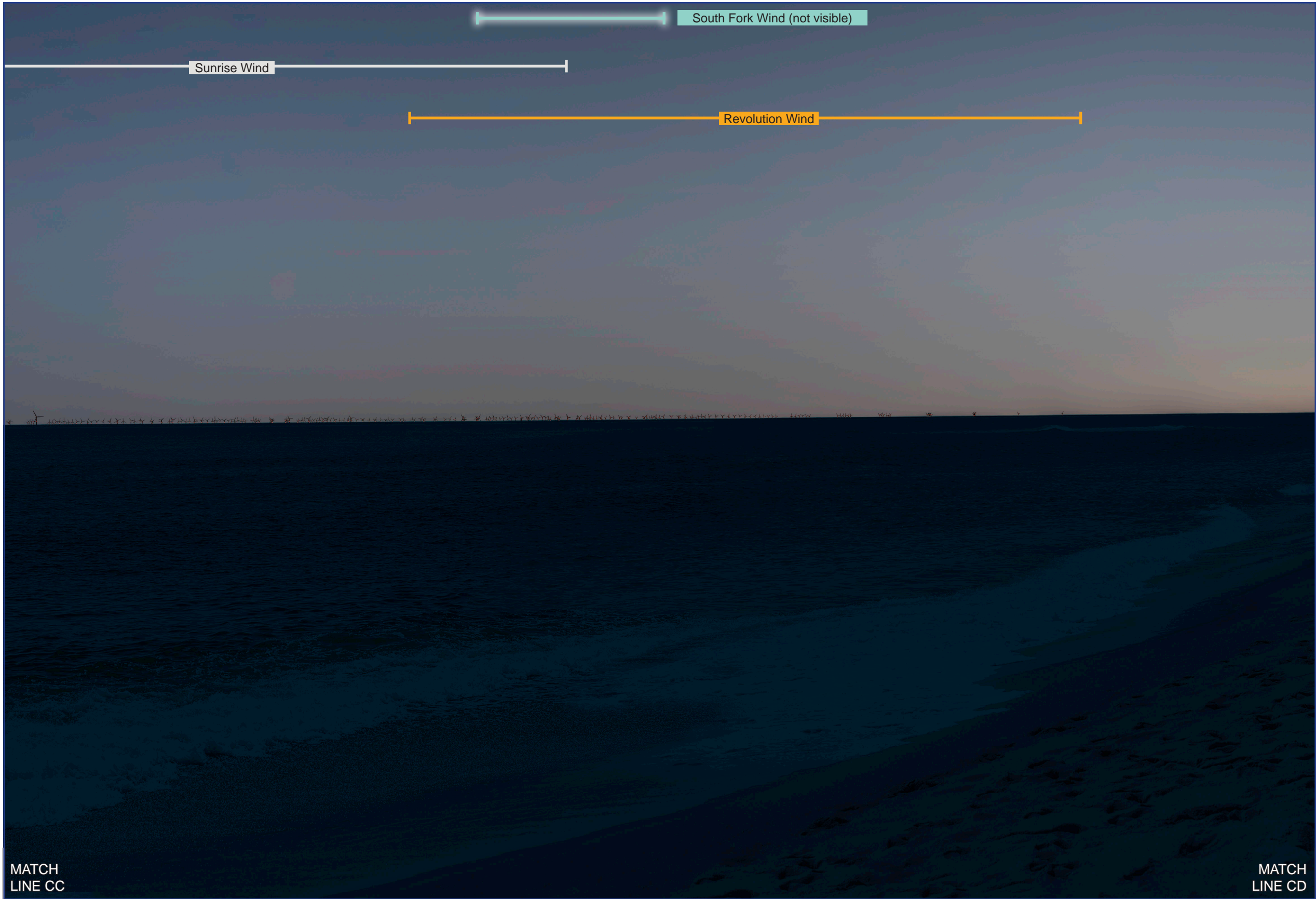
Temperature: 61° F
Humidity: 90%
Wind Dir & Speed: N 6 mph
Weather Condition: Partly Cloudy

CAMERA

Camera Elevation: 23.0 ft / 7.0 m
Nikon D4
Nikon 50mm
ISO: 100
Fstop: f/7.1
Shutter: 1/1250 sec
Exposure bias: -0.7 step







MATCH
LINE BC

MATCH
LINE CC

MATCH
LINE CD

MATCH
LINE B

PANORAMIC PHOTOGRAPH - EXISTING CONDITIONS

1



MATCH LINES define visual simulation detail areas

A-B is shown on pages 2-3

AA-AB is shown on page 4

BB-BC is shown on page 5

CC-CD is shown on page 6

PROJECT VIEW

Horizontal Field of View: 193°	Furthest Visible WTG: 46 mi / 74 km
Vertical Field of View: 40°	Potential Number of Structures Visible: 577
Nearest WTG: 16 mi / 26 km	Potential Number of Structures Not Visible: 337

PHOTOGRAPH AND SITE

Time of photograph: 9:00 PM	Viewing direction: South (226°)
Date of photograph: 8-20-20	Latitude: 41.252490°N
L/SCA: Open Ocean, Ocean Beach, Dunes, Salt Ponds/Tidal Marsh, Residential	Longitude: 70.154080°W
	Lighting Direction: Backlit diffused

ENVIRONMENT

Temperature: 61° F
Humidity: 90%
Wind Dir & Speed: N 6 mph
Weather Condition: Partly Cloudy

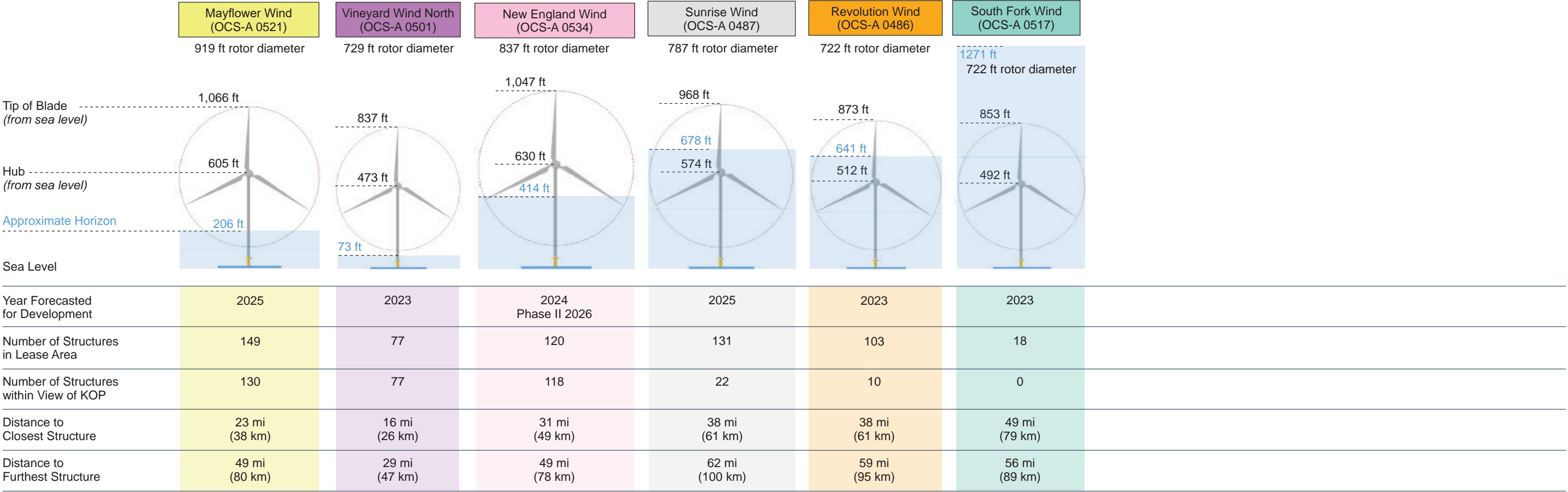
CAMERA

Camera Elevation: 23.0 ft / 7.0 m
Nikon D4
Nikon 50mm
ISO: 100
Fstop: f/7.1
Shutter: 1/1250 sec
Exposure bias: -0.7 step

SIMULATED CONDITIONS2



VISIBILTY OF CLOSEST TURBINES

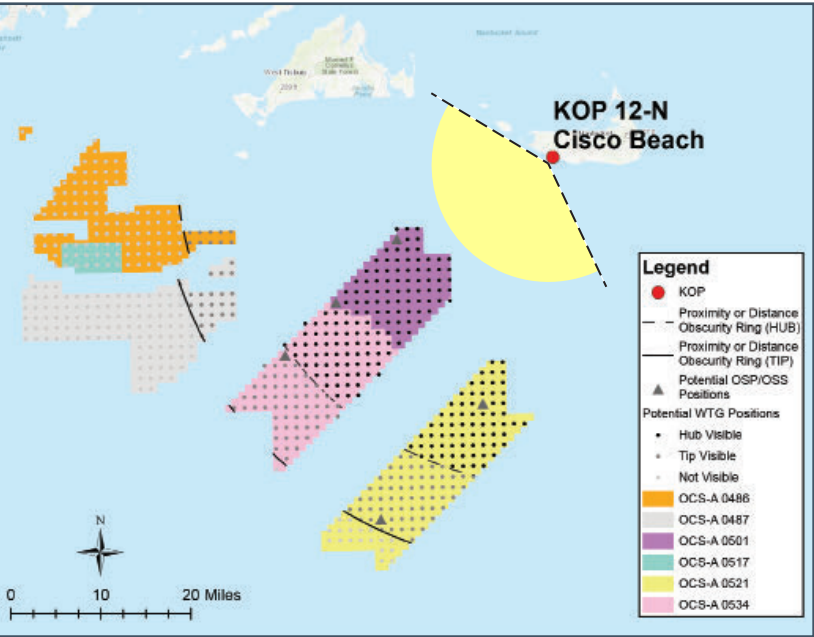


SIMULATED CONDITIONS

3



REGIONAL MAP



SITE MAP



PROJECT VIEW

Horizontal Field of View: 124°	Furthest Visible WTG: 46 mi / 74 km
Vertical Field of View: 40°	Potential Number of Structures Visible: 577
Nearest WTG: 16 mi / 26 km	Potential Number of Structures Not Visible: 337

PHOTOGRAPH AND SITE

Time of photograph: 1:25PM	Viewing direction: South (226°)
Date of photograph: 8-20-20	Latitude: 41.252490°N
L/SCA: Open Ocean, Ocean Beach, Dunes, Salt Ponds/Tidal Marsh, Residential	Longitude: 70.154080°W
	Lighting Direction: Backlit diffused

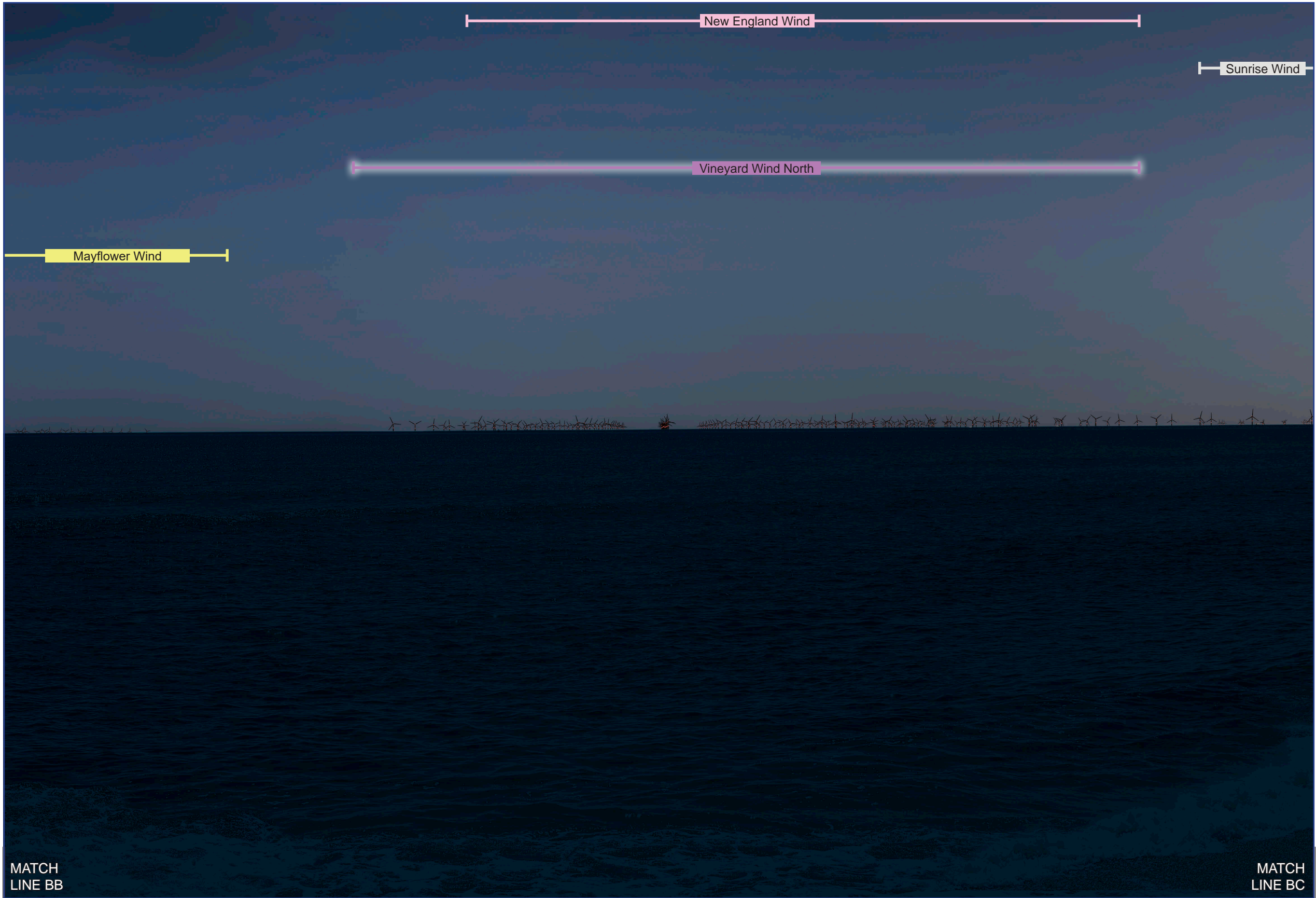
ENVIRONMENT

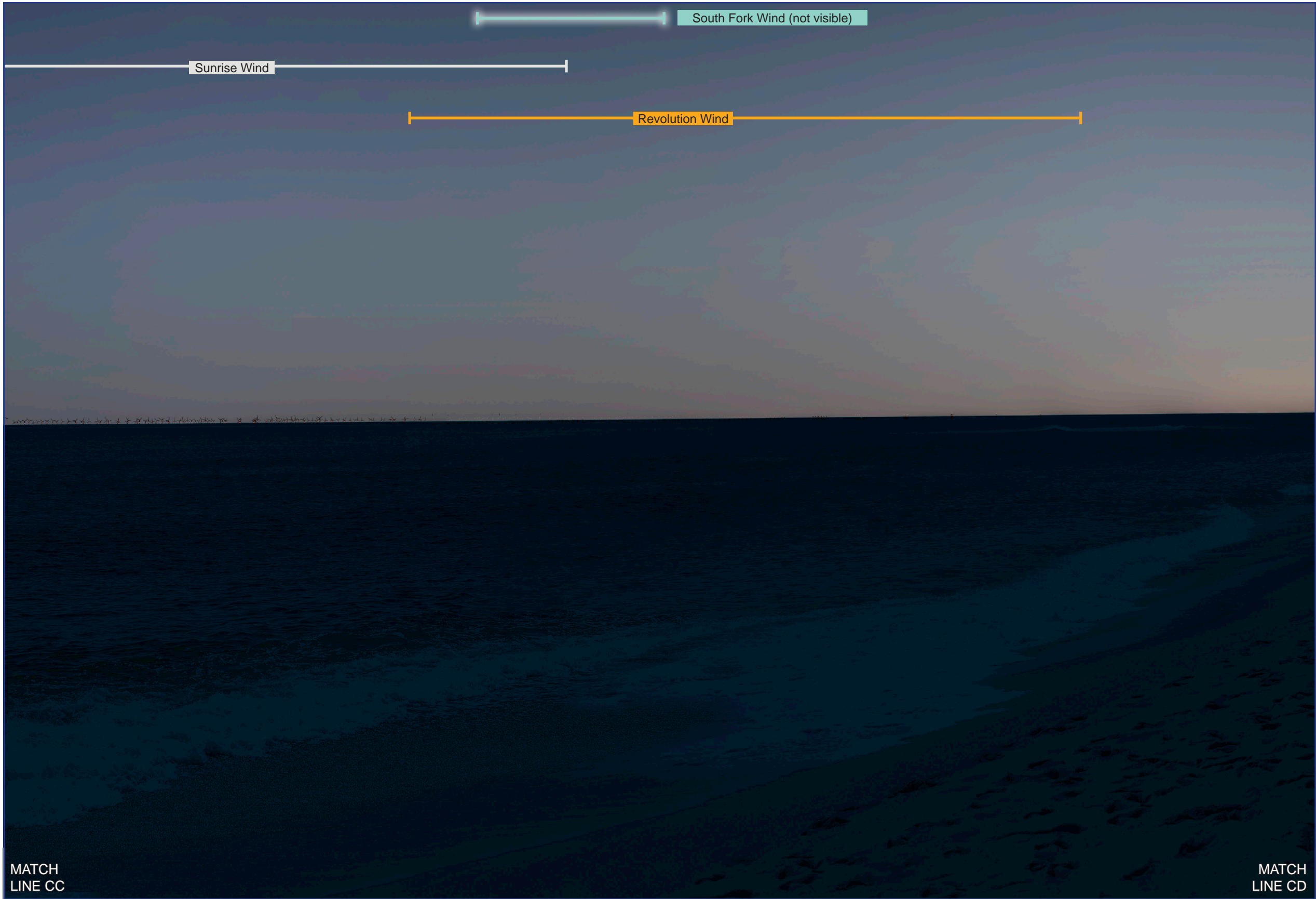
Temperature: 61° F
Humidity: 90%
Wind Dir & Speed: N 6 mph
Weather Condition: Partly Cloudy

CAMERA

Camera Elevation: 23.0 ft / 7.0 m
Nikon D4
Nikon 50mm
ISO: 100
Fstop: f/7.1
Shutter: 1/1250 sec
Exposure bias: -0.7 step







The page should viewed at 11" x 17" approximately 15" from viewer's eyes .

PANORAMIC PHOTOGRAPH - EXISTING CONDITIONS

1



MATCH LINES define visual simulation detail areas

A-B is shown on pages 2-3
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BB-BC is shown on page 5
CC-CD is shown on page 6

PROJECT VIEW

Horizontal Field of View: 193°	Furthest Visible WTG: 46 mi / 74 km
Vertical Field of View: 40°	Potential Number of Structures Visible: 577
Nearest WTG: 16 mi / 26 km	Potential Number of Structures Not Visible: 337

PHOTOGRAPH AND SITE

Time of photograph: 9:00 PM	Viewing direction: South (226°)
Date of photograph: 8-20-20	Latitude: 41.252490°N
L/SCA: Open Ocean, Ocean Beach, Dunes, Salt Ponds/Tidal Marsh, Residential	Longitude: 70.154080°W
	Lighting Direction: Backlit diffused

ENVIRONMENT

Temperature: 61° F
Humidity: 90%
Wind Dir & Speed: N 6 mph
Weather Condition: Partly Cloudy

CAMERA

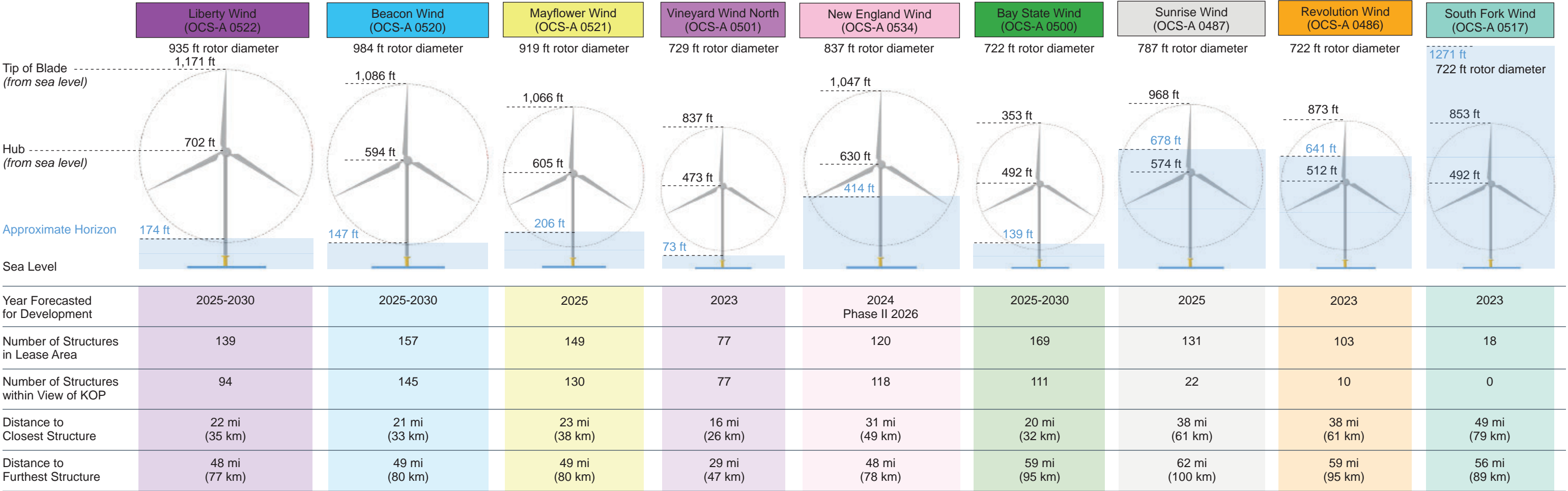
Camera Elevation: 23.0 ft / 7.0 m
Nikon D4
Nikon 50mm
ISO: 100
Fstop: f/7.1
Shutter: 1/1250 sec
Exposure bias: -0.7 step

SIMULATED CONDITIONS

2

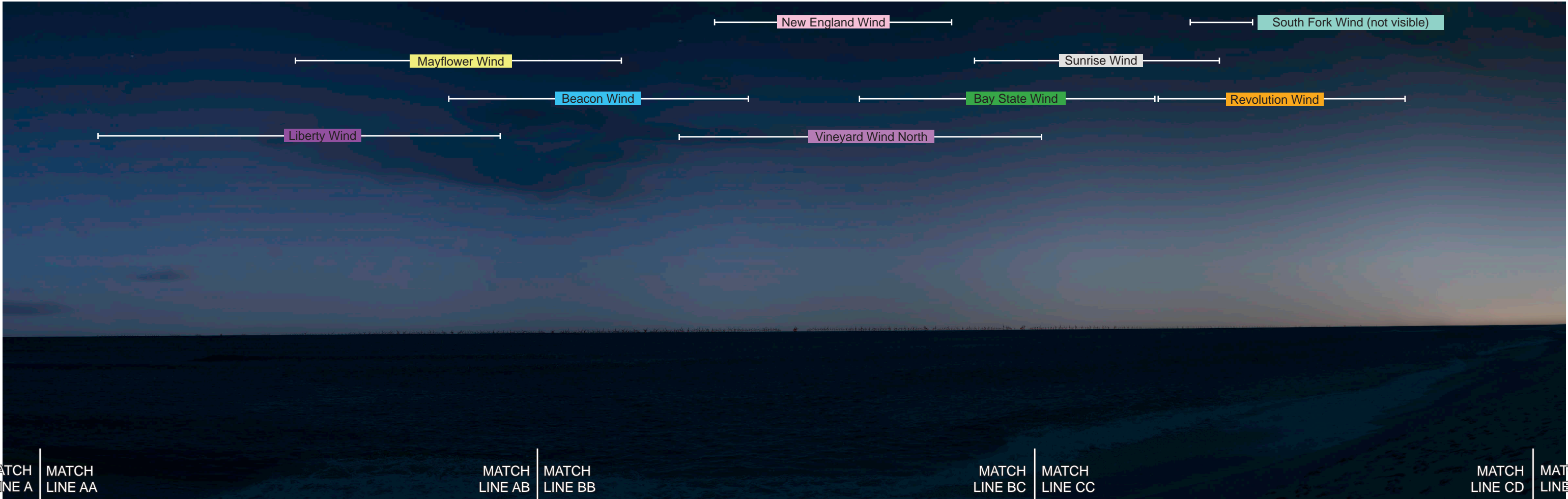


VISIBILTY OF CLOSEST TURBINES

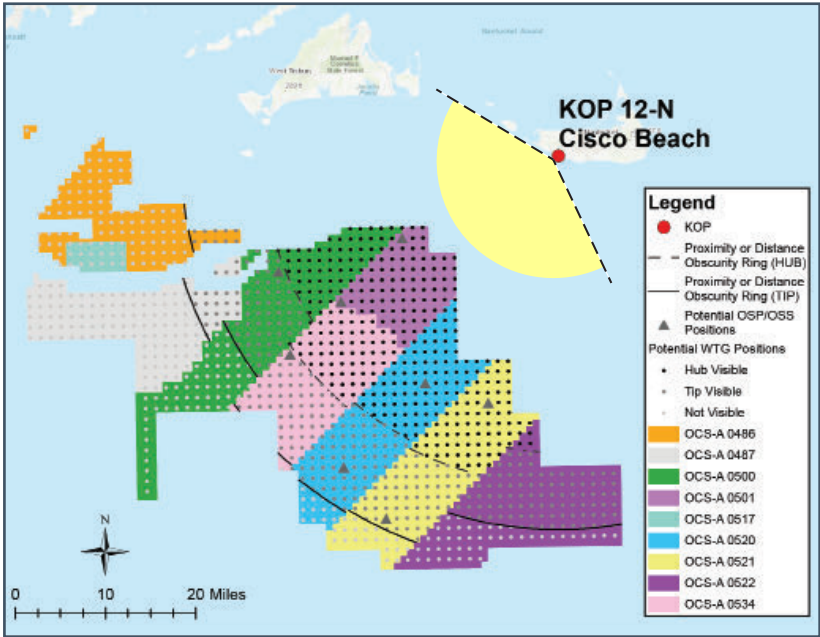


SIMULATED CONDITIONS

3



REGIONAL MAP



SITE MAP



PROJECT VIEW

Horizontal Field of View: 124°	Furthest Visible WTG: 46 mi / 74 km
Vertical Field of View: 40°	Potential Number of Structures Visible: 577
Nearest WTG: 16 mi / 26 km	Potential Number of Structures Not Visible: 337

PHOTOGRAPH AND SITE

Time of photograph: 1:25PM	Viewing direction: South (226°)
Date of photograph: 8-20-20	Latitude: 41.252490°N
L/SCA: Open Ocean, Ocean Beach, Dunes, Salt Ponds/Tidal Marsh, Residential	Longitude: 70.154080°W
	Lighting Direction: Backlit diffused

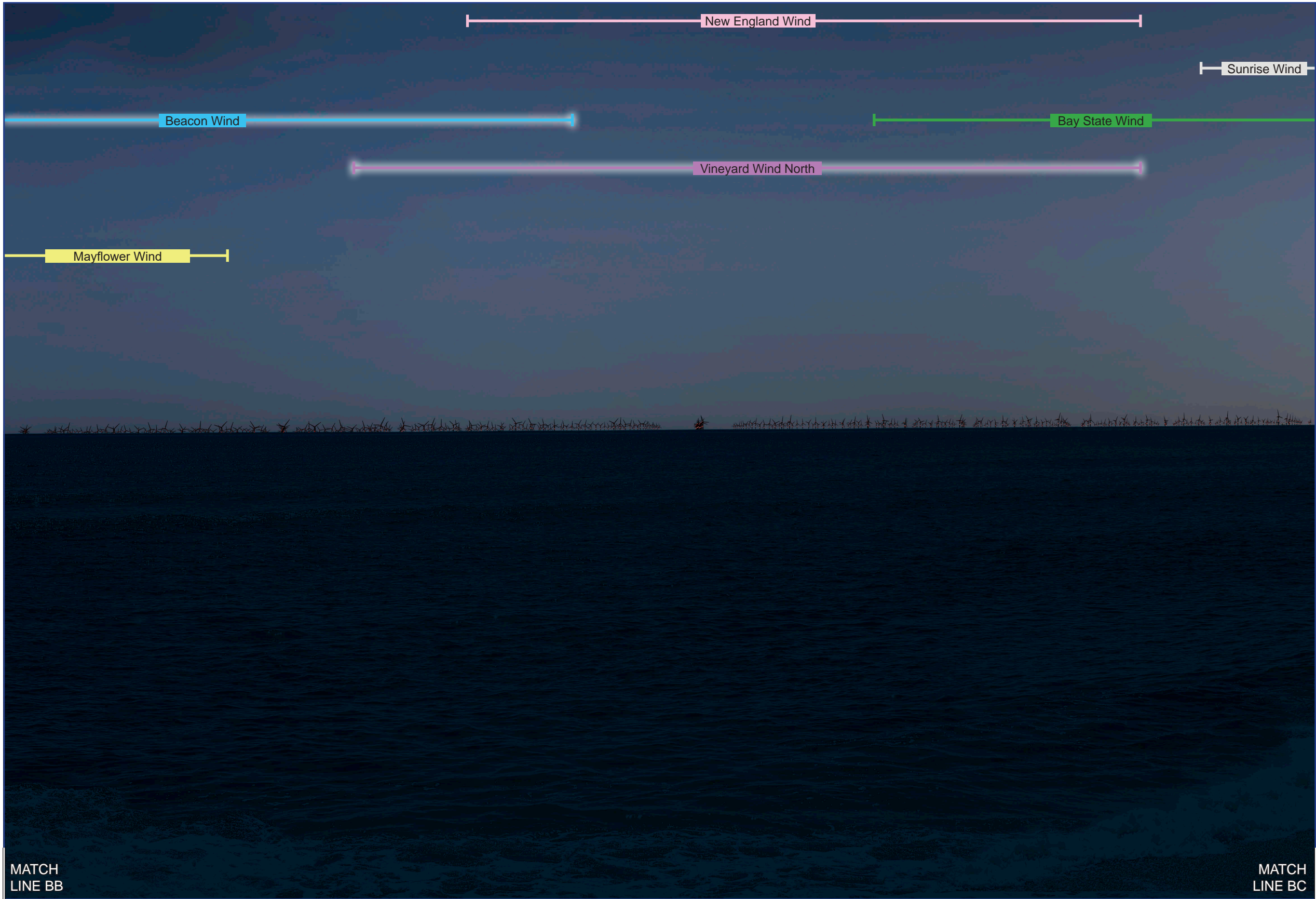
ENVIRONMENT

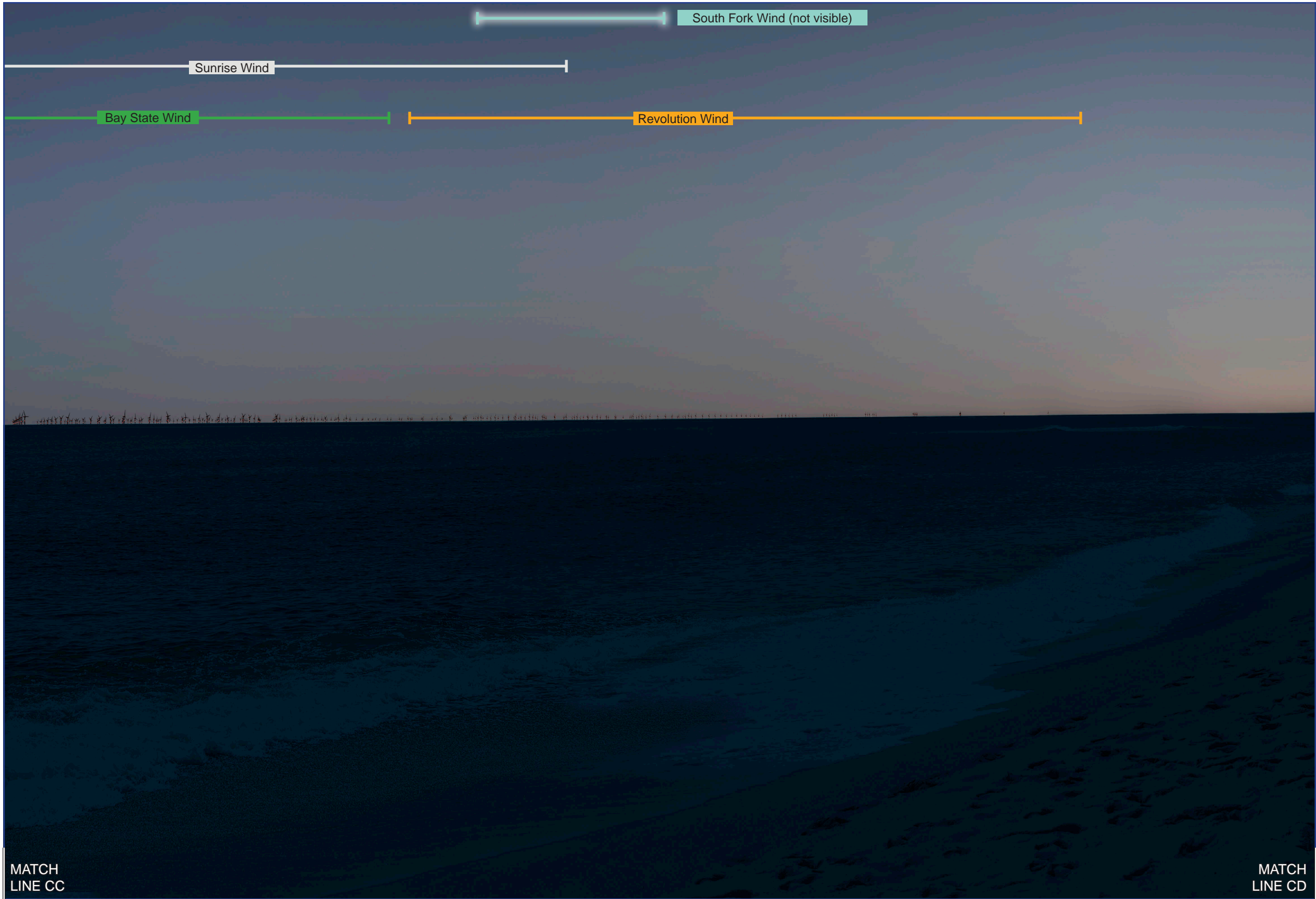
Temperature: 61° F
Humidity: 90%
Wind Dir & Speed: N 6 mph
Weather Condition: Partly Cloudy

CAMERA

Camera Elevation: 23.0 ft / 7.0 m
Nikon D4
Nikon 50mm
ISO: 100
Fstop: f/7.1
Shutter: 1/1250 sec
Exposure bias: -0.7 step







MATCH
LINE BC

MATCH
LINE CC

MATCH
LINE CD

MATCH
LINE B

PANORAMIC PHOTOGRAPH - EXISTING CONDITIONS

1



MATCH LINES define visual simulation detail areas

A-B is shown on pages 2-3
AA-AB is shown on page 4
BB-BC is shown on page 5
CC-CD is shown on page 6

PROJECT VIEW

Horizontal Field of View: 193°	Furthest Visible WTG: 46 mi / 74 km
Vertical Field of View: 40°	Potential Number of Structures Visible: 577
Nearest WTG: 16.2 mi / 26 km	Potential Number of Structures Not Visible: 337

PHOTOGRAPH AND SITE

Time of photograph: 9:00PM	Viewing direction: South (226°)
Date of photograph: 8-20-20	Latitude: 41.252490°N
L/SCA: Open Ocean, Ocean Beach, Dunes, Salt Ponds/Tidal Marsh, Residential	Longitude: 70.154080°W
	Lighting Direction: Backlit diffused

ENVIRONMENT

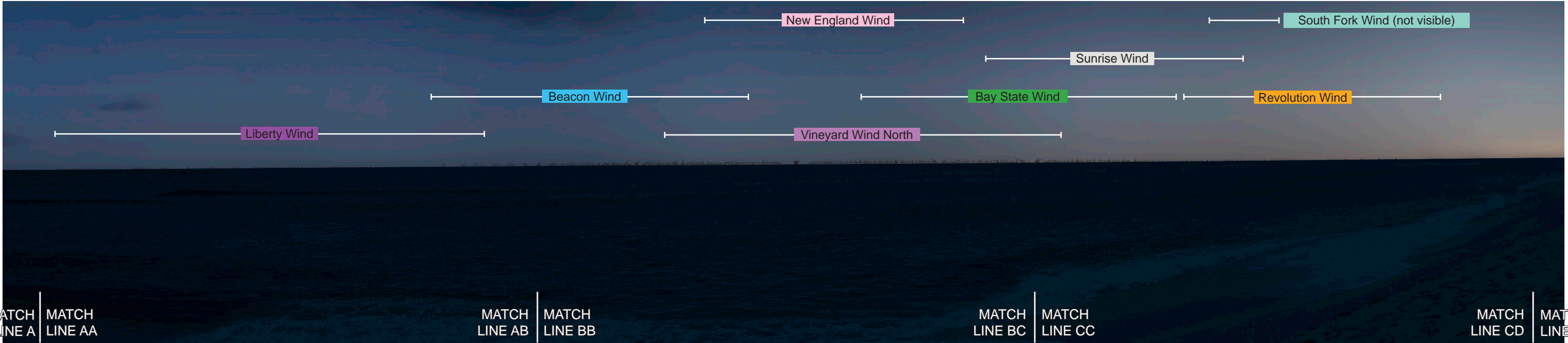
Temperature: 61° F
Humidity: 90%
Wind Dir & Speed: N 6 mph
Weather Condition: Partly Cloudy

CAMERA

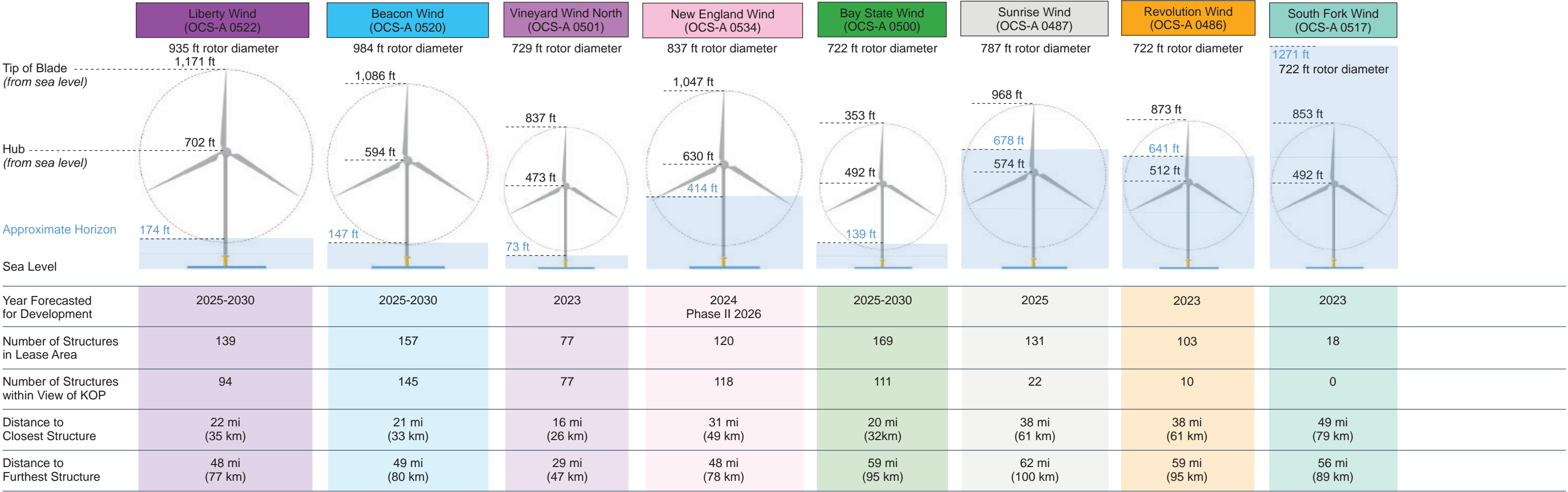
Camera Elevation: 23.0 ft / 7.0 m
Nikon D4
Nikon 50mm
ISO: 100
Fstop: f/7.1
Shutter: 1/1250 sec
Exposure bias: -0.7 step

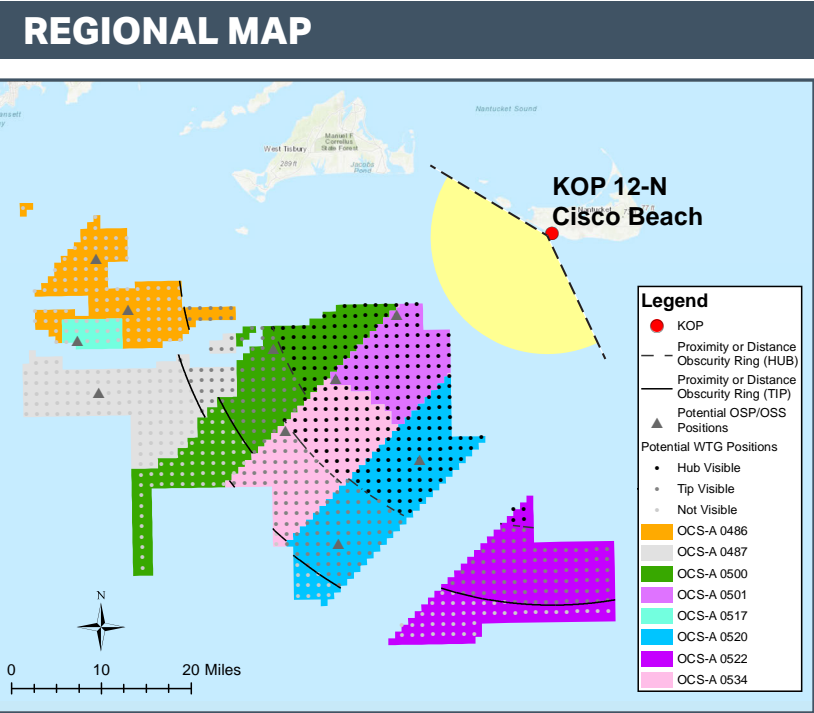
SIMULATED CONDITIONS

2



VISIBILTY OF CLOSEST TURBINES





PROJECT VIEW

Horizontal Field of View: 124°	Furthest Visible WTG: 46 mi / 74 km
Vertical Field of View: 40°	Potential Number of Structures Visible: 577
Nearest WTG: 16 mi / 26 km	Potential Number of Structures Not Visible: 337

PHOTOGRAPH AND SITE

Time of photograph: 1:25PM	Viewing direction: South (226°)
Date of photograph: 8-20-20	Latitude: 41.252490°N
L/SCA: Open Ocean, Ocean Beach, Dunes, Salt Ponds/Tidal Marsh, Residential	Longitude: 70.154080°W
	Lighting Direction: Backlit diffused

ENVIRONMENT

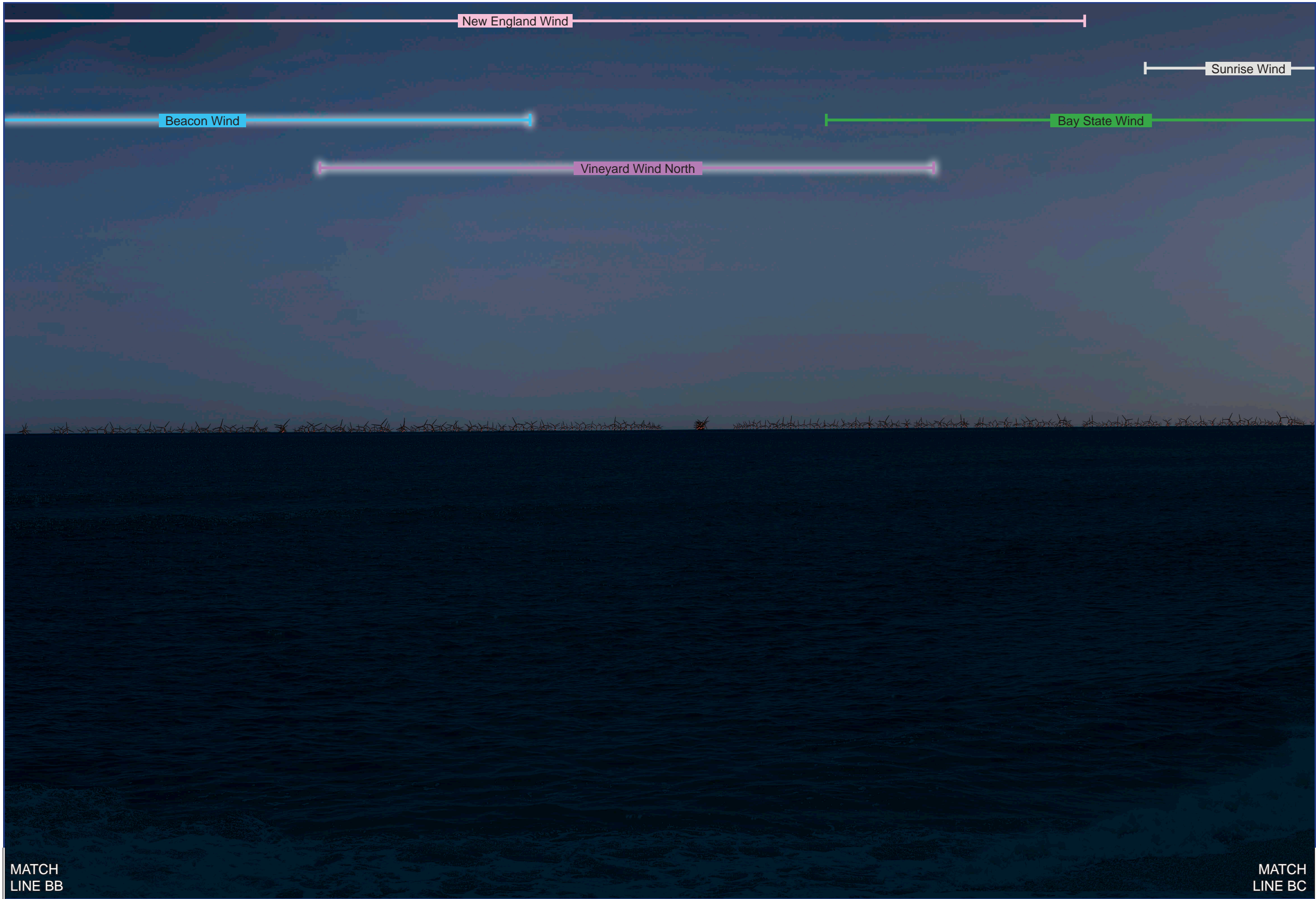
Temperature: 61° F
Humidity: 90%
Wind Dir & Speed: N 6 mph
Weather Condition: Partly Cloudy

CAMERA

Camera Elevation: 23.0 ft / 7.0 m
Nikon D4
Nikon 50mm
ISO: 100
Fstop: f/7.1
Shutter: 1/1250 sec
Exposure bias: -0.7 step



The page should viewed at 11" x 17" approximately 15" from viewer's eyes .



The page should viewed at 11" x 17" approximately 15" from viewer's eyes .



MATCH
LINE BC

MATCH
LINE CC

MATCH
LINE CD

MATCH
LINE B

PANORAMIC PHOTOGRAPH - EXISTING CONDITIONS

1



MATCH LINES define visual simulation detail areas

A-B is shown on pages 2-3
AA-AB is shown on page 4
BB-BC is shown on page 5
CC-CD is shown on page 6

PROJECT VIEW

Horizontal Field of View: 193°	Furthest Visible WTG: 46 mi / 74 km
Vertical Field of View: 40°	Potential Number of Structures Visible: 577
Nearest WTG: 16 mi / 26 km	Potential Number of Structures Not Visible: 337

PHOTOGRAPH AND SITE

Time of photograph: 9:00PM	Viewing direction: South (226°)
Date of photograph: 8-20-20	Latitude: 41.252490°N
L/SCA: Open Ocean, Ocean Beach, Dunes, Salt Ponds/Tidal Marsh, Residential	Longitude: 70.154080°W
	Lighting Direction: Backlit diffused

ENVIRONMENT

Temperature: 61° F
Humidity: 90%
Wind Dir & Speed: N 6 mph
Weather Condition: Partly Cloudy

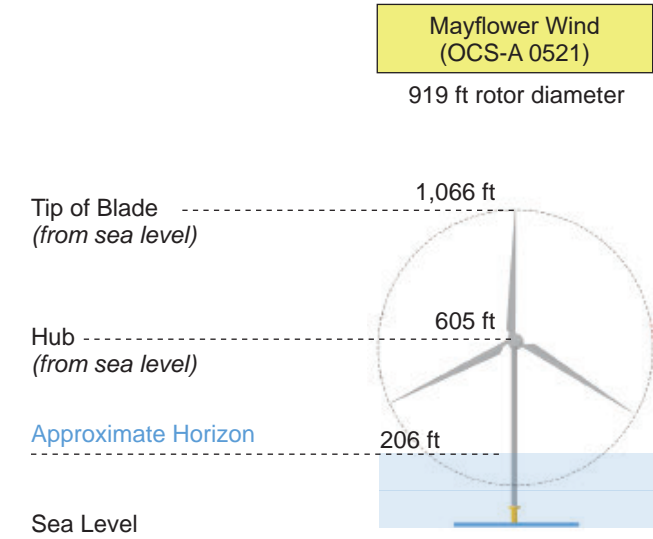
CAMERA

Camera Elevation: 23.0 ft / 7.0 m
Nikon D4
Nikon 50mm
ISO: 100
Fstop: f/7.1
Shutter: 1/1250 sec
Exposure bias: -0.7 step

SIMULATED CONDITIONS2



VISIBILTY OF CLOSEST TURBINES



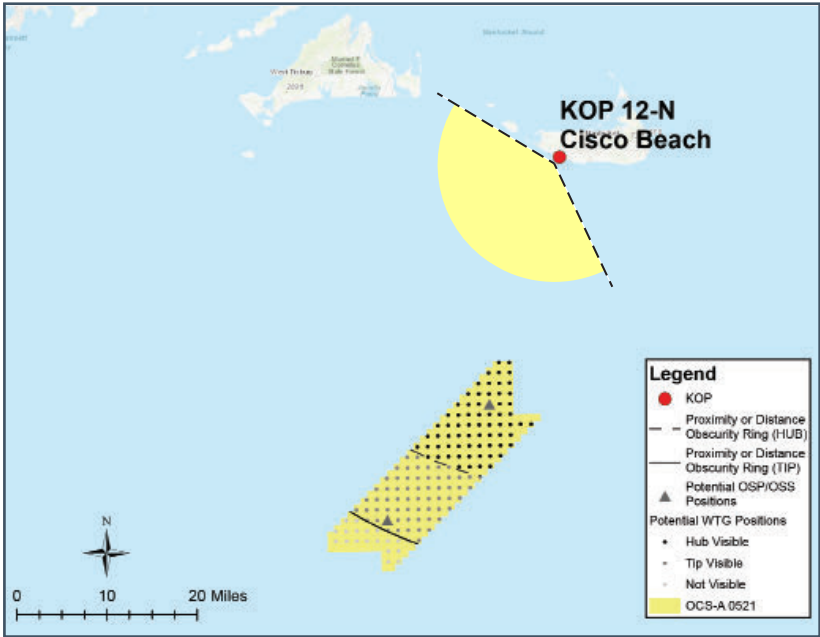
Year Forecasted for Development	2025
Number of Structures in Lease Area	149
Number of Structures within View of KOP	130
Distance to Closest Structure	23 mi (38 km)
Distance to Furthest Structure	49 mi (80 km)

SIMULATED CONDITIONS

3



REGIONAL MAP



SITE MAP



PROJECT VIEW

Horizontal Field of View: 124°	Furthest Visible WTG: 46 mi / 74 km
Vertical Field of View: 40°	Potential Number of Structures Visible: 577
Nearest WTG: 16 mi / 26 km	Potential Number of Structures Not Visible: 337

ENVIRONMENT

Temperature: 61° F
Humidity: 90%
Wind Dir & Speed: N 6 mph
Weather Condition: Partly Cloudy

PHOTOGRAPH AND SITE

Time of photograph: 1:25PM	Viewing direction: South (226°)
Date of photograph: 8-20-20	Latitude: 41.252490°N
L/SCA: Open Ocean, Ocean Beach, Dunes, Salt Ponds/Tidal Marsh, Residential	Longitude: 70.154080°W
	Lighting Direction: Backlit diffused

CAMERA

Camera Elevation: 23.0 ft / 7.0 m
Nikon D4
Nikon 50mm
ISO: 100
Fstop: f/7.1
Shutter: 1/1250 sec
Exposure bias: -0.7 step







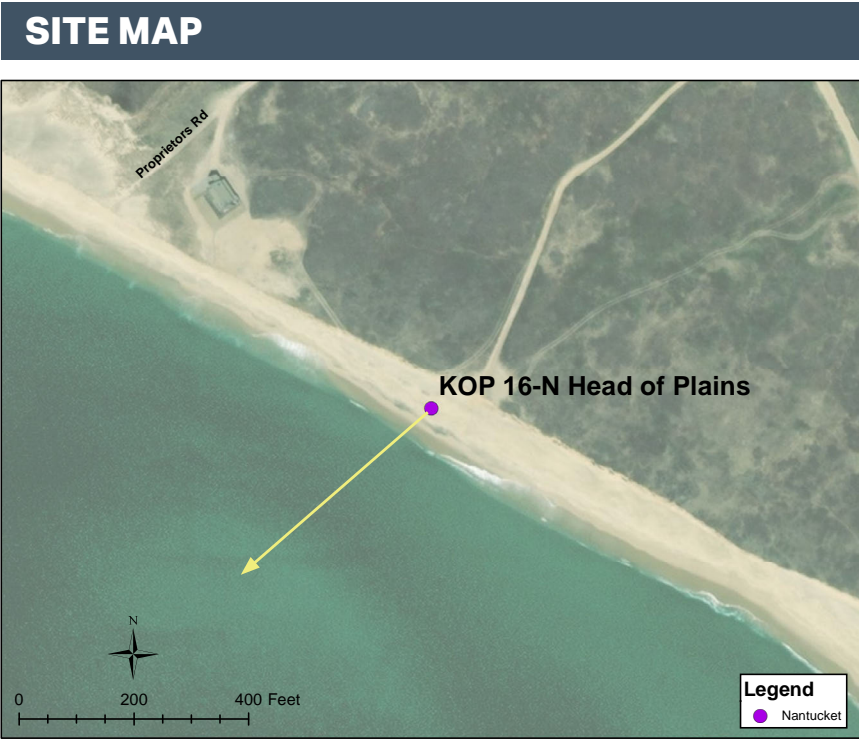
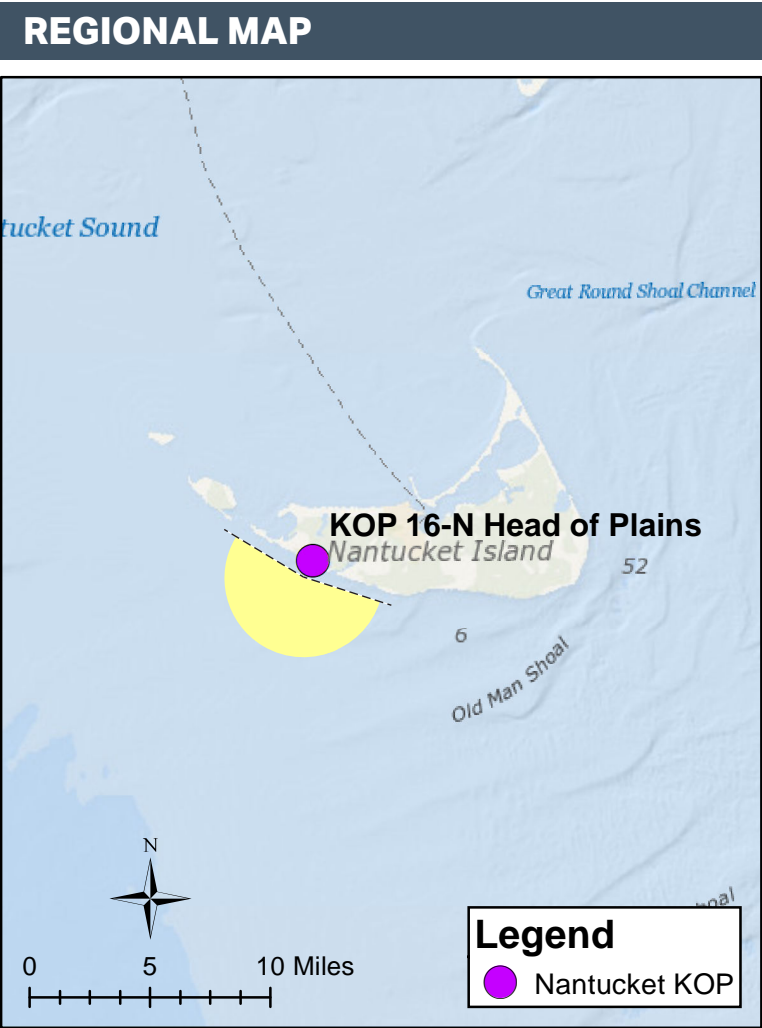
MATCH
LINE BC

MATCH
LINE CD

MATCH
LINE B

PANORAMIC PHOTOGRAPH - EXISTING CONDITIONS

1



MATCH LINES define visual simulation detail areas

A-B is shown on pages 2-3
AA-AB is shown on page 4
BB-BC is shown on page 5
CC-CD is shown on page 6

PROJECT VIEW

Horizontal Field of View: 193°	Furthest Visible WTG: 46 mi / 74 km
Vertical Field of View: 40°	Potential Number of WTGs Visible: 244
Nearest WTG: 16 mi / 25 km	Potential Number of WTGs Not Visible: 205

PHOTOGRAPH AND SITE

Time of photograph: 3:54 PM	Viewing direction: South (229°)
Date of photograph: 10-7-20	Latitude: 41.341724°N
L/SCA: Ocean Beach, Open Ocean, Dunes	Longitude: 70.179524°W
	Lighting Direction: Sidelit

ENVIRONMENT

Temperature: 66° F
Humidity: 81%
Wind Dir & Speed: SW 21 mph
Weather Condition: Clear

CAMERA

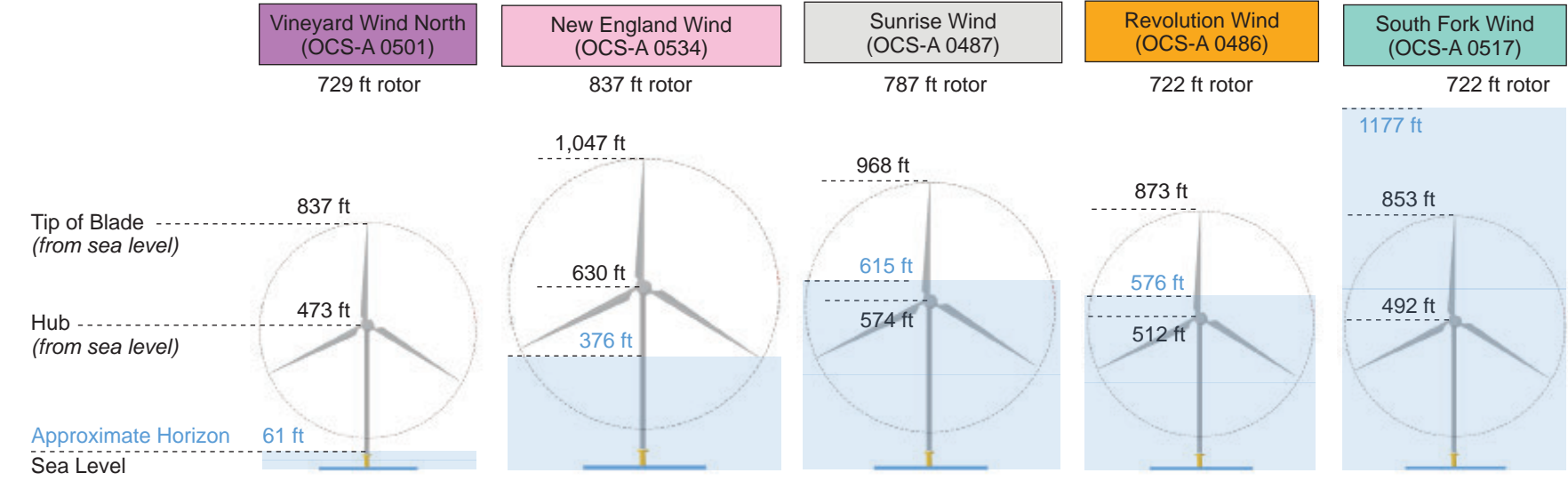
Camera Elevation: 20.5 ft / 6.3 m
Nikon D4
Nikon 50mm
ISO: 100
Fstop: f/7.1
Shutter: 1/1250 sec
Exposure bias: -0.7 step

SIMULATED CONDITIONS

2



VISIBILTY OF CLOSEST TURBINES



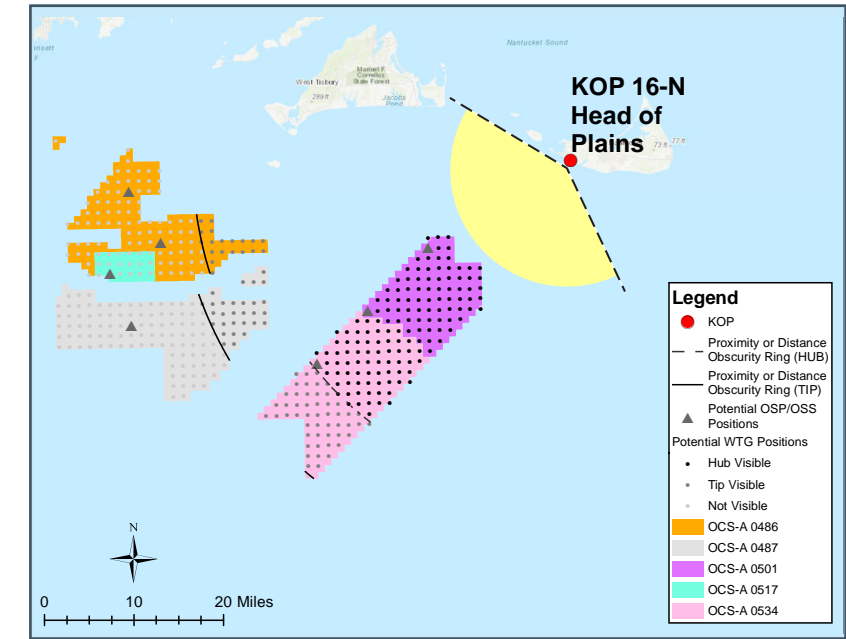
Year Forecasted for Development	2023	2024 Phase II 2026	2025	2023	2023	
Number of Structures in Lease Area	77	120	131	103	18	
Number of Structures within View of KOP	77	119	29	19	0	
Distance to Closest Structure	16 mi (25 km)	30 mi (48 km)	37 mi (59 km)	36 mi (57 km)	48 mi (77.45 km)	
Distance to Furthest Structure	28 mi (46 km)	46 mi (74 km)	61 mi (98 km)	58 mi (93 km)	54 mi (87 km)	

SIMULATED CONDITIONS

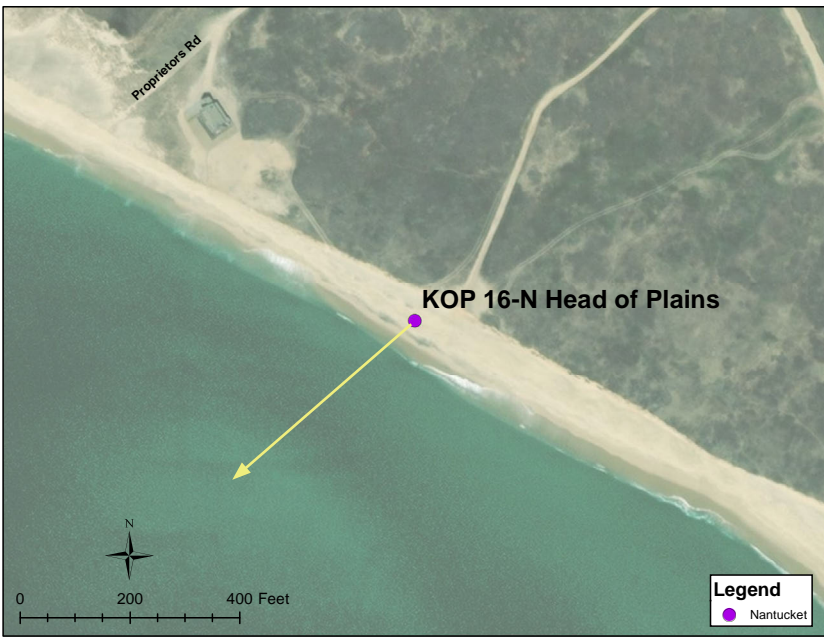
3



REGIONAL MAP



SITE MAP



PROJECT VIEW

Horizontal Field of View: 124°	Furthest Visible WTG: 46 mi / 74 km
Vertical Field of View: 40°	Potential Number of WTGs Visible: 244
Nearest WTG: 16 mi / 25 km	Potential Number of WTGs Not Visible: 205

ENVIRONMENT

Temperature: 66° F
Humidity: 81%
Wind Dir & Speed: SW 21 mph
Weather Condition: Clear

PHOTOGRAPH AND SITE

Time of photograph: 3:54PM	Viewing direction: South (229°)
Date of photograph: 10-7-20	Latitude: 41.341724°N
L/SCA: Ocean Beach, Open Ocean, Dunes	Longitude: 70.179524°W
	Lighting Direction: Sidelit

CAMERA

Camera Elevation: 20.5 ft / 6.3 m
Nikon D4
Nikon 50mm
ISO: 100
Fstop: f/7.1
Shutter: 1/1250 sec
Exposure bias: -0.7 step



MATCH
LINE A

MATCH
LINE AA

MATCH
LINE AB

MATCH
LINE BB

The page should viewed at 11" x 17" approximately 15" from viewer's eyes .



MATCH
LINE AB

MATCH
LINE BB

MATCH
LINE BC

MATCH
LINE CC



MATCH
LINE BC

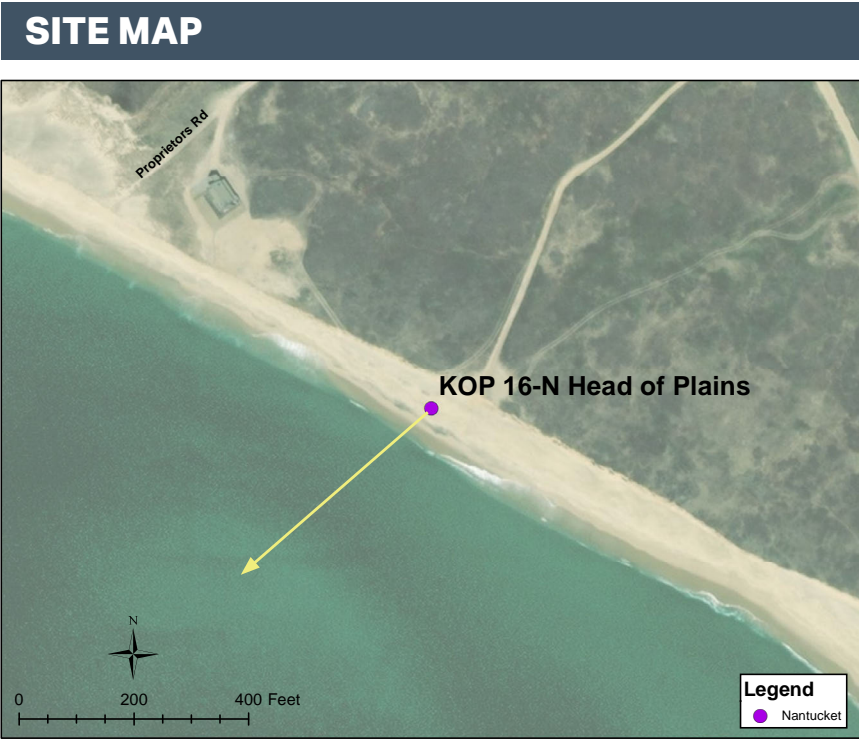
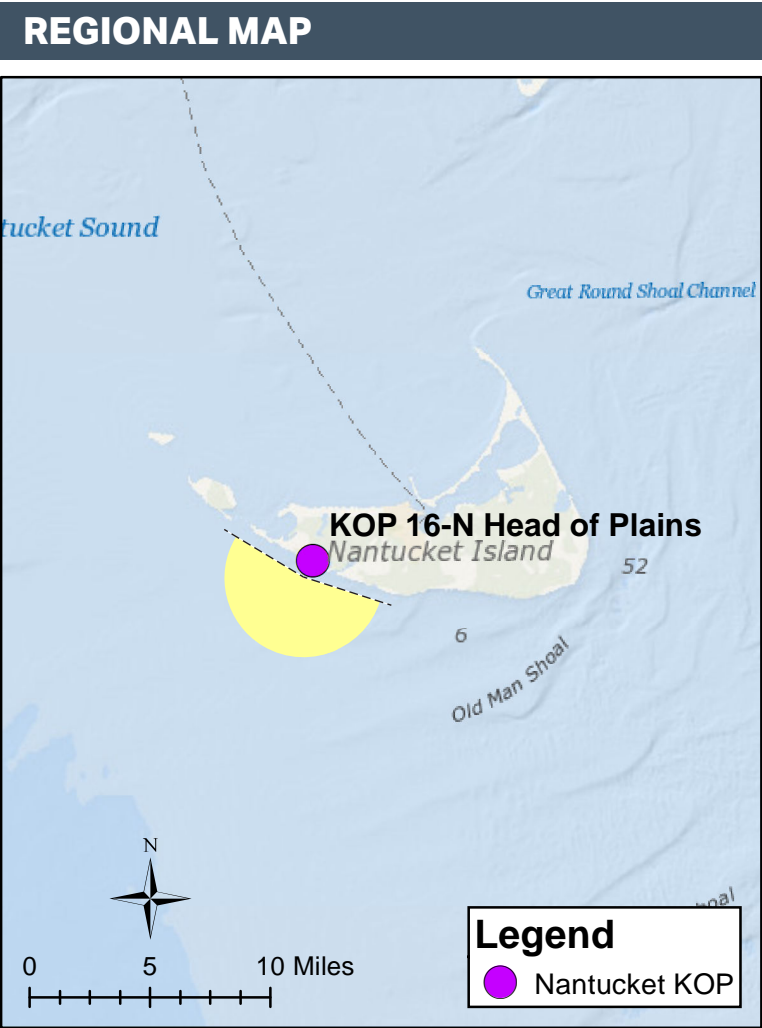
MATCH
LINE CC

MATCH
LINE CD

MATCH
LINE B

PANORAMIC PHOTOGRAPH - EXISTING CONDITIONS

1



MATCH LINES define visual simulation detail areas

- A-B is shown on pages 2-3
- AA-AB is shown on page 4
- BB-BC is shown on page 5
- CC-CD is shown on page 6

PROJECT VIEW

Horizontal Field of View: 193°	Furthest Visible WTG: 46 mi / 74 km
Vertical Field of View: 40°	Potential Number of WTGs Visible: 376
Nearest WTG: 16 mi / 25 km	Potential Number of WTGs Not Visible: 222

PHOTOGRAPH AND SITE

Time of photograph: 3:54PM	Viewing direction: South (229°)
Date of photograph: 10-7-20	Latitude: 41.341724°N
L/SCA: Ocean Beach, Open Ocean, Dunes	Longitude: 70.179524°W
	Lighting Direction: Sidelit

ENVIRONMENT

Temperature: 66° F
Humidity: 81%
Wind Dir & Speed: SW 21 mph
Weather Condition: Clear

CAMERA

Camera Elevation: 20.5 ft / 6.3 m
Nikon D4
Nikon 50mm
ISO: 100
Fstop: f/7.1
Shutter: 1/1250 sec
Exposure bias: -0.7 step

SIMULATED CONDITIONS2

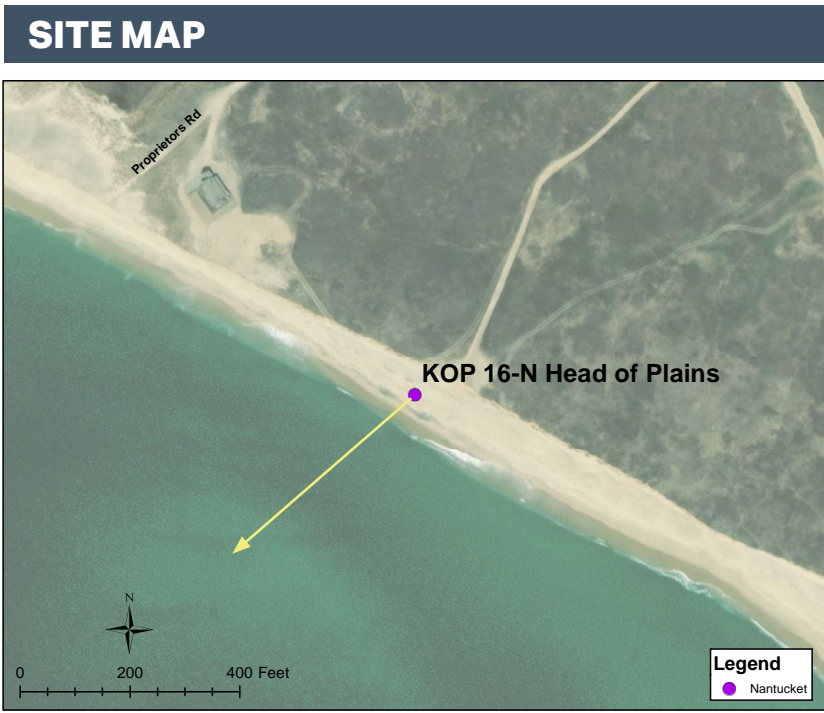
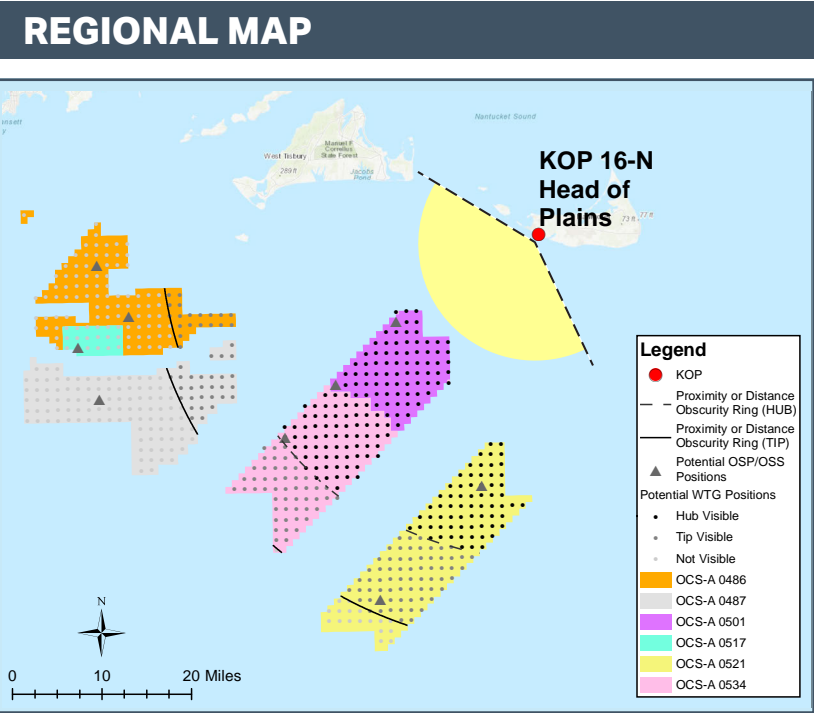
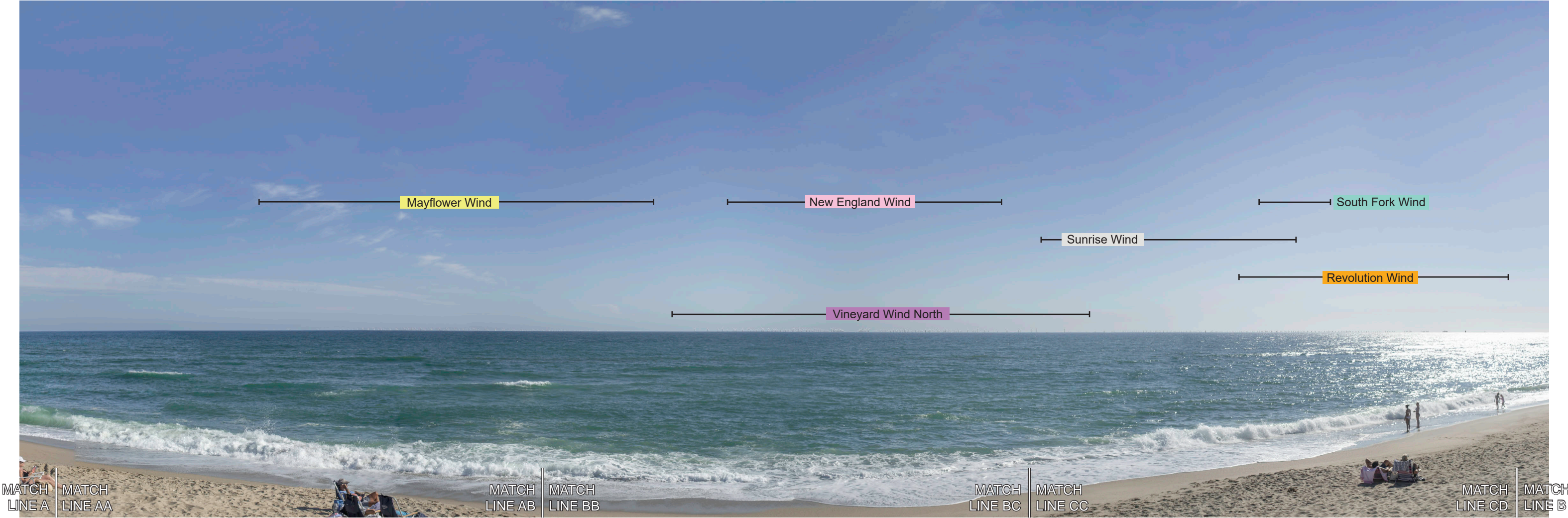


VISIBILTY OF CLOSEST TURBINES

	Mayflower Wind (OCS-A 0521)	Vineyard Wind North (OCS-A 0501)	New England Wind (OCS-A 0534)	Sunrise Wind (OCS-A 0487)	Revolution Wind (OCS-A 0486)	South Fork Wind (OCS-A 0517)	
	919 ft rotor	729 ft rotor	837 ft rotor	787 ft rotor	722 ft rotor	722 ft rotor	
Tip of Blade (from sea level)	1,066 ft	837 ft	1,047 ft	968 ft	873 ft	1177 ft	
Hub (from sea level)	605 ft	473 ft	630 ft	615 ft	576 ft	853 ft	
Approximate Horizon	214 ft	61 ft	376 ft	574 ft	512 ft	492 ft	
Sea Level							
Year Forecasted for Development	2025	2023	2024 Phase II 2026	2025	2023	2023	
Number of Structures in Lease Area	149	77	120	131	103	18	
Number of Structures within View of KOP	132	77	119	29	19	0	
Distance to Closest Structure	24 mi (38.67 km)	16 mi (25 km)	30 mi (48 km)	37 mi (59 km)	36 mi (57 km)	48 mi (77.45 km)	
Distance to Furthest Structure	49 mi (79 km)	28 mi (46 km)	46 mi (74 km)	61 mi (98 km)	58 mi (93 km)	54 mi (87 km)	

SIMULATED CONDITIONS

3



PROJECT VIEW

Horizontal Field of View: 124°	Furthest Visible WTG: 46 mi / 74 km
Vertical Field of View: 40°	Potential Number of WTGs Visible: 376
Nearest WTG: 16 mi / 25 km	Potential Number of WTGs Not Visible: 222

ENVIRONMENT

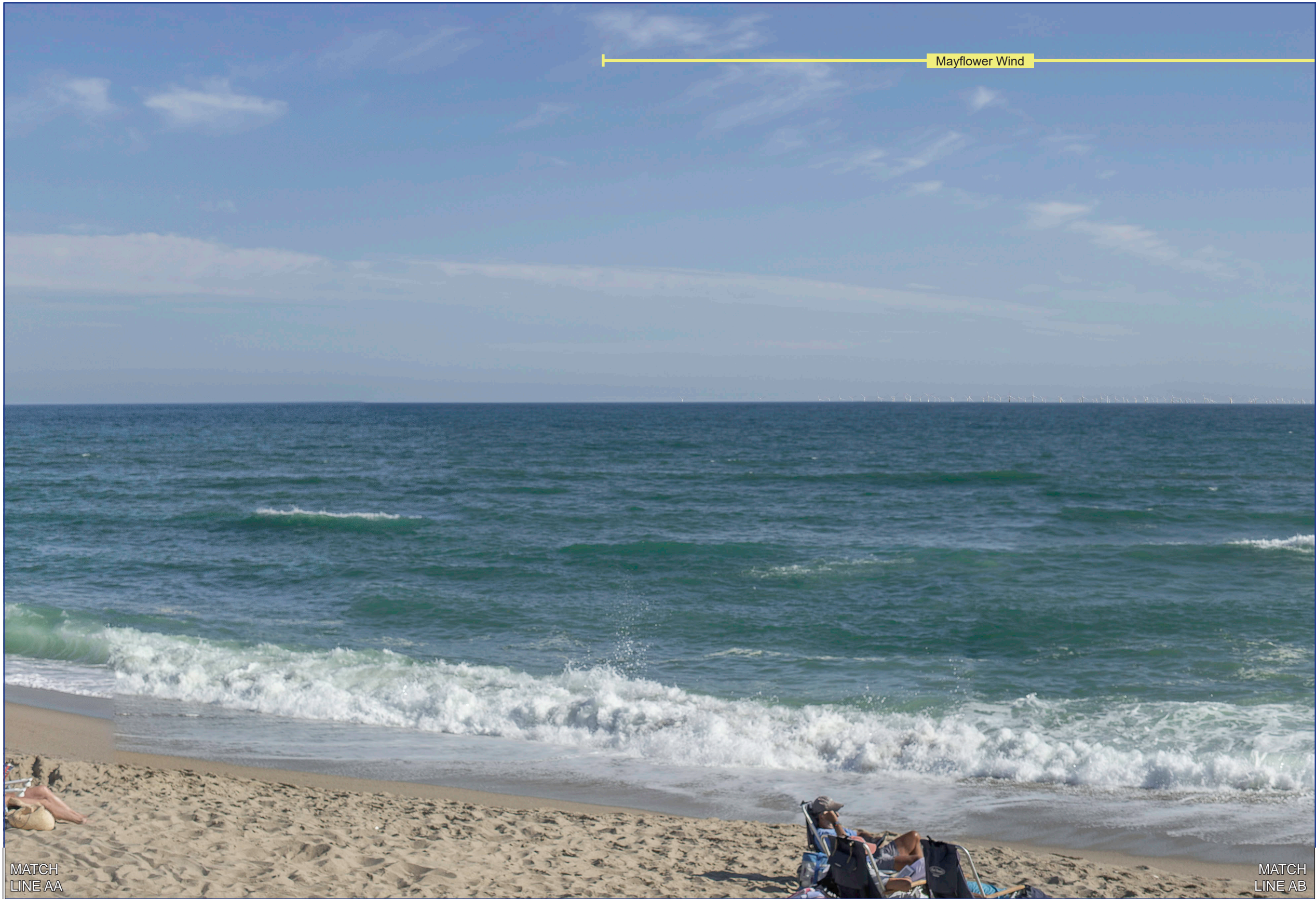
Temperature: 66° F
Humidity: 81%
Wind Dir & Speed: SW 21 mph
Weather Condition: Clear

PHOTOGRAPH AND SITE

Time of photograph: 3:54PM	Viewing direction: South (229°)
Date of photograph: 10-7-20	Latitude: 41.341724°N
L/SCA: Ocean Beach, Open Ocean, Dunes	Longitude: 70.179524°W
	Lighting Direction: Sidelit

CAMERA

Camera Elevation: 20.5 ft / 6.3 m
Nikon D4
Nikon 50mm
ISO: 100
Fstop: f/7.1
Shutter: 1/1250 sec
Exposure bias: -0.7 step



The page should viewed at 11" x 17" approximately 15" from viewer's eyes .



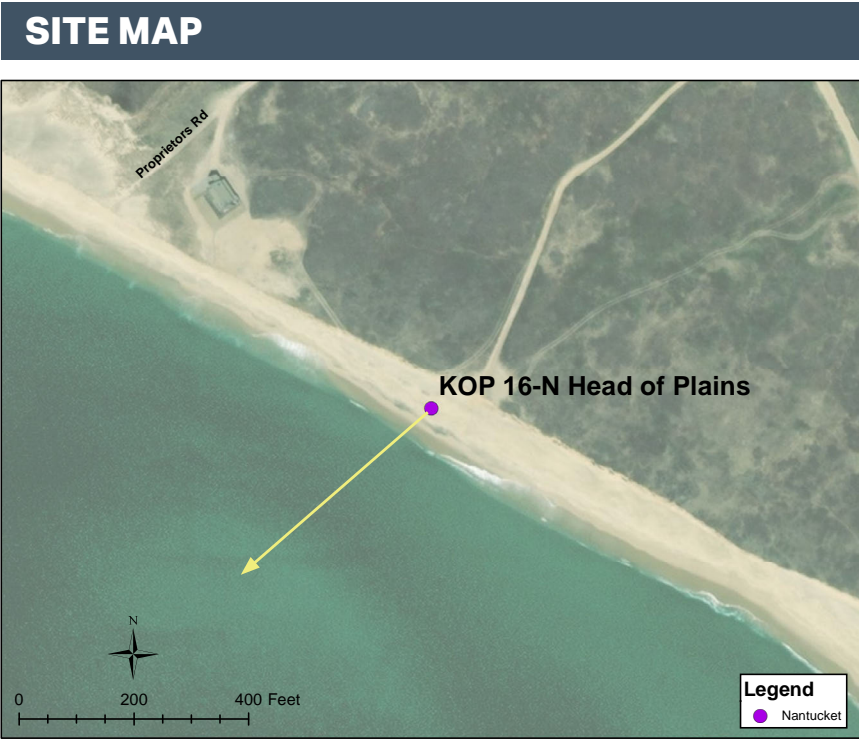
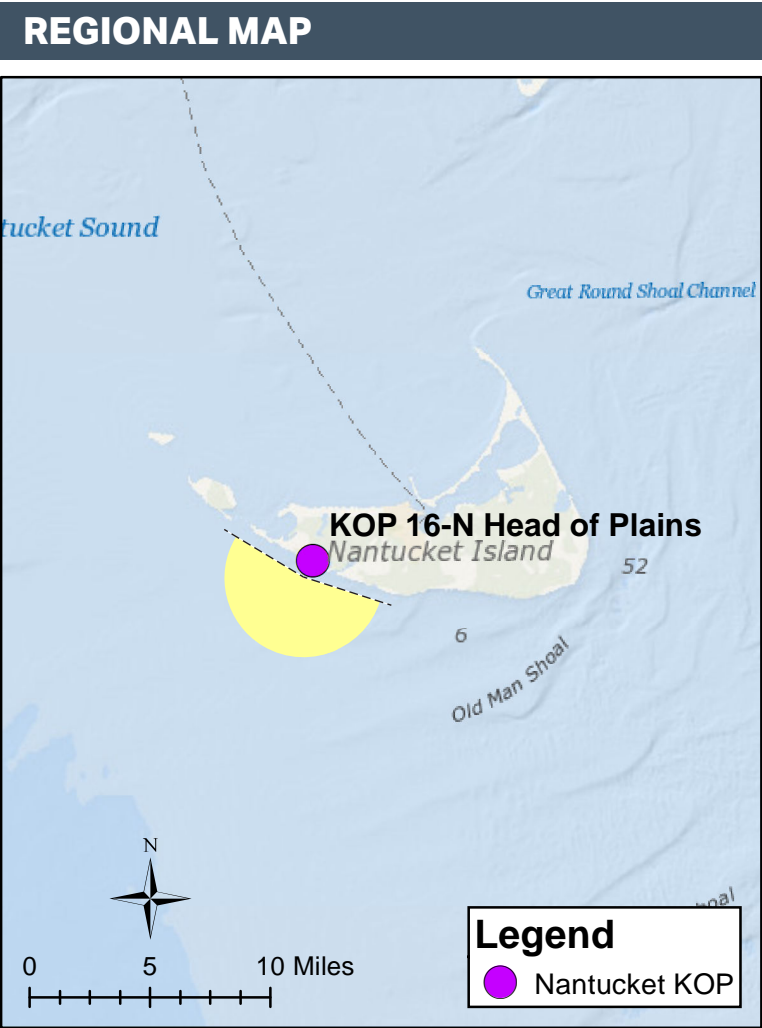
The page should viewed at 11" x 17" approximately 15" from viewer's eyes .



The page should viewed at 11" x 17" approximately 15" from viewer's eyes .

PANORAMIC PHOTOGRAPH - EXISTING CONDITIONS

1



MATCH LINES define visual simulation detail areas

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- BB-BC is shown on page 5
- CC-CD is shown on page 6

PROJECT VIEW

Horizontal Field of View: 193°	Furthest Visible WTG: 46 mi / 74 km
Vertical Field of View: 40°	Potential Number of WTGs Visible: 746
Nearest WTG: 16 mi / 25 km	Potential Number of WTGs Not Visible: 317

PHOTOGRAPH AND SITE

Time of photograph: 3:54PM	Viewing direction: South (229°)
Date of photograph: 10-7-20	Latitude: 41.341724°N
L/SCA: Ocean Beach, Open Ocean, Dunes	Longitude: 70.179524°W
	Lighting Direction: Sidelit

ENVIRONMENT

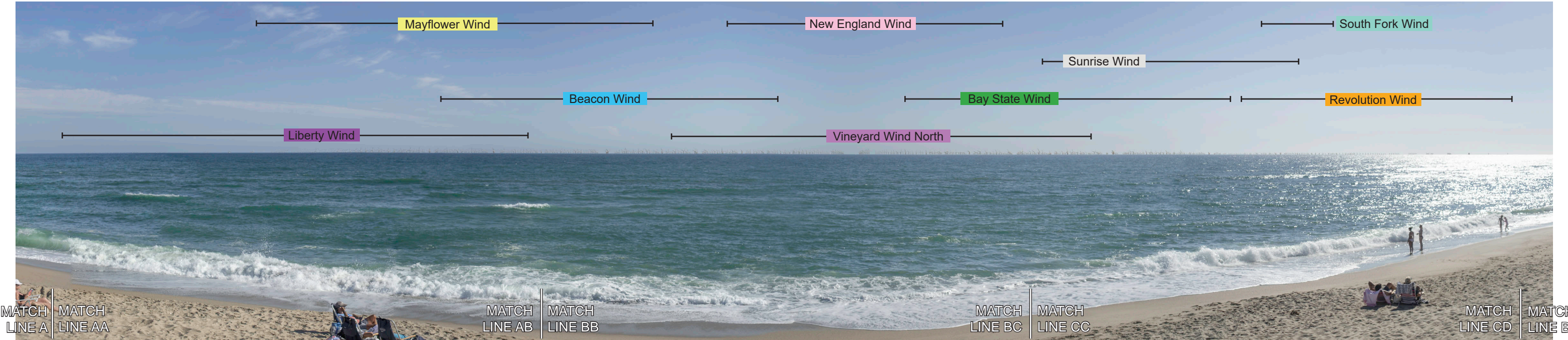
Temperature: 66° F
Humidity: 81%
Wind Dir & Speed: SW 21 mph
Weather Condition: Clear

CAMERA

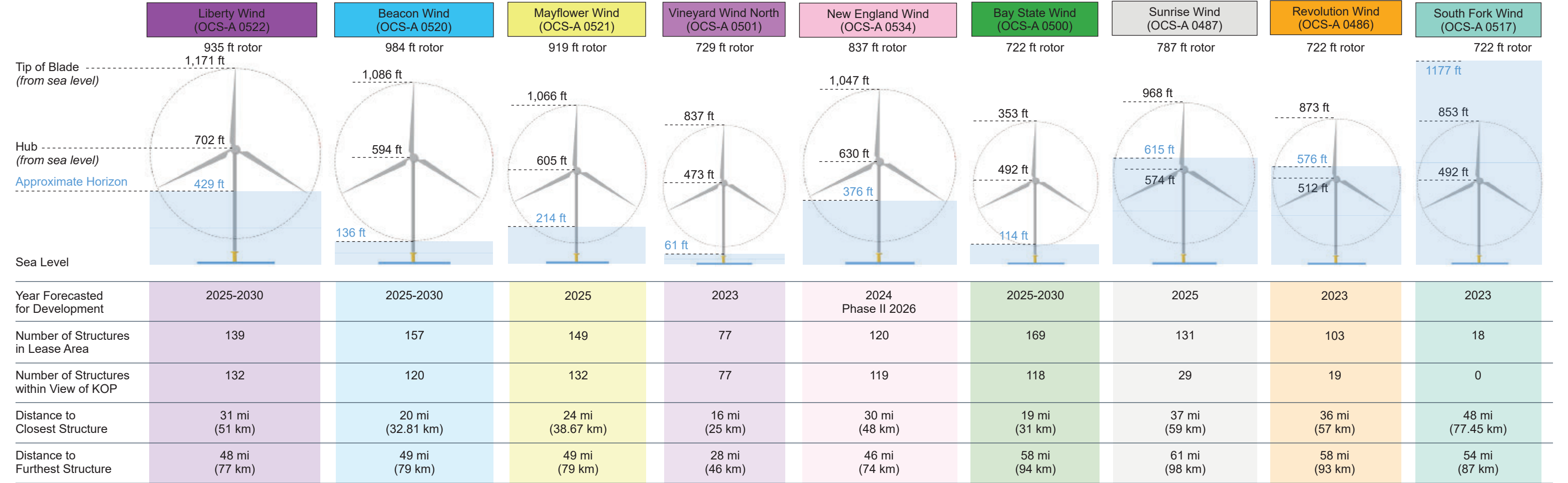
Camera Elevation: 20.5 ft / 6.3 m
Nikon D4
Nikon 50mm
ISO: 100
Fstop: f/7.1
Shutter: 1/1250 sec
Exposure bias: -0.7 step

SIMULATED CONDITIONS

2

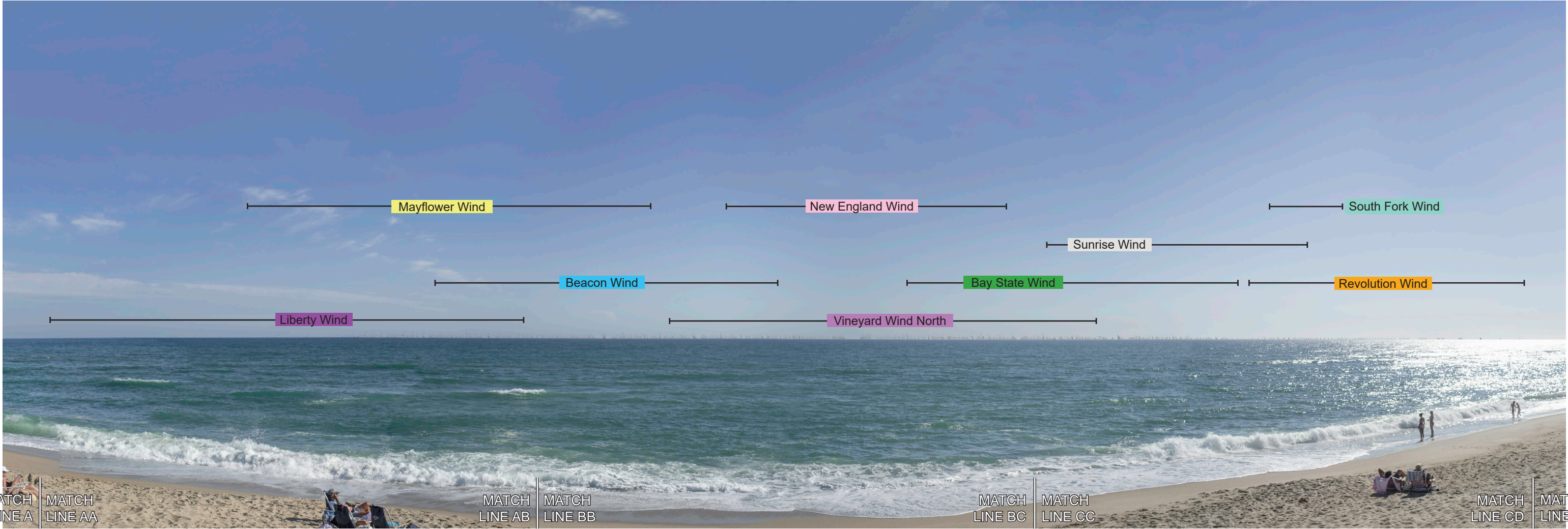


VISIBILTY OF CLOSEST TURBINES

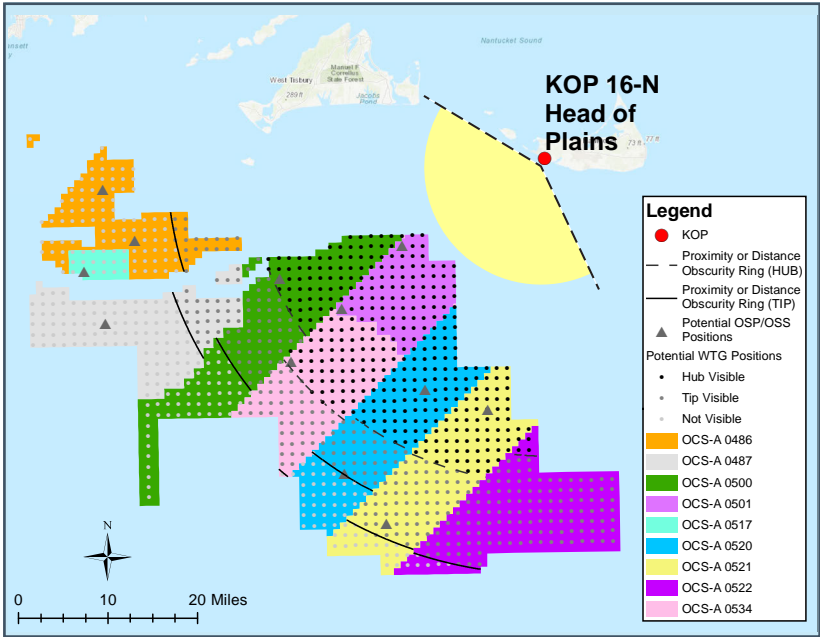


SIMULATED CONDITIONS

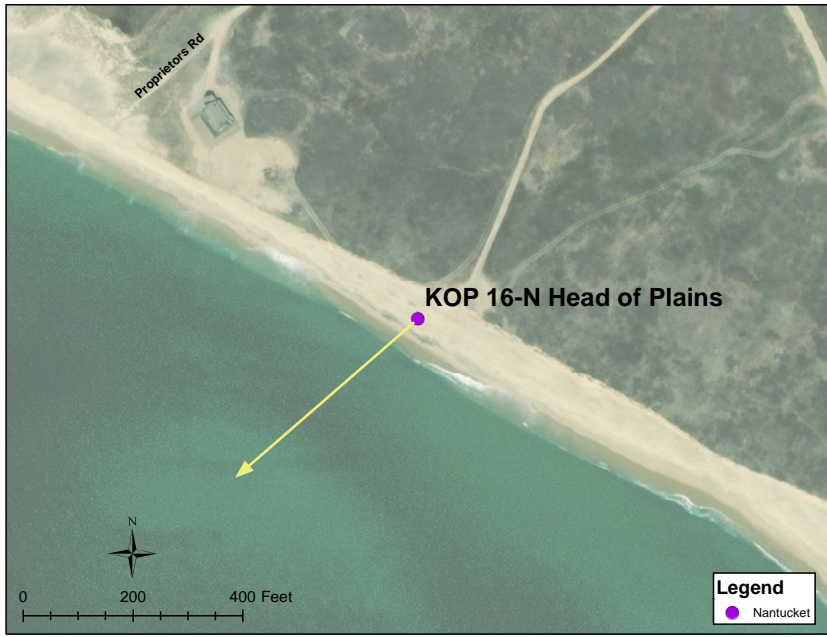
3



REGIONAL MAP



SITE MAP



PROJECT VIEW

Horizontal Field of View: 124°	Furthest Visible WTG: 46 mi / 74 km
Vertical Field of View: 40°	Potential Number of WTGs Visible: 746
Nearest WTG: 16 mi / 25 km	Potential Number of WTGs Not Visible: 317

ENVIRONMENT

Temperature: 66° F
Humidity: 81%
Wind Dir & Speed: SW 21 mph
Weather Condition: Clear

PHOTOGRAPH AND SITE

Time of photograph: 3:54PM	Viewing direction: South (229°)
Date of photograph: 10-7-20	Latitude: 41.341724°N
L/SCA: Ocean Beach, Open Ocean, Dunes	Longitude: 70.179524°W
	Lighting Direction: Sidelit

CAMERA

Camera Elevation: 20.5 ft / 6.3 m
Nikon D4
Nikon 50mm
ISO: 100
Fstop: f/7.1
Shutter: 1/1250 sec
Exposure bias: -0.7 step



MATCH
LINE A

MATCH
LINE AA

MATCH
LINE AB

MATCH
LINE BB

The page should viewed at 11" x 17" approximately 15" from viewer's eyes .



The page should viewed at 11" x 17" approximately 15" from viewer's eyes .



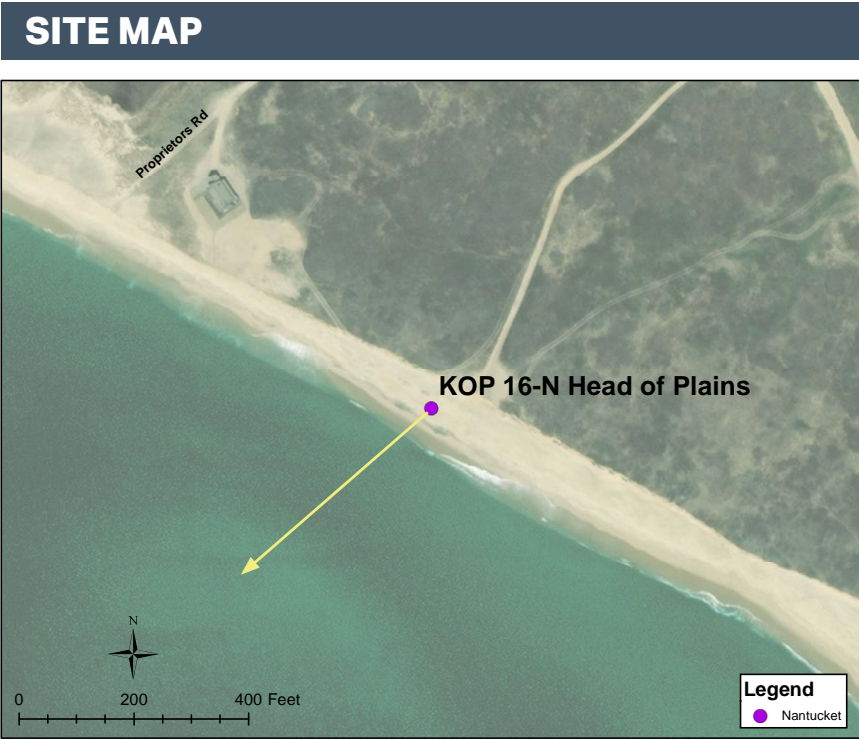
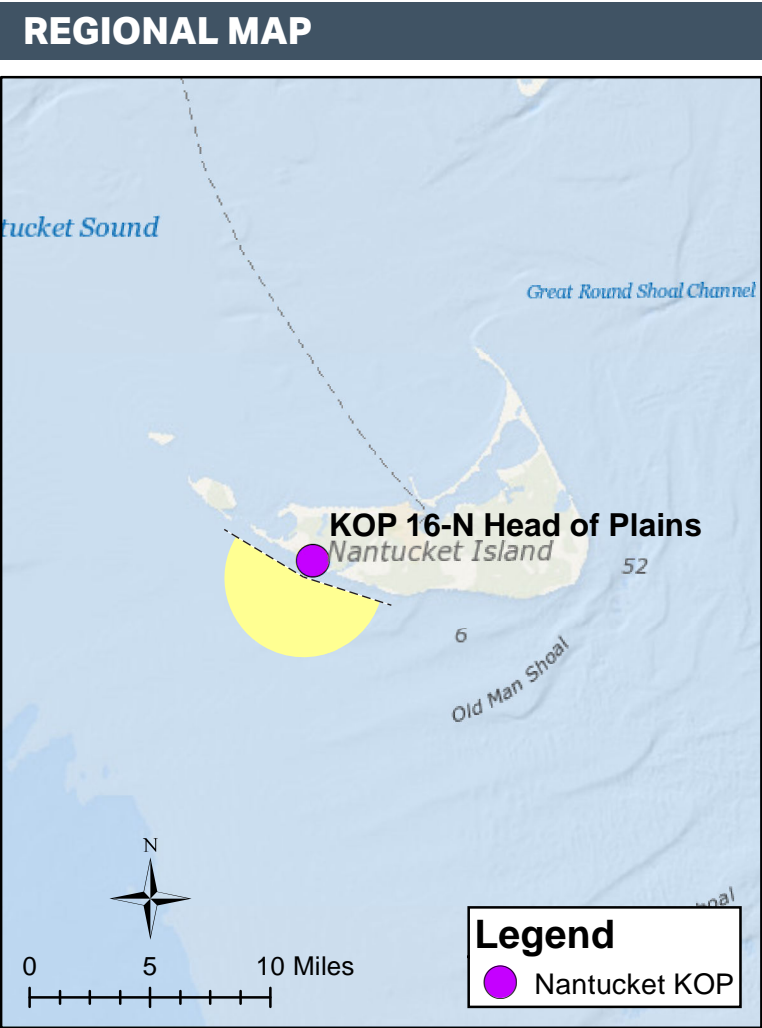
MATCH
LINE BC

MATCH
LINE CD

MATCH
LINE B

PANORAMIC PHOTOGRAPH - EXISTING CONDITIONS

1



MATCH LINES define visual simulation detail areas

A-B is shown on pages 2-3
AA-AB is shown on page 4
BB-BC is shown on page 5
CC-CD is shown on page 6

PROJECT VIEW

Horizontal Field of View: 193°	Furthest Visible WTG: 46 mi / 74 km
Vertical Field of View: 40°	Potential Number of WTGs Visible: 614
Nearest WTG: 16 mi / 25 km	Potential Number of WTGs Not Visible: 300

PHOTOGRAPH AND SITE

Time of photograph: 3:54PM	Viewing direction: South (229°)
Date of photograph: 10-7-20	Latitude: 41.341724°N
L/SCA: Ocean Beach, Open Ocean, Dunes	Longitude: 70.179524°W
	Lighting Direction: Sidelit

ENVIRONMENT

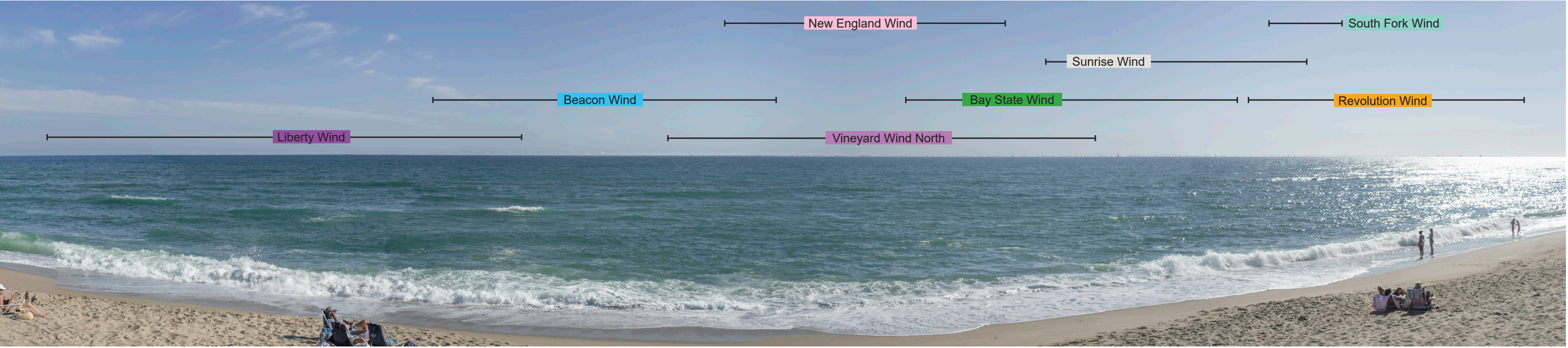
Temperature: 66° F
Humidity: 81%
Wind Dir & Speed: SW 21 mph
Weather Condition: Clear

CAMERA

Camera Elevation: 20.5 ft / 6.3 m
Nikon D4
Nikon 50mm
ISO: 100
Fstop: f/7.1
Shutter: 1/1250 sec
Exposure bias: -0.7 step

SIMULATED CONDITIONS

2

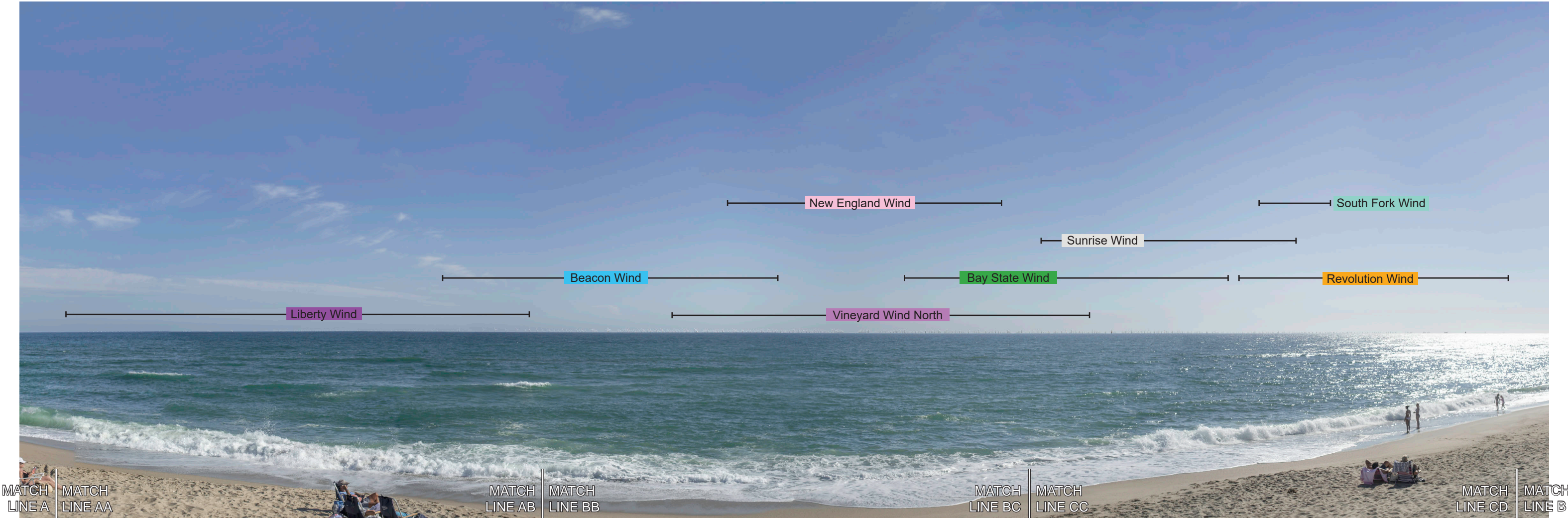


VISIBILTY OF CLOSEST TURBINES

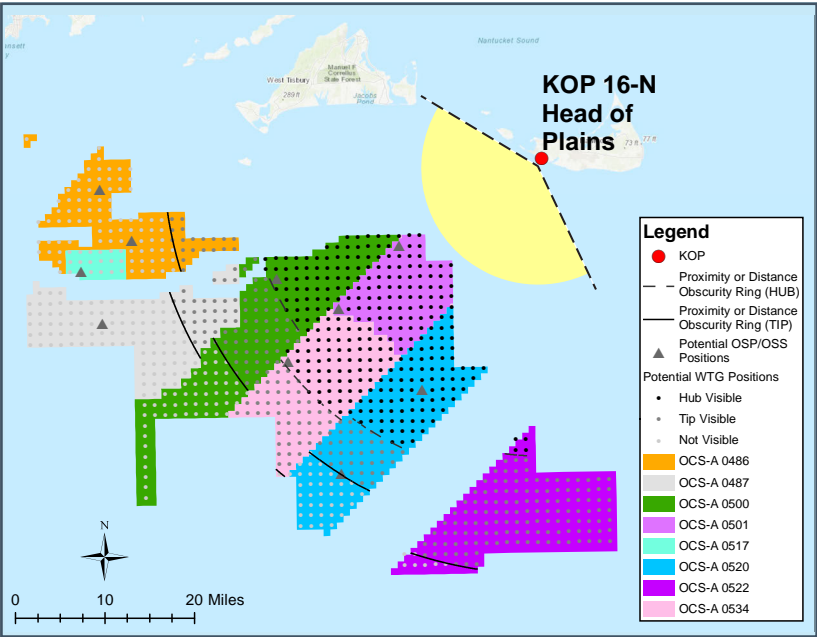
	Liberty Wind (OCS-A 0522)	Beacon Wind (OCS-A 0520)	Vineyard Wind North (OCS-A 0501)	New England Wind (OCS-A 0534)	Bay State Wind (OCS-A 0500)	Sunrise Wind (OCS-A 0487)	Revolution Wind (OCS-A 0486)	South Fork Wind (OCS-A 0517)
	935 ft rotor 1,171 ft	984 ft rotor	729 ft rotor	837 ft rotor	722 ft rotor	787 ft rotor	722 ft rotor	722 ft rotor
Tip of Blade (from sea level)		1,086 ft		1,047 ft		968 ft		1177 ft
Hub (from sea level)	702 ft	594 ft	837 ft	630 ft	353 ft	615 ft	873 ft	853 ft
Approximate Horizon	429 ft		473 ft	376 ft	492 ft	574 ft	576 ft	492 ft
Sea Level		136 ft	61 ft		114 ft		512 ft	
Year Forecasted for Development	2025-2030	2025-2030	2023	2024 Phase II 2026	2025-2030	2025	2023	2023
Number of Structures in Lease Area	139	157	77	120	169	131	103	18
Number of Structures within View of KOP	132	120	77	119	118	29	19	0
Distance to Closest Structure	31 mi (51 km)	20 mi (32.81 km)	16 mi (25 km)	30 mi (48 km)	19 mi (31 km)	37 mi (59 km)	36 mi (57 km)	48 mi (77.45 km)
Distance to Furthest Structure	48 mi (77 km)	49 mi (79 km)	28 mi (46 km)	46 mi (74 km)	58 mi (94 km)	61 mi (98 km)	58 mi (93 km)	54 mi (87 km)

SIMULATED CONDITIONS

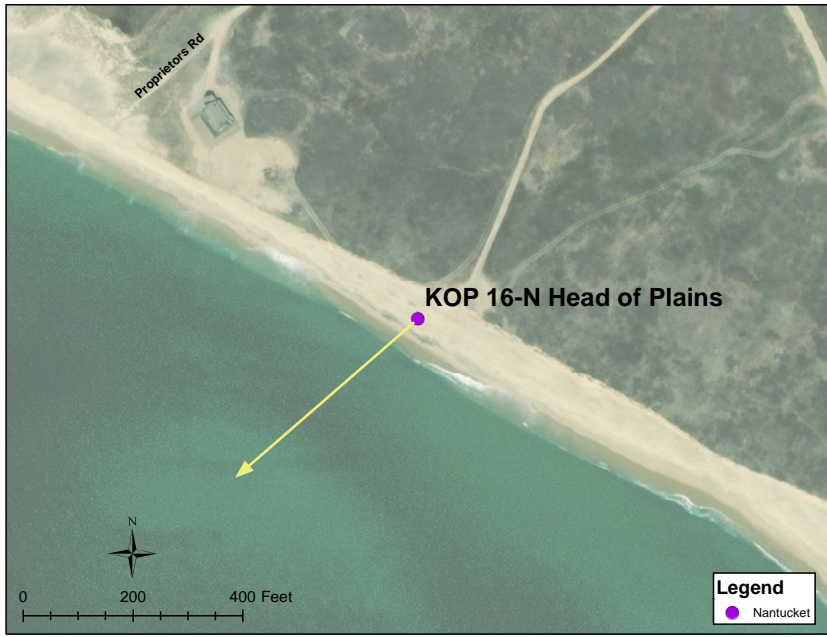
3



REGIONAL MAP



SITE MAP



PROJECT VIEW

Horizontal Field of View: 124°	Furthest Visible WTG: 46 mi / 74 km
Vertical Field of View: 40°	Potential Number of WTGs Visible: 614
Nearest WTG: 16 mi / 25 km	Potential Number of WTGs Not Visible: 300

ENVIRONMENT

Temperature: 66° F
Humidity: 81%
Wind Dir & Speed: SW 21 mph
Weather Condition: Clear

PHOTOGRAPH AND SITE

Time of photograph: 3:54PM	Viewing direction: South (229°)
Date of photograph: 10-7-20	Latitude: 41.341724°N
L/SCA: Ocean Beach, Open Ocean, Dunes	Longitude: 70.179524°W
	Lighting Direction: Sidelit

CAMERA

Camera Elevation: 20.5 ft / 6.3 m
Nikon D4
Nikon 50mm
ISO: 100
Fstop: f/7.1
Shutter: 1/1250 sec
Exposure bias: -0.7 step



MATCH
LINE A

MATCH
LINE AA

MATCH
LINE AB

MATCH
LINE BB

The page should viewed at 11" x 17" approximately 15" from viewer's eyes .



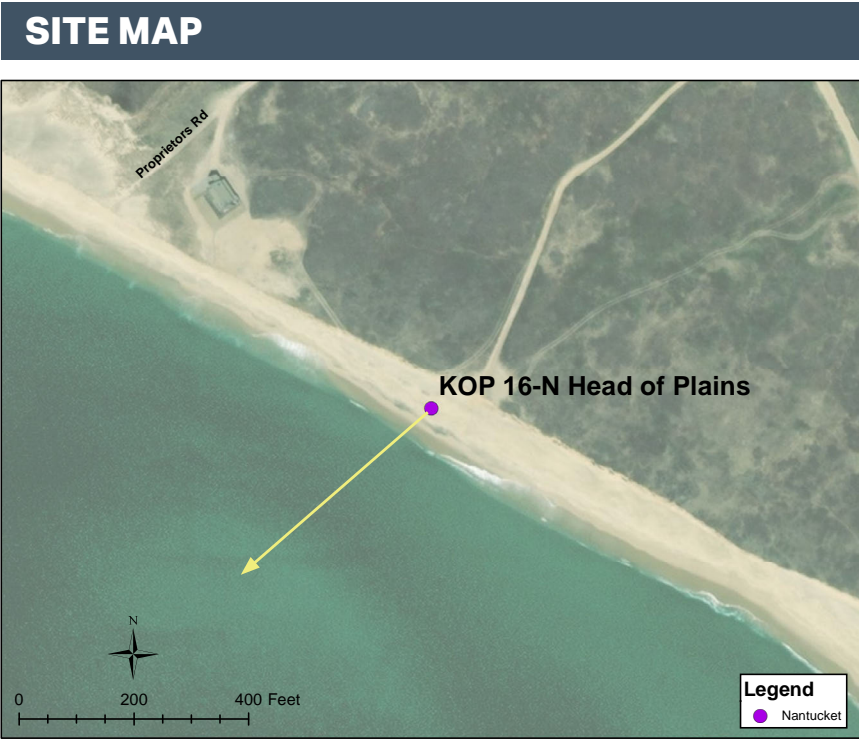
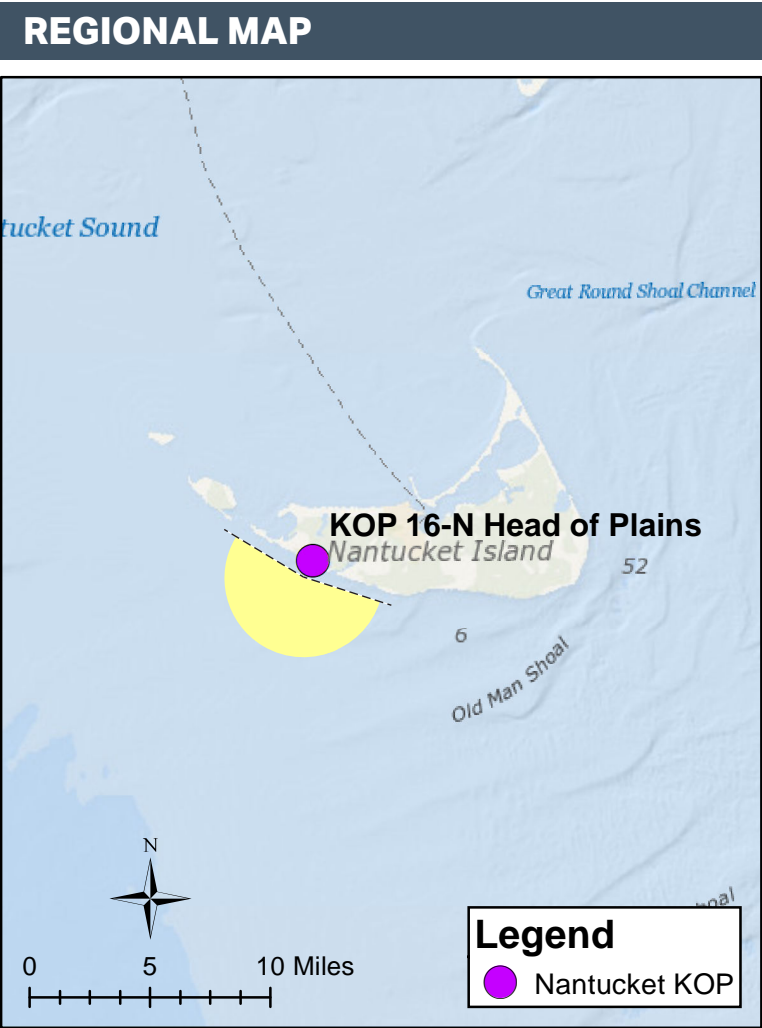
The page should viewed at 11" x 17" approximately 15" from viewer's eyes .



The page should viewed at 11" x 17" approximately 15" from viewer's eyes .

PANORAMIC PHOTOGRAPH - EXISTING CONDITIONS

1



MATCH LINES define visual simulation detail areas

- A-B is shown on pages 2-3
- AA-AB is shown on page 4
- BB-BC is shown on page 5
- CC-CD is shown on page 6

PROJECT VIEW

Horizontal Field of View: 193°	Furthest Visible WTG: 46 mi / 74 km
Vertical Field of View: 40°	Potential Number of WTGs Visible: 132
Nearest WTG: 24 mi / 38 km	Potential Number of WTGs Not Visible: 17

PHOTOGRAPH AND SITE

Time of photograph: 3:54 PM	Viewing direction: South (229°)
Date of photograph: 10-7-20	Latitude: 41.341724°N
L/SCA: Ocean Beach, Open Ocean, Dunes	Longitude: 70.179524°W
	Lighting Direction: Sidelit

ENVIRONMENT

Temperature: 66° F
Humidity: 81%
Wind Dir & Speed: SW 21 mph
Weather Condition: Clear

CAMERA

Camera Elevation: 20.5 ft / 6.3 m
Nikon D4
Nikon 50mm
ISO: 100
Fstop: f/7.1
Shutter: 1/1250 sec
Exposure bias: -0.7 step

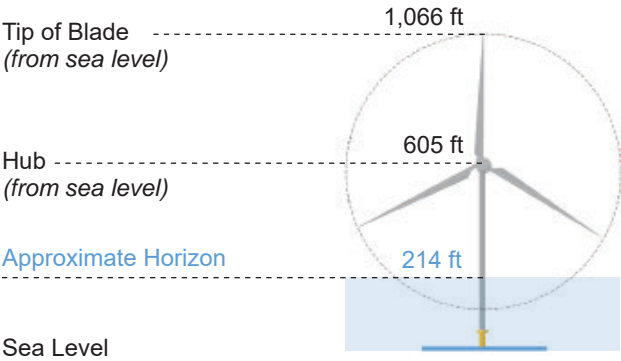
SIMULATED CONDITIONS2



VISIBILTY OF CLOSEST TURBINES

Mayflower Wind
(OCS-A 0521)

919 ft rotor



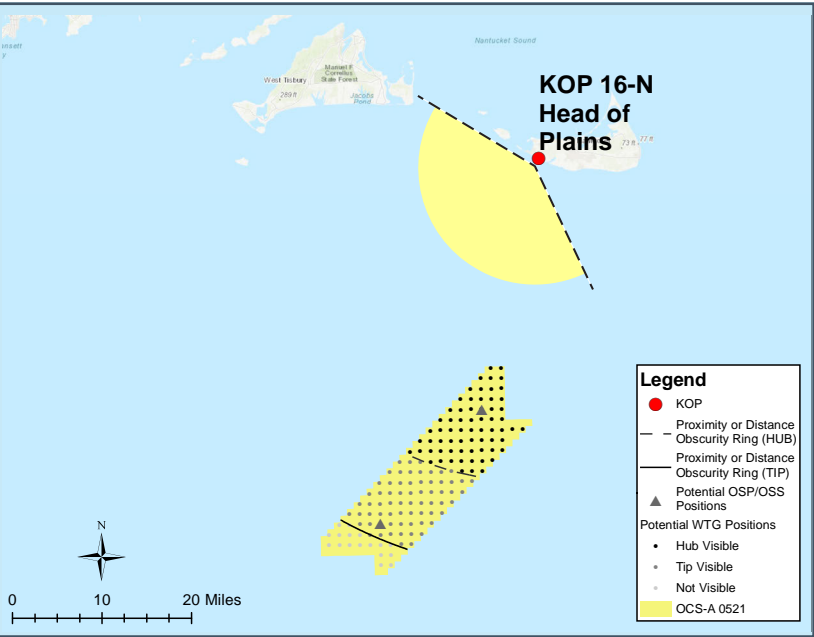
Year Forecasted for Development	2025	
Number of Structures in Lease Area	149	
Number of Structures within View of KOP	132	
Distance to Closest Structure	24 mi (38.67 km)	
Distance to Furthest Structure	49 mi (79 km)	

SIMULATED CONDITIONS

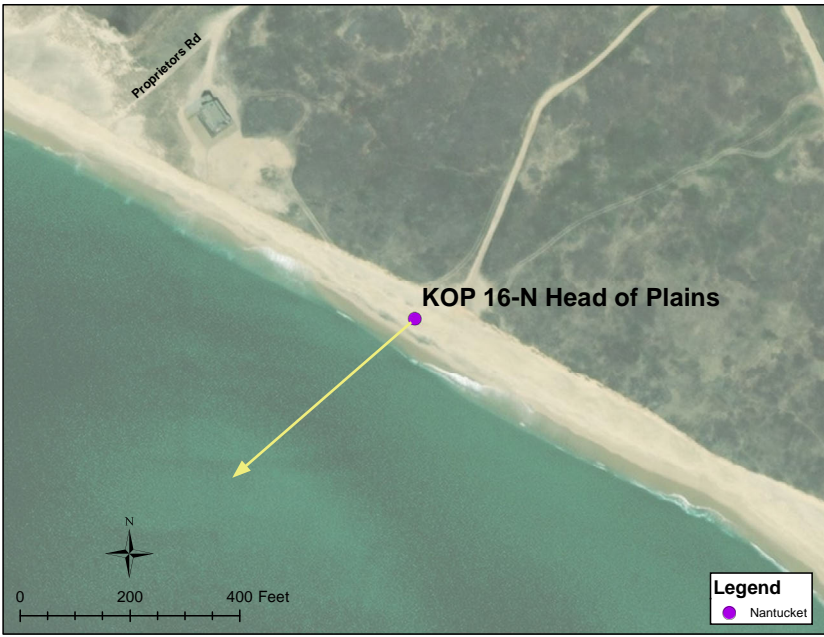
3



REGIONAL MAP



SITE MAP



PROJECT VIEW

Horizontal Field of View: 124°	Furthest Visible WTG: 49 mi / 79 km
Vertical Field of View: 40°	Potential Number of WTGs Visible: 132
Nearest WTG: 24 mi / 39 km	Potential Number of WTGs Not Visible: 17

ENVIRONMENT

Temperature: 66° F
Humidity: 81%
Wind Dir & Speed: SW 21 mph
Weather Condition: Clear

PHOTOGRAPH AND SITE

Time of photograph: 3:54PM	Viewing direction: South (229°)
Date of photograph: 10-7-20	Latitude: 41.341724°N
L/SCA: Ocean Beach, Open Ocean, Dunes	Longitude: 70.179524°W
	Lighting Direction: Sidelit

CAMERA

Camera Elevation: 20.5 ft / 6.3 m
Nikon D4
Nikon 50mm
ISO: 100
Fstop: f/7.1
Shutter: 1/1250 sec
Exposure bias: -0.7 step



MATCH
LINE A

MATCH
LINE AA

MATCH
LINE AB

MATCH
LINE BB

The page should viewed at 11" x 17" approximately 15" from viewer's eyes .



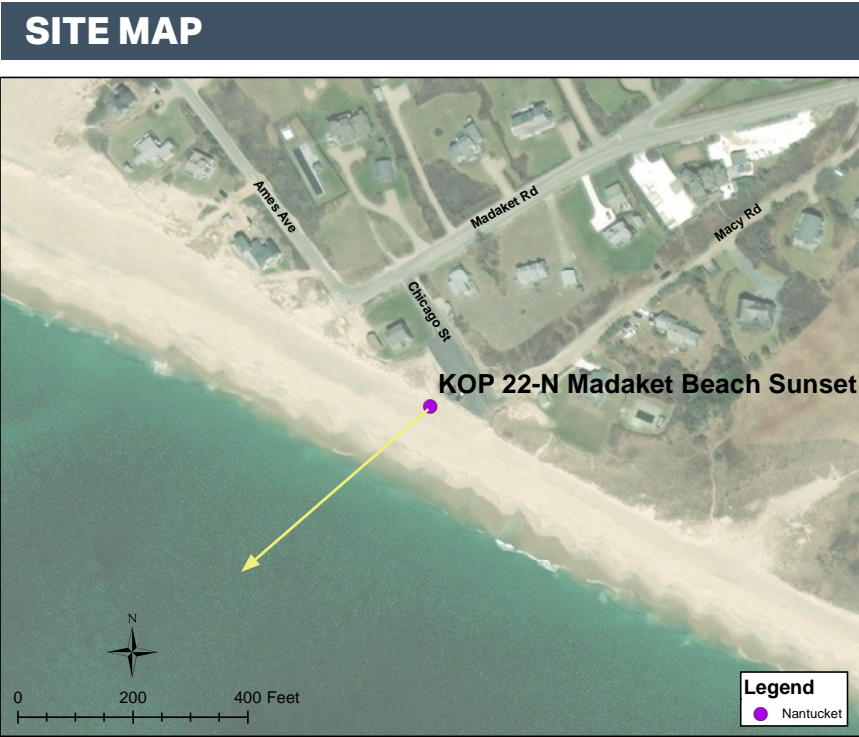
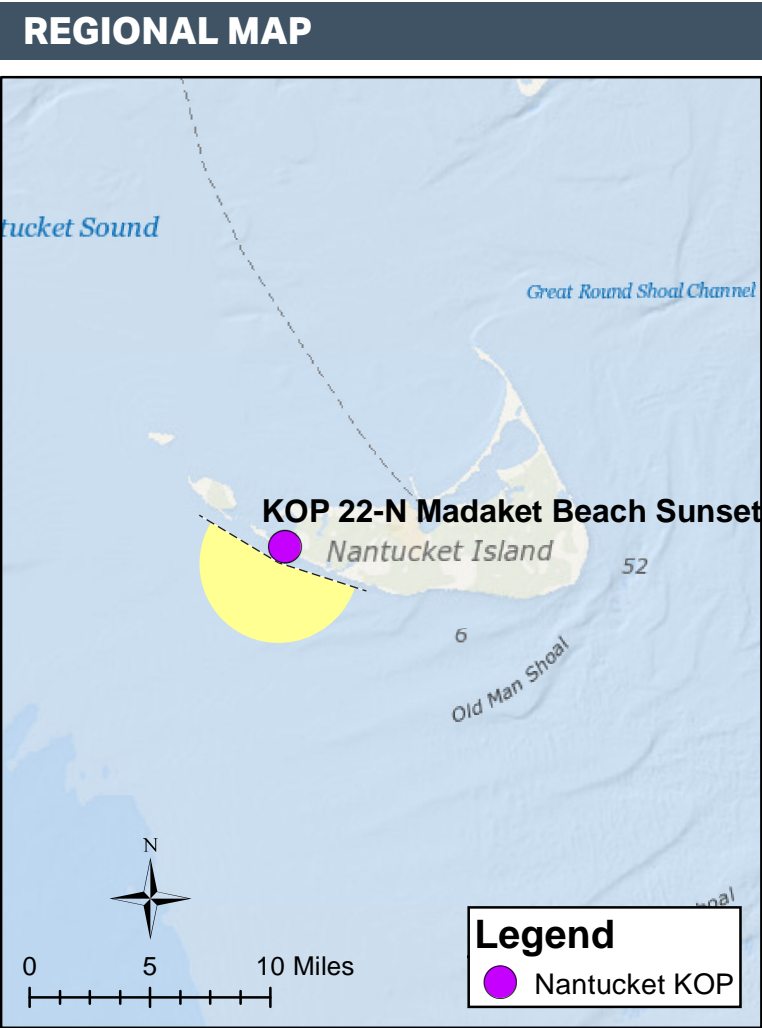
The page should viewed at 11" x 17" approximately 15" from viewer's eyes .



The page should viewed at 11" x 17" approximately 15" from viewer's eyes .

PANORAMIC PHOTOGRAPH - EXISTING CONDITIONS

1



MATCH LINES define visual simulation detail areas

A-B is shown on pages 2-3
AA-AB is shown on page 4
BB-BC is shown on page 5
CC-CD is shown on page 6

PROJECT VIEW

Horizontal Field of View: 193°	Furthest Visible WTG: 45 mi / 72 km
Vertical Field of View: 40°	Potential Number of Structures Visible: 249
Nearest WTG: 15 mi / 25 km	Potential Number of Structures Not Visible: 200

PHOTOGRAPH AND SITE

Time of photograph: 6:11PM	Viewing direction: South (228°)
Date of photograph: 7-29-20	Latitude: 41.270282°N
L/SCA: Ocean beach	Longitude: 70.201719°W
	Lighting Direction: Backlit diffused

ENVIRONMENT

Temperature: 74° F
Humidity: 79%
Wind Dir & Speed: WNW 3 mph
Weather Condition: Clear

CAMERA

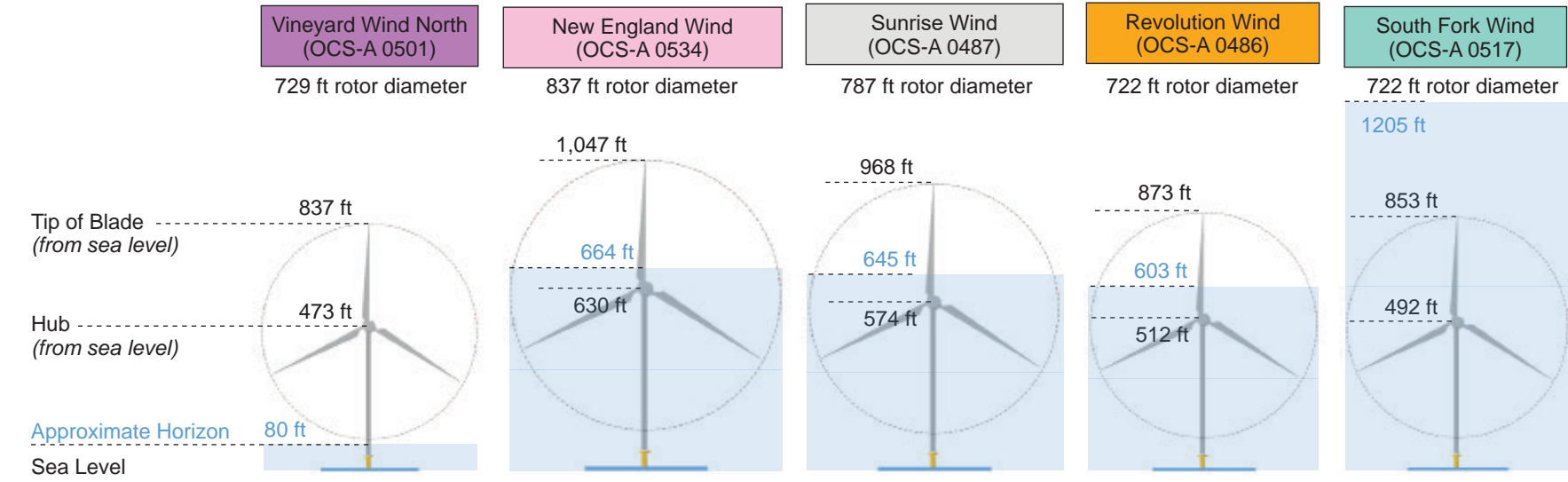
Camera Elevation: 13.5 ft / 4.1 m
Nikon D4
Nikon 50mm
ISO: 100
Fstop: f/7.1
Shutter: 1/1250 sec
Exposure bias: -0.7 step

SIMULATED CONDITIONS

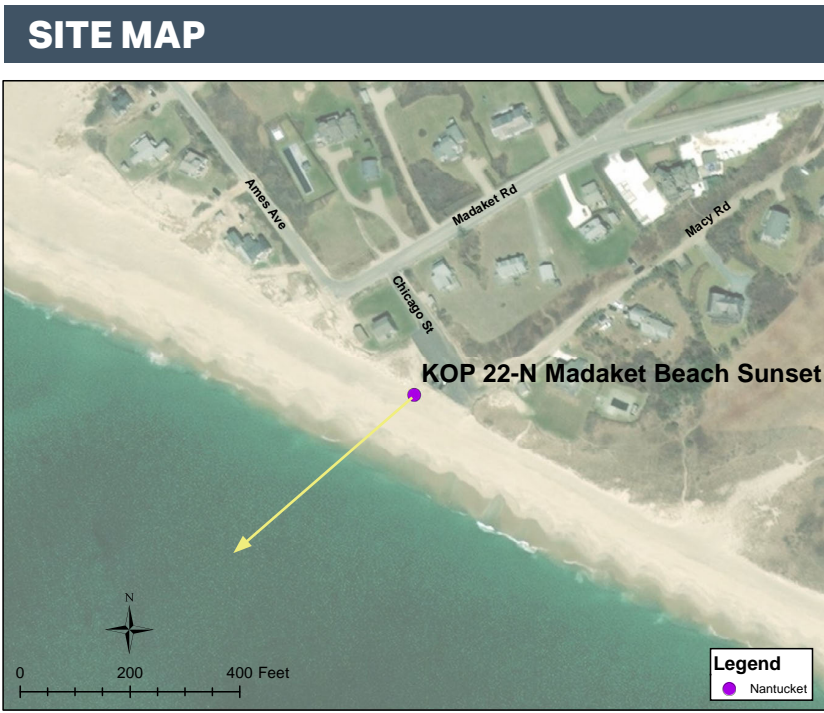
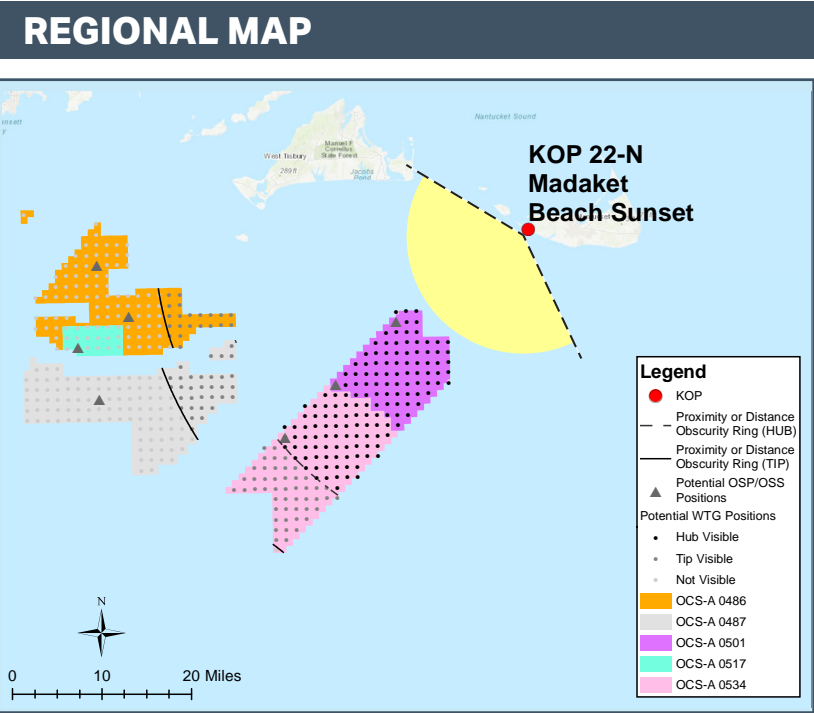
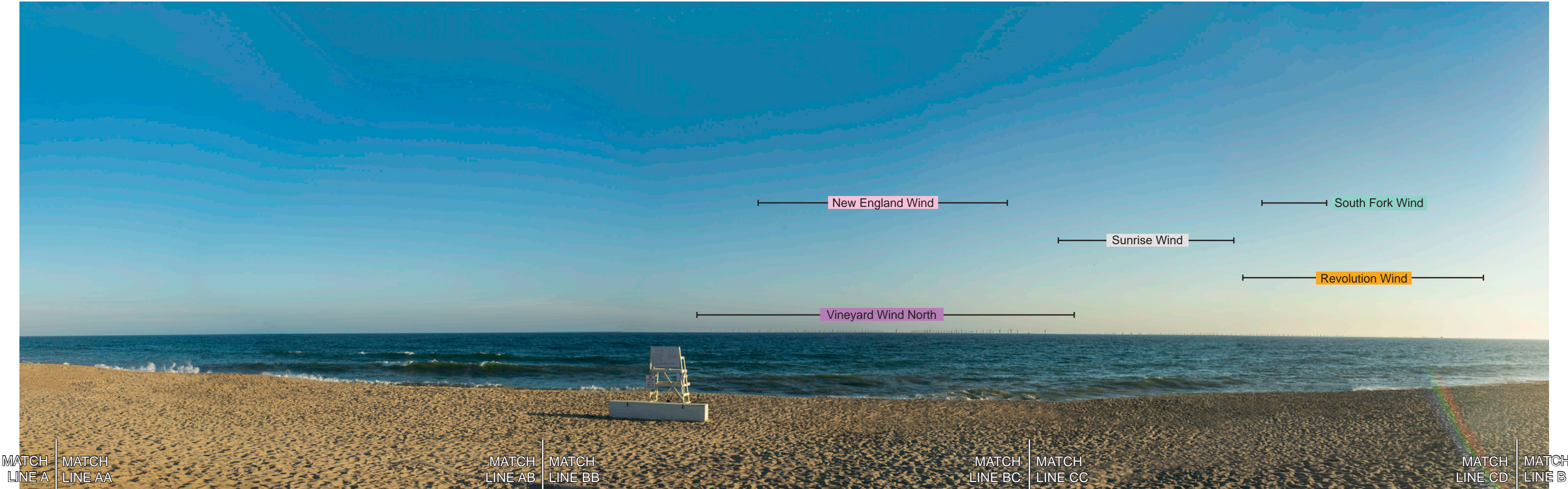
2



VISIBILTY OF CLOSEST TURBINES



Year Forecasted for Development	2023	2024 Phase II 2026	2025	2023	2023	
Number of Structures in Lease Area	77	120	131	103	18	
Number of Structures within View of KOP	77	119	32	21	0	
Distance to Closest Structure	15 mi (25 km)	36 mi (58 km)	36 mi (57 km)	35 mi (56 km)	47 mi (76 km)	
Distance to Furthest Structure	28 mi (45 km)	45 mi (72 km)	43.73 mi (70 km)	42 mi (67 km)	53 mi (85 km)	



PROJECT VIEW

Horizontal Field of View: 124°	Furthest Visible WTG: 45 mi / 72 km
Vertical Field of View: 40°	Potential Number of Structures Visible: 249
Nearest WTG: 15 mi / 25 km	Potential Number of Structures Not Visible: 200

ENVIRONMENT

Temperature: 74° F
Humidity: 79%
Wind Dir & Speed: WNW 3 mph
Weather Condition: Clear

PHOTOGRAPH AND SITE

Time of photograph: 6:11PM	Viewing direction: South (228°)
Date of photograph: 7-29-20	Latitude: 41.270282°N
L/SCA: Ocean beach	Longitude: 70.201719°W
	Lighting Direction: Backlit diffused

CAMERA

Camera Elevation: 13.5 ft / 4.1 m
Nikon D4
Nikon 50mm
ISO: 100
Fstop: f/7.1
Shutter: 1/1250 sec
Exposure bias: -0.7 step



The page should viewed at 11" x 17" approximately 15" from viewer's eyes .



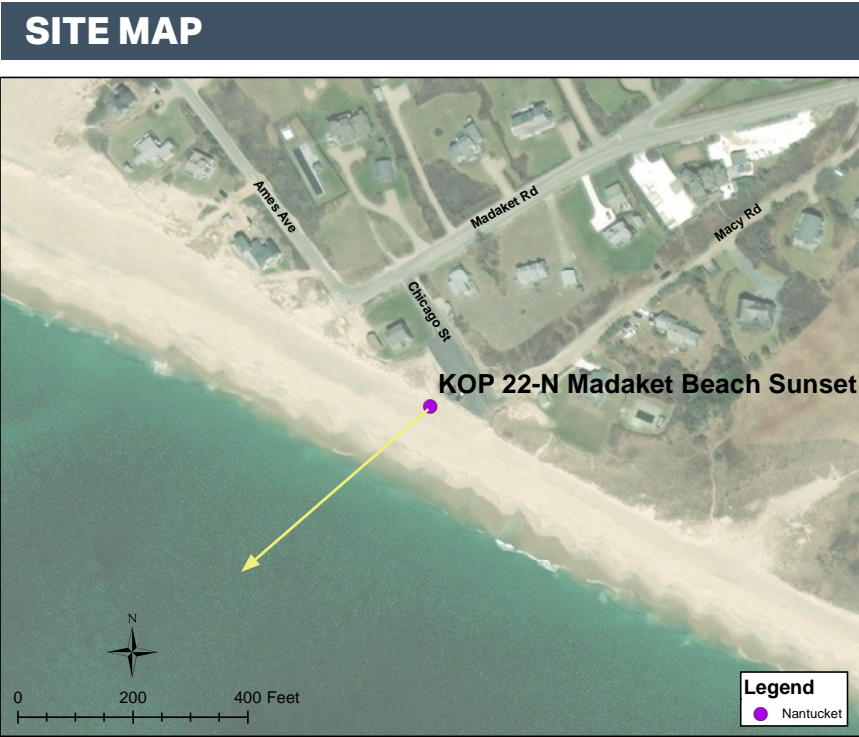
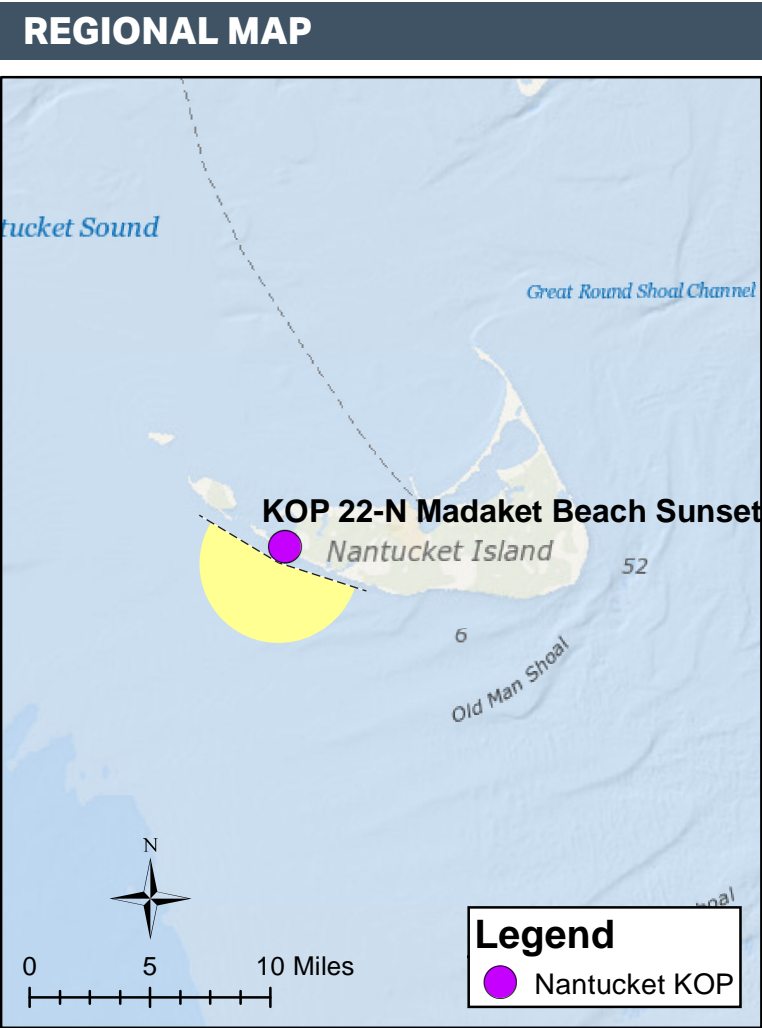
The page should viewed at 11" x 17" approximately 15" from viewer's eyes .



The page should viewed at 11" x 17" approximately 15" from viewer's eyes .

PANORAMIC PHOTOGRAPH - EXISTING CONDITIONS

1



MATCH LINES define visual simulation detail areas

A-B is shown on pages 2-3

AA-AB is shown on page 4

BB-BC is shown on page 5

CC-CD is shown on page 6

PROJECT VIEW

Horizontal Field of View: 193°	Furthest Visible WTG: 46 mi / 73 km
Vertical Field of View: 40°	Potential Number of Structures Visible: 378
Nearest WTG: 15 mi / 25 km	Potential Number of Structures Not Visible: 220

PHOTOGRAPH AND SITE

Time of photograph: 6:11 PM	Viewing direction: South (228°)
Date of photograph: 7-29-20	Latitude: 41.270282°N
L/SCA: Ocean beach	Longitude: 70.201719°W
	Lighting Direction: Backlit diffused

ENVIRONMENT

Temperature: 74° F
Humidity: 79%
Wind Dir & Speed: WNW 3 mph
Weather Condition: Clear

CAMERA

Camera Elevation: 13.5 ft / 4.1 m
Nikon D4
Nikon 50mm
ISO: 100
Fstop: f/7.1
Shutter: 1/1250 sec
Exposure bias: -0.7 step

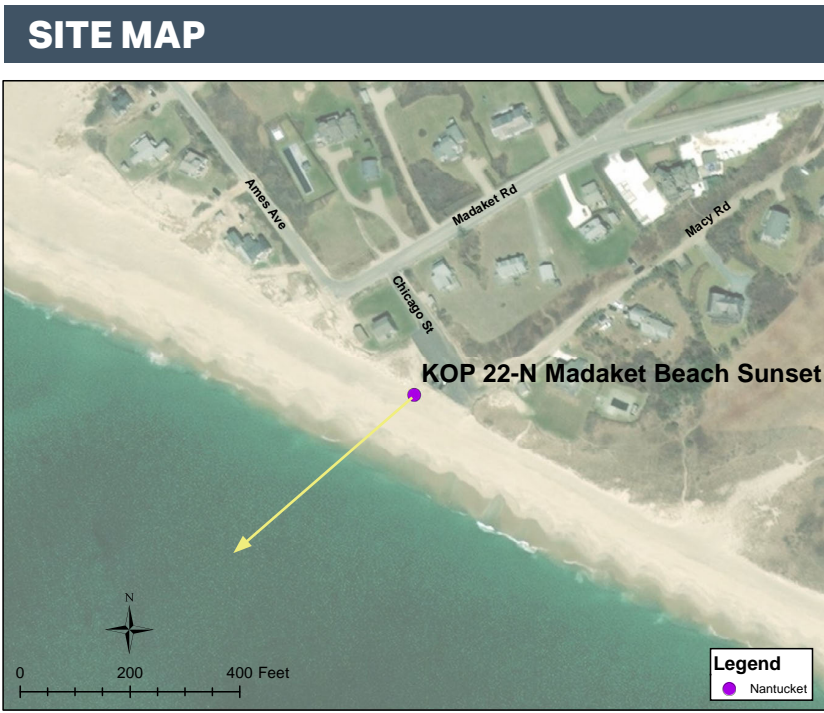
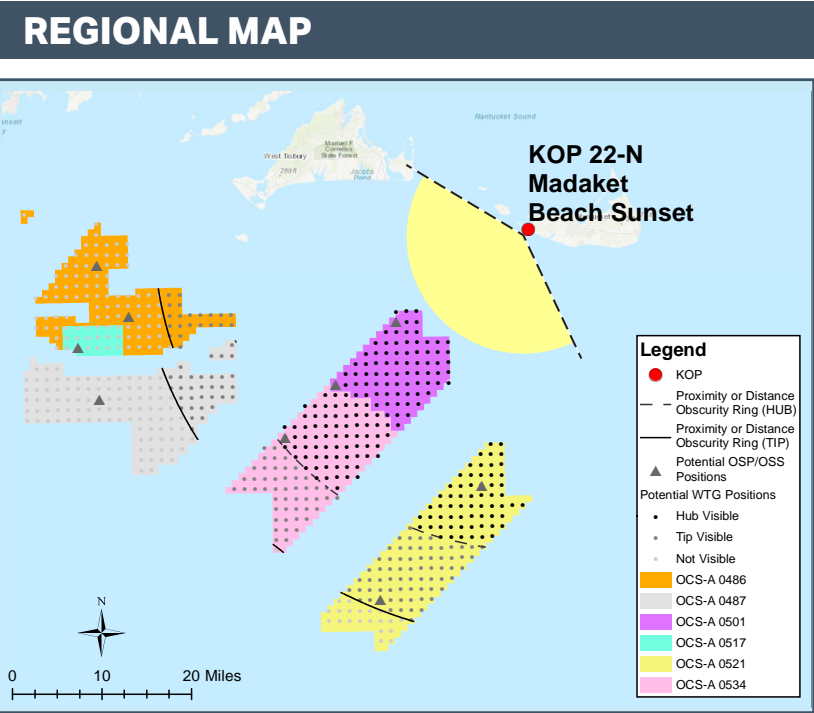
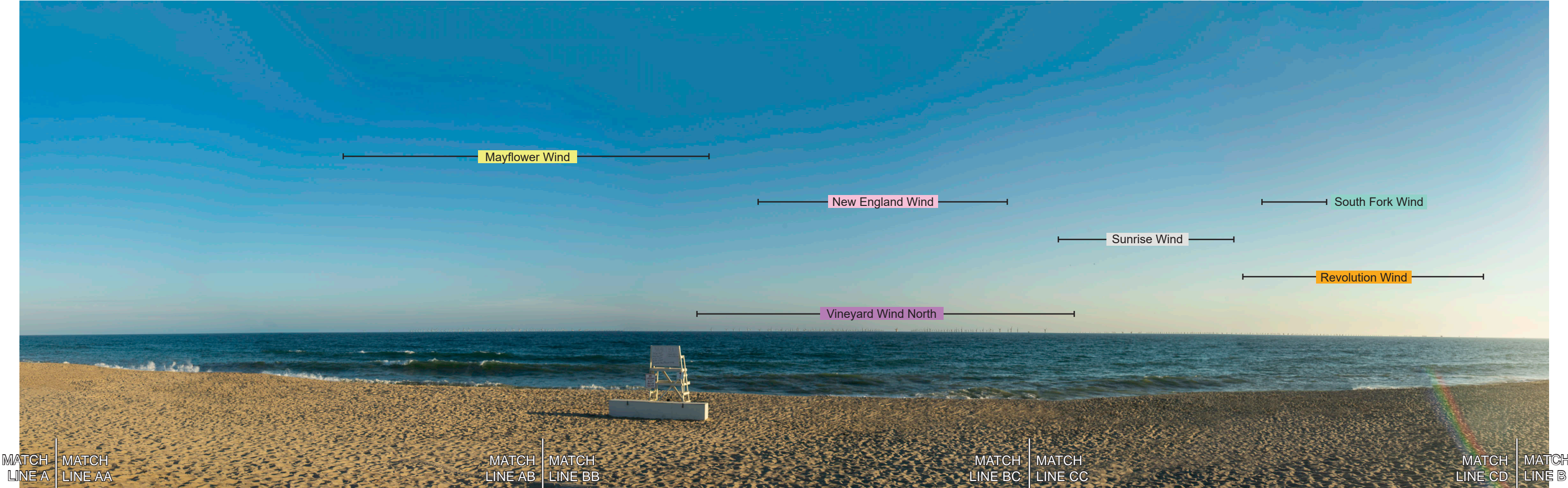
SIMULATED CONDITIONS

2



VISIBILTY OF CLOSEST TURBINES

	Mayflower Wind (OCS-A 0521)	Vineyard Wind North (OCS-A 0501)	New England Wind (OCS-A 0534)	Sunrise Wind (OCS-A 0487)	Revolution Wind (OCS-A 0486)	South Fork Wind (OCS-A 0517)	
	919 ft rotor diameter	729 ft rotor diameter	837 ft rotor diameter	787 ft rotor diameter	722 ft rotor diameter	722 ft rotor diameter	
Tip of Blade (from sea level)	1,066 ft	837 ft	1,047 ft	968 ft	873 ft	1205 ft	
Hub (from sea level)	605 ft	473 ft	630 ft	574 ft	512 ft	492 ft	
Approximate Horizon	264 ft	80 ft					
Sea Level							
Year Forecasted for Development	2025	2023	2024 Phase II 2026	2025	2023	2023	
Number of Structures in Lease Area	149	77	120	131	103	18	
Number of Structures within View of KOP	129	77	119	32	21	0	
Distance to Closest Structure	24 mi (39 km)	15 mi (25 km)	36 mi (58 km)	36 mi (57 km)	35 mi (56 km)	47 mi (76 km)	
Distance to Furthest Structure	46 mi (73 km)	28 mi (45 km)	45 mi (72 km)	43.73 mi (70 km)	42 mi (67 km)	53 mi (85 km)	



PROJECT VIEW

Horizontal Field of View: 124°	Furthest Visible WTG: 46 mi / 73 km
Vertical Field of View: 40°	Potential Number of Structures Visible: 378
Nearest WTG: 15 mi / 25 km	Potential Number of Structures Not Visible: 220

ENVIRONMENT

Temperature: 74° F
Humidity: 79%
Wind Dir & Speed: WNW 3 mph
Weather Condition: Clear

PHOTOGRAPH AND SITE

Time of photograph: 6:11PM	Viewing direction: South (228°)
Date of photograph: 7-29-20	Latitude: 41.270282°N
L/SCA: Ocean beach	Longitude: 70.201719°W
	Lighting Direction: Backlit diffused

CAMERA

Camera Elevation: 13.5 ft / 4.1 m
Nikon D4
Nikon 50mm
ISO: 100
Fstop: f/7.1
Shutter: 1/1250 sec
Exposure bias: -0.7 step



MATCH
LINE A

MATCH
LINE AB

MATCH
LINE BB



MATCH
LINE AB

MATCH
LINE BB

MATCH
LINE BC

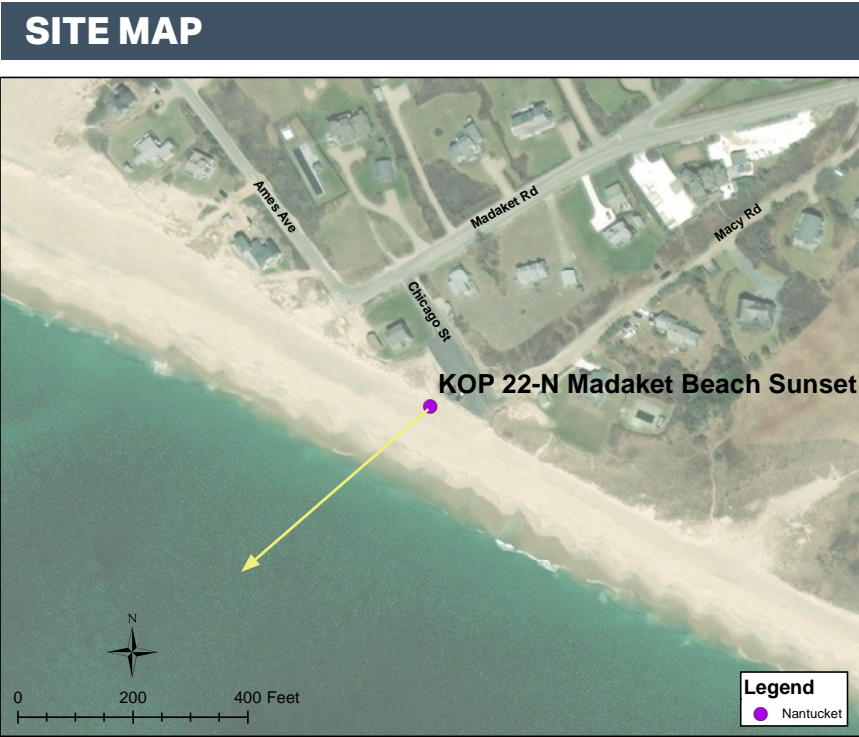
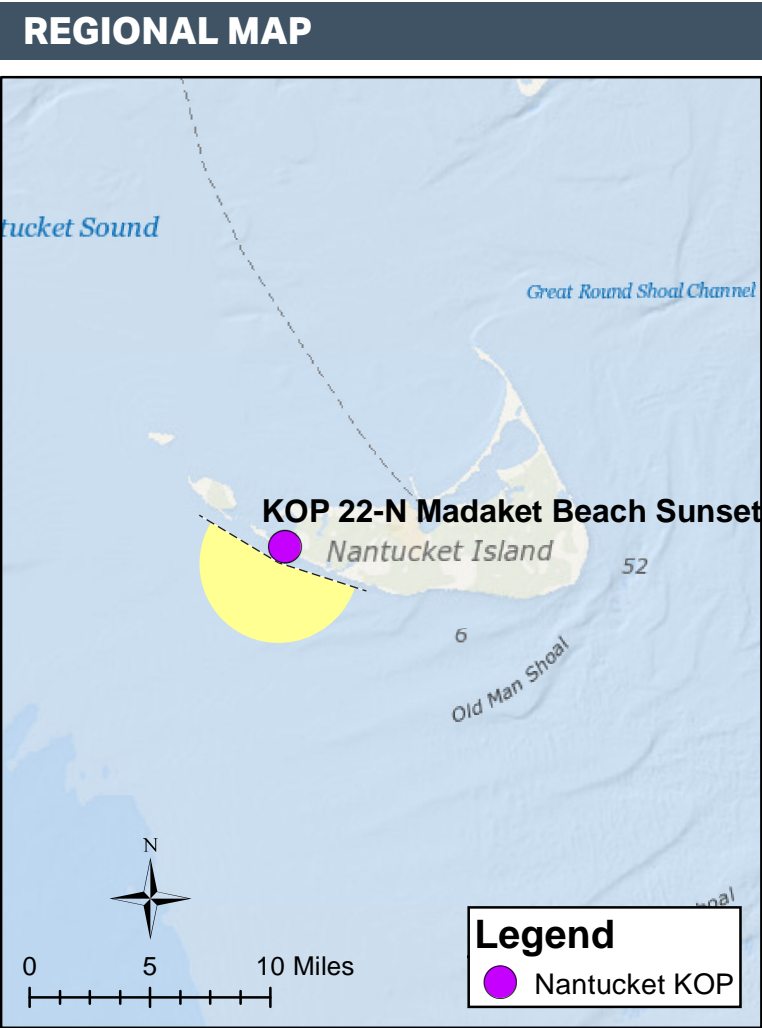
MATCH
LINE CC



The page should viewed at 11" x 17" approximately 15" from viewer's eyes .

PANORAMIC PHOTOGRAPH - EXISTING CONDITIONS

1



MATCH LINES define visual simulation detail areas

A-B is shown on pages 2-3

AA-AB is shown on page 4

BB-BC is shown on page 5

CC-CD is shown on page 6

PROJECT VIEW

Horizontal Field of View: 193°	Furthest Visible WTG: 46 mi / 74 km
Vertical Field of View: 40°	Potential Number of Structures Visible: 743
Nearest WTG: 15 mi / 25 km	Potential Number of Structures Not Visible: 320

PHOTOGRAPH AND SITE

Time of photograph: 6:11 PM	Viewing direction: South (228°)
Date of photograph: 7-29-20	Latitude: 41.270282°N
L/SCA: Ocean beach	Longitude: 70.201719°W
	Lighting Direction: Backlit diffused

ENVIRONMENT

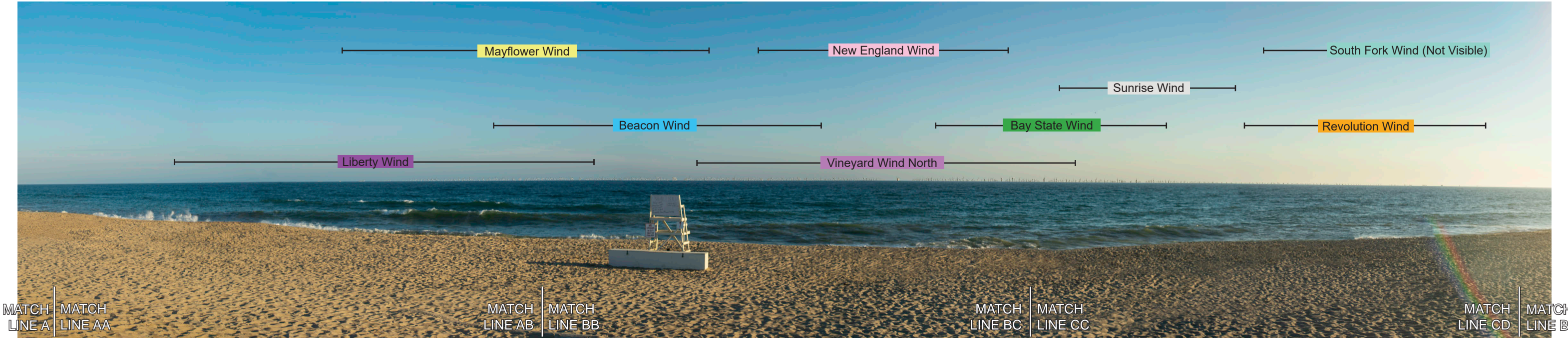
Temperature: 74° F
Humidity: 79%
Wind Dir & Speed: WNW 3 mph
Weather Condition: Clear

CAMERA

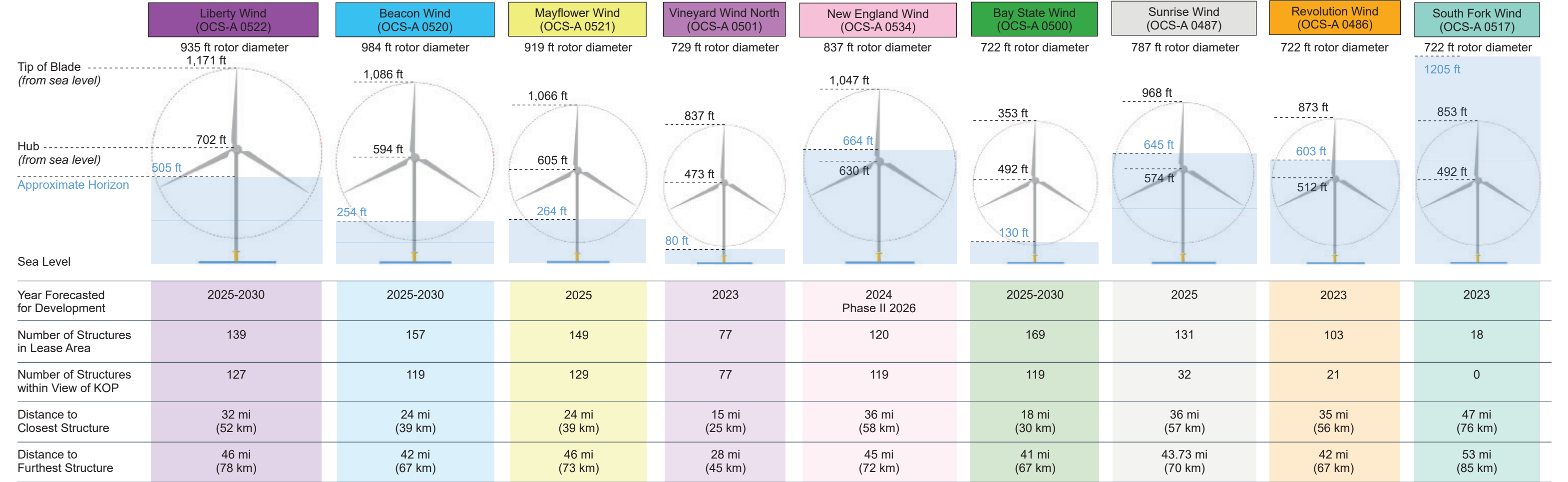
Camera Elevation: 13.5 ft / 4.1 m
Nikon D4
Nikon 50mm
ISO: 100
Fstop: f/7.1
Shutter: 1/1250 sec
Exposure bias: -0.7 step

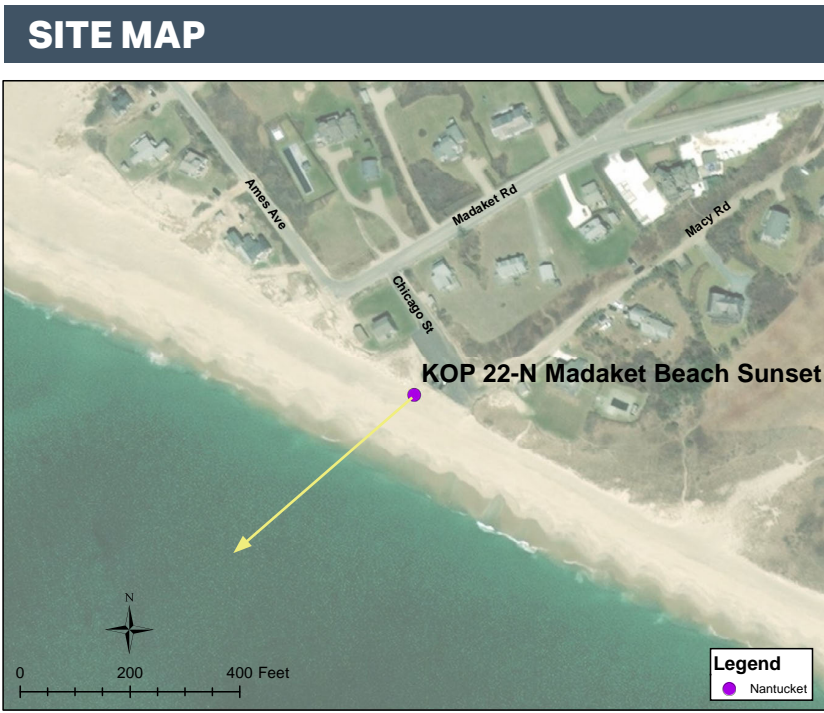
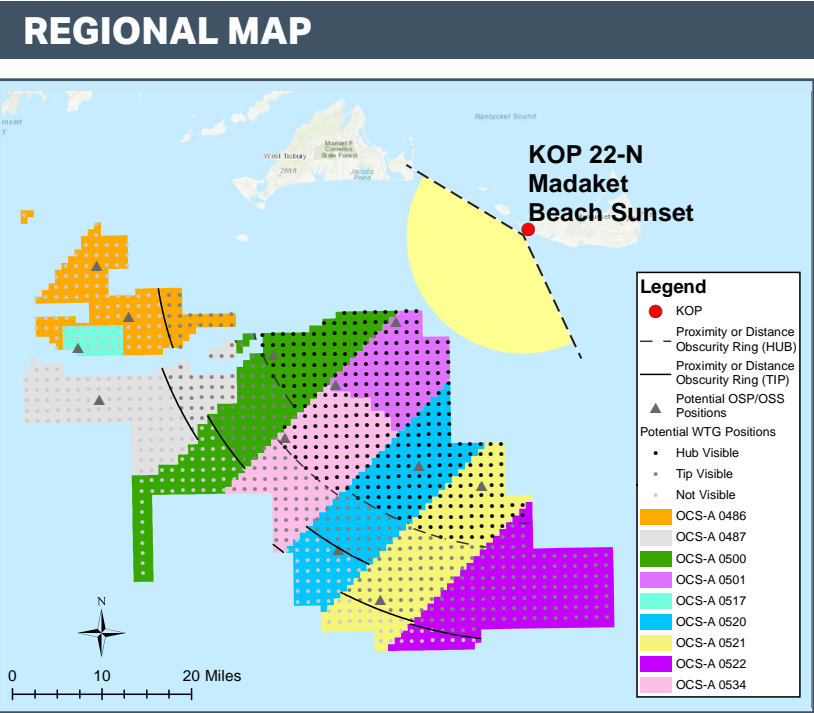
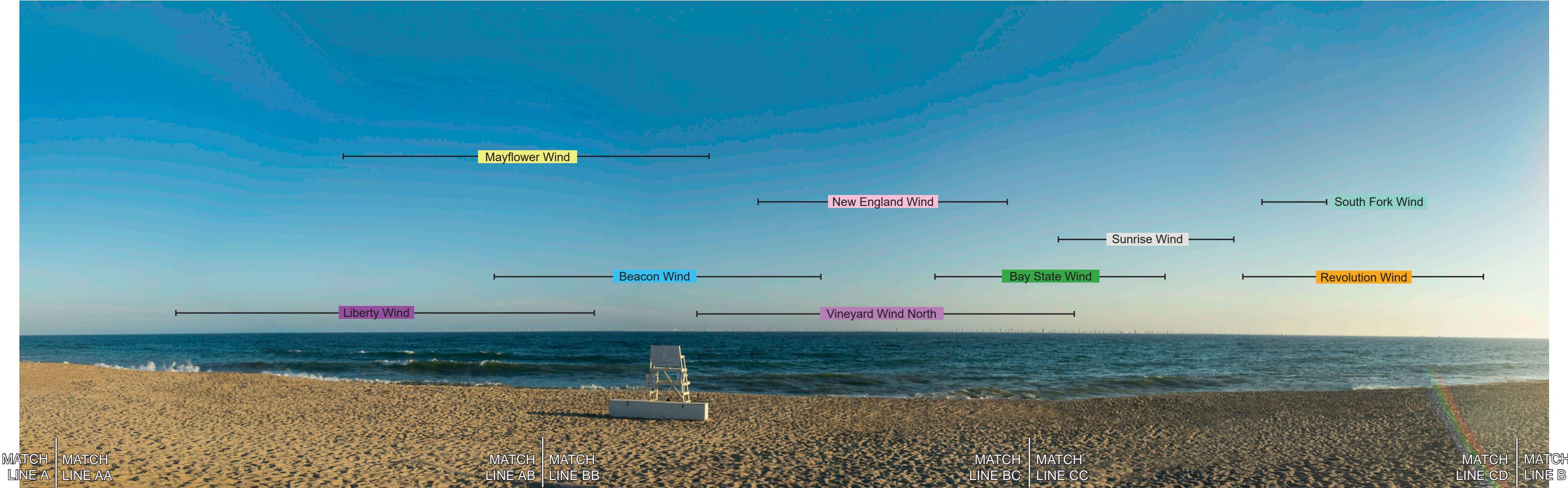
SIMULATED CONDITIONS

2



VISIBILTY OF CLOSEST TURBINES





PROJECT VIEW

Horizontal Field of View: 124°	Furthest Visible WTG: 46 mi / 74 km
Vertical Field of View: 40°	Potential Number of Structures Visible: 743
Nearest WTG: 15 mi / 25 km	Potential Number of Structures Not Visible: 320

ENVIRONMENT

Temperature: 74° F
Humidity: 79%
Wind Dir & Speed: WNW 3 mph
Weather Condition: Clear

PHOTOGRAPH AND SITE

Time of photograph: 6:11PM	Viewing direction: South (228°)
Date of photograph: 7-29-20	Latitude: 41.270282°N
L/SCA: Ocean beach	Longitude: 70.201719°W
	Lighting Direction: Backlit diffused

CAMERA

Camera Elevation: 13.5 ft / 4.1 m
Nikon D4
Nikon 50mm
ISO: 100
Fstop: f/7.1
Shutter: 1/1250 sec
Exposure bias: -0.7 step



The page should viewed at 11" x 17" approximately 15" from viewer's eyes .



MATCH
LINE AB

MATCH
LINE BB

MATCH
LINE BC

MATCH
LINE CC

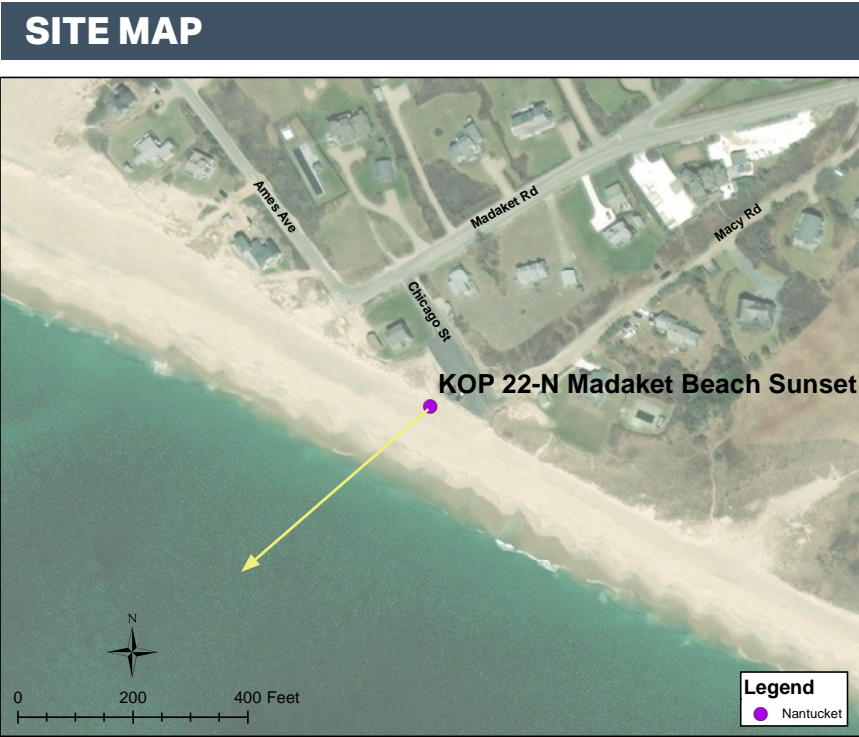
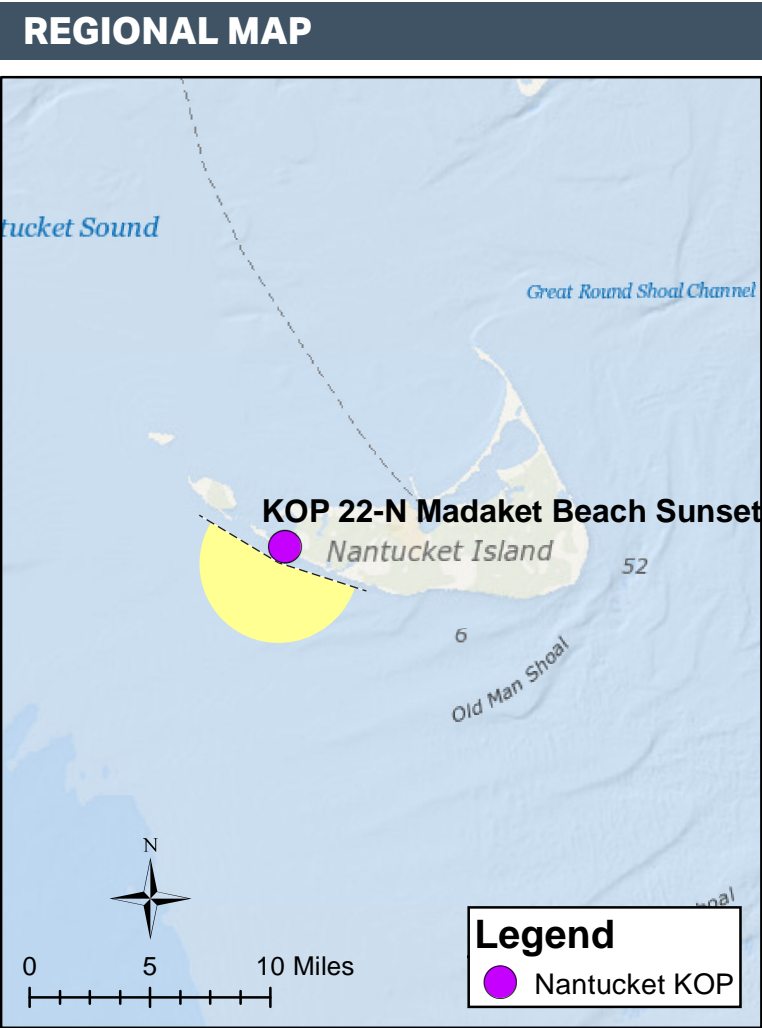
The page should viewed at 11" x 17" approximately 15" from viewer's eyes .



The page should viewed at 11" x 17" approximately 15" from viewer's eyes .

PANORAMIC PHOTOGRAPH - EXISTING CONDITIONS

1



MATCH LINES define visual simulation detail areas

- A-B is shown on pages 2-3
- AA-AB is shown on page 4
- BB-BC is shown on page 5
- CC-CD is shown on page 6

PROJECT VIEW

Horizontal Field of View: 193°	Furthest Visible WTG: 46 mi / 74 km
Vertical Field of View: 40°	Potential Number of Structures Visible: 614
Nearest WTG: 15 mi / 25 km	Potential Number of Structures Not Visible: 300

PHOTOGRAPH AND SITE

Time of photograph: 6:11PM	Viewing direction: South (228°)
Date of photograph: 7-29-20	Latitude: 41.270282°N
L/SCA: Ocean beach	Longitude: 70.201719°W
	Lighting Direction: Backlit diffused

ENVIRONMENT

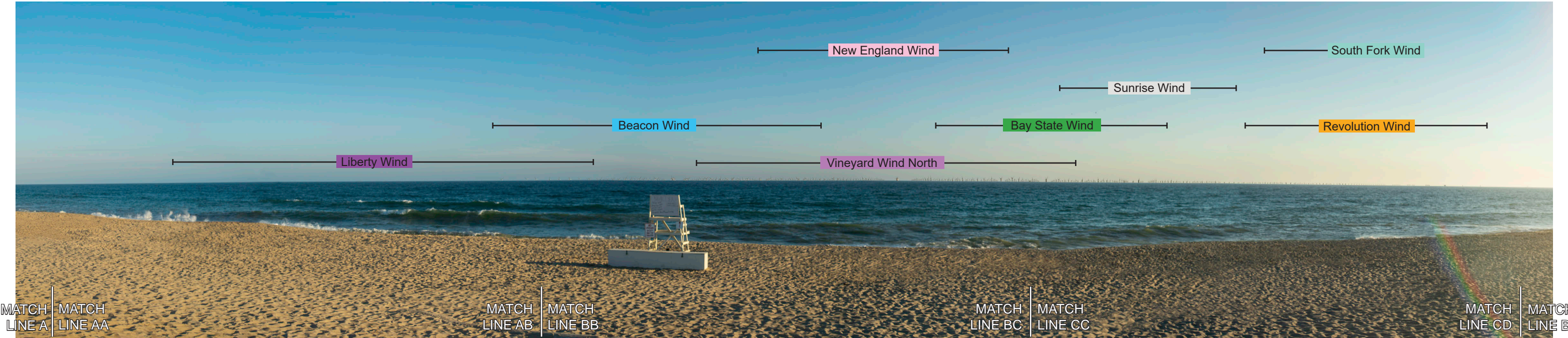
Temperature: 74° F
Humidity: 79%
Wind Dir & Speed: WNW 3 mph
Weather Condition: Clear

CAMERA

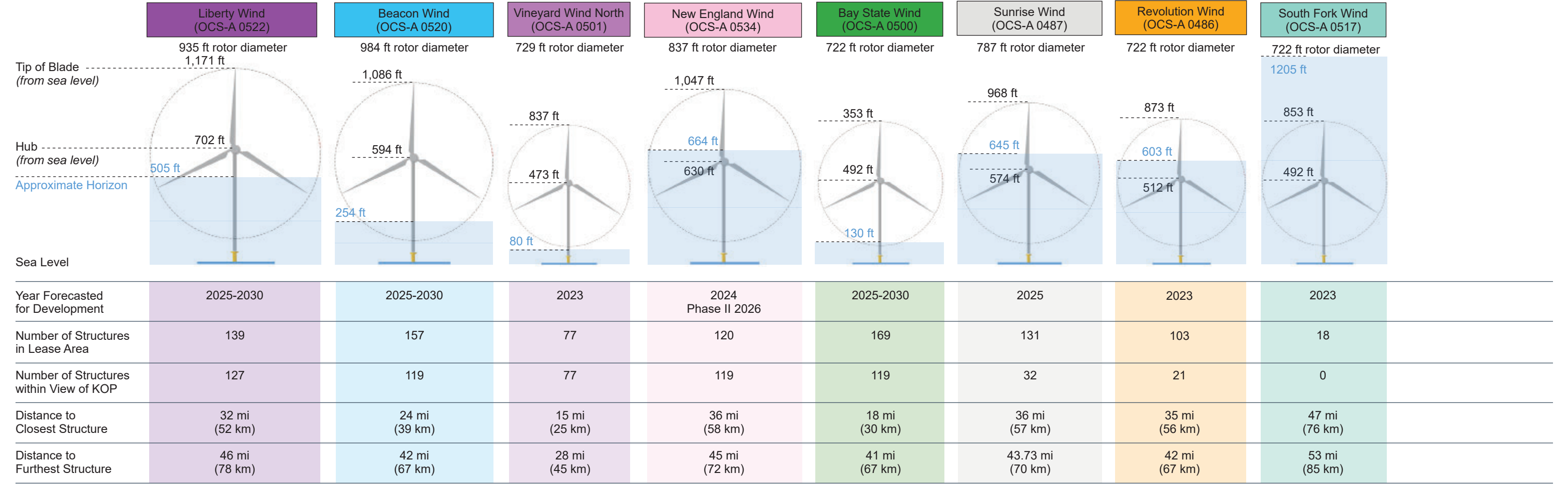
Camera Elevation: 13.5 ft / 4.1 m
Nikon D4
Nikon 50mm
ISO: 100
Fstop: f/7.1
Shutter: 1/1250 sec
Exposure bias: -0.7 step

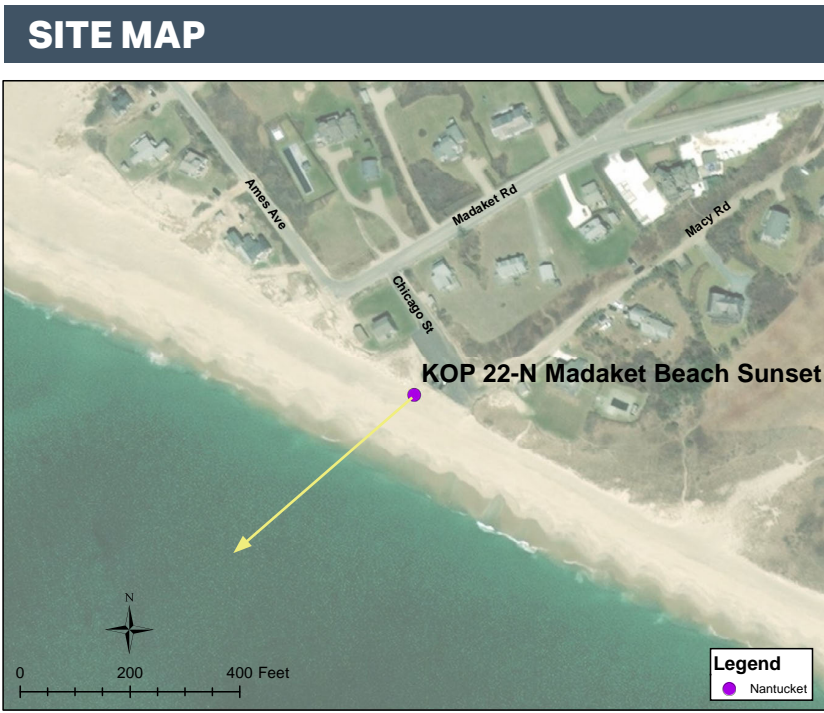
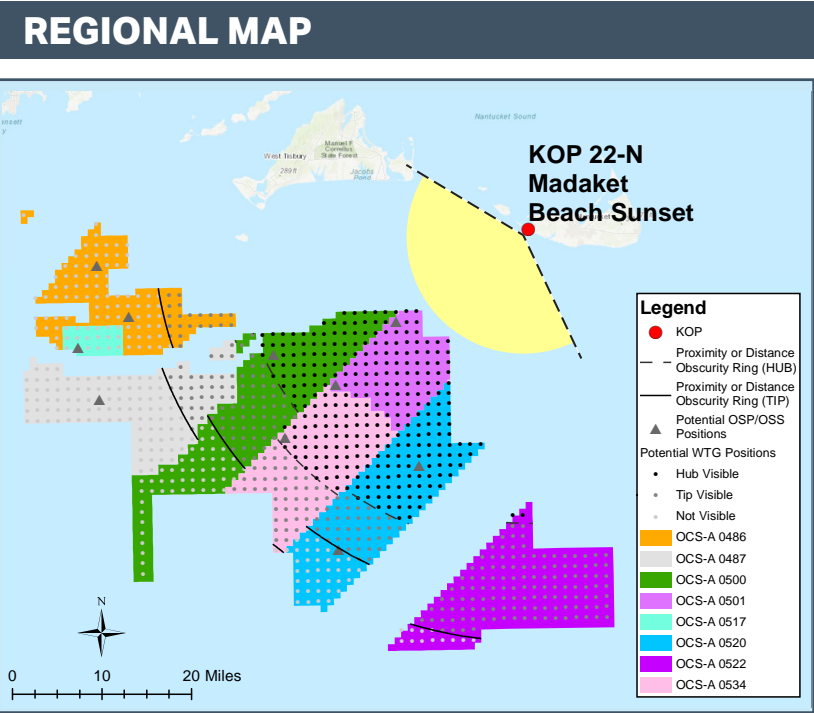
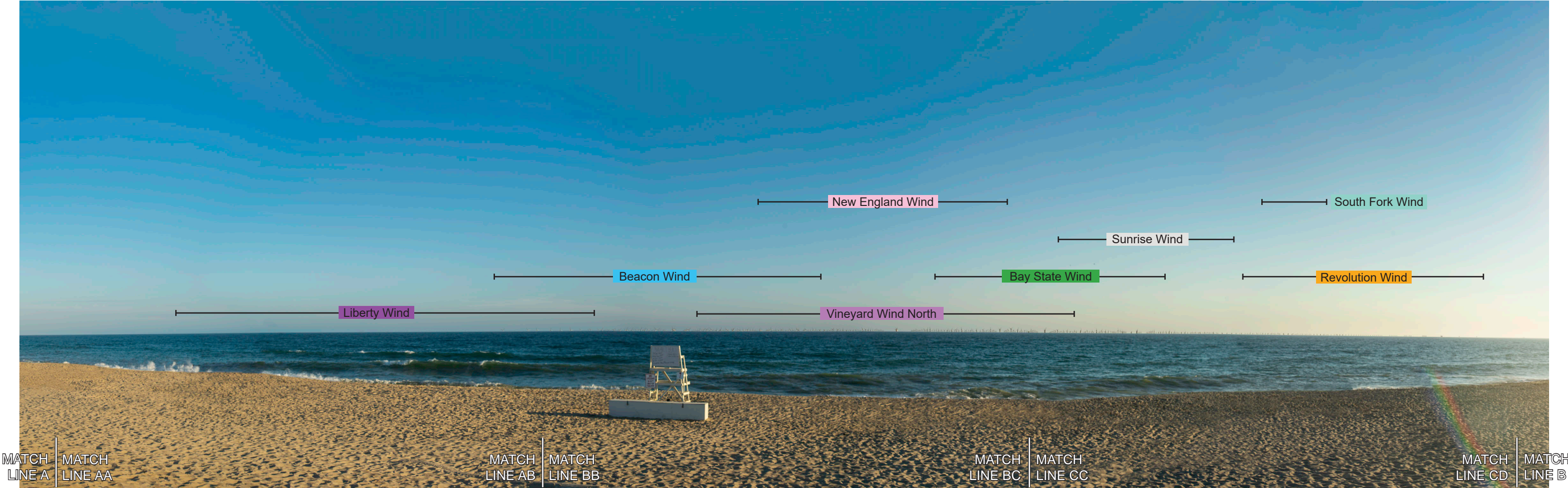
SIMULATED CONDITIONS

2



VISIBILTY OF CLOSEST TURBINES





PROJECT VIEW

Horizontal Field of View: 124°	Furthest Visible WTG: 46 mi / 74 km
Vertical Field of View: 40°	Potential Number of Structures Visible: 614
Nearest WTG: 15 mi / 25 km	Potential Number of Structures Not Visible: 300

ENVIRONMENT

Temperature: 74° F
Humidity: 79%
Wind Dir & Speed: WNW 3 mph
Weather Condition: Clear

PHOTOGRAPH AND SITE

Time of photograph: 6:11PM	Viewing direction: South (228°)
Date of photograph: 7-29-20	Latitude: 41.270282°N
L/SCA: Ocean beach	Longitude: 70.201719°W
	Lighting Direction: Backlit diffused

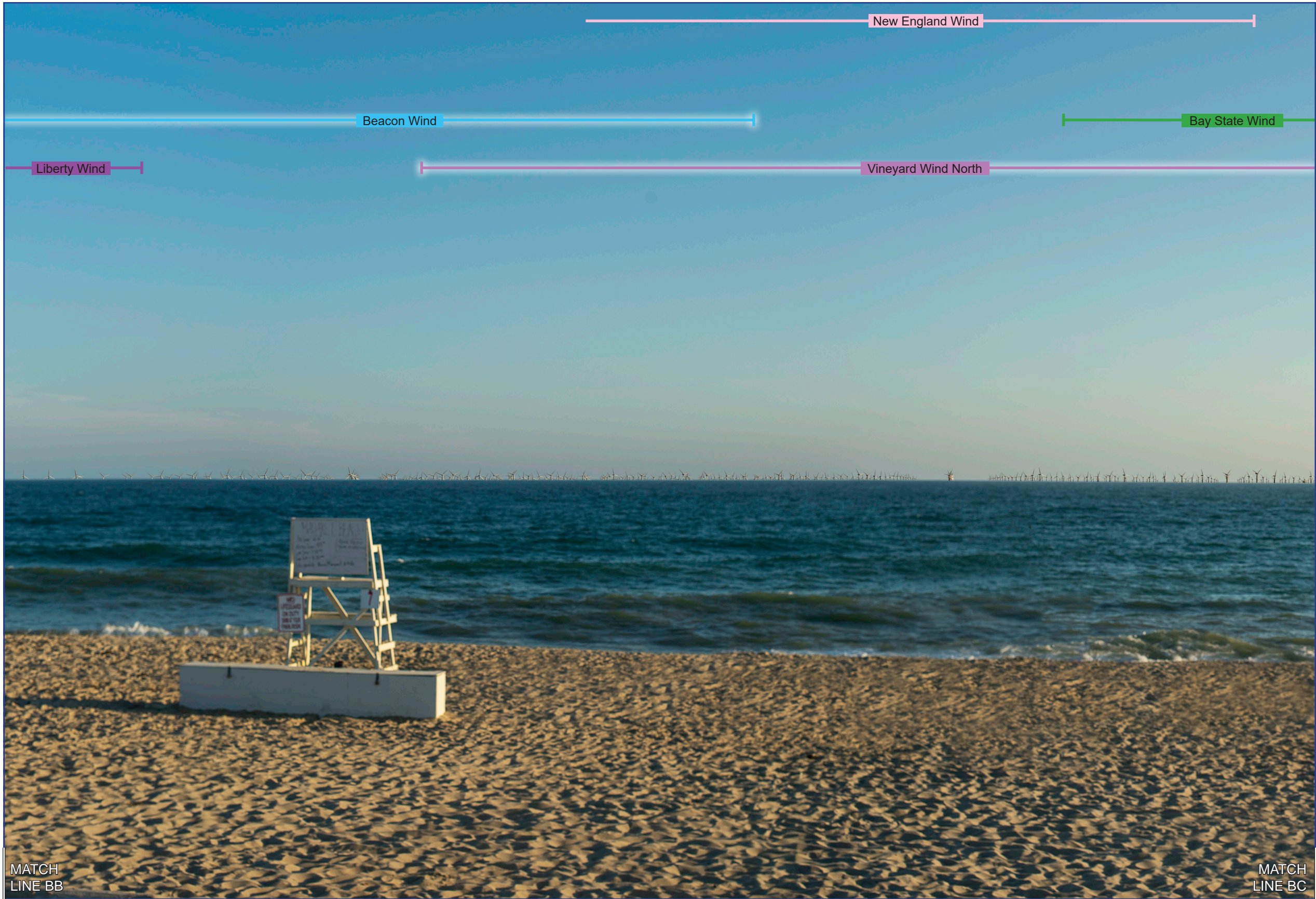
CAMERA

Camera Elevation: 13.5 ft / 4.1 m
Nikon D4
Nikon 50mm
ISO: 100
Fstop: f/7.1
Shutter: 1/1250 sec
Exposure bias: -0.7 step

SIMULATED CONDITIONS



The page should viewed at 11" x 17" approximately 15" from viewer's eyes .



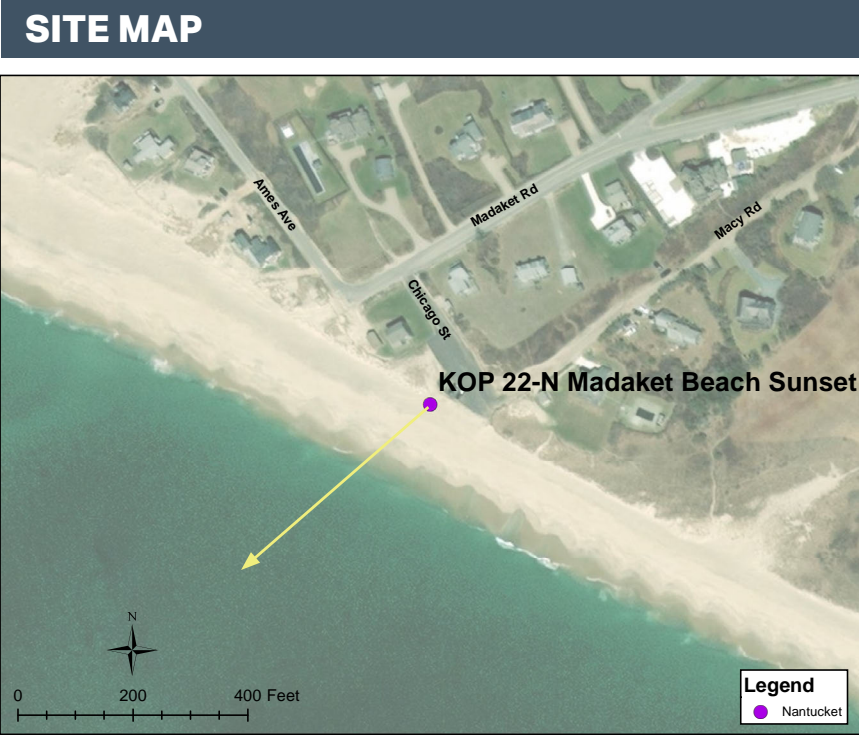
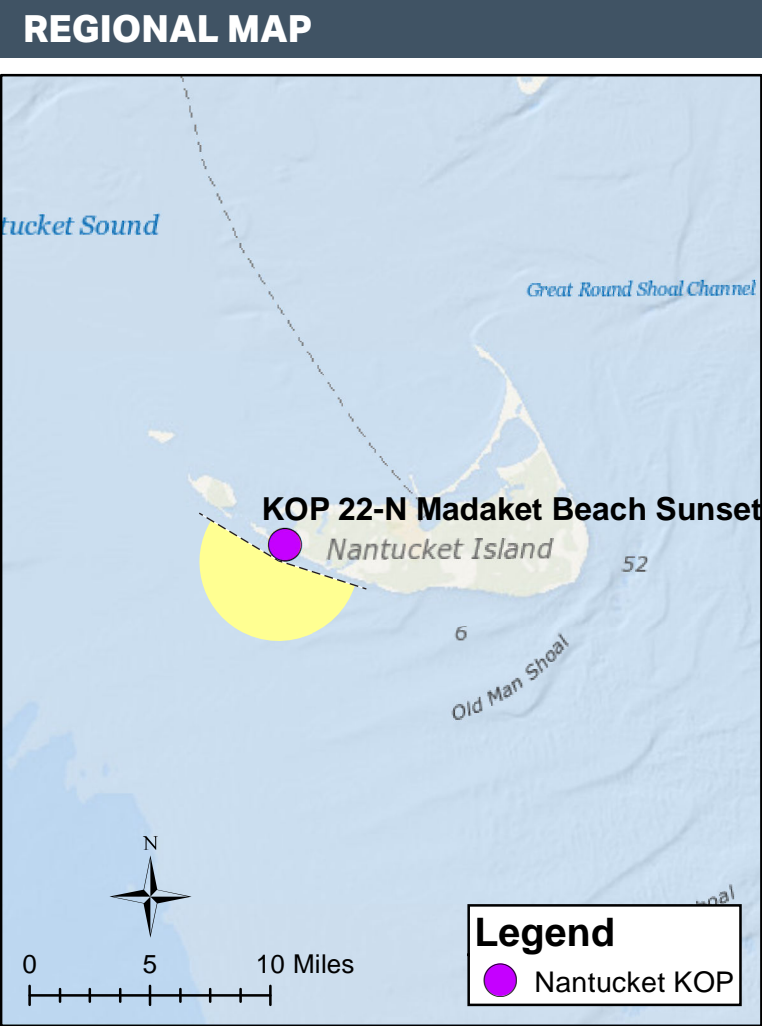
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The page should viewed at 11" x 17" approximately 15" from viewer's eyes .

PANORAMIC PHOTOGRAPH - EXISTING CONDITIONS

1



MATCH LINES define visual simulation detail areas

- A-B is shown on pages 2-3
- AA-AB is shown on page 4
- BB-BC is shown on page 5
- CC-CD is shown on page 6

PROJECT VIEW

Horizontal Field of View: 193°	Furthest Visible WTG: 46 mi / 73 km
Vertical Field of View: 40°	Potential Number of Structures Visible: 129
Nearest WTG: 24 mi / 39 km	Potential Number of Structures Not Visible: 20

PHOTOGRAPH AND SITE

Time of photograph: 6:11PM	Viewing direction: South (228°)
Date of photograph: 7-29-20	Latitude: 41.270282°N
L/SCA: Ocean beach	Longitude: 70.201719°W
	Lighting Direction: Backlit diffused

ENVIRONMENT

Temperature: 74° F
Humidity: 79%
Wind Dir & Speed: WNW 3 mph
Weather Condition: Clear

CAMERA

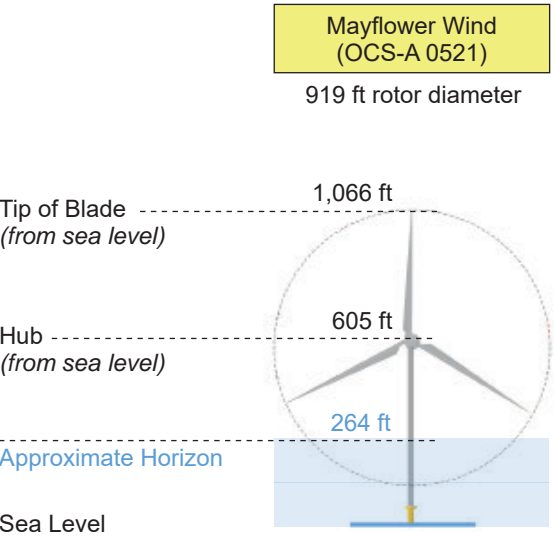
Camera Elevation: 13.5 ft / 4.1 m
Nikon D4
Nikon 50mm
ISO: 100
Fstop: f/7.1
Shutter: 1/1250 sec
Exposure bias: -0.7 step

SIMULATED CONDITIONS

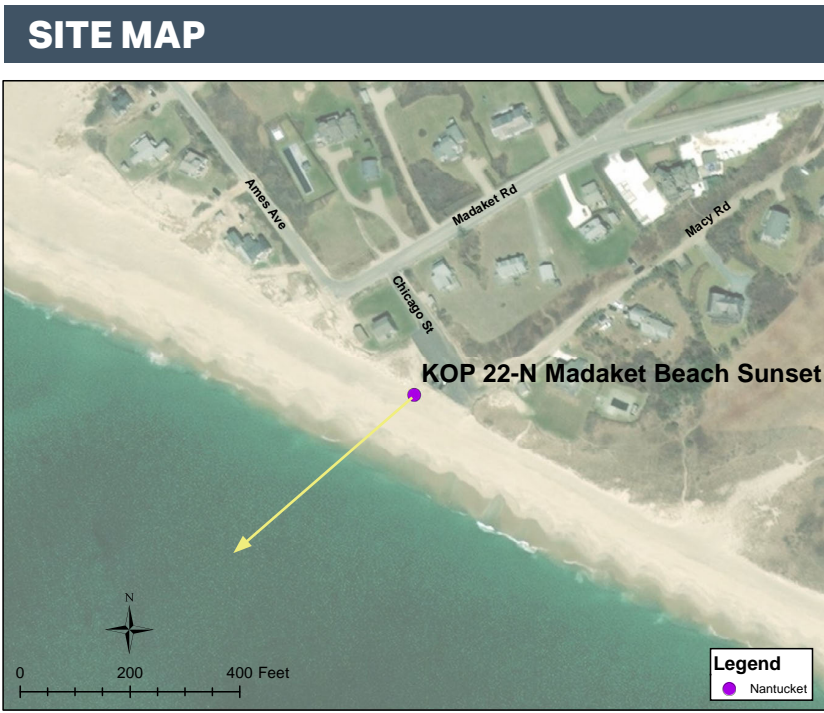
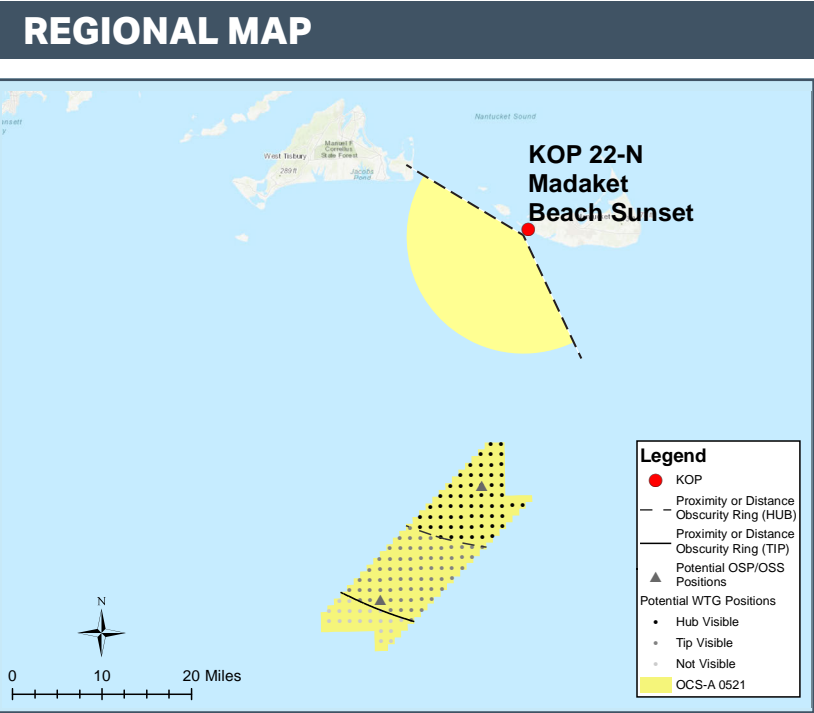
2



VISIBILTY OF CLOSEST TURBINES



Year Forecasted for Development	2025	
Number of Structures in Lease Area	149	
Number of Structures within View of KOP	129	
Distance to Closest Structure	24 mi (39 km)	
Distance to Furthest Structure	46 mi (73 km)	



PROJECT VIEW

Horizontal Field of View: 127°	Furthest Visible WTG: 46 mi / 73 km
Vertical Field of View: 40°	Potential Number of Structures Visible: 129
Nearest WTG: 24 mi / 39 km	Potential Number of Structures Not Visible: 20

ENVIRONMENT

Temperature: 74° F
Humidity: 79%
Wind Dir & Speed: WNW 3 mph
Weather Condition: Clear

PHOTOGRAPH AND SITE

Time of photograph: 6:11PM	Viewing direction: South (228°)
Date of photograph: 7-29-20	Latitude: 41.270282°N
L/SCA: Ocean beach	Longitude: 70.201719°W
	Lighting Direction: Backlit diffused

CAMERA

Camera Elevation: 13.5 ft / 4.1 m
Nikon D4
Nikon 50mm
ISO: 100
Fstop: f/7.1
Shutter: 1/1250 sec
Exposure bias: -0.7 step



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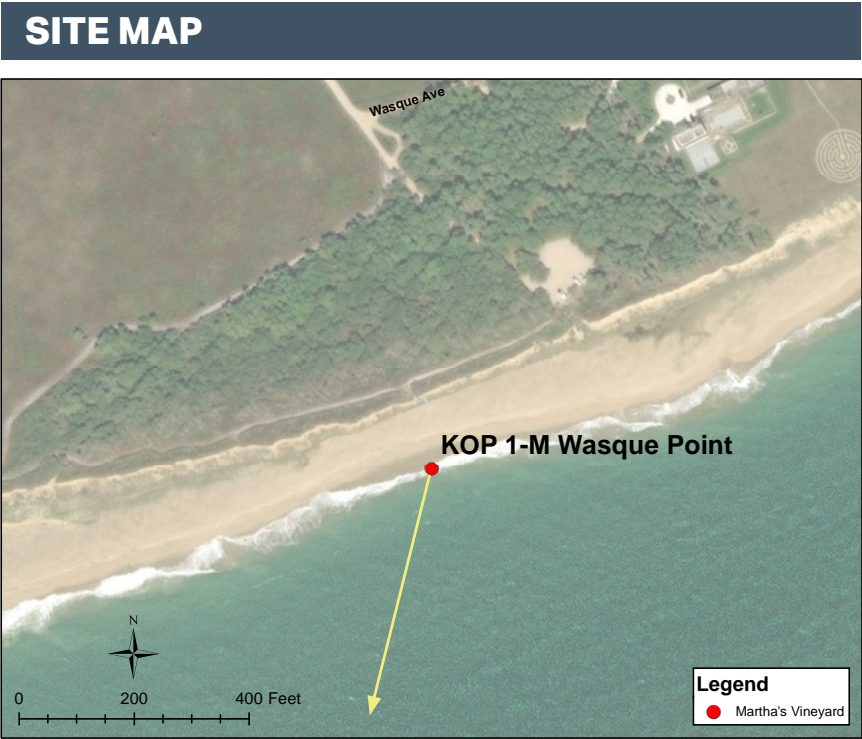
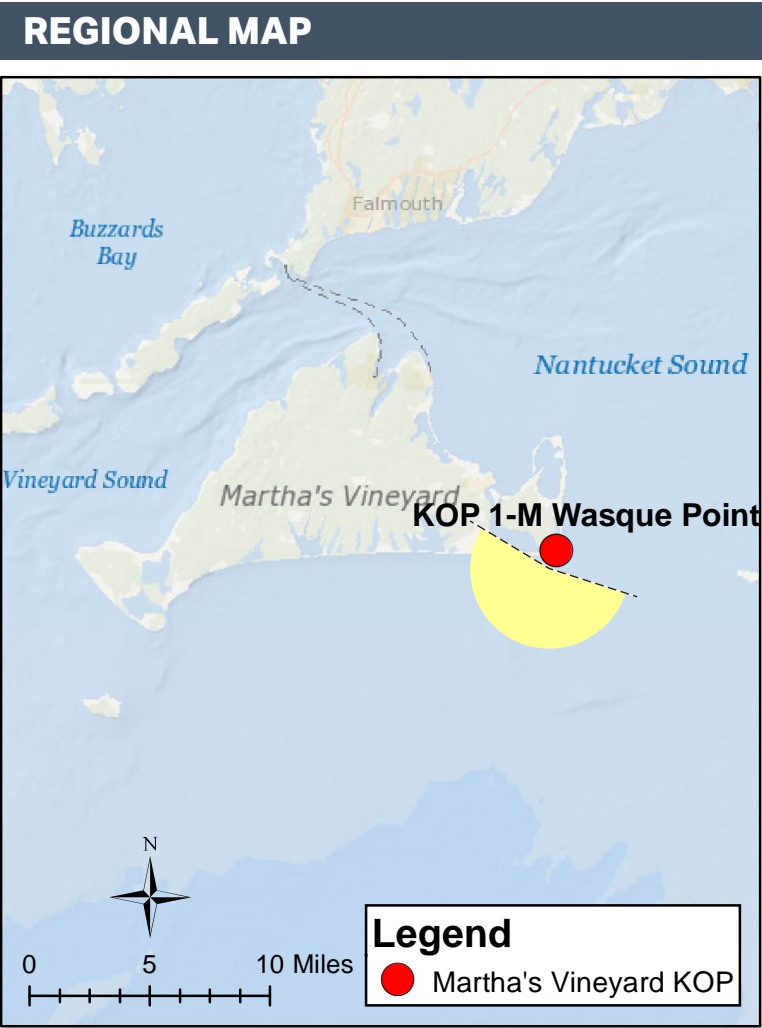
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PANORAMIC PHOTOGRAPH - EXISTING CONDITIONS

1



MATCH LINES define visual simulation detail areas

A-B is shown on pages 2-3

AA-AB is shown on page 4

BB-BC is shown on page 5

CC-CD is shown on page 6

PROJECT VIEW

Horizontal Field of View: 193°	Furthest Visible WTG: 43 mi / 69 km
Vertical Field of View: 40°	Potential Number of Structures Visible: 352
Nearest WTG: 15 mi / 24 km	Potential Number of Structures Not Visible: 95

PHOTOGRAPH AND SITE

Time of photograph: 9:01AM	Viewing direction: South (194°)
Date of photograph: 6-25-20	Latitude: 41.351077°N
L/SCA: Ocean Beach, Costal Scrub, Rural/Residential	Longitude: 70.454821°W
	Lighting Direction: Backlit diffused

ENVIRONMENT

Temperature: 77° F

Humidity: 58%

Wind Dir & Speed: SSW 14mph

Weather Condition: Cloudy

CAMERA

Camera Elevation: 6.5 ft / 6.3 m

Nikon D4

Nikon 50mm

ISO: 100

Fstop: f/7.1

Shutter: 1/1250 sec

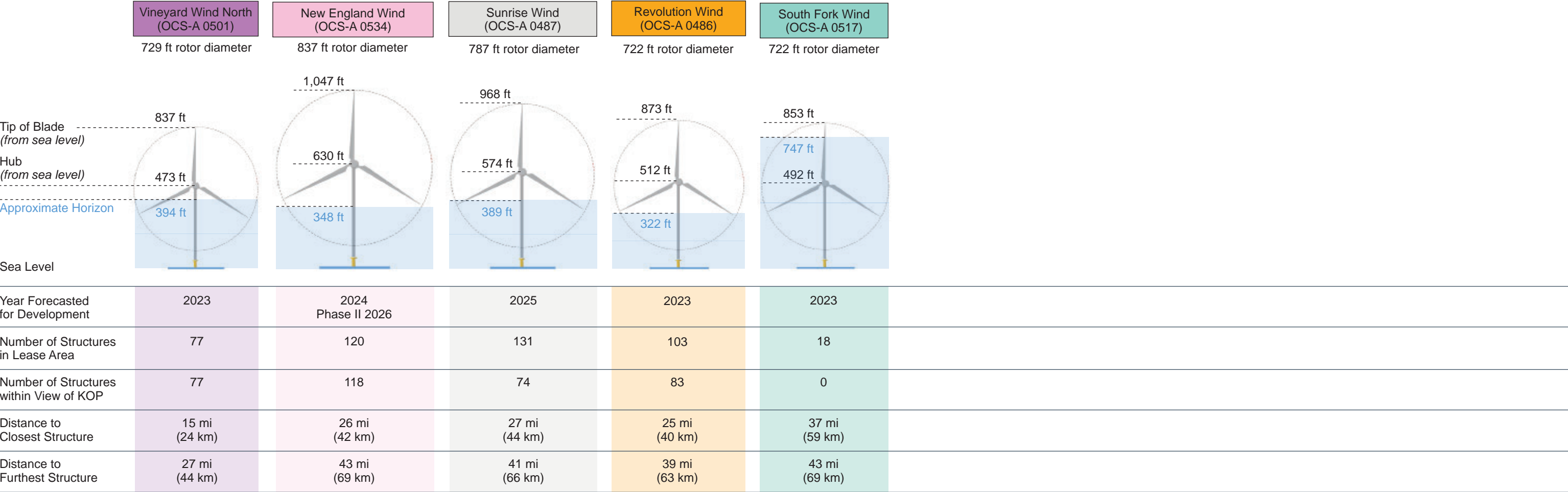
Exposure bias: -0.7 step

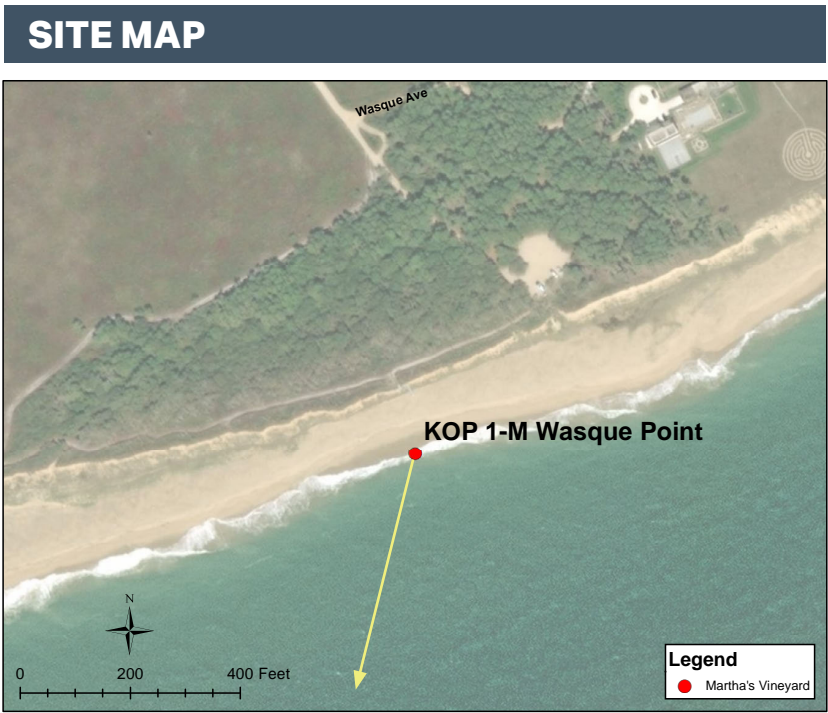
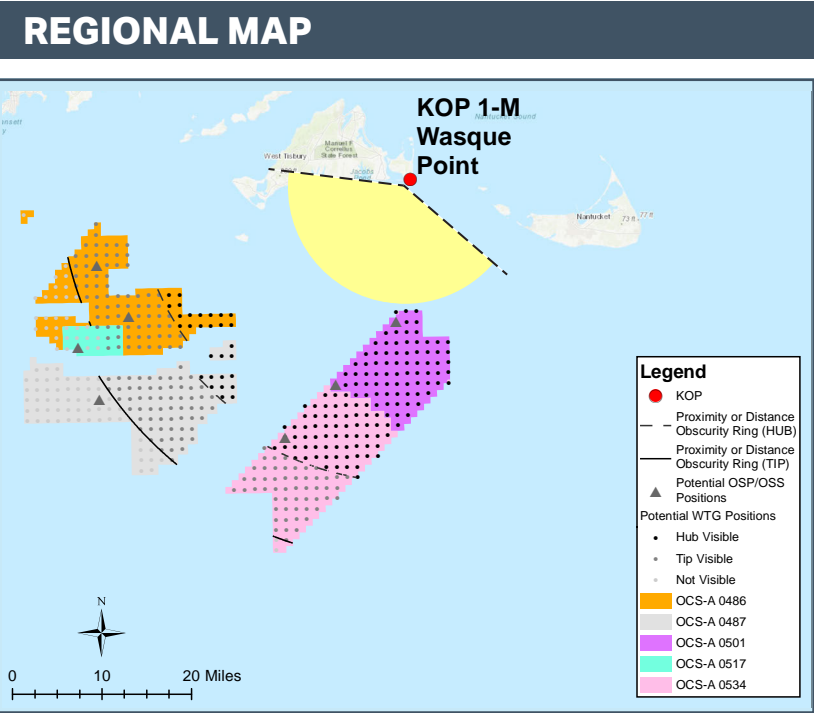
SIMULATED CONDITIONS

2



VISIBILTY OF CLOSEST TURBINES





PROJECT VIEW

Horizontal Field of View: 124°	Furthest Visible WTG: 43 mi / 69 km
Vertical Field of View: 40°	Potential Number of Structures Visible: 352
Nearest WTG: 15 mi / 24 km	Potential Number of Structures Not Visible: 95

ENVIRONMENT

Temperature: 77° F
Humidity: 58%
Wind Dir & Speed: SSW 14mph
Weather Condition: Cloudy

PHOTOGRAPH AND SITE

Time of photograph: 9:01AM	Viewing direction: South (194°)
Date of photograph: 6-25-20	Latitude: 41.351077°N
L/SCA: Ocean Beach, Costal Scrub, Rural/Residential	Longitude: 70.454821°W
	Lighting Direction: Backlit diffused

CAMERA

Camera Elevation: 6.5 ft / 6.3 m
Nikon D4
Nikon 50mm
ISO: 100
Fstop: f/7.1
Shutter: 1/1250 sec
Exposure bias: -0.7 step



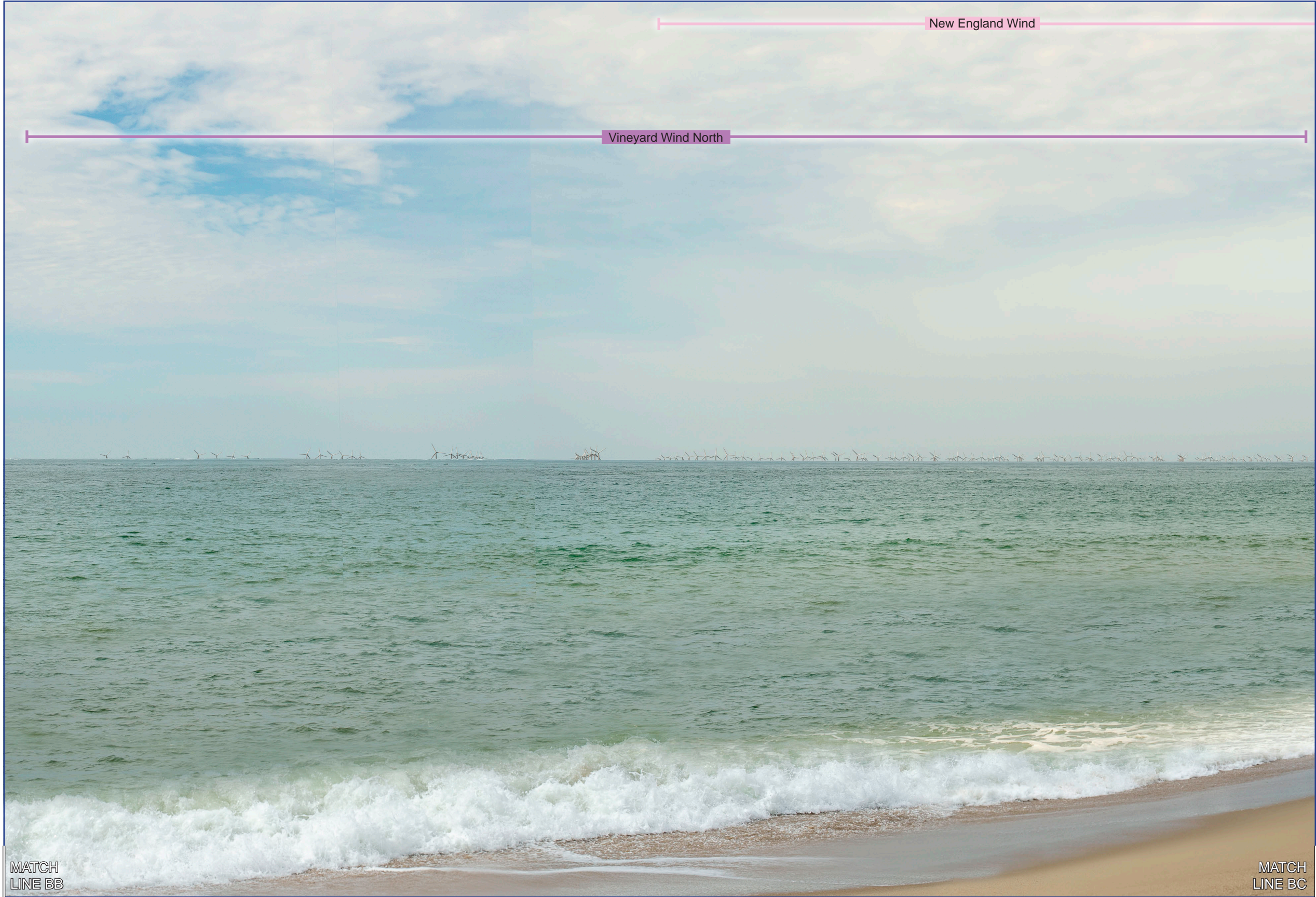
MATCH
LINE A

MATCH
LINE AA

MATCH
LINE AB

MATCH
LINE BB

The page should viewed at 11" x 17" approximately 15" from viewer's eyes .



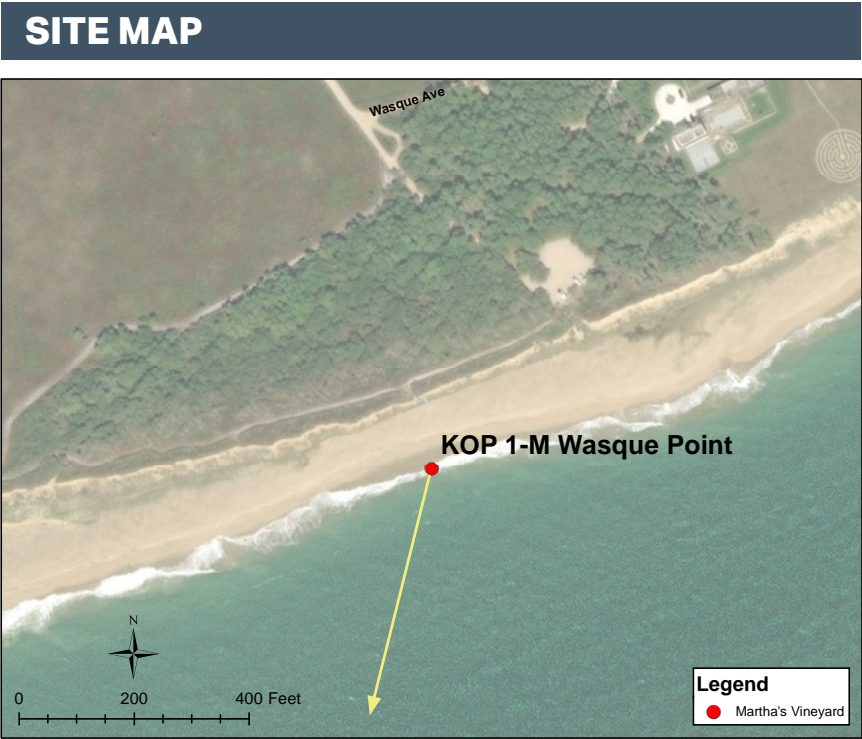
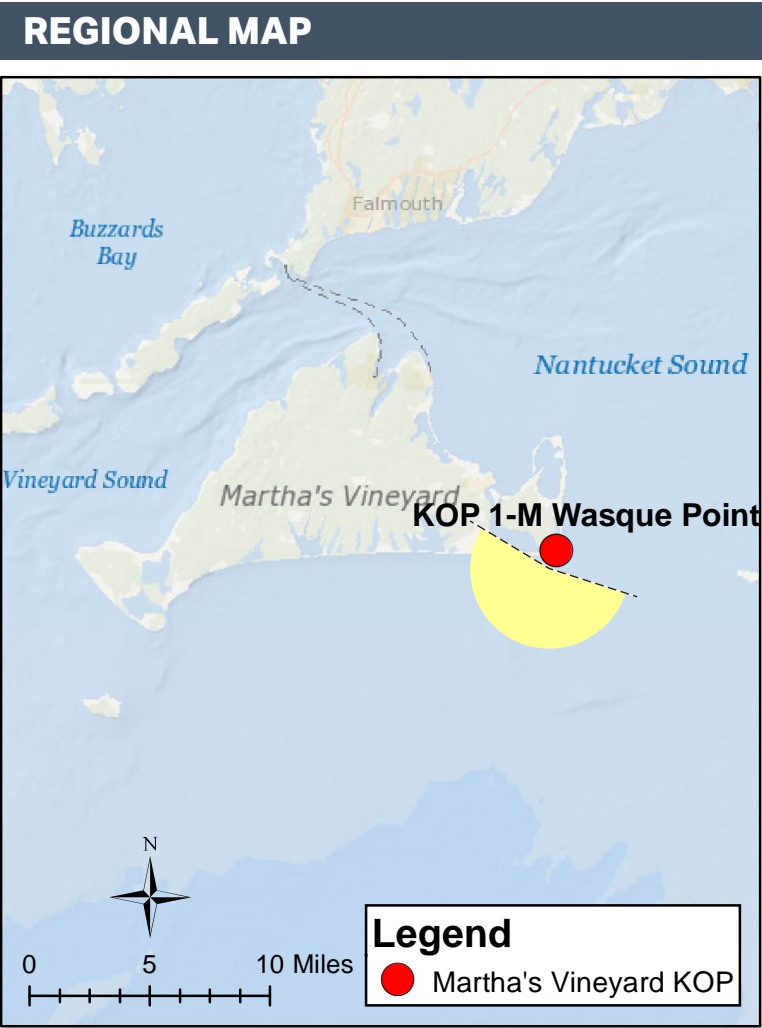
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PANORAMIC PHOTOGRAPH - EXISTING CONDITIONS

1



MATCH LINES define visual simulation detail areas

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- BB-BC is shown on page 5
- CC-CD is shown on page 6

PROJECT VIEW

Horizontal Field of View: 193°	Furthest Visible WTG: 43 mi / 69 km
Vertical Field of View: 40°	Potential Number of Structures Visible: 438
Nearest WTG: 15 mi / 4 km	Potential Number of Structures Not Visible: 160

PHOTOGRAPH AND SITE

Time of photograph: 9:01AM	Viewing direction: South (194°)
Date of photograph: 6-25-20	Latitude: 41.351077°N
L/SCA: Ocean Beach, Costal Scrub, Rural/Residential	Longitude: 70.454821°W
	Lighting Direction: Backlit diffused

ENVIRONMENT

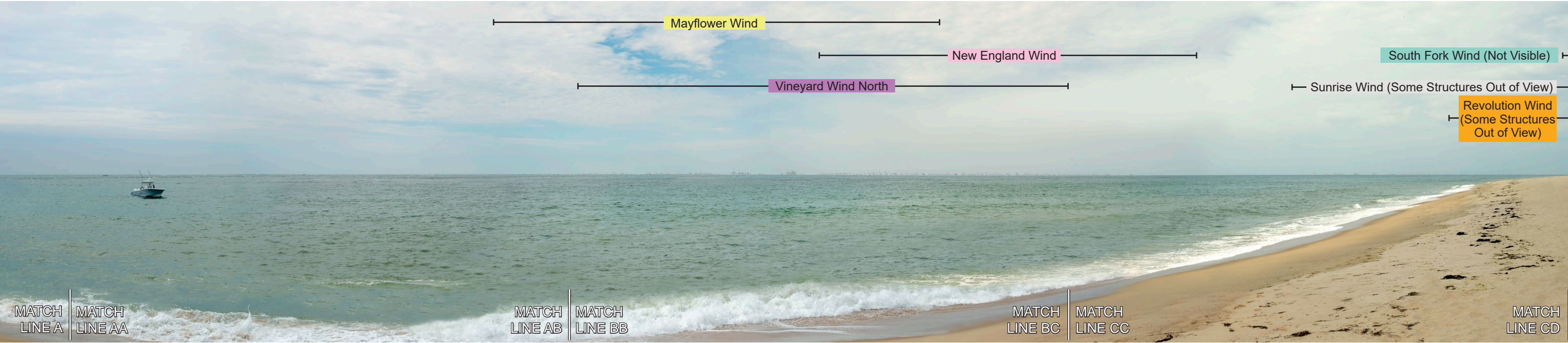
Temperature: 77° F
Humidity: 58%
Wind Dir & Speed: SSW 14mph
Weather Condition: Cloudy

CAMERA

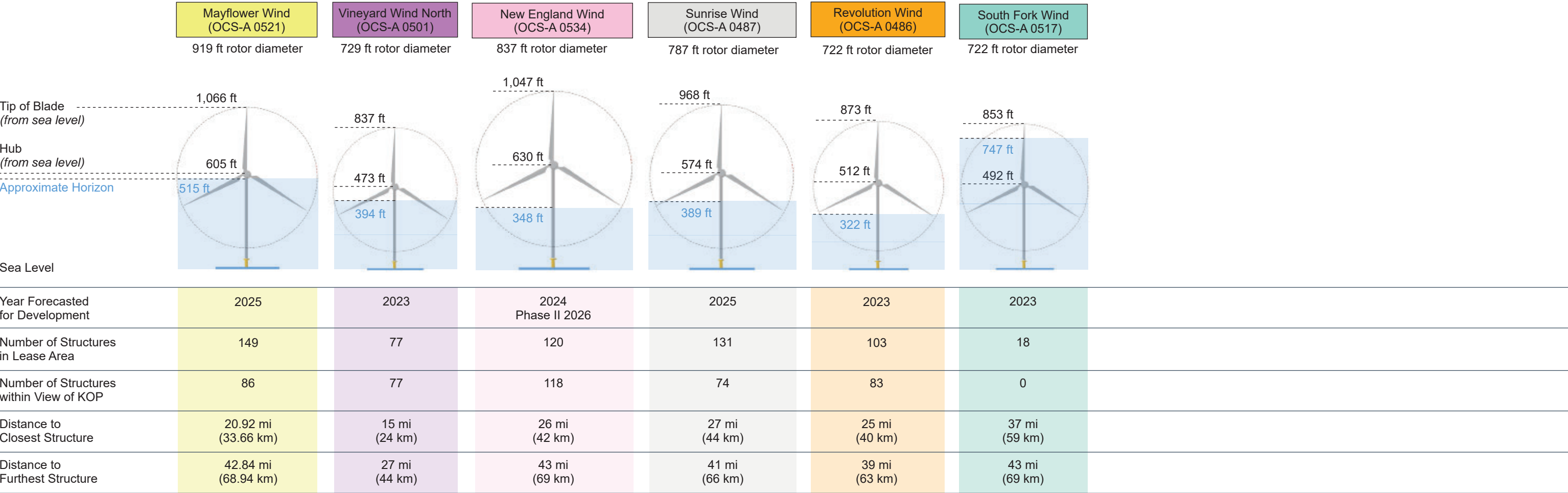
Camera Elevation: 6.5 ft / 6.3 m
Nikon D4
Nikon 50mm
ISO: 100
Fstop: f/7.1
Shutter: 1/1250 sec
Exposure bias: -0.7 step

SIMULATED CONDITIONS

2

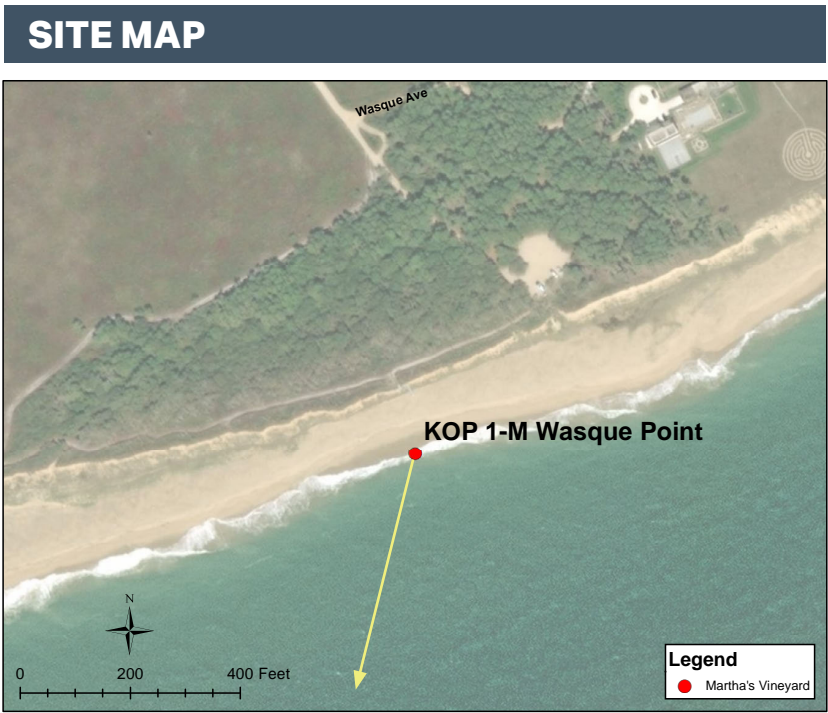
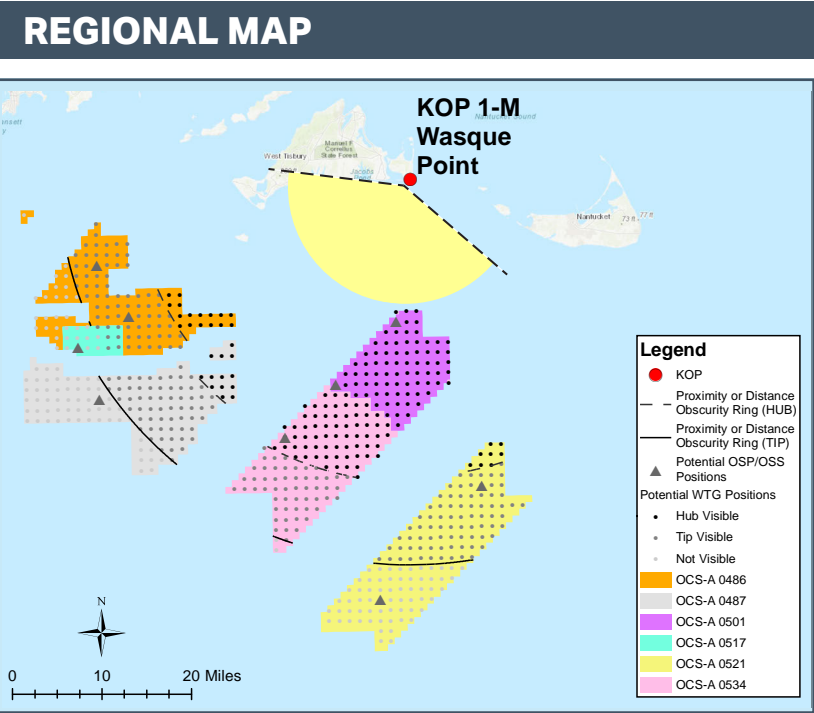


VISIBILTY OF CLOSEST TURBINES



SIMULATED CONDITIONS

3



PROJECT VIEW

Horizontal Field of View: 124°	Furthest Visible WTG: 43 mi / 69 km
Vertical Field of View: 40°	Potential Number of Structures Visible: 438
Nearest WTG: 15 mi / 4 km	Potential Number of Structures Not Visible: 160

ENVIRONMENT

Temperature: 77° F
Humidity: 58%
Wind Dir & Speed: SSW 14mph
Weather Condition: Cloudy

PHOTOGRAPH AND SITE

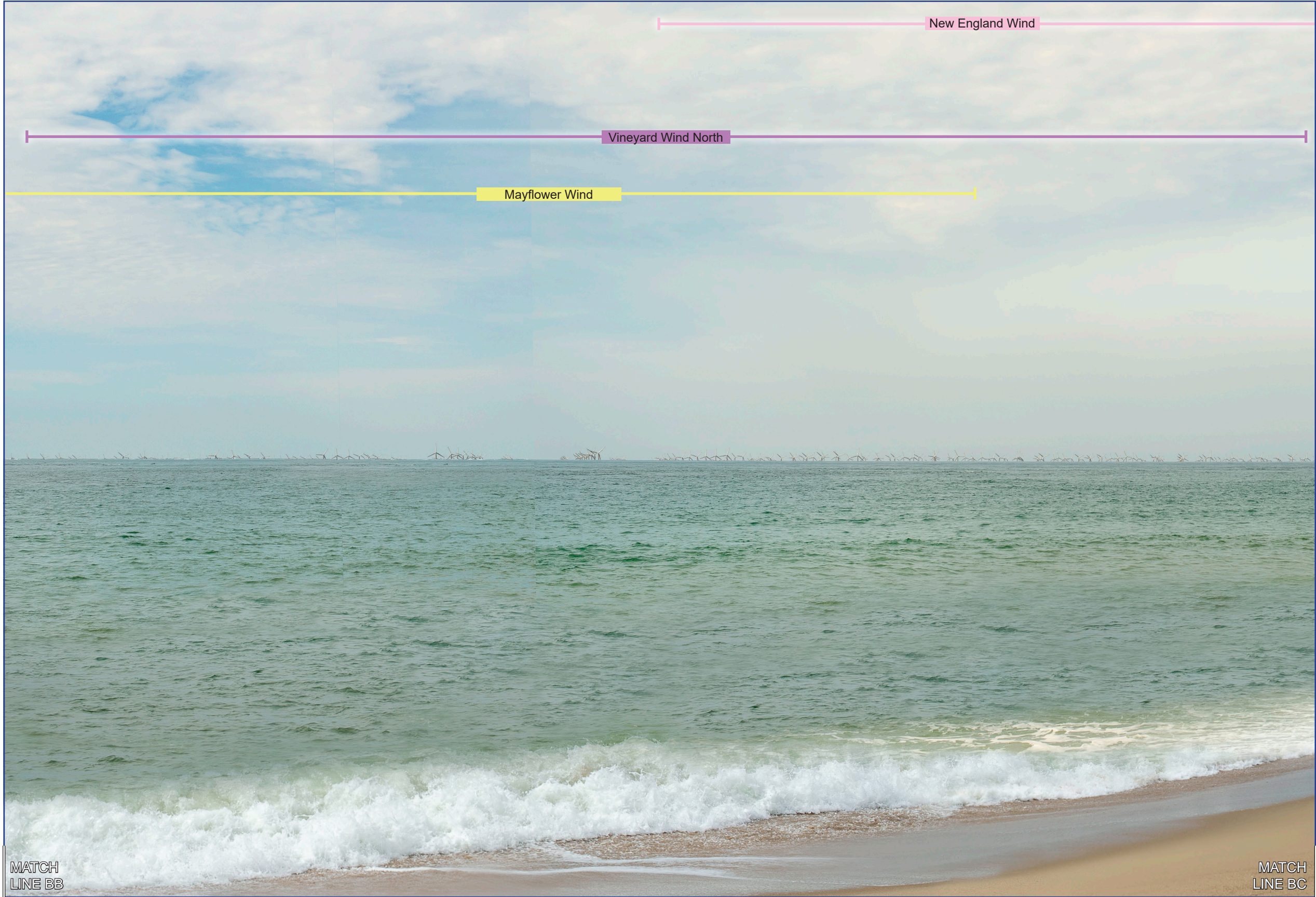
Time of photograph: 9:01AM	Viewing direction: South (194°)
Date of photograph: 6-25-20	Latitude: 41.351077°N
L/SCA: Ocean Beach, Costal Scrub, Rural/Residential	Longitude: 70.454821°W
	Lighting Direction: Backlit diffused

CAMERA

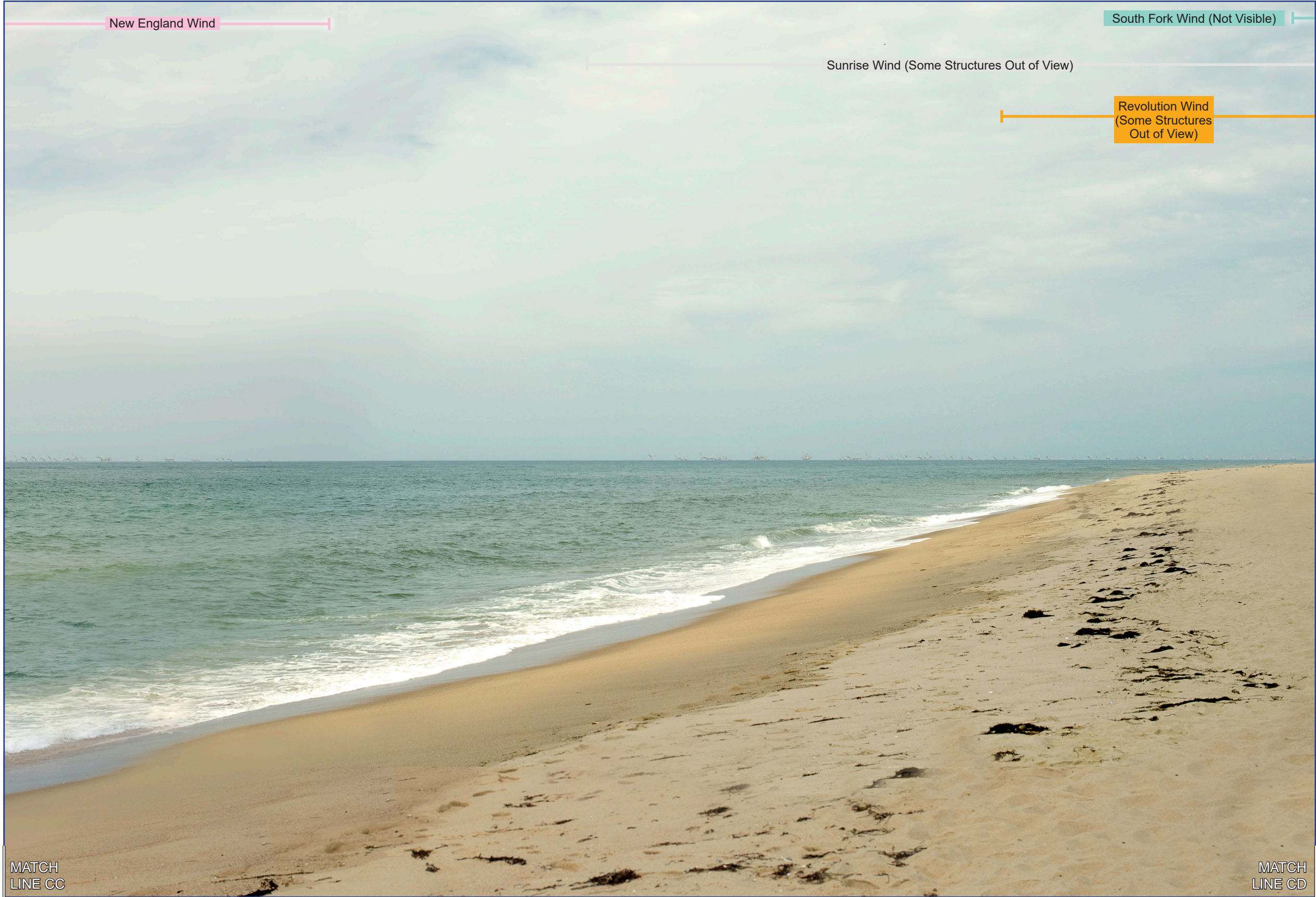
Camera Elevation: 6.5 ft / 6.3 m
Nikon D4
Nikon 50mm
ISO: 100
Fstop: f/7.1
Shutter: 1/1250 sec
Exposure bias: -0.7 step



The page should viewed at 11" x 17" approximately 15" from viewer's eyes .



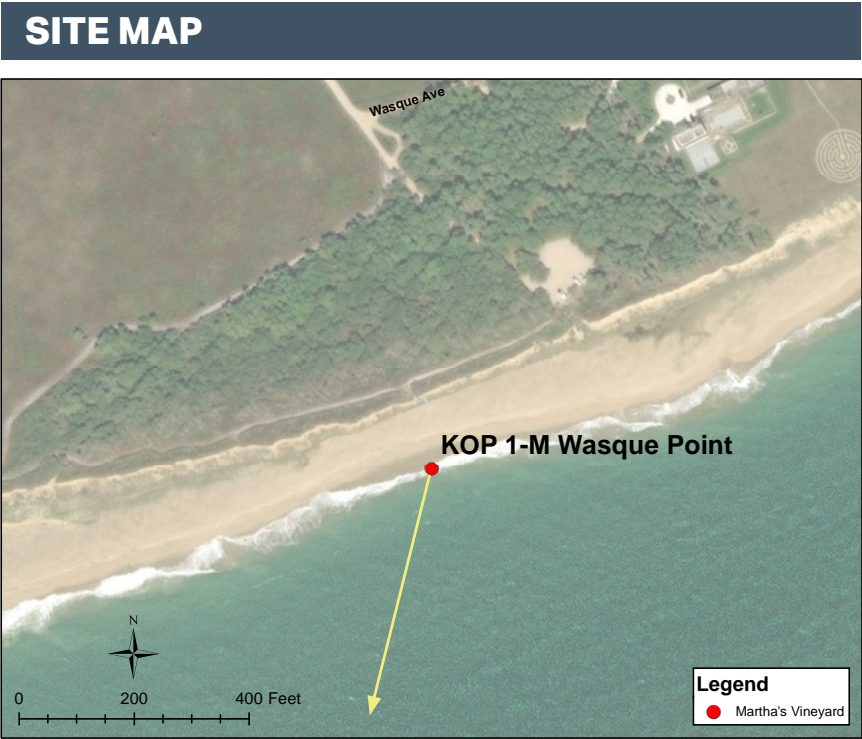
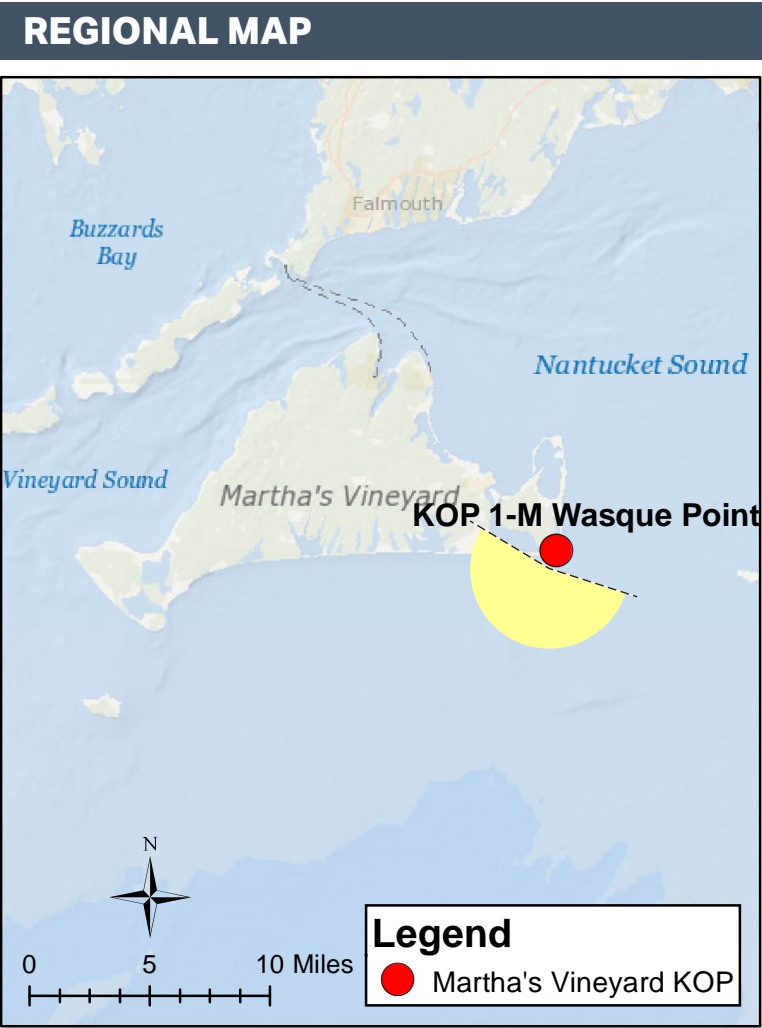
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The page should viewed at 11" x 17" approximately 15" from viewer's eyes .

PANORAMIC PHOTOGRAPH - EXISTING CONDITIONS

1



MATCH LINES define visual simulation detail areas

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- BB-BC is shown on page 5
- CC-CD is shown on page 6

PROJECT VIEW

Horizontal Field of View: 193°	Furthest Visible WTG: 43 mi / 70 km
Vertical Field of View: 40°	Potential Number of Structures Visible: 686
Nearest WTG: 15 mi / 24 km	Potential Number of Structures Not Visible: 384

PHOTOGRAPH AND SITE

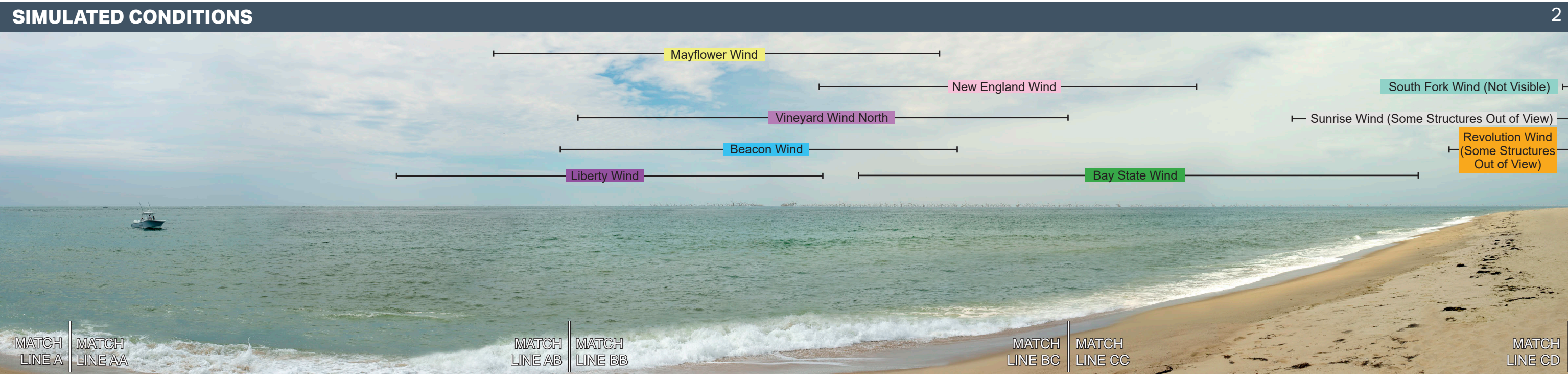
Time of photograph: 9:01AM	Viewing direction: South (194°)
Date of photograph: 6-25-20	Latitude: 41.351077°N
L/SCA: Ocean Beach, Costal Scrub, Rural/Residential	Longitude: 70.454821°W
	Lighting Direction: Backlit diffused

ENVIRONMENT

Temperature: 77° F
Humidity: 58%
Wind Dir & Speed: SSW 14mph
Weather Condition: Cloudy

CAMERA

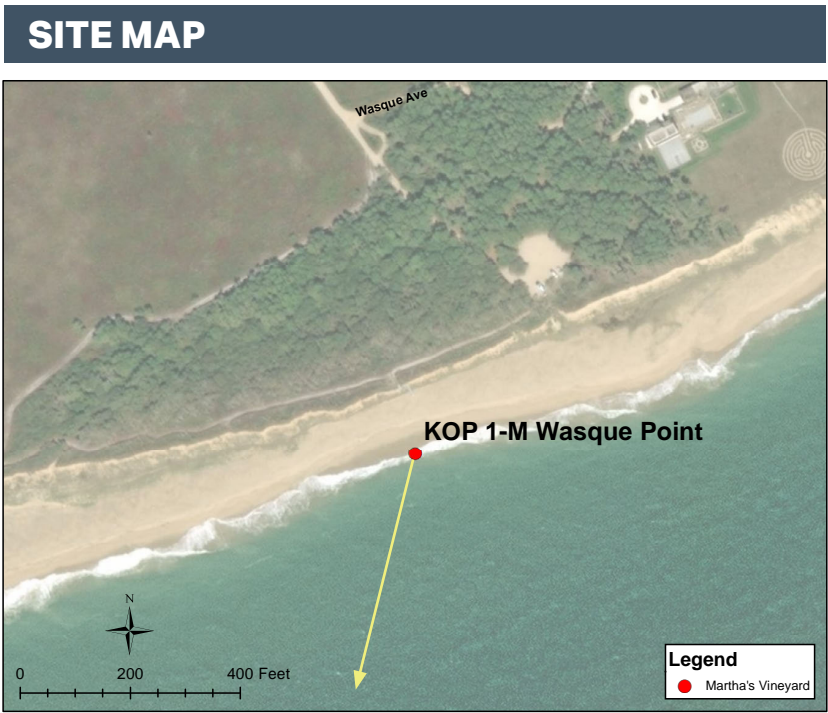
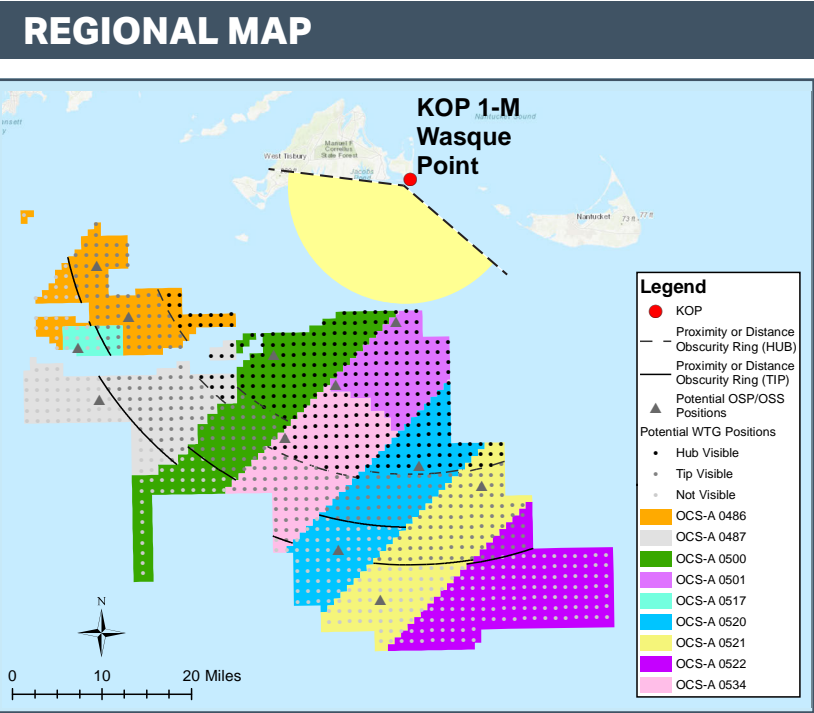
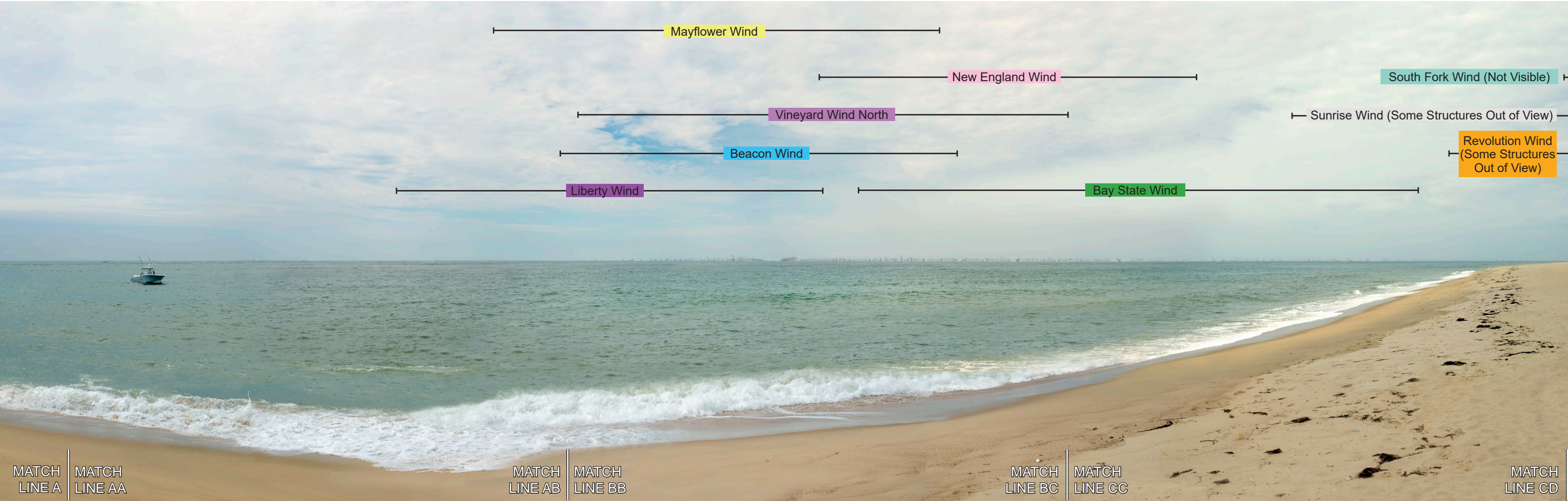
Camera Elevation: 6.5 ft / 6.3 m
Nikon D4
Nikon 50mm
ISO: 100
Fstop: f/7.1
Shutter: 1/1250 sec
Exposure bias: -0.7 step



	Liberty Wind (OCS-A 0522)	Beacon Wind (OCS-A 0520)	Mayflower Wind (OCS-A 0521)	Vineyard Wind North (OCS-A 0501)	New England Wind (OCS-A 0534)	Bay State Wind (OCS-A 0500)	Sunrise Wind (OCS-A 0487)	Revolution Wind (OCS-A 0486)	South Fork Wind (OCS-A 0517)
	935 ft rotor 1,171 ft	984 ft rotor	919 ft rotor	729 ft rotor	837 ft rotor	722 ft rotor	787 ft rotor	722 ft rotor	722 ft rotor
Tip of Blade (from sea level)	1,171 ft	1,086 ft	1,066 ft	837 ft	1,047 ft	353 ft	968 ft	873 ft	853 ft
Approximate Horizon	888 ft								
Hub (from sea level)	702 ft	594 ft	605 ft	473 ft	630 ft	492 ft	574 ft	512 ft	747 ft
Sea Level		294 ft	515 ft	394 ft	348 ft	93 ft	389 ft	322 ft	492 ft
Year Forecasted for Development	2025-2030	2025-2030	2025	2023	2024 Phase II 2026	2025-2030	2025	2023	2023
Number of Structures in Lease Area	139	157	149	77	120	169	131	103	18
Number of Structures within View of KOP	13	95	86	77	118	133	74	83	0
Distance to Closest Structure	40 mi (64 km)	24 mi (39 km)	31 mi (50 km)	15 mi (24 km)	26 mi (42 km)	15 mi (24 km)	27 mi (44 km)	25 mi (40 km)	37 mi (59 km)
Distance to Furthest Structure	43 mi (70 km)	39 mi (62 km)	43 mi (69 km)	27 mi (44 km)	43 mi (69 km)	39 mi (62 km)	41 mi (66 km)	39 mi (63 km)	43 mi (69 km)

SIMULATED CONDITIONS

3



PROJECT VIEW

Horizontal Field of View: 124°	Furthest Visible WTG: 43 mi / 70 km
Vertical Field of View: 40°	Potential Number of Structures Visible: 686
Nearest WTG: 15 mi / 24 km	Potential Number of Structures Not Visible: 384

ENVIRONMENT

Temperature: 77° F
Humidity: 58%
Wind Dir & Speed: SSW 14mph
Weather Condition: Cloudy

PHOTOGRAPH AND SITE

Time of photograph: 9:01AM	Viewing direction: South (194°)
Date of photograph: 6-25-20	Latitude: 41.351077°N
L/SCA: Ocean Beach, Costal Scrub, Rural/Residential	Longitude: 70.454821°W
	Lighting Direction: Backlit diffused

CAMERA

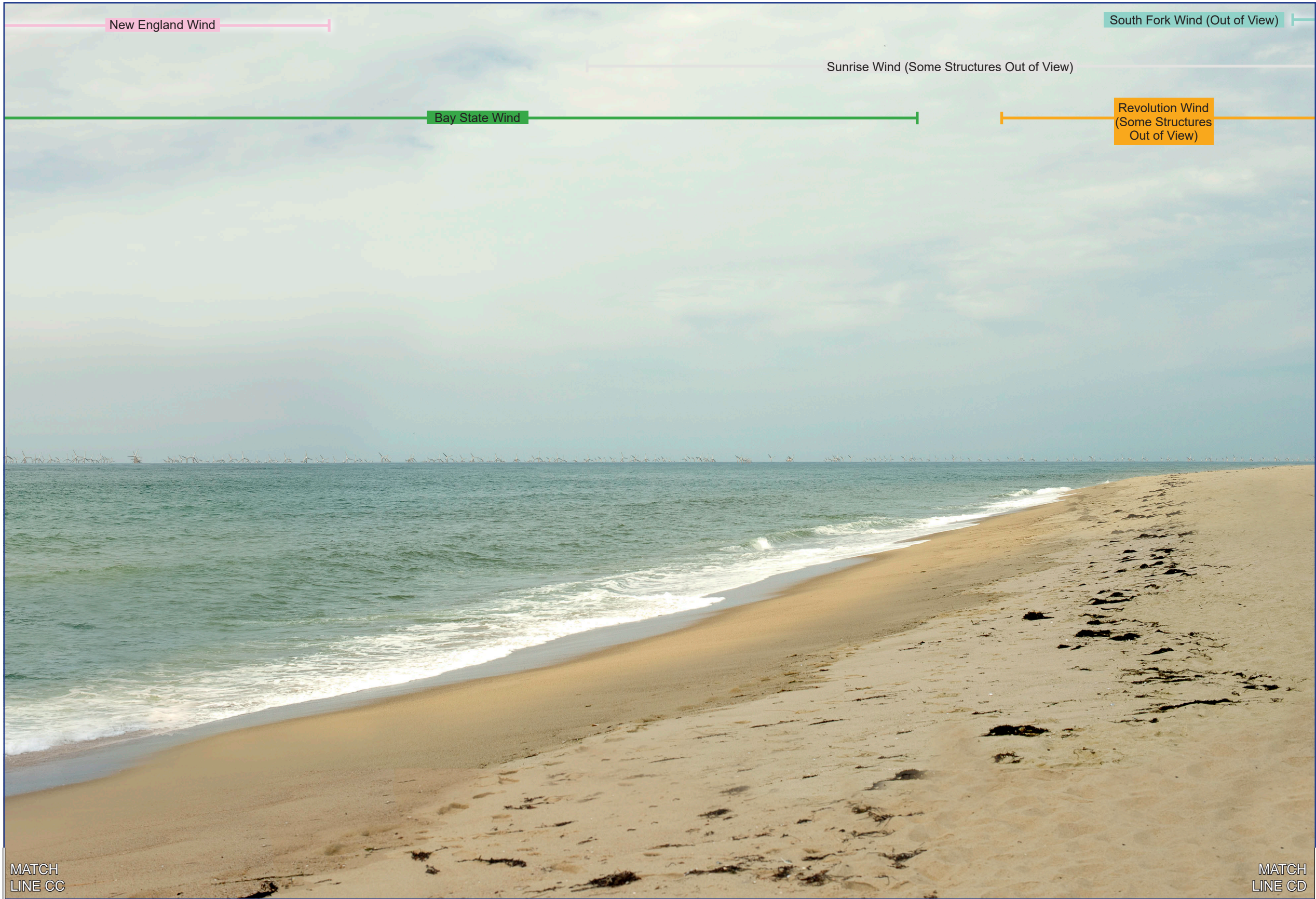
Camera Elevation: 6.5 ft / 6.3 m
Nikon D4
Nikon 50mm
ISO: 100
Fstop: f/7.1
Shutter: 1/1250 sec
Exposure bias: -0.7 step



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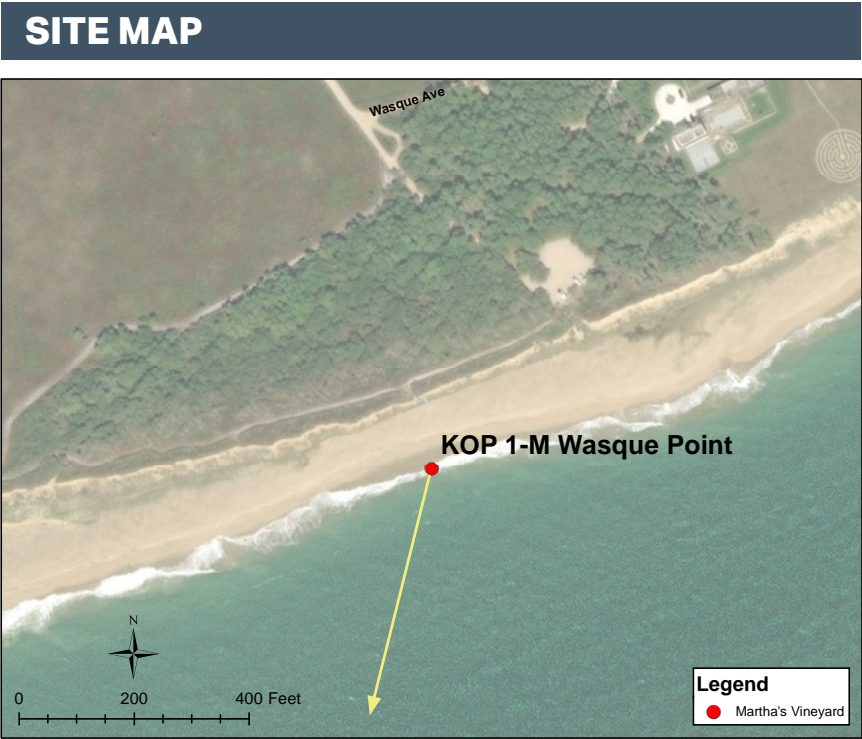
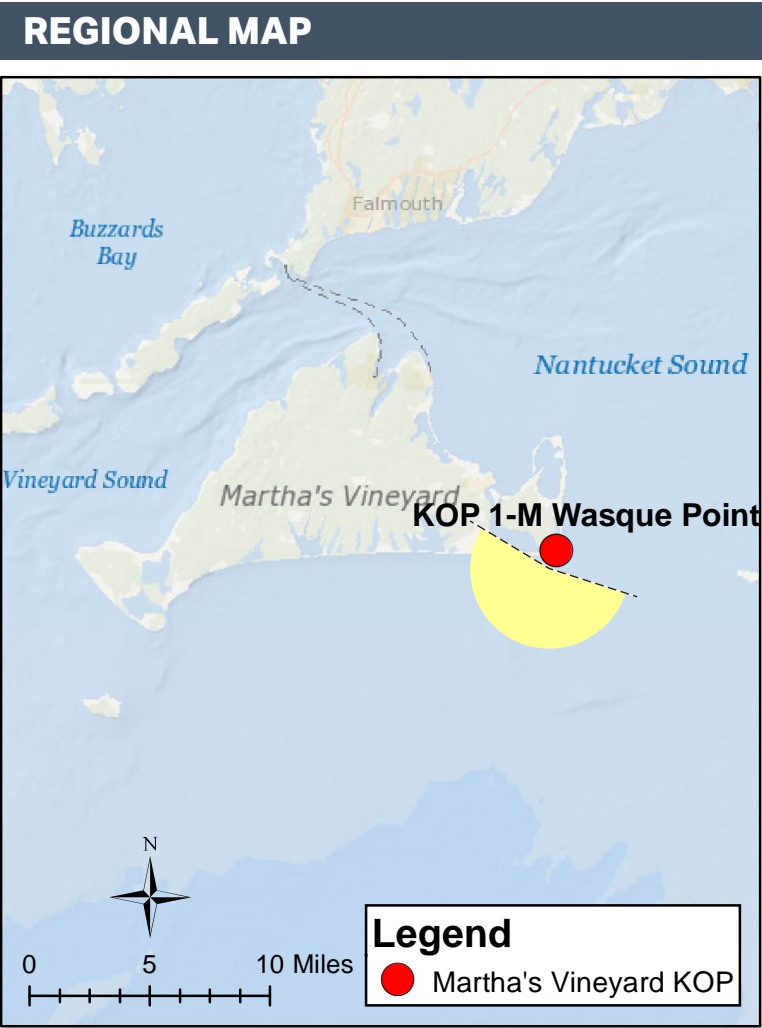
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The page should viewed at 11" x 17" approximately 15" from viewer's eyes .

PANORAMIC PHOTOGRAPH - EXISTING CONDITIONS

1



MATCH LINES define visual simulation detail areas

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AA-AB is shown on page 4
BB-BC is shown on page 5
CC-CD is shown on page 6

PROJECT VIEW

Horizontal Field of View: 193°	Furthest Visible WTG: 43 mi / 70 km
Vertical Field of View: 40°	Potential Number of Structures Visible: 593
Nearest WTG: 15 mi / 24 km	Potential Number of Structures Not Visible: 321

PHOTOGRAPH AND SITE

Time of photograph: 9:01AM	Viewing direction: South (194°)
Date of photograph: 6-25-20	Latitude: 41.351077°N
L/SCA: Ocean Beach, Costal Scrub, Rural/Residential	Longitude: 70.454821°W
	Lighting Direction: Backlit diffused

ENVIRONMENT

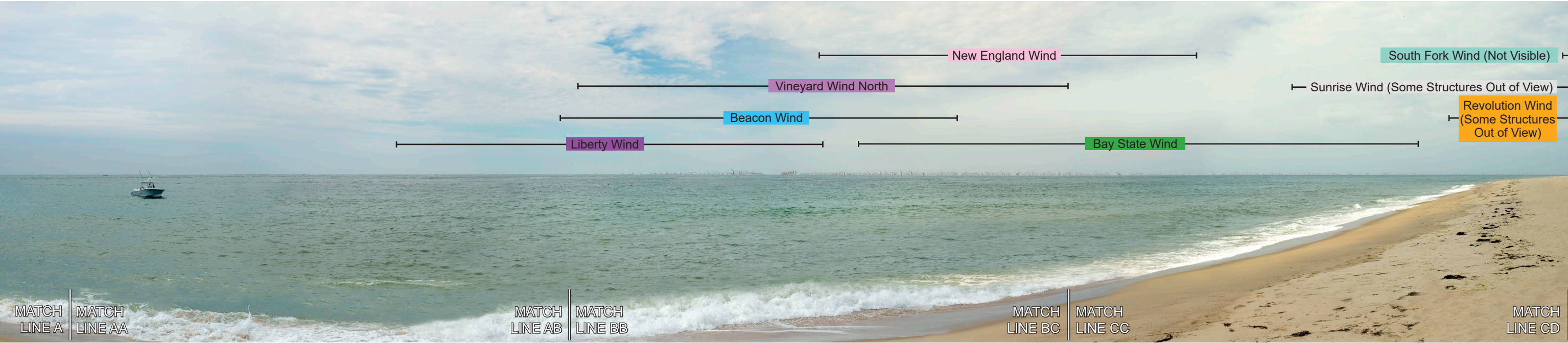
Temperature: 77° F
Humidity: 58%
Wind Dir & Speed: SSW 14mph
Weather Condition: Cloudy

CAMERA

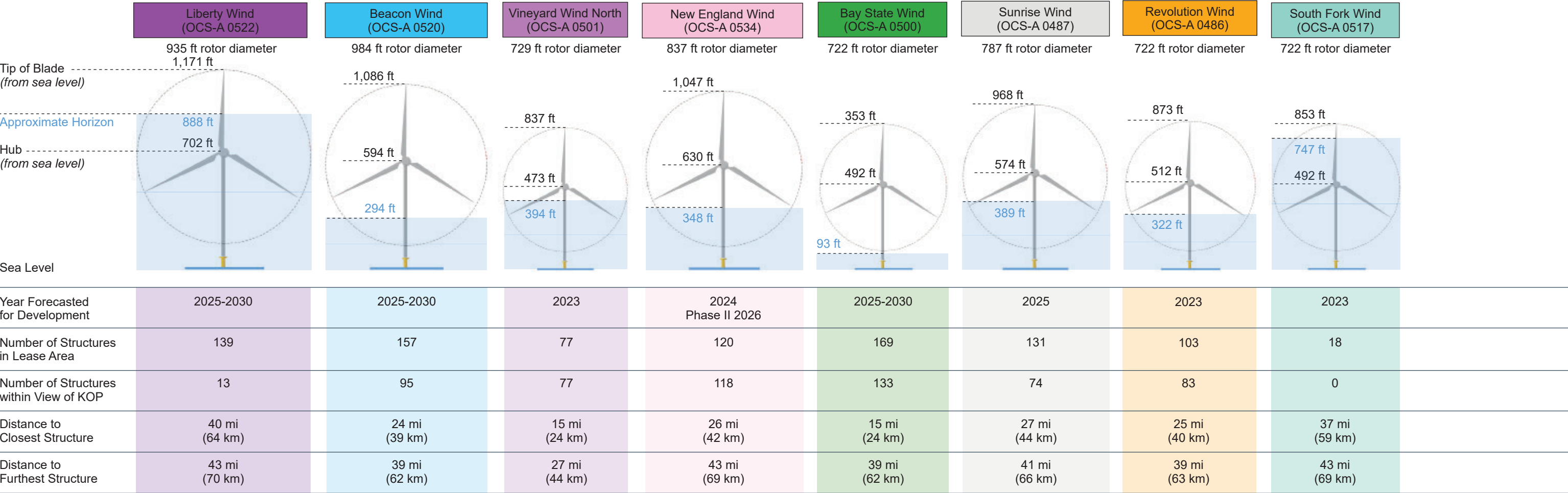
Camera Elevation: 6.5 ft / 6.3 m
Nikon D4
Nikon 50mm
ISO: 100
Fstop: f/7.1
Shutter: 1/1250 sec
Exposure bias: -0.7 step

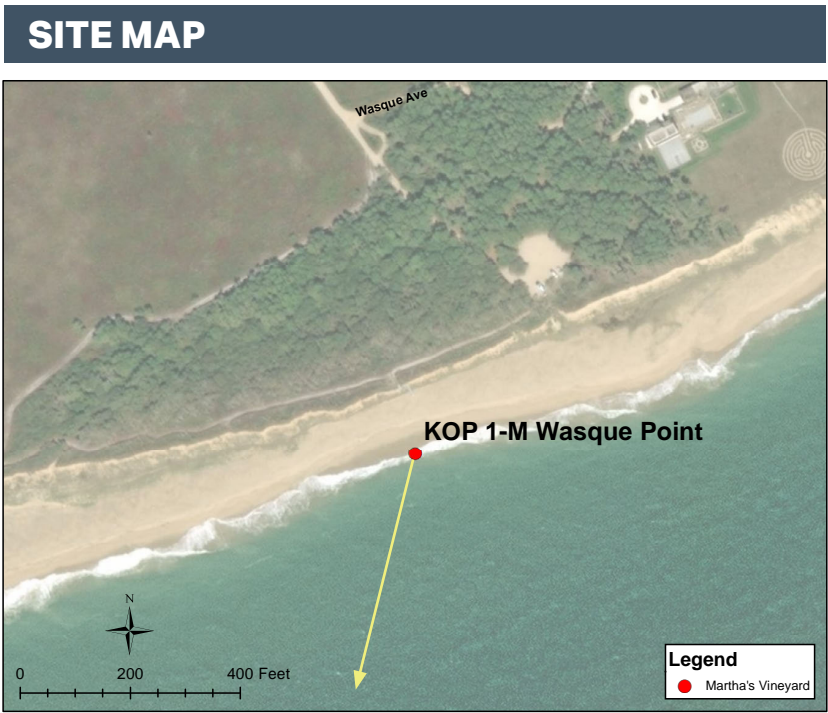
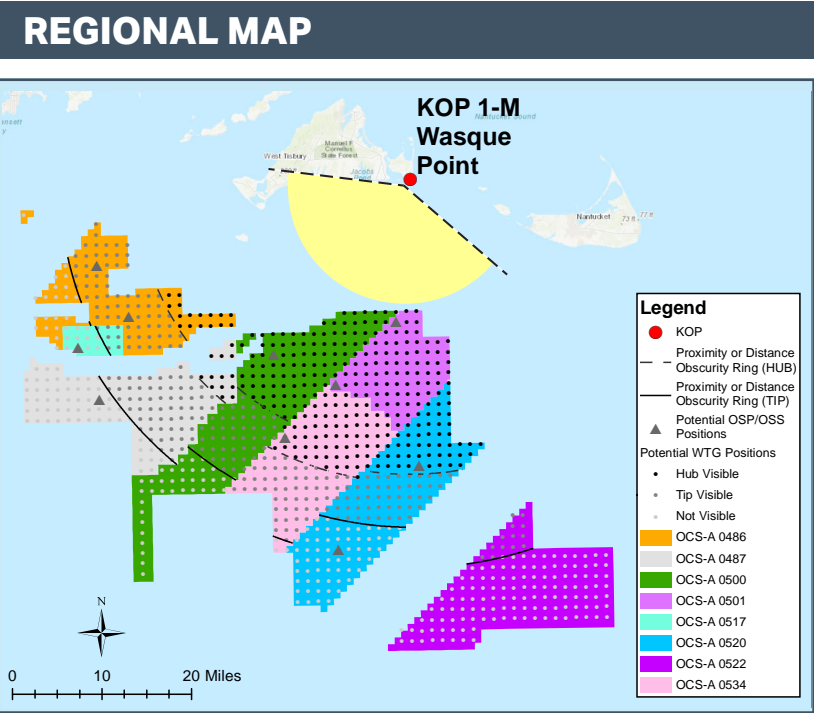
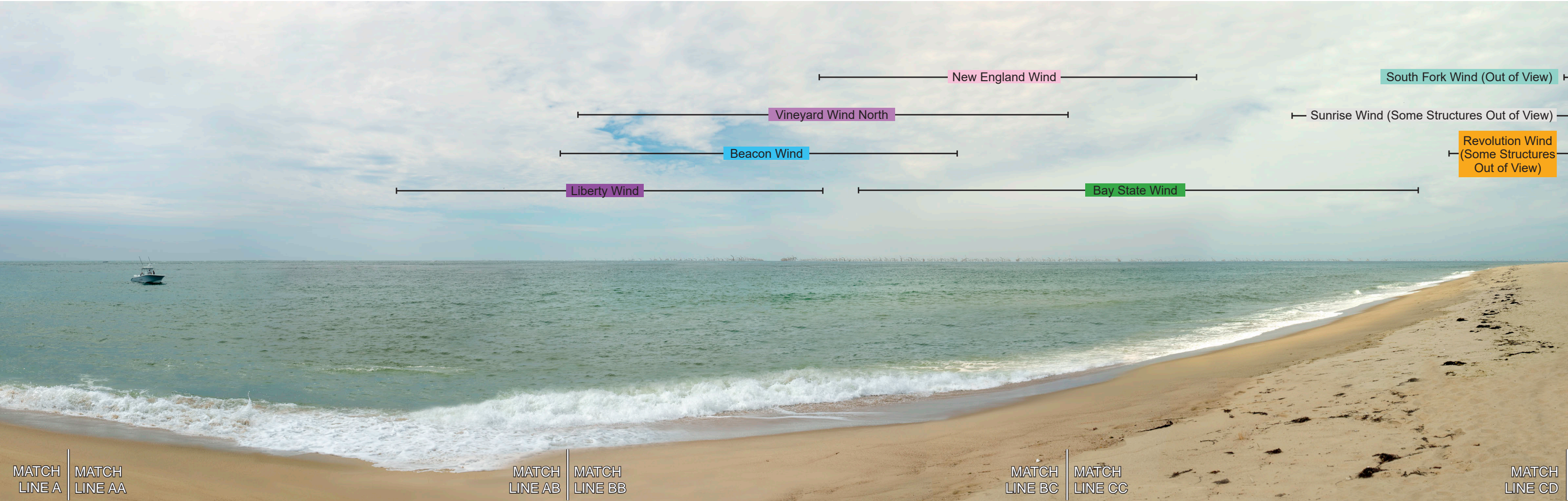
SIMULATED CONDITIONS

2



VISIBILTY OF CLOSEST TURBINES





PROJECT VIEW

Horizontal Field of View: 124°	Furthest Visible WTG: 43 mi / 70 km
Vertical Field of View: 40°	Potential Number of Structures Visible: 593
Nearest WTG: 15 mi / 24 km	Potential Number of Structures Not Visible: 321

ENVIRONMENT

Temperature: 77° F
Humidity: 58%
Wind Dir & Speed: SSW 14mph
Weather Condition: Cloudy

PHOTOGRAPH AND SITE

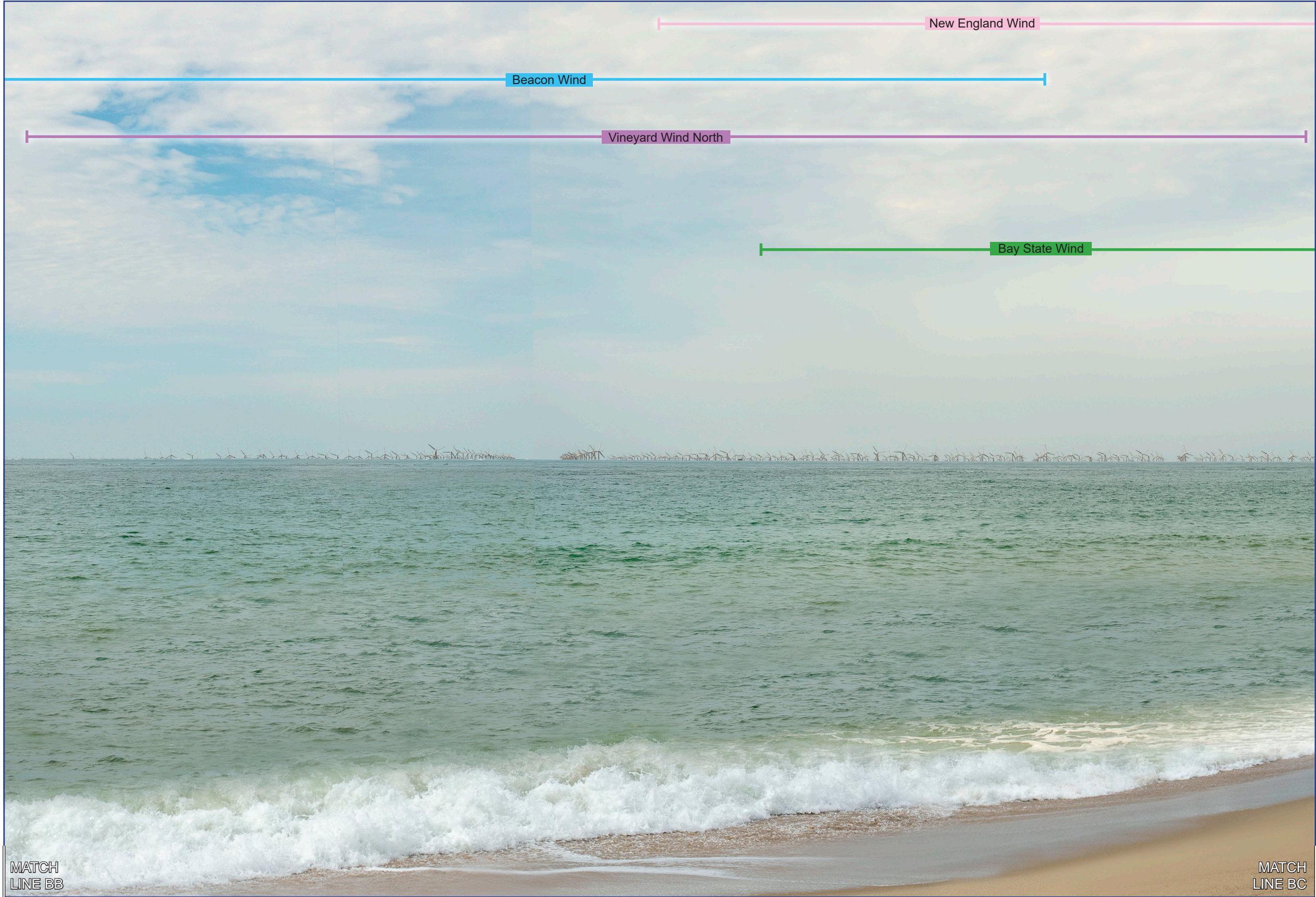
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L/SCA: Ocean Beach, Costal Scrub, Rural/Residential	Longitude: 70.454821°W
	Lighting Direction: Backlit diffused

CAMERA

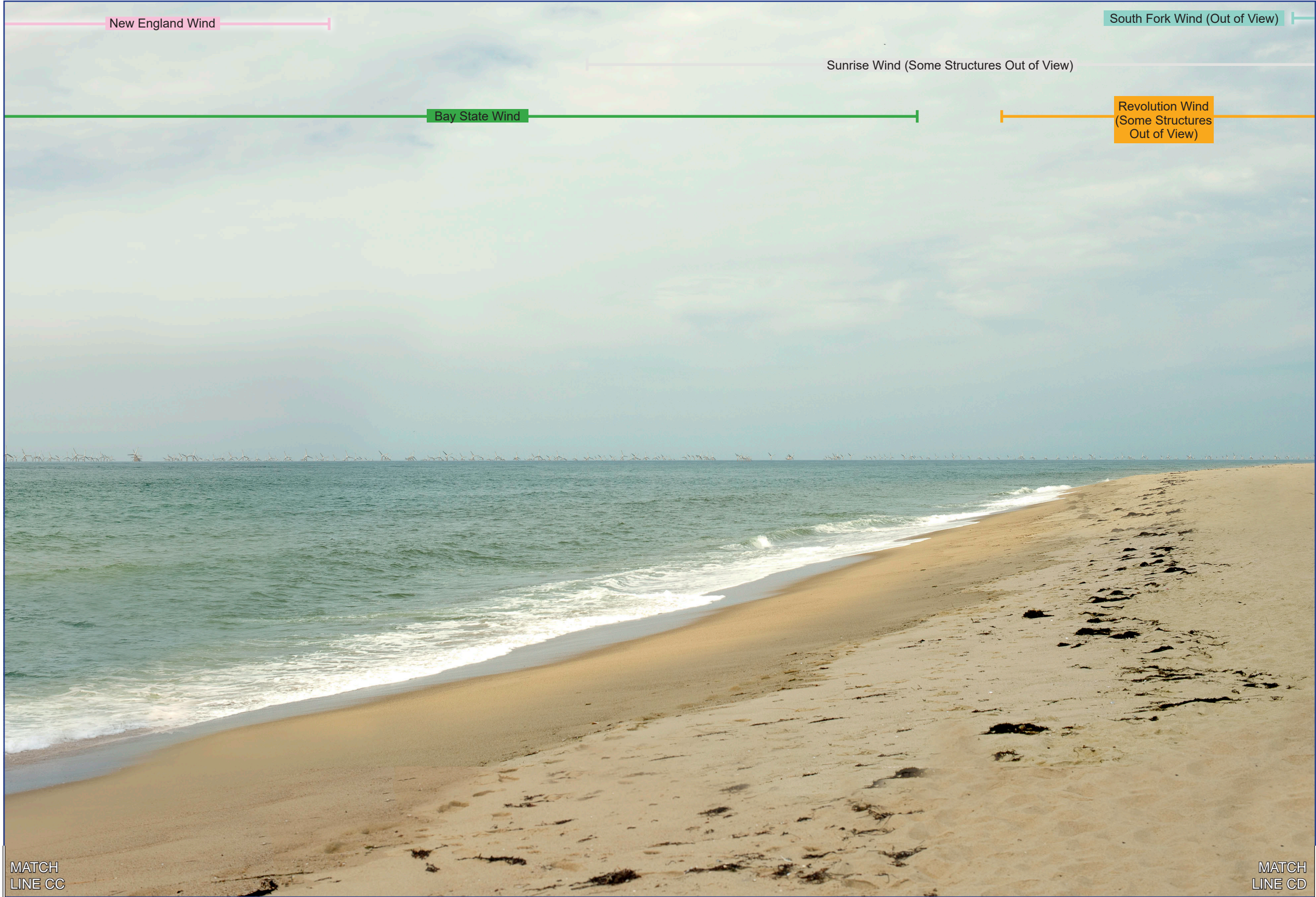
Camera Elevation: 6.5 ft / 6.3 m
Nikon D4
Nikon 50mm
ISO: 100
Fstop: f/7.1
Shutter: 1/1250 sec
Exposure bias: -0.7 step



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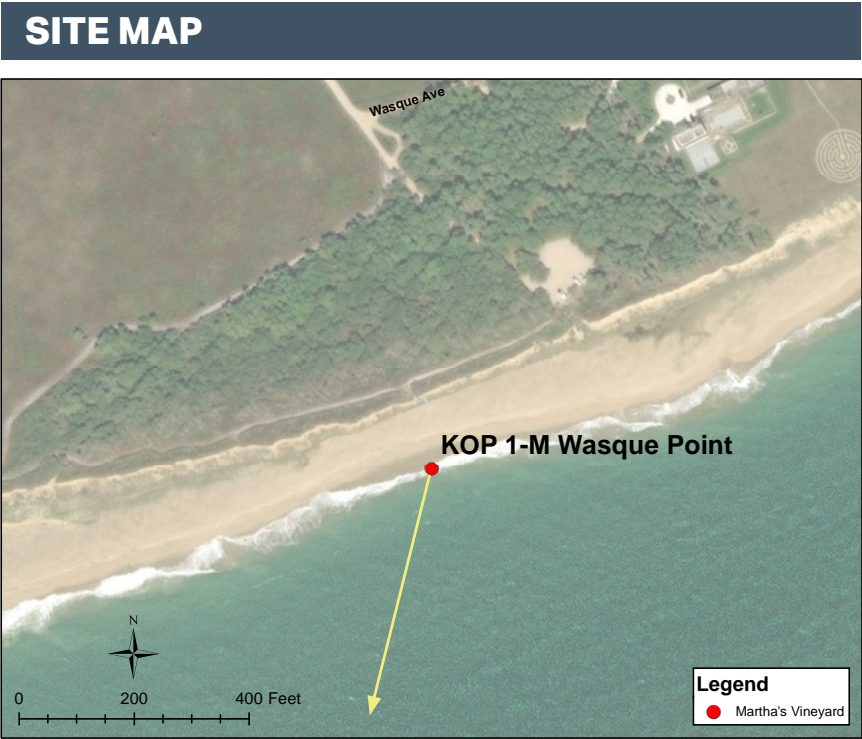
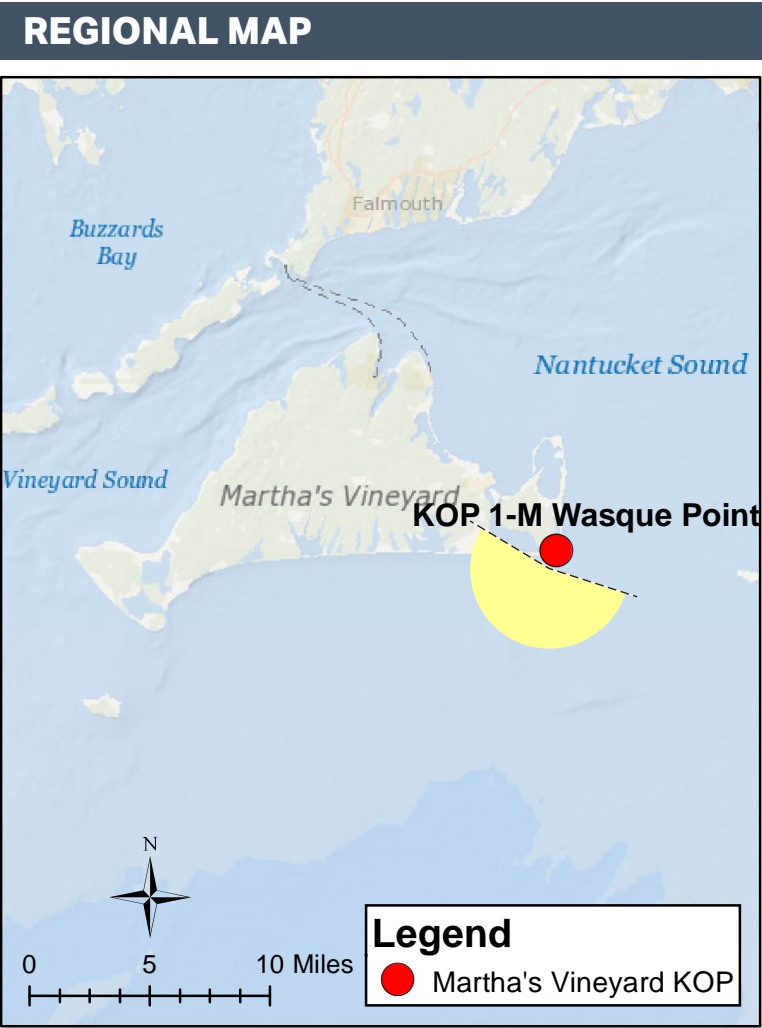
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PANORAMIC PHOTOGRAPH - EXISTING CONDITIONS

1



MATCH LINES define visual simulation detail areas

A-B is shown on pages 2-3
AA-AB is shown on page 4
BB-BC is shown on page 5
CC-CD is shown on page 6

PROJECT VIEW

Horizontal Field of View: 193°	Furthest Visible WTG: 43 mi / 69 km
Vertical Field of View: 40°	Potential Number of Structures Visible: 86
Nearest WTG: 31 mi / 50 km	Potential Number of Structures Not Visible: 63

PHOTOGRAPH AND SITE

Time of photograph: 9:01AM	Viewing direction: South (194°)
Date of photograph: 6-25-20	Latitude: 41.351077°N
L/SCA: Ocean Beach, Costal Scrub, Rural/Residential	Longitude: 70.454821°W
	Lighting Direction: Backlit diffused

ENVIRONMENT

Temperature: 77° F
Humidity: 58%
Wind Dir & Speed: SSW 14mph
Weather Condition: Cloudy

CAMERA

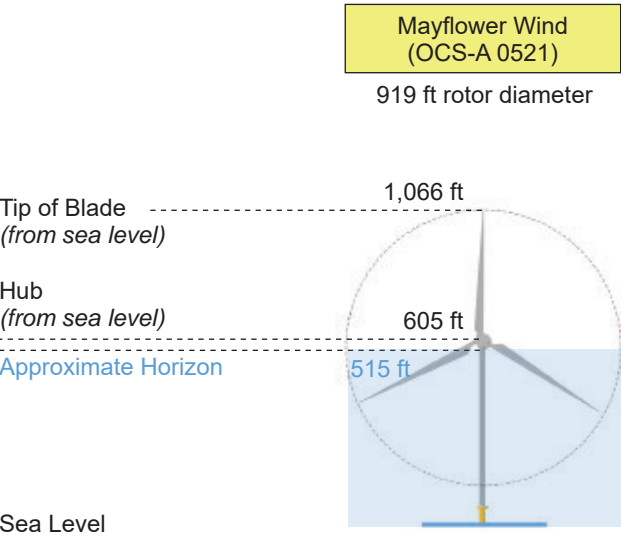
Camera Elevation: 20.5 ft / 6.3 m
Nikon D4
Nikon 50mm
ISO: 100
Fstop: f/7.1
Shutter: 1/1250 sec
Exposure bias: -0.7 step

SIMULATED CONDITIONS

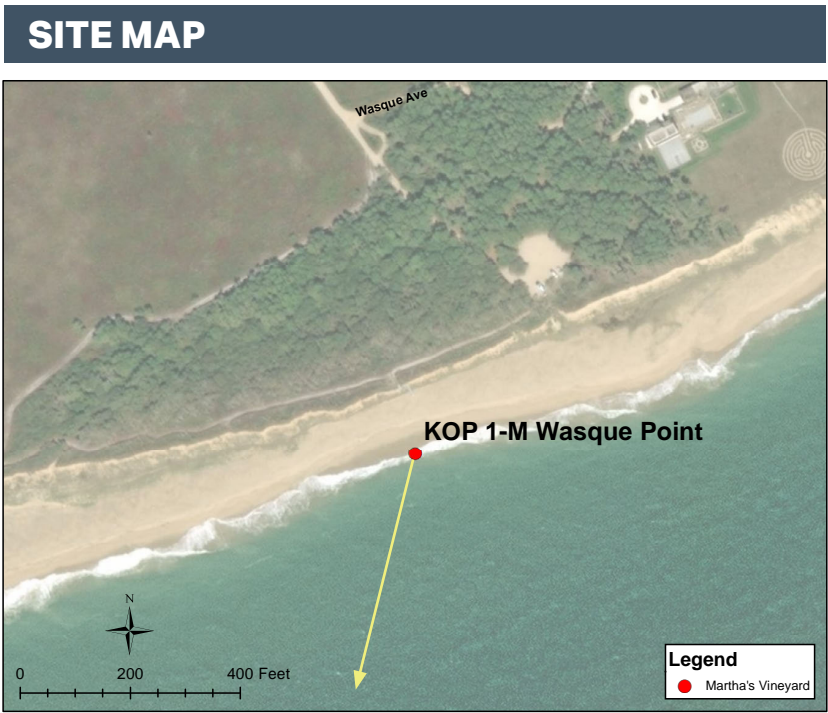
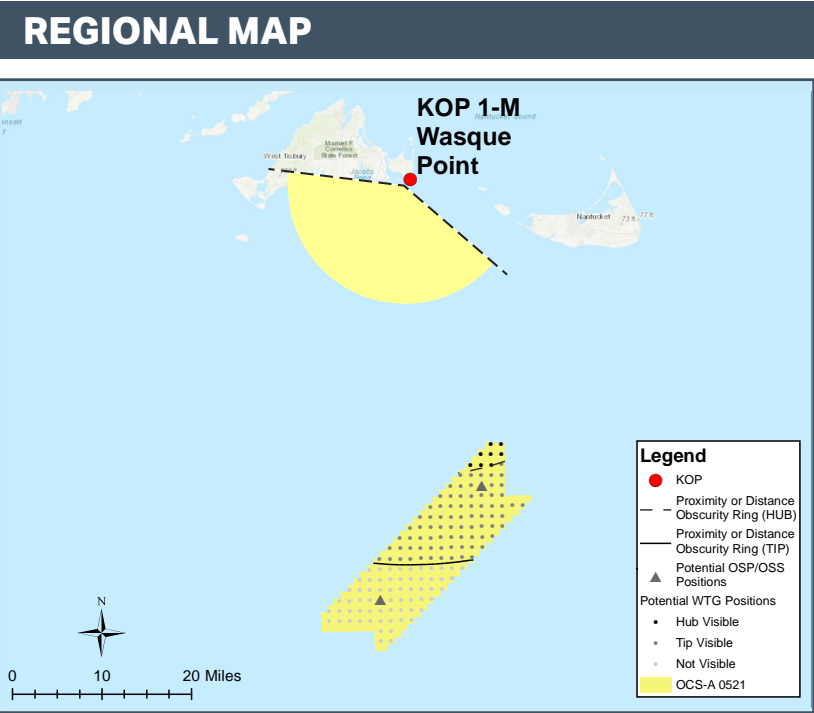
2



VISIBILTY OF CLOSEST TURBINES



Year Forecasted for Development	2025	
Number of Structures in Lease Area	149	
Number of Structures within View of KOP	86	
Distance to Closest Structure	20.92 mi (33.66 km)	
Distance to Furthest Structure	42.84 mi (68.94 km)	



PROJECT VIEW

Horizontal Field of View: 124°	Furthest Visible WTG: 43 mi / 69 km
Vertical Field of View: 40°	Potential Number of Structures Visible: 86
Nearest WTG: 31 mi / 50 km	Potential Number of Structures Not Visible: 63

PHOTOGRAPH AND SITE

Time of photograph: 9:01AM	Viewing direction: South (194°)
Date of photograph: 6-25-20	Latitude: 41.351077°N
L/SCA: Ocean Beach, Costal Scrub, Rural/Residential	Longitude: 70.454821°W
	Lighting Direction: Backlit diffused

ENVIRONMENT

Temperature: 77° F
Humidity: 58%
Wind Dir & Speed: SSW 14mph
Weather Condition: Cloudy

CAMERA

Camera Elevation: 20.5 ft / 6.3 m
Nikon D4
Nikon 50mm
ISO: 100
Fstop: f/7.1
Shutter: 1/1250 sec
Exposure bias: -0.7 step



The page should viewed at 11" x 17" approximately 15" from viewer's eyes .



The page should viewed at 11" x 17" approximately 15" from viewer's eyes .



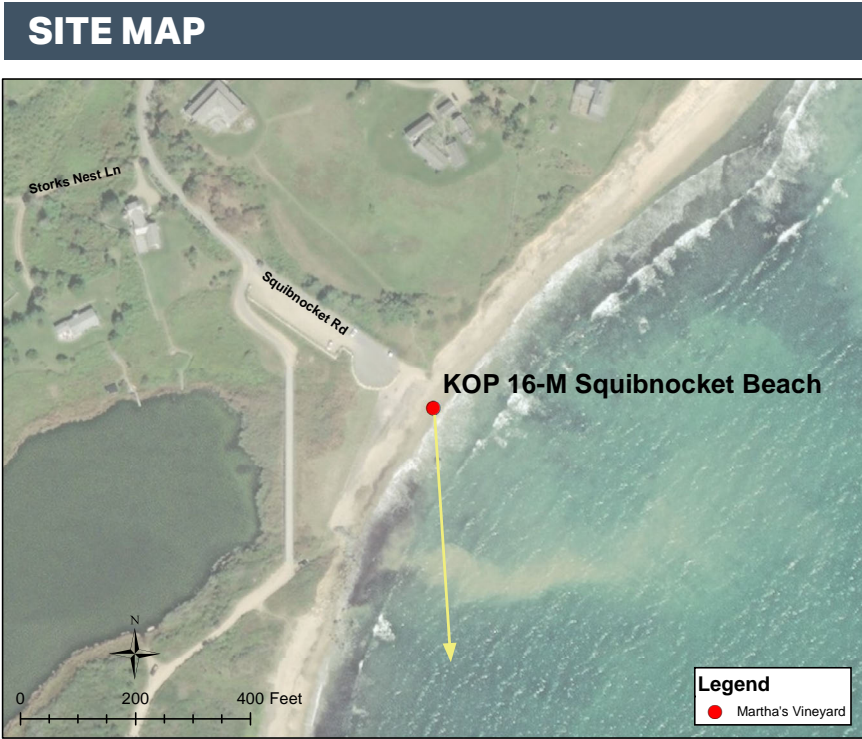
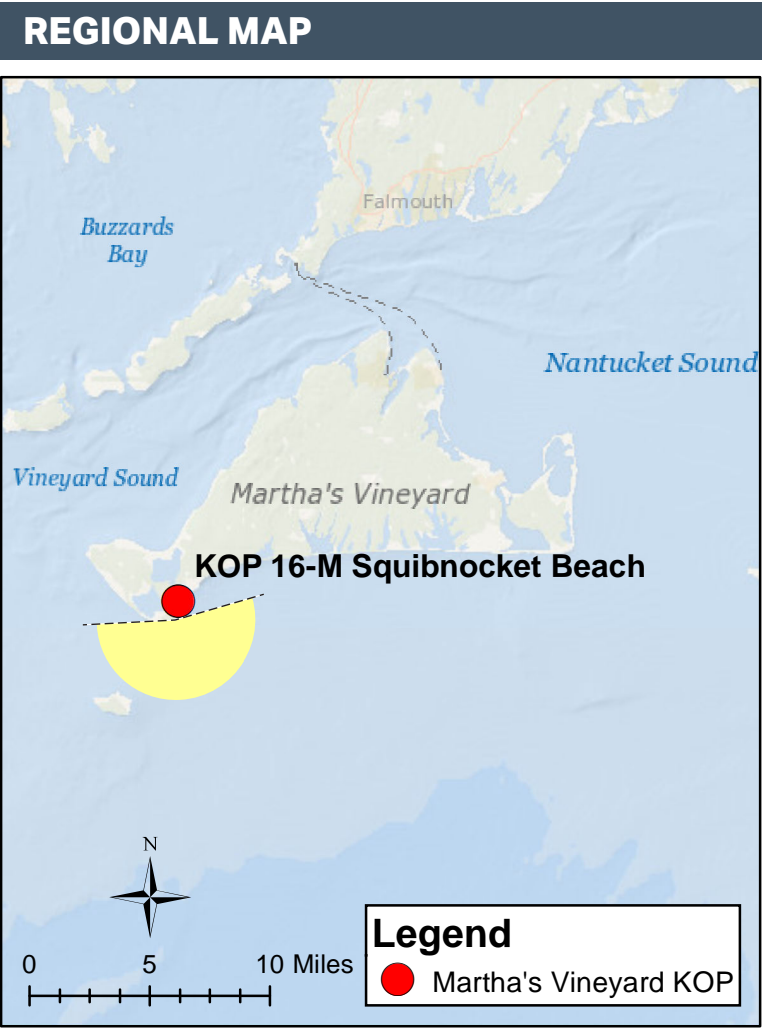
MATCH
LINE BC MATCH
LINE CC

MATCH
LINE CD MATCH
LINE B

The page should viewed at 11" x 17" approximately 15" from viewer's eyes .

PANORAMIC PHOTOGRAPH - EXISTING CONDITIONS

1



MATCH LINES define visual simulation detail areas

A-B is shown on pages 2-3

AA-AB is shown on page 4

BB-BC is shown on page 5

CC-CD is shown on page 6

PROJECT VIEW

Horizontal Field of View: 193°	Furthest Visible WTG: 39 mi / 63 km
Vertical Field of View: 40°	Potential Number of Structures Visible: 191
Nearest WTG: 13 mi / 22 km	Potential Number of Structures Not Visible: 258

PHOTOGRAPH AND SITE

Time of photograph: 2:08PM	Viewing direction: Southeast (176°)
Date of photograph: 11-6-20	Latitude: 41.318873°N
L/SCA: Ocean Beach, Open Ocean	Longitude: 70.764908°W
	Lighting Direction: Sidelit diffused

ENVIRONMENT

Temperature: 65° F
Humidity: 78%
Wind Dir & Speed: SSW 16mph
Weather Condition: Hazy

CAMERA

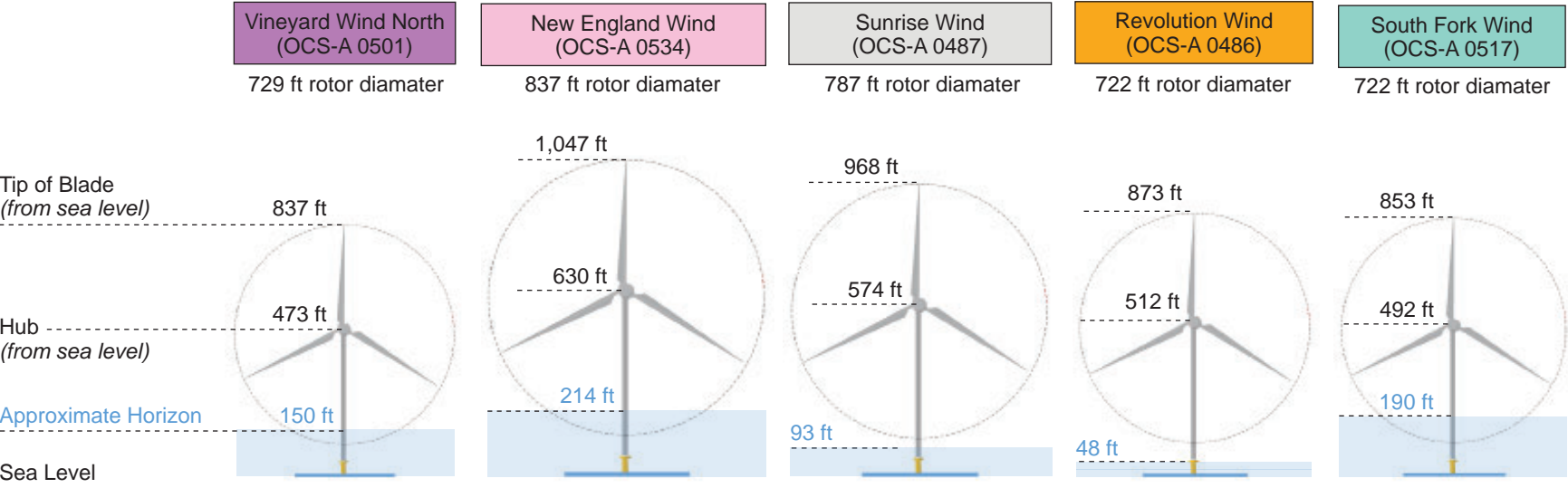
Camera Elevation: 16.5 ft / 5.0 m
Nikon D4
Nikon 50mm
ISO: 100
Fstop: f/7.1
Shutter: 1/1250 sec
Exposure bias: -0.7 step

SIMULATED CONDITIONS

2



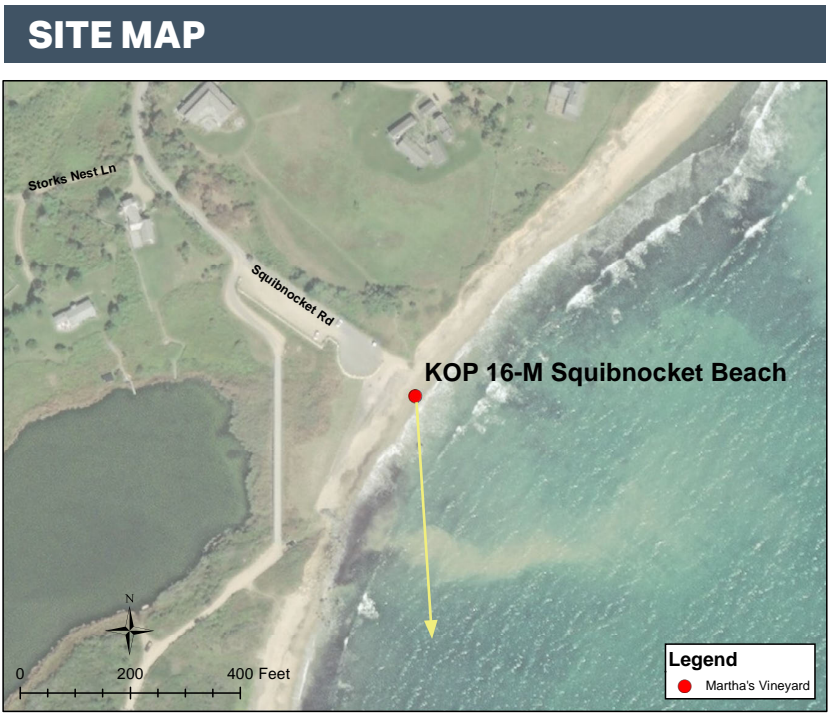
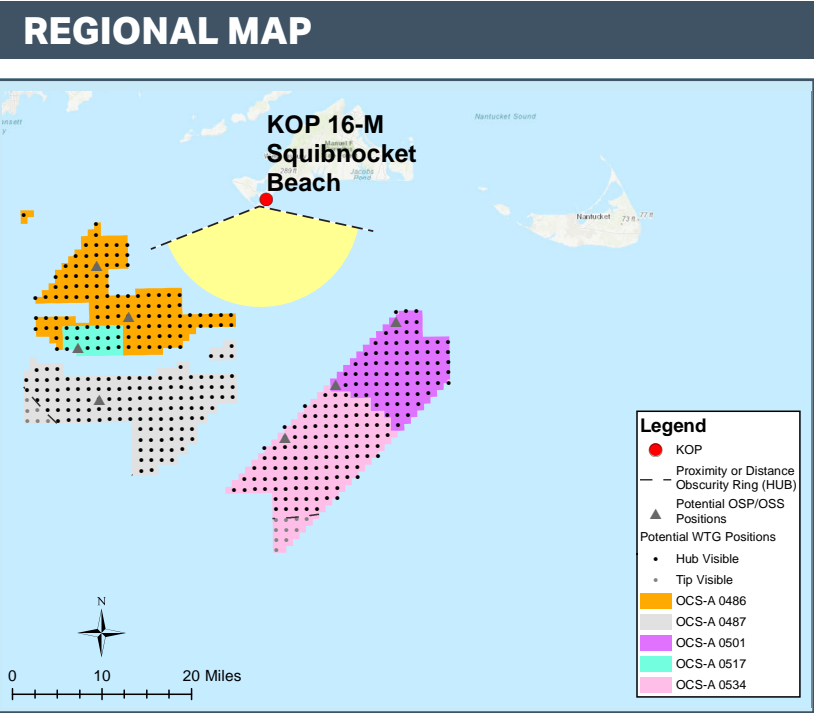
VISIBILTY OF CLOSEST TURBINES



Year Forecasted for Development	2023	2024 Phase II 2026	2025	2023	2023
Number of Structures in Lease Area	77	120	131	103	18
Number of Structures within View of KOP	71	120	0	0	0
Distance to Closest Structure	20 mi (32 km)	23 mi (37 km)	17 mi (27 km)	13 mi (22 km)	22 mi (35 km)
Distance to Furthest Structure	29 mi (47 km)	39 mi (63 km)	36 mi (59 km)	30 mi (47 km)	28 mi (45 km)

SIMULATED CONDITIONS

3



PROJECT VIEW

Horizontal Field of View: 193°	Furthest Visible WTG: 39 mi / 63 km
Vertical Field of View: 40°	Potential Number of Structures Visible: 191
Nearest WTG: 13 mi / 22 km	Potential Number of Structures Not Visible: 258

PHOTOGRAPH AND SITE

Time of photograph: 2:08PM	Viewing direction: Southeast (176°)
Date of photograph: 11-6-20	Latitude: 41.318873°N
L/SCA: Ocean Beach, Open Ocean	Longitude: 70.764908°W
	Lighting Direction: Sidelit diffused

ENVIRONMENT

Temperature: 65° F
Humidity: 78%
Wind Dir & Speed: SSW 16mph
Weather Condition: Hazy

CAMERA

Camera Elevation: 16.5 ft / 5.0 m
Nikon D4
Nikon 50mm
ISO: 100
Fstop: f/7.1
Shutter: 1/1250 sec
Exposure bias: -0.7 step



The page should viewed at 11" x 17" approximately 15" from viewer's eyes .



The page should viewed at 11" x 17" approximately 15" from viewer's eyes .



MATCH
LINE BC

MATCH
LINE CC

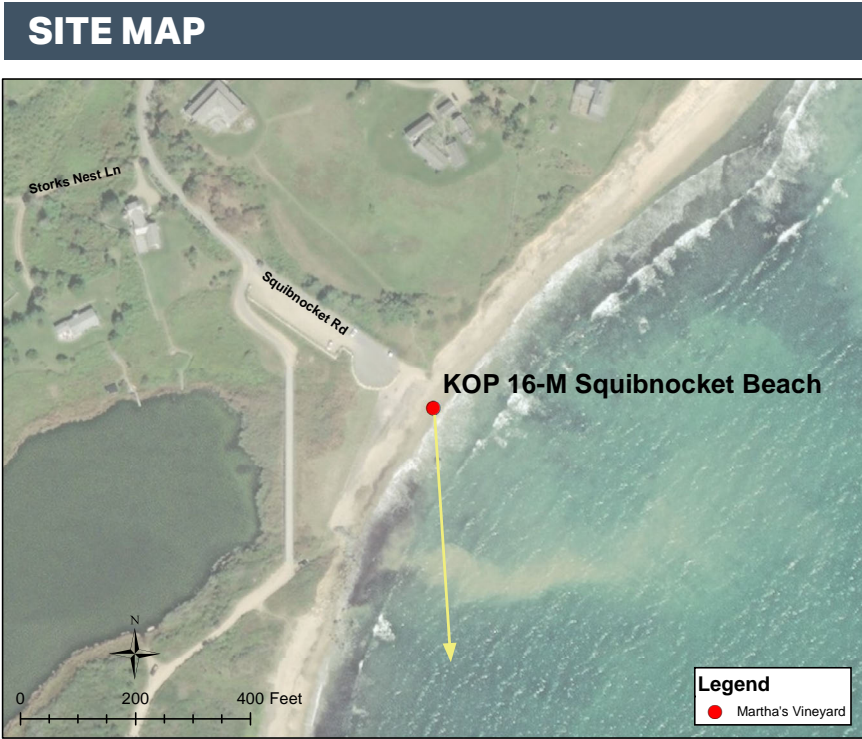
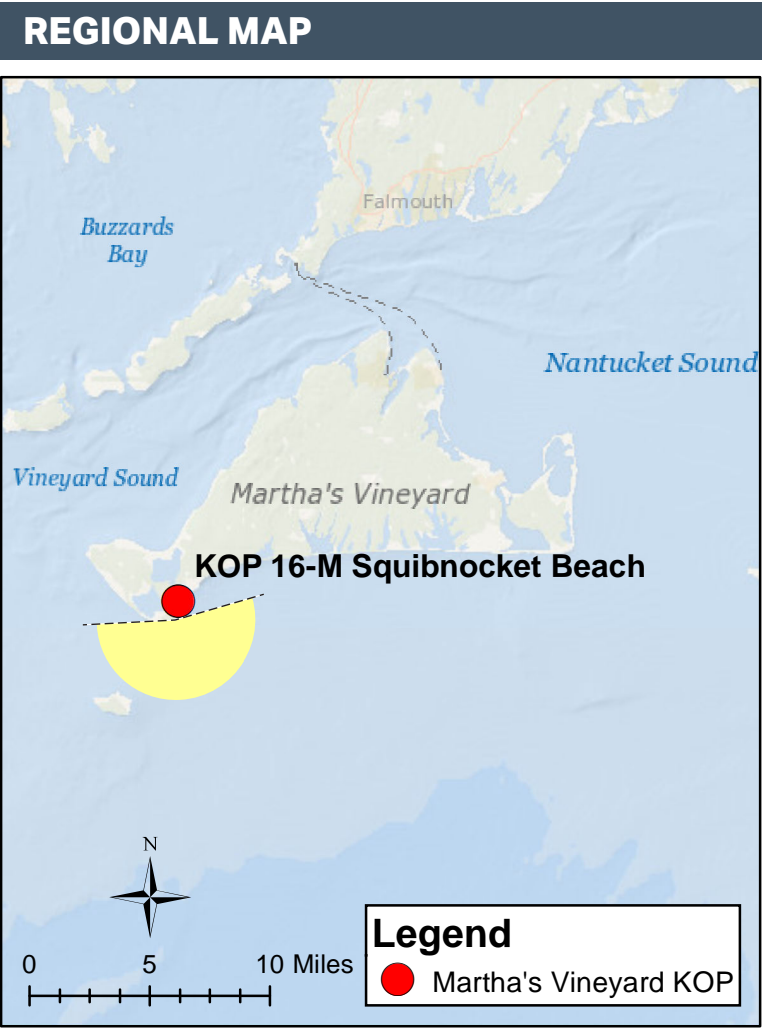
MATCH
LINE CD

MATCH
LINE B

The page should viewed at 11" x 17" approximately 15" from viewer's eyes .

PANORAMIC PHOTOGRAPH - EXISTING CONDITIONS

1



MATCH LINES define visual simulation detail areas

A-B is shown on pages 2-3

AA-AB is shown on page 4

BB-BC is shown on page 5

CC-CD is shown on page 6

PROJECT VIEW

Horizontal Field of View: 193°	Furthest Visible WTG: 45 mi / 72 km
Vertical Field of View: 40°	Potential Number of Structures Visible: 239
Nearest WTG: 12 mi / 20 km	Potential Number of Structures Not Visible: 359

PHOTOGRAPH AND SITE

Time of photograph: 2:08PM	Viewing direction: Southeast (176°)
Date of photograph: 11-6-20	Latitude: 41.318873°N
L/SCA: Ocean Beach, Open Ocean	Longitude: 70.764908°W
	Lighting Direction: Sidelit diffused

ENVIRONMENT

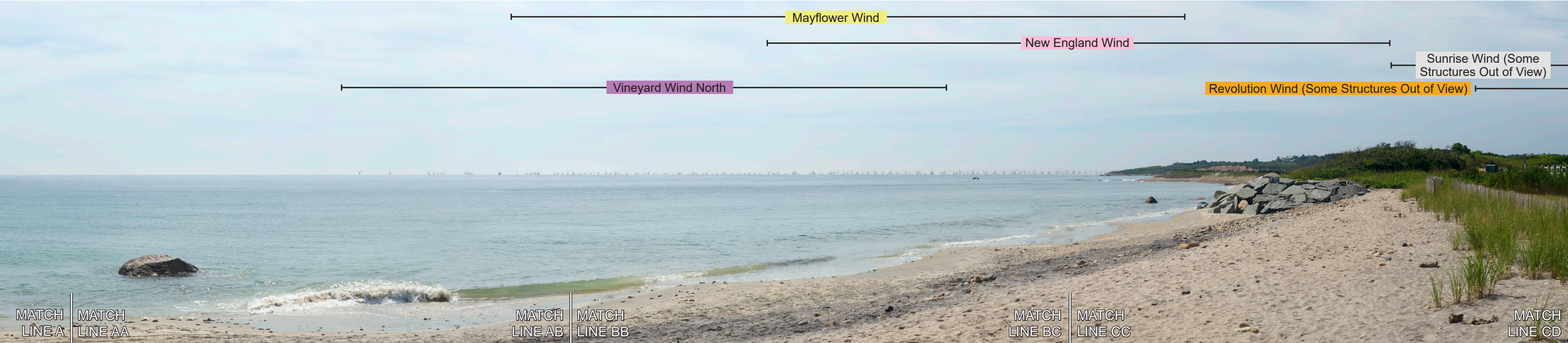
Temperature: 65° F
Humidity: 78%
Wind Dir & Speed: SSW 16mph
Weather Condition: Hazy

CAMERA

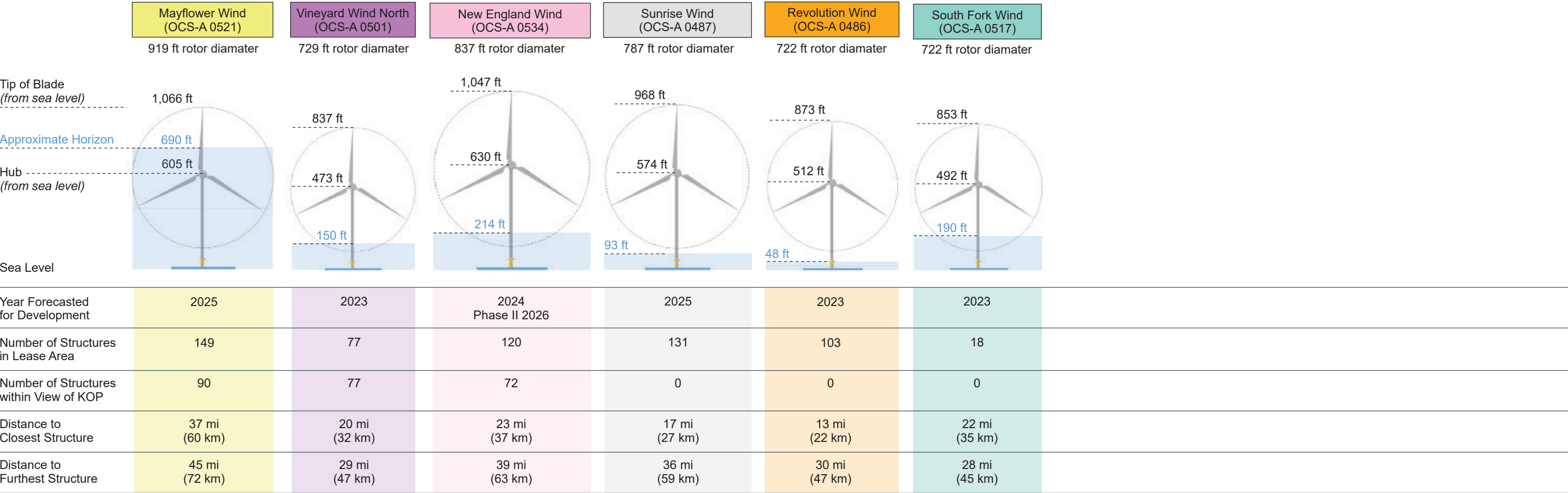
Camera Elevation: 16.5 ft / 5.0 m
Nikon D4
Nikon 50mm
ISO: 100
Fstop: f/7.1
Shutter: 1/1250 sec
Exposure bias: -0.7 step

SIMULATED CONDITIONS

2

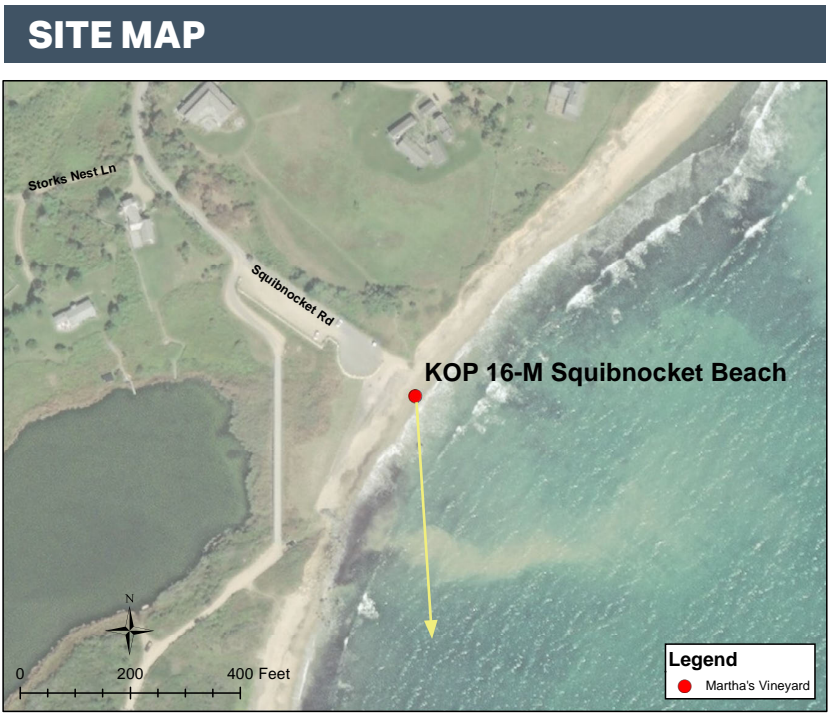
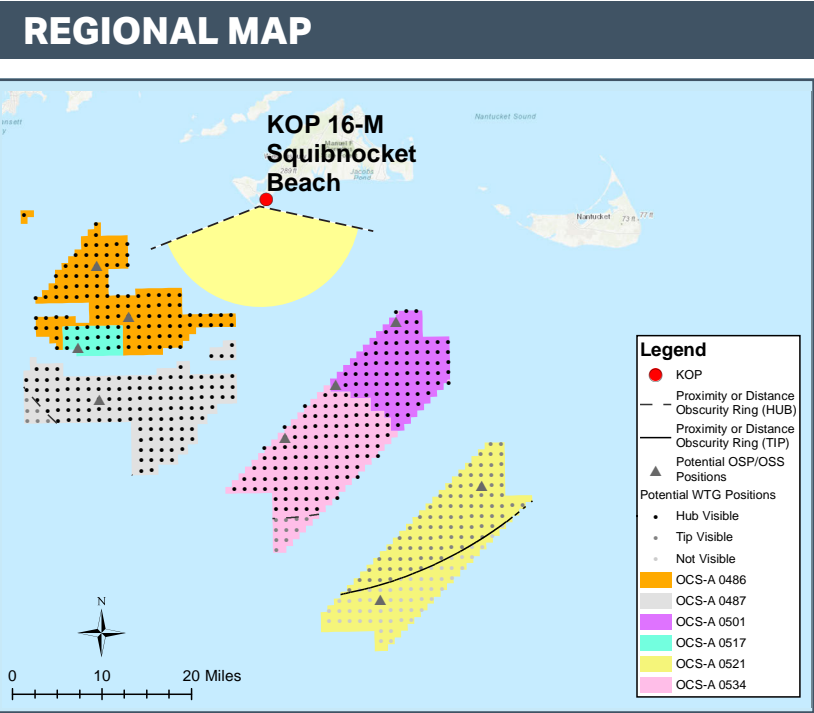


VISIBILTY OF CLOSEST TURBINES



SIMULATED CONDITIONS

3



PROJECT VIEW

Horizontal Field of View: 193°	Furthest Visible WTG: 45 mi / 72 km
Vertical Field of View: 40°	Potential Number of Structures Visible: 239
Nearest WTG: 12 mi / 20 km	Potential Number of Structures Not Visible: 359

PHOTOGRAPH AND SITE

Time of photograph: 2:08PM	Viewing direction: Southeast (176°)
Date of photograph: 11-6-20	Latitude: 41.318873°N
L/SCA: Ocean Beach, Open Ocean	Longitude: 70.764908°W
	Lighting Direction: Sidelit diffused

ENVIRONMENT

Temperature: 65° F
Humidity: 78%
Wind Dir & Speed: SSW 16mph
Weather Condition: Hazy

CAMERA

Camera Elevation: 16.5 ft / 5.0 m
Nikon D4
Nikon 50mm
ISO: 100
Fstop: f/7.1
Shutter: 1/1250 sec
Exposure bias: -0.7 step



The page should viewed at 11" x 17" approximately 15" from viewer's eyes .



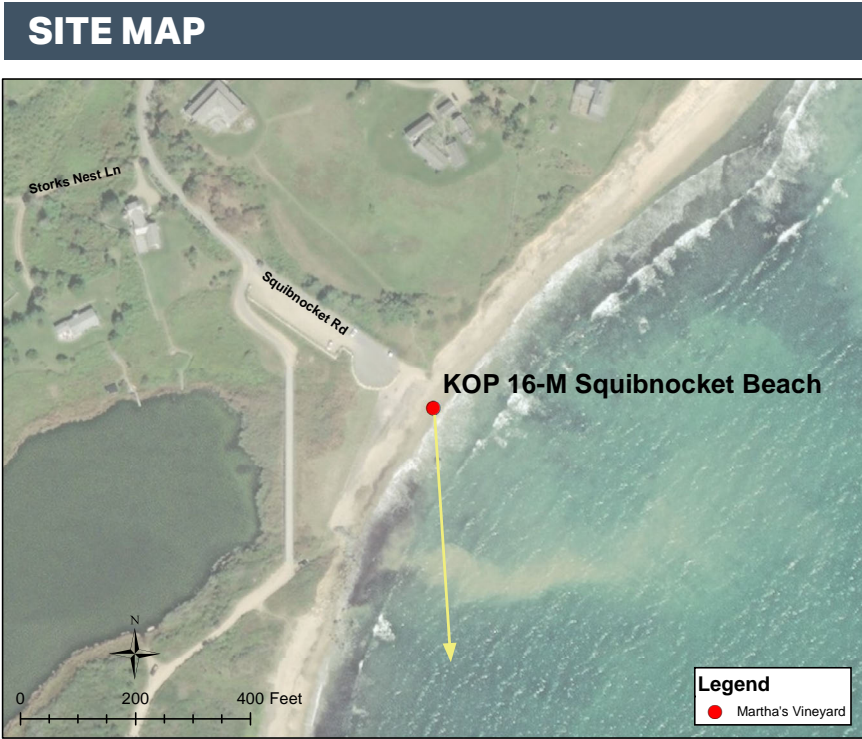
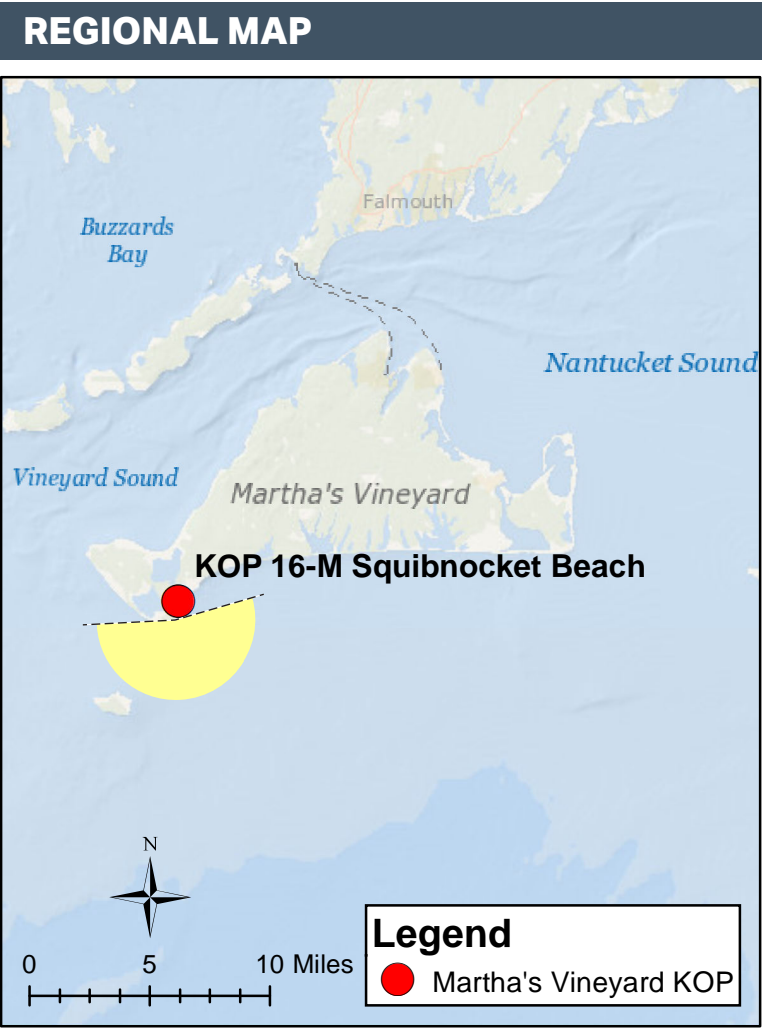
The page should viewed at 11" x 17" approximately 15" from viewer's eyes .



The page should viewed at 11" x 17" approximately 15" from viewer's eyes .

PANORAMIC PHOTOGRAPH - EXISTING CONDITIONS

1



MATCH LINES define visual simulation detail areas

A-B is shown on pages 2-3

AA-AB is shown on page 4

BB-BC is shown on page 5

CC-CD is shown on page 6

PROJECT VIEW

Horizontal Field of View: 193°	Furthest Visible WTG: 45 mi / 72 km
Vertical Field of View: 40°	Potential Number of Structures Visible: 425
Nearest WTG: 13 mi / 22 km	Potential Number of Structures Not Visible: 638

PHOTOGRAPH AND SITE

Time of photograph: 2:08PM	Viewing direction: Southeast (176°)
Date of photograph: 11-6-20	Latitude: 41.318873°N
L/SCA: Ocean Beach, Open Ocean	Longitude: 70.764908°W
	Lighting Direction: Sidelit diffused

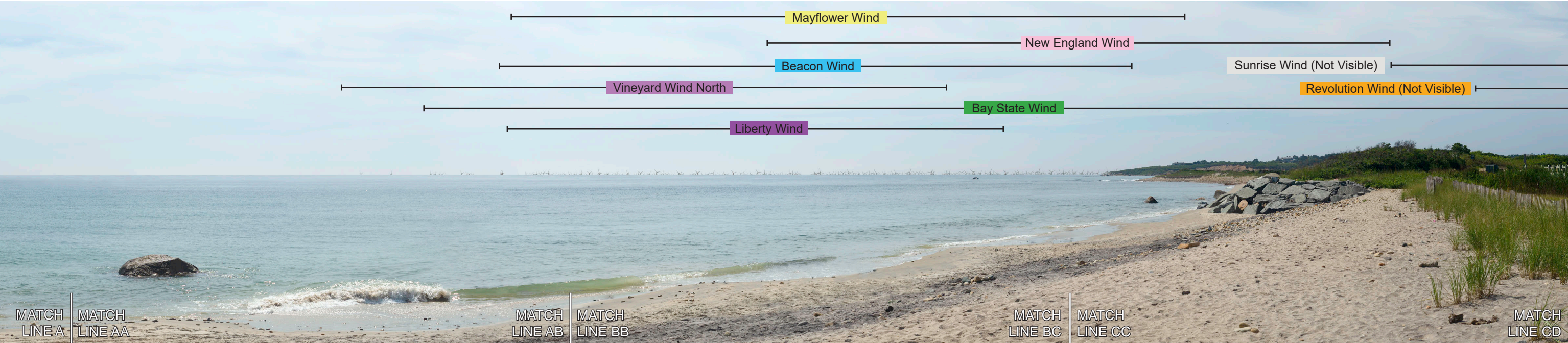
ENVIRONMENT

Temperature: 65° F
Humidity: 78%
Wind Dir & Speed: SSW 16mph
Weather Condition: Hazy

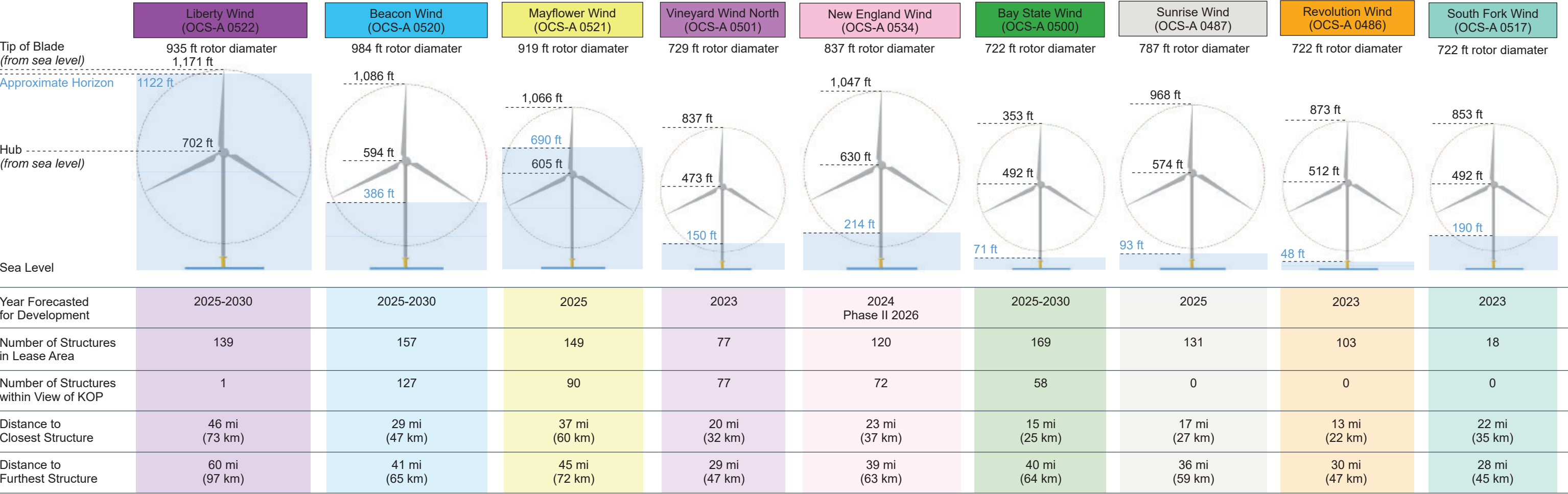
CAMERA

Camera Elevation: 16.5 ft / 5.0 m
Nikon D4
Nikon 50mm
ISO: 100
Fstop: f/7.1
Shutter: 1/1250 sec
Exposure bias: -0.7 step

SIMULATED CONDITIONS

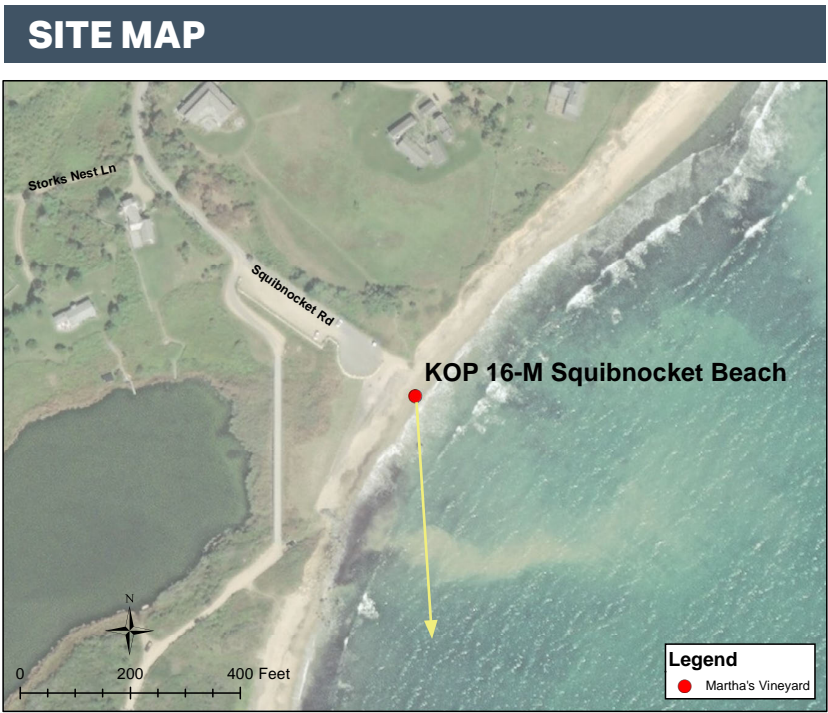
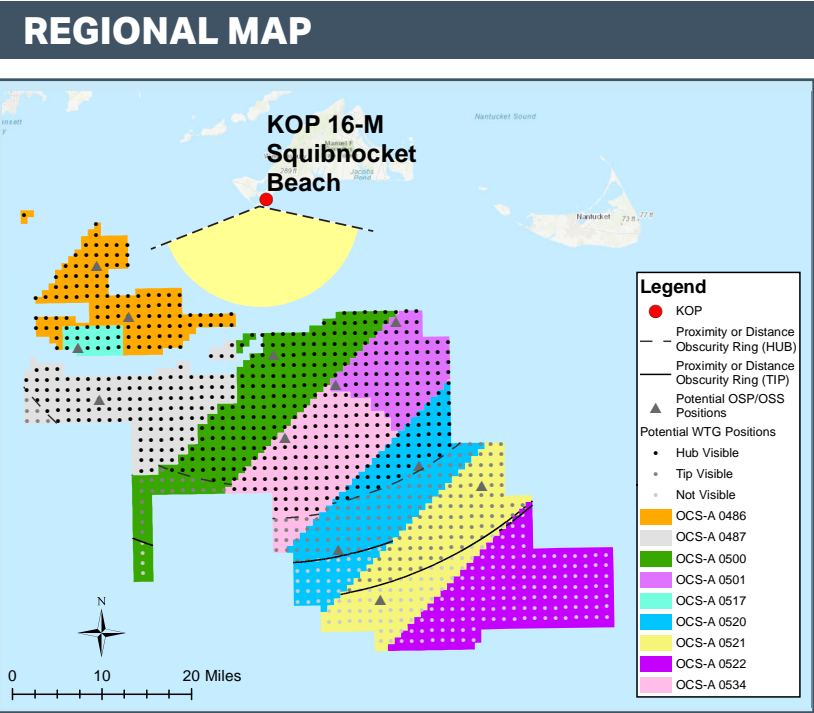


VISIBILTY OF CLOSEST TURBINES



SIMULATED CONDITIONS

3



PROJECT VIEW

Horizontal Field of View: 124°	Furthest Visible WTG: 45 mi / 72 km
Vertical Field of View: 40°	Potential Number of Structures Visible: 425
Nearest WTG: 13 mi / 22 km	Potential Number of Structures Not Visible: 638

ENVIRONMENT

Temperature: 65° F
Humidity: 78%
Wind Dir & Speed: SSW 16mph
Weather Condition: Hazy

PHOTOGRAPH AND SITE

Time of photograph: 2:08PM	Viewing direction: Southeast (176°)
Date of photograph: 11-6-20	Latitude: 41.318873°N
L/SCA: Ocean Beach, Open Ocean	Longitude: 70.764908°W
	Lighting Direction: Sidelit diffused

CAMERA

Camera Elevation: 16.5 ft / 5.0 m
Nikon D4
Nikon 50mm
ISO: 100
Fstop: f/7.1
Shutter: 1/1250 sec
Exposure bias: -0.7 step



The page should viewed at 11" x 17" approximately 15" from viewer's eyes .



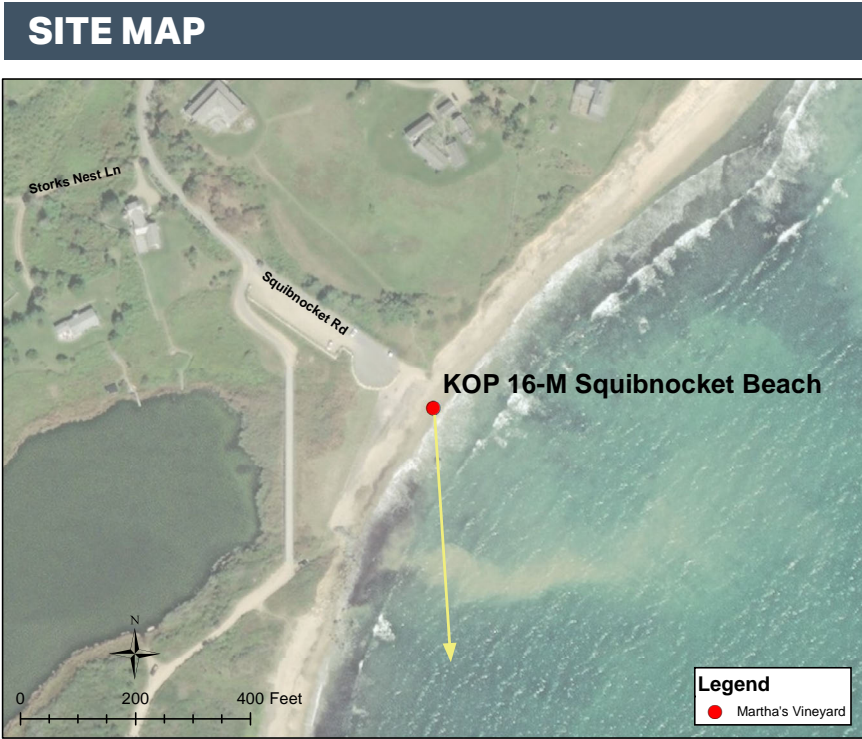
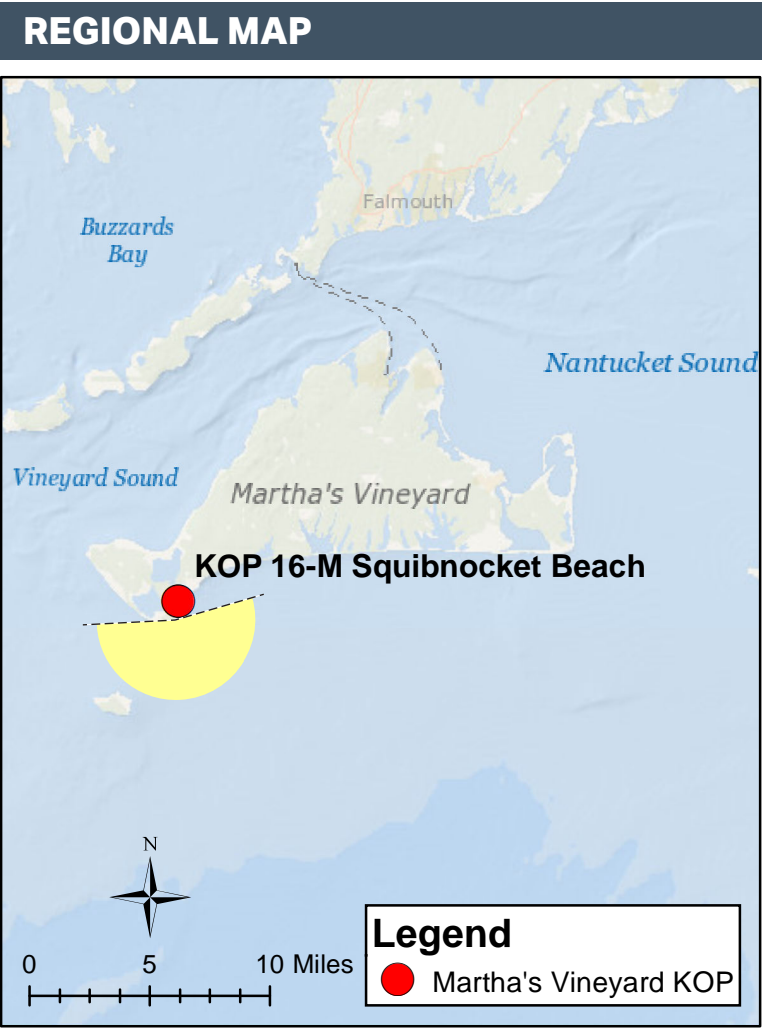
The page should viewed at 11" x 17" approximately 15" from viewer's eyes .



The page should viewed at 11" x 17" approximately 15" from viewer's eyes .

PANORAMIC PHOTOGRAPH - EXISTING CONDITIONS

1



MATCH LINES define visual simulation detail areas

A-B is shown on pages 2-3

AA-AB is shown on page 4

BB-BC is shown on page 5

CC-CD is shown on page 6

PROJECT VIEW

Horizontal Field of View: 193°	Furthest Visible WTG: 45 mi / 72 km
Vertical Field of View: 40°	Potential Number of Structures Visible: 335
Nearest WTG: 13 mi / 22 km	Potential Number of Structures Not Visible: 579

PHOTOGRAPH AND SITE

Time of photograph: 2:08PM	Viewing direction: Southeast (176°)
Date of photograph: 11-6-20	Latitude: 41.318873°N
L/SCA: Ocean Beach, Open Ocean	Longitude: 70.764908°W
	Lighting Direction: Sidelit diffused

ENVIRONMENT

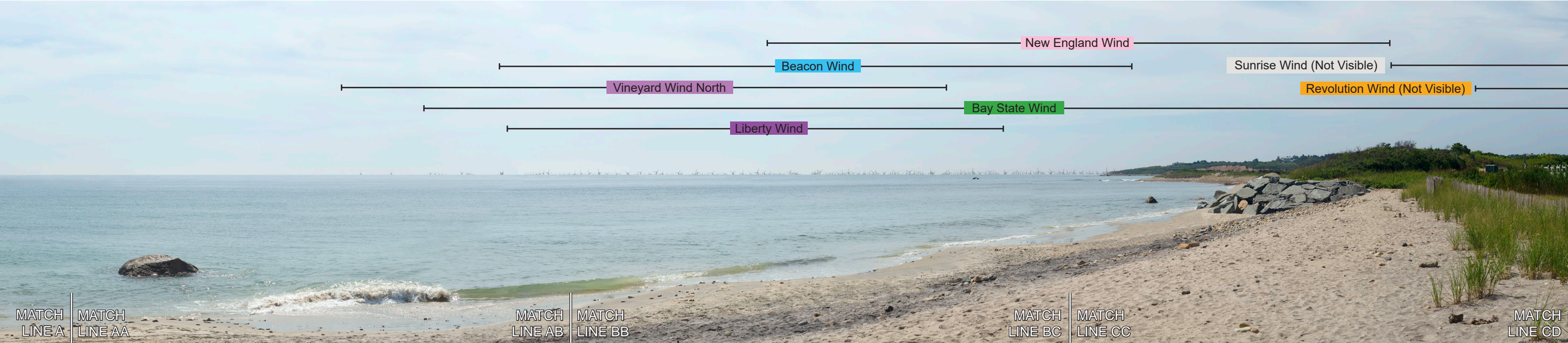
Temperature: 65° F
Humidity: 78%
Wind Dir & Speed: SSW 16mph
Weather Condition: Hazy

CAMERA

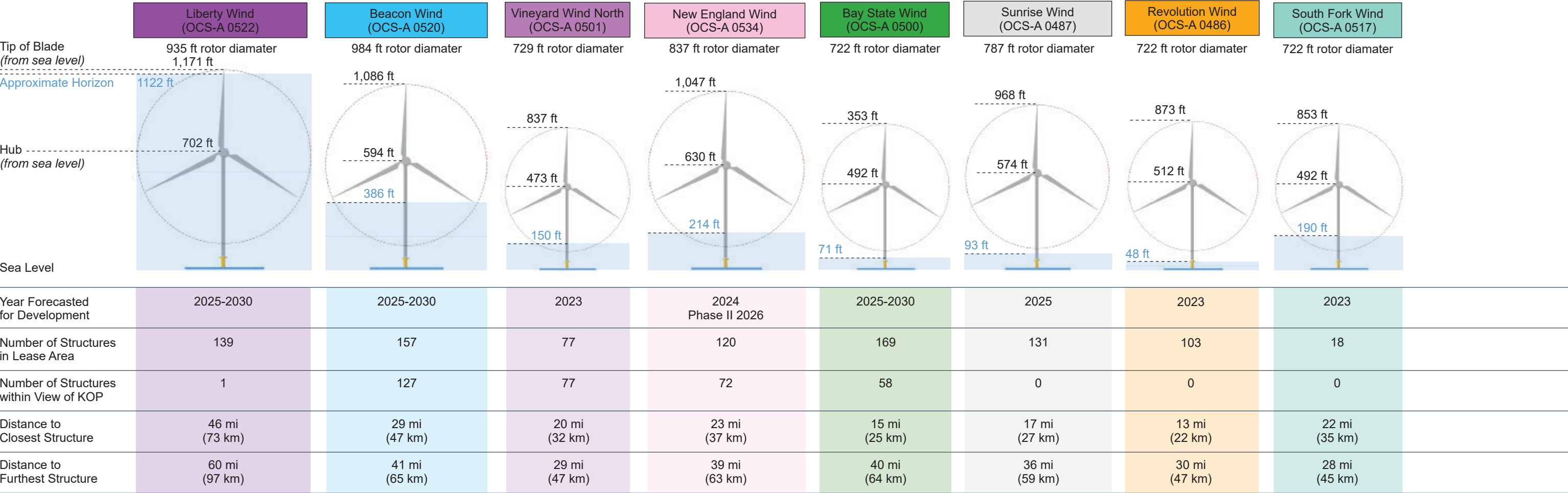
Camera Elevation: 16.5 ft / 5.0 m
Nikon D4
Nikon 50mm
ISO: 100
Fstop: f/7.1
Shutter: 1/1250 sec
Exposure bias: -0.7 step

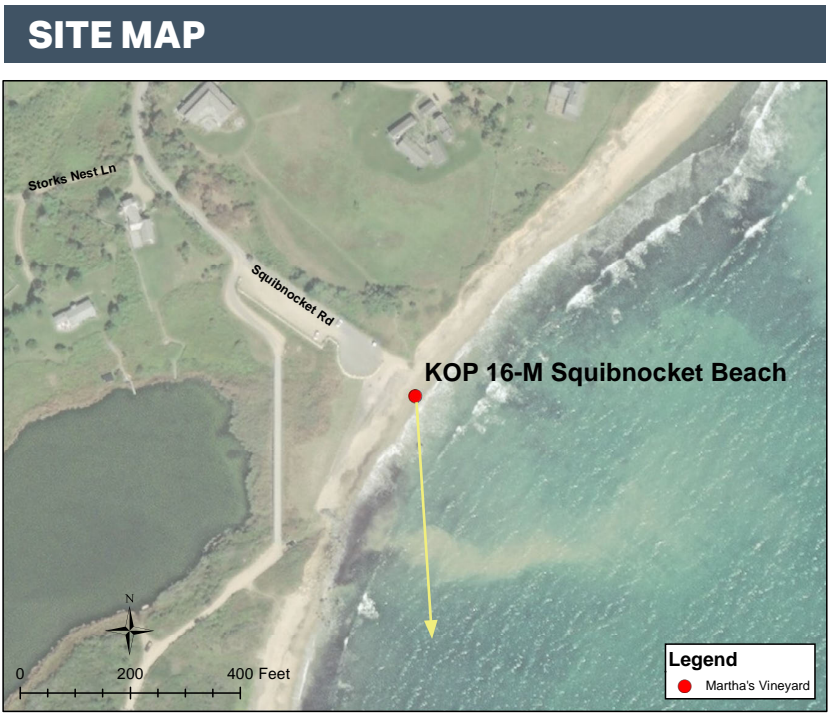
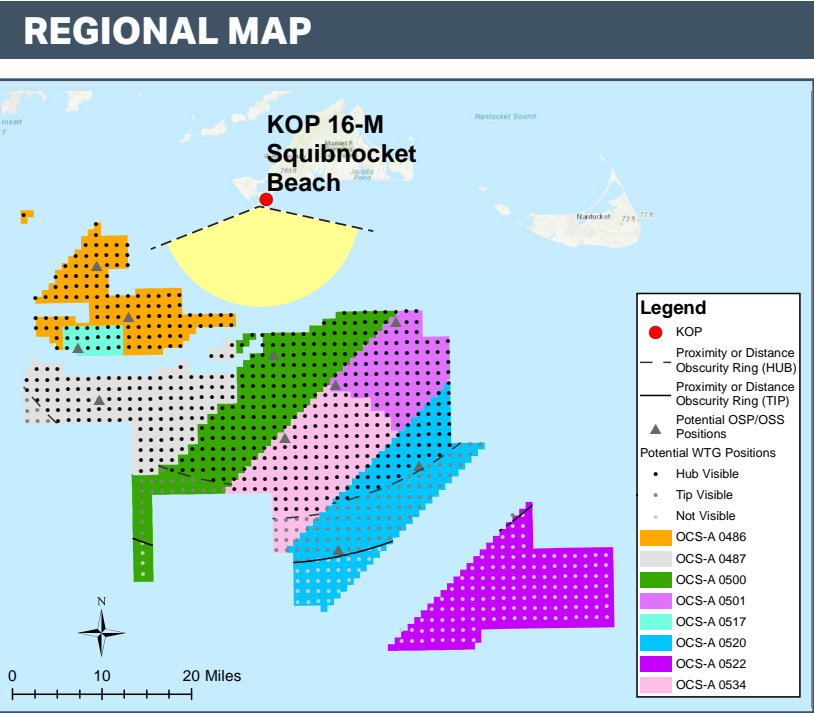
SIMULATED CONDITIONS

2



VISIBILTY OF CLOSEST TURBINES





PROJECT VIEW

Horizontal Field of View: 193°	Furthest Visible WTG: 45 mi / 72 km
Vertical Field of View: 40°	Potential Number of Structures Visible: 335
Nearest WTG: 13 mi / 22 km	Potential Number of Structures Not Visible: 579

ENVIRONMENT

Temperature: 65° F
Humidity: 78%
Wind Dir & Speed: SSW 16mph
Weather Condition: Hazy

PHOTOGRAPH AND SITE

Time of photograph: 2:08PM	Viewing direction: Southeast (176°)
Date of photograph: 11-6-20	Latitude: 41.318873°N
L/SCA: Ocean Beach, Open Ocean	Longitude: 70.764908°W
	Lighting Direction: Sidelit diffused

CAMERA

Camera Elevation: 16.5 ft / 5.0 m
Nikon D4
Nikon 50mm
ISO: 100
Fstop: f/7.1
Shutter: 1/1250 sec
Exposure bias: -0.7 step



MATCH
LINE A

MATCH
LINE AA

MATCH
LINE AB

MATCH
LINE BB

The page should viewed at 11" x 17" approximately 15" from viewer's eyes .



MATCH
LINE AB

MATCH
LINE BB

MATCH
LINE BC

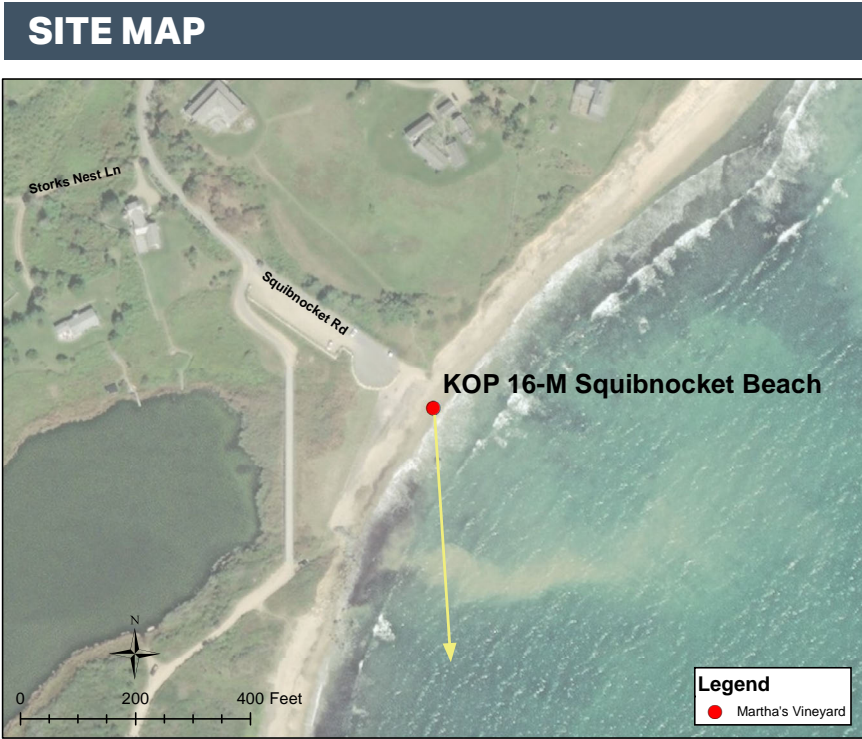
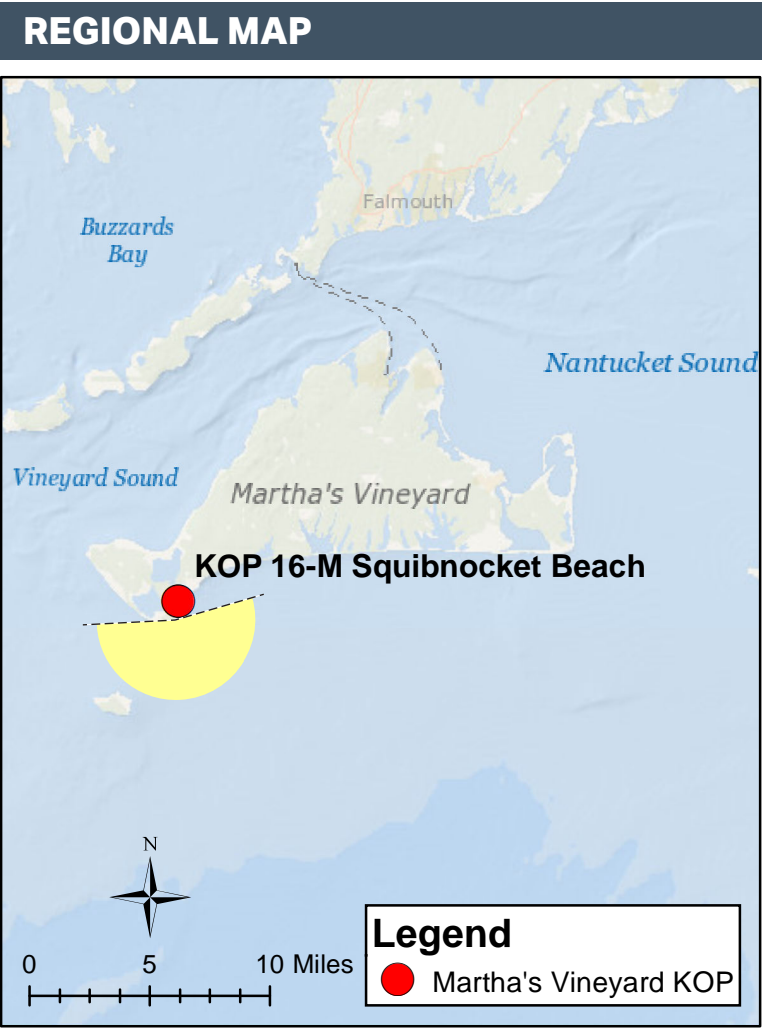
MATCH
LINE CC



The page should viewed at 11" x 17" approximately 15" from viewer's eyes .

PANORAMIC PHOTOGRAPH - EXISTING CONDITIONS

1



MATCH LINES define visual simulation detail areas

A-B is shown on pages 2-3

AA-AB is shown on page 4

BB-BC is shown on page 5

CC-CD is shown on page 6

PROJECT VIEW

Horizontal Field of View: 193°	Furthest Visible WTG: 45 mi / 72 km
Vertical Field of View: 40°	Potential Number of Structures Visible: 90
Nearest WTG: 37 mi / 60 km	Potential Number of Structures Not Visible: 59

PHOTOGRAPH AND SITE

Time of photograph: 2:08PM	Viewing direction: Southeast (176°)
Date of photograph: 11-6-20	Latitude: 41.318873°N
L/SCA: Ocean Beach, Open Ocean	Longitude: 70.764908°W
	Lighting Direction: Sidelit diffused

ENVIRONMENT

Temperature: 65° F
Humidity: 78%
Wind Dir & Speed: SSW 16mph
Weather Condition: Hazy

CAMERA

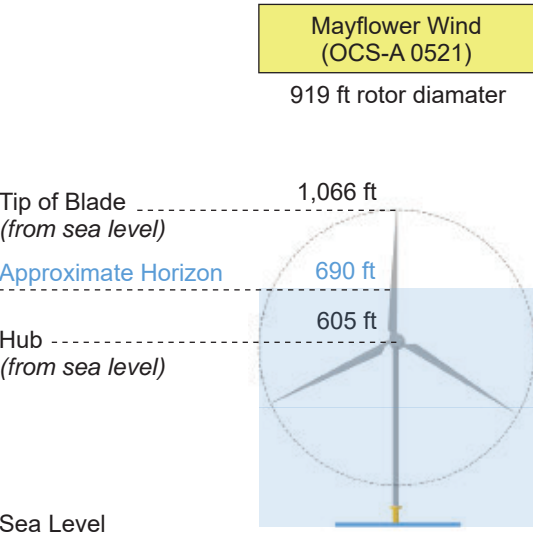
Camera Elevation: 16.5 ft / 5.0 m
Nikon D4
Nikon 50mm
ISO: 100
Fstop: f/7.1
Shutter: 1/1250 sec
Exposure bias: -0.7 step

SIMULATED CONDITIONS

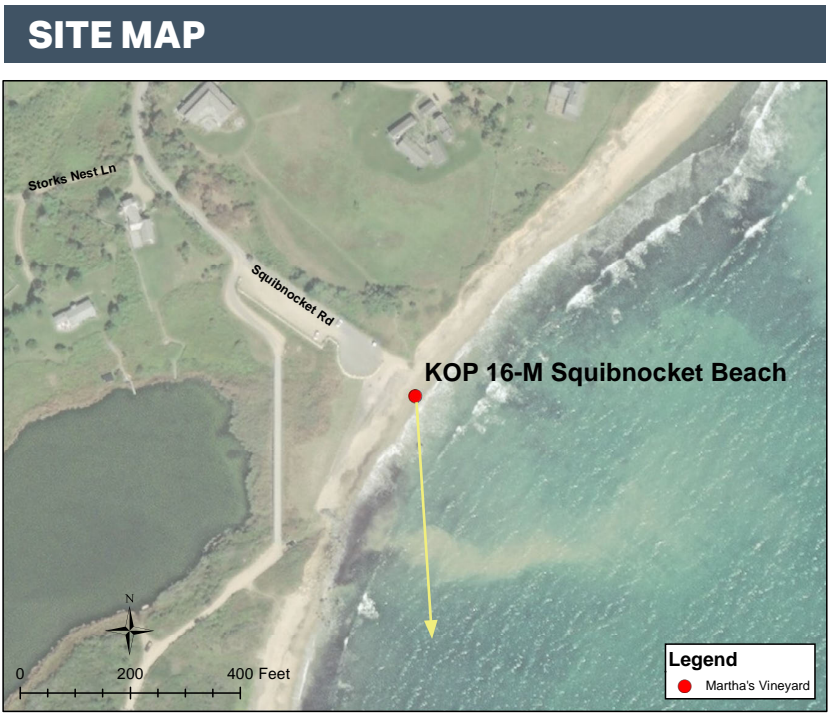
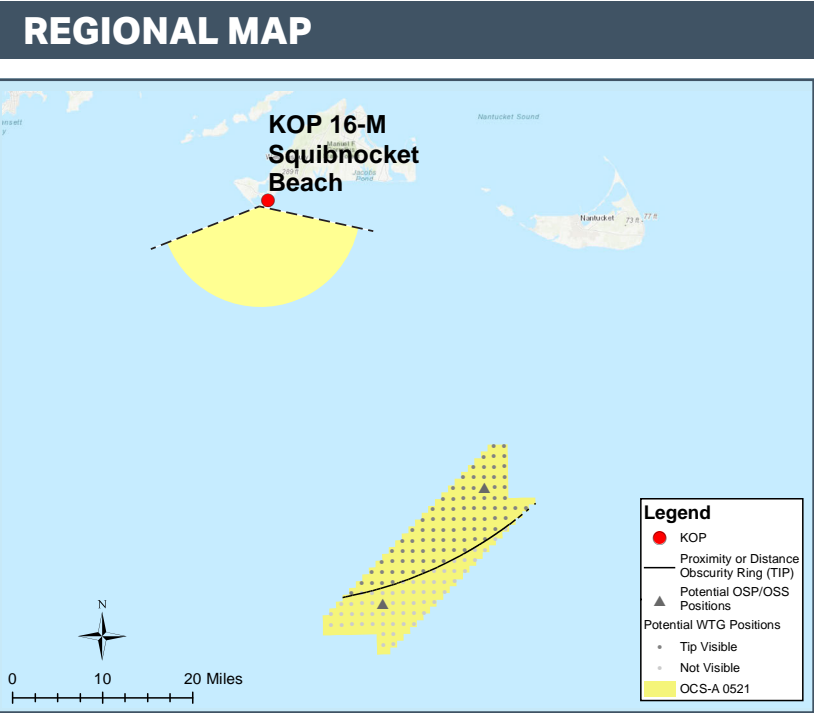
2



VISIBILTY OF CLOSEST TURBINES



Year Forecasted for Development	2025	
Number of Structures in Lease Area	149	
Number of Structures within View of KOP	90	
Distance to Closest Structure	37 mi (60 km)	
Distance to Furthest Structure	45 mi (72 km)	



PROJECT VIEW	
Horizontal Field of View: 193°	Furthest Visible WTG: 45 mi / 72 km
Vertical Field of View: 40°	Potential Number of Structures Visible: 90
Nearest WTG: 37 mi / 60 km	Potential Number of Structures Not Visible: 59

PHOTOGRAPH AND SITE	
Time of photograph: 2:08PM	Viewing direction: Southeast (176°)
Date of photograph: 11-6-20	Latitude: 41.318873°N
L/SCA: Ocean Beach, Open Ocean	Longitude: 70.764908°W
	Lighting Direction: Sidelit diffused

ENVIRONMENT
Temperature: 65° F
Humidity: 78%
Wind Dir & Speed: SSW 16mph
Weather Condition: Hazy

CAMERA
Camera Elevation: 16.5 ft / 5.0 m
Nikon D4
Nikon 50mm
ISO: 100
Fstop: f/7.1
Shutter: 1/1250 sec
Exposure bias: -0.7 step



The page should viewed at 11" x 17" approximately 15" from viewer's eyes .



The page should viewed at 11" x 17" approximately 15" from viewer's eyes .



MATCH
LINE BC

MATCH
LINE CC

MATCH
LINE CD

MATCH
LINE B

The page should viewed at 11" x 17" approximately 15" from viewer's eyes .

APPENDIX D
Key Personnel Resumes

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Karen Crawford, MA, RPA

Section 106 & Cultural Resources Lead

Years of Experience

- Professional start date: 02/1996
- ICF start date: 03/2003

Education

- MA, Anthropology, University of California, Davis, 2000
- BA, Anthropology, California State University, Long Beach, 1997

Ms. Crawford is a cultural resources project manager and principal investigator. She serves as a technical leader on large multidisciplinary projects throughout the United States. She has extensive experience in prehistoric and historical archaeological research, surveys, and excavation throughout the United States and in the United Kingdom, Ireland, and China. She brings 26 years of comprehensive experience preparing documentation to meet the requirements of Section 106 of the National Historic Preservation Act (NHPA) and National Environmental Policy Act (NEPA) and has written numerous cultural resources research designs, technical reports, consultation and agreement documents, findings of effect, and mitigation and monitoring plans.

Ms. Crawford frequently assists agencies by coordinating State Historic Preservation Office (SHPO) consultation, and she has coordinated tribal input and participation with dozens of tribes. Ms. Crawford meets the U.S. Secretary of the Interior's guidelines for a professional archaeologist and is a Registered Professional Archaeologist (RPA).

Ms. Crawford is skilled at ensuring project milestones, schedules, and budgets are met in a timely and efficient manner; overseeing collaboration between internal team members; and performing internal quality assurance review for technical reports and NEPA sections.

PROJECT EXPERIENCE

Mayflower Wind Environmental Impact Statement (EIS)—Bureau of Ocean Energy Management (BOEM), Massachusetts, 2021–Present

Section 106 Lead. Ms. Crawford is the Section 106 lead for the Mayflower Wind project and is responsible for implementing the consultation plan as agreed to by BOEM. She is also provides senior review for the cultural sections of the Mayflower Wind EIS. The Mayflower Wind project is located more than 30 miles south of Martha's Vineyard and 20 miles south of Nantucket and has the potential to generate more than 2,000 MW of low-cost clean energy (i.e., enough to power nearly 800,000 homes).

Inventory and Analysis of Coastal and Submerged Site Occurrence on the Pacific Outer Continental Shelf (OCS)—BOEM, Pacific Region, 2011–2015

Program Manager. Ms. Crawford led a team that completed baseline inventories of coastal and submerged historic properties on the Pacific OCS and western U.S. coast. She oversaw all tasks, including outreach to 152 tribes in California, Oregon, and Washington and ethnographers, anthropologists, and preservation groups and modeling the prehistoric site potential of submerged landforms and georeferenced databases of shipwrecks and coastal properties. Ms. Crawford's team developed management recommendations regarding potential direct and indirect impacts of future offshore energy projects under NEPA/Section 106. She coordinated closely with the subconsultant team and BOEM staff. The technical report produced by the ICF

team won the Outstanding Resource Document Award from the California Association of Environmental Professionals in 2015.

[As-Needed Environmental Services—Los Angeles County Metropolitan Transportation Authority \(LA Metro\), California, 2011–2012 and 2017–Present](#)

Cultural Resources Manager. Ms. Crawford has filled this role under two contracts and oversees the identification, evaluation, mitigation, and monitoring efforts for all cultural resources tasks, most of which receive federal funding. She oversees the preparation of documentation for compliance with Section 106 of NHPA, assists with the coordination between LA Metro and lead federal agencies (California Department of Transportation [Caltrans]/Federal Highway Administration [FHWA], Federal Transit Administration [FTA]), and prepares SHPO and consulting party consultation documentation. She led the preparation of the programmatic agreement and conducted extensive Section 106 consultation on behalf of Caltrans/FHWA for the Alameda Esplanade and Los Angeles Street Improvements Project. She also authored the programmatic agreement for the Union Station/Patsaouras Plaza El Monte Busway Station Project for FTA and currently leads the implementation of the programmatic agreement, including organizing consulting party meetings, preparing as-needed consulting party notifications, and preparing quarterly and annual Section 106 reports.

[XpressWest High-Speed Train Project—Federal Railroad Administration/Circlepoint, Bureau of Land Management \(BLM\), California and Nevada, 2019–Present](#)

Technical Manager. Ms. Crawford provided oversight of California and Nevada Class III cultural resources inventories for a proposed high-speed train between Victorville, CA, and Las Vegas, NV. She performed extensive coordination among multiple agencies including the Federal Railroad Administration, the California BLM Barstow and Needles Field Offices, the Nevada BLM Southern Nevada District Office, the California and Nevada Departments of Transportation, and California and Nevada SHPOs. Ms. Crawford conducted extensive coordination among tribal consulting parties and prepared Section 106 documentation supporting SHPO consultation. She led the cultural resources analysis for the reevaluation of the project NEPA document.

[North Peak Wind Biological and Cultural Technical Studies and Permitting Support—E.ON Climate and Renewables North America, California, 2013–2015](#)

Cultural Resources Task Manager and Principal Investigator. Ms. Crawford led and oversaw cultural resources services to support environmental and permitting process requirements. She assisted the client during applicant meetings with the BLM Barstow Field Office and worked closely with the BLM archaeologist to define and refine the area of potential effect. Ms. Crawford managed a Class I cultural resources inventory covering 200 square miles and oversaw the development of a viewshed analysis to streamline the number of cultural resources subject to visual impact assessment. She also wrote the cultural resources work plan.



Years of Experience

Professional start date: 05/2018
ICF start date: 11/2021

Education

MS, Historic Preservation,
University of Vermont, 2018

MA, Humanities, University of
Louisville, 2013

BA, Art History & Humanities,
University of Louisville, 2011

Certifications/Registrations

Secretary of the Interior-qualified
Architectural Historian

Professional Affiliations

Transportation Research Board,
Committee on Historic and
Archaeological Preservation in
Transportation, 2019-present

Member, Vernacular Architecture
Forum, 2020-present

Member, Preservation Delaware,
2020-present

Member, U.S. National Committee
of the International Council on
Monuments and Sites, 2017-2019.

Maureen R. McCoy, MSHP & MA

Historic Preservation Specialist, Architectural Historian

Maureen R. McCoy is an Architectural Historian with experience working with federal and state agencies on projects that comply with the National Environmental Policy Act (NEPA), Section 106 of the National Historic Preservation Act (NHPA), and Section 4(f) of the Department of Transportation Act of 1966. She has served as a subject matter expert and authored architectural history reports for projects in the New England and Mid-Atlantic regions, including cultural resource survey reports and evaluations of properties from the National Register of Historic Places (NRHP). She has experience in assessing and mitigating environmental and cultural impacts from infrastructure projects from the initial design stage through construction monitoring. Through a combination of experience and education, she meets the professional qualifications of the Secretary of the Interior for architectural history and history.

Project Experience Examples

Offshore Wind Energy

Atlantic Shores Offshore Wind Energy Project—Bureau of Ocean Energy Management (BOEM), New Jersey, 11/2021 – Present

Historic Preservation Specialist. Maureen assists with multiple aspects of the NEPA and Section 106 processes for this project to construct up to 200 wind turbine generators (WTGs) off the coast of New Jersey. She developed the Section 106 Consultation Plan, assists with consulting party coordination, provides sufficiency reviews of the Construction and Operations Plan (COP), co-authored the cultural resources chapter of the Environmental Impact Statement (EIS) and Section 106 Finding of Effect (FOE), wrote the Cumulative Historic Resources Visual Effects Analysis (CHVREA), and is assisting with the development of a Memorandum of Agreement (MOA).

Coastal Virginia Offshore Wind Commercial (CVOW-C) Project—BOEM, Virginia, 11/2021 – Present

Historic Preservation Specialist. Maureen assists with multiple aspects of the NEPA and Section 106 processes for this project, which involves the construction of up to 205 WTGs off the coast of Virginia. She co-authored the cultural resources chapter of the EIS and FOE, organizes consulting party meetings, wrote the CHVREA, and is assisting with MOA development.

Kitty Hawk Offshore Wind Project—BOEM, Virginia, North Carolina, 12/2021 – Present

Historic Preservation Specialist. Maureen assists with multiple aspects of the NEPA and Section 106 processes for this project, which involves the construction of up to 69 WTGs off the coasts of North Carolina and Virginia. She is co-authoring the cultural resources chapter of the EIS and FOE and organizing consulting party meetings.

Mayflower Offshore Wind Project—BOEM, Massachusetts and Rhode Island, 03/2022 – Present

Historic Preservation Specialist. Maureen assists with multiple aspects of the NEPA and Section 106 processes for this project, which involves the construction of WTGs off the coasts of Rhode Island and Massachusetts. She co-authored the cultural resources chapter of the EIS and FOE, organizes consulting party meetings, wrote the CHRVEA, and is assisting with MOA development.

Federal Programs

Cultural Heritage Guidance—United States Agency for International Development (USAID), 01/2022 – Present

Historic Preservation Specialist. Maureen is developing a document to provide USAID mission and project managers with guidance and best practices for considering cultural heritage impacts within the USAID environmental review process. This includes an overview of cultural heritage considerations in a global setting, advice on sources of information on sites and their significance, and recommendations for how to work with local communities and understand and address project impacts on cultural heritage.

Educational Mitigation

Stairway of Power Documentary—Pacific Gas and Electric (PG&E), California, 05/2022 – Present

Historic Preservation Specialist. Maureen developed the narrative script for this documentary and conducted research to inform the script and contribute historic visual resources to the video. This documentary is being produced in accordance with a MOA between the United States Forest Service (USFS), California State Historic Preservation Officer, and PG&E as a mitigation measure to resolve the adverse effect on the Caribou-Big Bend 115kV transmission line from the decommissioning and removal of the line.

Transportation—Roads, Bridges, Highways

Georgetown Transportation Hub—Federal Transit Administration (FTA) and DelDOT, Georgetown, DE, 07/2021 – 10/2021

Environmental Specialist. While employed by DelDOT, Maureen provided an expedited Section 106 review process for a new transit facility in coordination with FTA and DE SHPO that resulted in a conditional FOE. She conducted an architectural survey and compiled a report with property evaluations and recommendations for eligibility of each property for the NRHP to fulfill the conditions of the finding within the expedited funding timeframe.

West Camden Bypass, East Camden Bypass, and US 13 Widening from Lochmeath Way to Walnut Shade to Loch—FHWA and DelDOT, Newark, DE, 05/2020 –10/2021

Environmental Specialist. While employed by DelDOT, Maureen facilitated all aspects of the Section 106 documentation and coordination for this project. She provided technical direction, task management, and quality control of deliverables during the production of a consultant-led architectural survey of the three adjacent project areas. She coordinated with consulting parties about the findings of this survey and prepared the FOEs for all three projects. The East Camden Bypass resulted in an Adverse Effect and Memorandum of Agreement, and Maureen prepared the ACHP notification documents for this project.

Employment History

ICF International. Historic Preservation Specialist. Elkton, Maryland. 11/2021 – Present.

Delaware Department of Transportation. Environmental Specialist III. Dover, Delaware. 01/2019 – 10/2021.

International Council on Monuments and Sites. US/ICOMOS International Exchange Program Intern. Charenton-le-pont, France. 05/2018-08/2018.

University of Vermont. Graduate Writing Consultant. Burlington, Vermont. 08/2017 – 12/2018.

University of Louisville. Program Coordinator. Louisville, Kentucky. 08/2015 – 08/2017.

Bellarmine University. Tutor Coordinator. Louisville, Kentucky. 06/2013 – 07/2015.