Appendix M. Seascape, Landscape, and Visual Impact Assessment

M.1. Introduction

This appendix describes the Seascape, Landscape, and Visual Impact Assessment (SLVIA) methodology and key findings that BOEM used to identify the potential impacts of offshore wind structures (wind turbine generators [WTGs] and offshore substations [OSSs]) on scenic and visual resources within the geographic analysis area. This SLVIA methodology applies to any offshore wind energy development proposed for the outer continental shelf (OCS) and incorporates by reference the detailed description of the methodology described in the Assessment of Seascape, Landscape, and Visual Impacts of Offshore Wind Energy Developments on the Outer Continental Shelf of the United States (BOEM 2021). Section M.2, Method of Analysis, describes the specific methodology used to apply the SLVIA methodology to the Construction and Operations Plan (COP) and Section M.3, SLIA Results, summarizes the wind farm distances, field of view (FOV), noticeable elements, visual contrasts, scale of change, and prominence that contributed to the determination of impact levels for each key observation point (KOP) under the Proposed Action and each of the action alternatives that include modifications to WTG array layouts (Alternatives B, C, and D). An overview map of scenic resources present in the geographic analysis area is included as Attachment M-1, Scenic Resources Overview Map. Visual simulations of the Proposed Action alone, other planned offshore wind projects without the Proposed Action, and other offshore wind projects in combination with the Proposed Action are included in Attachment M-2, Cumulative Visual Simulations. Visual simulations of Alternatives B, C, and D are included in Attachment M-3, Visual Simulations of Action Alternatives. The onshore geographic analysis area includes landfalls, buried onshore export cables, onshore substations, and transmission connections to the electric grid. The visual impacts of onshore components are assessed in Chapter 3, Section 3.20, Scenic and Visual Resources.

M.1.1 State and Local Codes, Ordinances, and Planning Guidance

State planning documents that refer to scenic resources and visual quality for coastal communities in Virginia and North Carolina within the geographic analysis area are summarized below.

- The Virginia Scenic Rivers Act (Code of Virginia 10.1-400, et seq.) requires all state agencies to "consider the visual, natural, and recreational values of a scenic river in planning and permitting processes," (VDCR 2020) but includes no specific land use or visual controls. A segment of the North Landing River is a Commonwealth-designated Scenic River.
- The State Scenic Highway and Virginia Byways Act of 1966 allows roads "having relatively high aesthetic or cultural value, leading to or within areas of historical, natural or recreational significance" to be designated as a scenic byway (VDOT 2019). The designation does not carry land use of visual impact controls, but instead recognizes roads "controlled by zoning or otherwise, so as to reasonably protect the aesthetic or cultural value of the highway" (Code of Virginia 33.2-406). A segment of Indian River Road crossed by several Project alternatives is a Virginia Byway.

The following local land use plans and guidance address scenic and visual resources include the following.

• Moving Forward City of Chesapeake Comprehensive Plan 2035 (Chesapeake Bay Planning Department 2018) outlines the vision for the City of Chesapeake's physical environment, built environment, and land use for 2023. The plan encourages the location or relocation of utilities underground and recommends working "with private energy providers to plan for high-capacity

transmission lines and substations in order to minimize their impact on residences and businesses." (City of Chesapeake 2016; COP, Appendix I-2.3.2; Dominion Energy 2023).

- PlaNorfolk2030 (City of Norfolk 2021) is the City of Norfolk's comprehensive plan, which serves as a guide for the future physical, social, and economic development and as a basis for land use decisions within the city.
- It's Our Future: A Choice City City of Virginia Beach Comprehensive Plan (City of Virginia Beach 2020) addresses long-term sustainable and strategic city planning including visual design of new development on the shore and shoreline. The Green Sea Blueway and Greenway Management Plan is a functional component of the Comprehensive Plan that addresses the North Landing River and tributaries and portions of Indian River Road. While the management plan does not establish regulations related to the scenic resources, it treats scenic resources as a contributing factor to environmental protection, agricultural preservation, passive recreation, tourism, growth management, and cultural heritage preservation goals. (City of Virginia Beach 2015.)
- The Imagine Currituck 2040 Vision Plan (Currituck County 2019) satisfies the Coastal Area Management Act requirement to produce and adopt a local land use plan for Currituck County. Geographical areas addressed in the plan relevant to this Project include the Off-Road Area and the Corolla Area.

M.2. Method of Analysis

The SLVIA has two separate but linked parts: seascape, open ocean, and landscape impact assessment (SLIA) and visual impact assessment (VIA). SLIA analyzes and evaluates impacts on both the physical elements and features that make up a landscape, seascape, or open ocean; and the aesthetic, perceptual, and experiential aspects of the landscape, seascape, or open ocean that make it distinctive. These impacts affect the "feel," "character," or "sense of place" of an area of landscape, seascape, or open ocean, rather than the composition of a view from a particular place. In SLIA, the impact receptors (the entities that are potentially affected by the proposed Project) are the seascape/open ocean/landscape itself and its components, both its physical features and its distinctive character.

VIA analyzes and evaluates the impacts on people of adding the proposed development to views from selected viewpoints. VIA evaluates the change to the composition of the view itself and assesses how the people who are likely to be at that viewpoint may be affected by the change to the view. Enjoyment of a particular view is dependent on the viewer, and, in VIA, the impact receptors are people. The inclusion of both SLIA and VIA in the Bureau of Ocean and Energy Management (BOEM) SLVIA methodology is consistent with NEPA's objective of providing Americans with aesthetically and culturally pleasing surroundings and its requirement to consider all potentially significant impacts of development.

The magnitude of effect in a seascape, open ocean, landscape, or view depends on the nature, scale, prominence, and visual contrast of the change and its experiential duration. The SLVIA offshore geographic analysis area consists of the following extent of the zone of theoretical visibility and zones of visual influence (COP, Appendix I-1; Dominion Energy 2023).

- A 40-mile (64.4-kilometer) radius area around the WTGs and OSSs. This distance is the maximum extent within which a seascape, landscape, or visual effect could occur, given visibility of the maximum height of the WTG rotor (869 feet [265 meters]).
- The OSSs (maximum height of 220 feet [67 meters]) would potentially be visible to a distance of 21 miles (33.7 kilometers).

WTG visibility would be variable through the day depending on many factors. View angle, sun angle, and atmospheric conditions would affect the WTG visibility. Visual contrast of WTGs would vary depending

on the visual character of the horizon's backdrop and whether the WTGs are backlit, side-lit, or front-lit. If less visual contrast is apparent in the morning hours, then it is likely that the visual contrast may be more pronounced in the afternoon. The inverse is possible, as well.

When placing WTGs offshore, the visual interplay and contrasting elements in form, line, color, and texture may vary with the ever-changing character of the backdrop. Front-lit WTGs may have strong color contrast against a darker gray sky, giving definition to the WTG vertical form and line contrast to the ocean's horizontal character and the line where the sea meets sky, or visually dissipate against a whiter backdrop created by high levels of evaporative atmospheric moisture during clear sunny days. Partly cloudy skies may create varying degrees of sunlight reflecting off the white color wind turbines, placing some WTGs in the shadow and making them appear darker gray and less conspicuous while highlighting others with a bright white color contrast. The level of noticeability would be directly proportional to the degree of visual contrast and scale of change between the WTGs and the corresponding backdrop.

The magnitude of effect is also influenced by the viewers context including the direction of view, distance between the viewer and the WTGs, and elevation of the viewer. At closer distances, approximately 12 miles or closer, the form of the WTG may be the dominant visual element creating the visual contrast regardless of color. At greater distances, color may become the dominant visual element creating that gives definition to the WTG's form and line. As the elevation of the viewer increases, the less Earth's curvature (EC) screens the visible height of individual WTGs and therefore a greater portion of the WTG is visible.

While the East Coast shoreline has a prevailing eastward viewing direction, localized views may vary from southwest to north-northeast. All cardinal directions are conceivable when viewing from a water vessel while at sea. When viewing from onshore toward a northerly direction and scanning to the south, the color of the horizon backdrop will often vary. Variation will continue as the sun arcs across the sky from sunrise to sunset. Depending on sun angle, the backdrop sky color may have various intensities of white to gray and sky blue to pale blue to dark blue-gray. Partly cloudy to overcast conditions will also influence the color makeup of the horizon's backdrop. The sunrise and sunset have varying degrees of light blue to dark blue, light and dark purples intermixed with oranges, yellows, and reds. Partly cloudy skies may increase the remarkable color effects during the sunset and sunrise periods of the day. These variations through the course of the day may result in periods of moderate to major visual effect while at other times of day would have minor or negligible effect. The visibility variables described above are represented through the visual simulations found in the COP. Table M-1identifies the photo simulation for each condition. It should be noted that this EIS analysis treats the potential view at each Key Observation Point represented by the photo simulation as a clear sky day.

Table M-1 Visibility Variables for Key Observation Point Simulations

Visibility Condition	Key Observation Point Photo Simulation
Morning – back light	KOP-13 Cape Henry Lighthouse
Afternoon – side light	KOP-22 King Neptune Statue/Boardwalk
Midday – front light	KOP-31 Picnic Views on Beach at State Military Reservation
Nighttime	KOP-15b North End Beach – Residential View 1 (nighttime) KOP-24b Virginia Beach Boardwalk – 16 th Street entrance (nighttime)
Sunny and clear	KOP-24a Virginia Beach Boardwalk – 17 th Street Park KOP-24d Virginia Beach Boardwalk – 16 th Street entrance KOP-44 Back Bay National Wildlife Refuge (Little Island Park) ¹
Overcast and hazy	KOP-15a North End Beach – Residential View 1 KOP-30a Croatan Beach A

Visibility Condition	Key Observation Point Photo Simulation
Cloudy and rainy	KOP-29 Grommet Island Park

¹ KOP-44 was revised August 2023 in sunny fair sky conditions. Unlike the other simulations, the WTGs are rendered in RAL7035 Light Grey.

The SLVIA methodology and parameters assessed consider local stakeholders' identity, culture, values, and issues and the understanding of baseline maritime conditions. Project activities for all stages of the Project life cycle (construction and installation, O&M, and decommissioning) are assessed against the environmental baseline to identify the potential interactions between the Project and the seascape, landscape, and viewers. Potential impacts are assessed to determine an impact level consistent with the definitions in Table M-2.

Table M-2 Definitions of Potential Adverse Impact Levels

Impact Level	Historic Properties under Section 106 of the NHPA	Visual Resources
Negligible	No historic properties affected, as defined at 36 CFR 800.4(d)(1).	SLIA: Very little or no effect on seascape/landscape/ocean unit features, elements, or key qualities, either because unit has minimal visibility/susceptibility or lacks value (distinctive character or key features/elements/qualities). VIA: Very little or no effect on viewers experiences, because project visibility/contrast/magnitude of change are minimal, and/or view receptor sensitivity/susceptibility/value is minimal.
Minor	No adverse effects on historic properties could occur, as defined at 36 CFR 800.5(b).	SLIA: The project would introduce features that may have noticeable low to medium levels of visual prominence within the geographic area of an ocean/ seascape/ landscape character unit. The project features may introduce a visual character that is somewhat inconsistent with the character of the unit, which may have minor to medium negative effects to the unit's features, elements, or key qualities, but the unit's features, elements, or key qualities have low susceptibility or value. VIA: The visibility of the project would introduce a small but noticeable to medium level of change to the view's character; have a low to medium level of visual prominence that attracts but may or may not hold the viewer's attention; and have a small to medium effect on the viewer's experience. The viewer receptor sensitivity/ susceptibility/ value is low. If the value, susceptibility, and viewer concern for change is medium or high, then evaluate the nature of the sensitivity to determine if elevating the impact to the next level is justified. For instance, a KOP with a low magnitude of change, but has a high level of viewer concern (combination of susceptibility/value) may justify adjusting to a moderate level of impact.
Moderate	Adverse effects on historic properties as defined at 36 CFR 800.5(a)(1) could occur but would be avoided or minimized using a less-impactful scenario contemplated under the PDE.	SLIA: The project would introduce features that would have medium to large levels of visual prominence within the geographic area of an ocean/seascape/landscape character unit. The project would introduce a visual character that is inconsistent with the character of the unit, which may have a moderate negative effect to the unit's features, elements, or the key qualities. In areas affected by large magnitudes of change, the unit's features, elements, or key qualities have low susceptibility and/ or value. VIA: The visibility of the project would introduce a moderate to large level of change to the view's character; may have moderate

Impact Level	Historic Properties under Section 106 of the NHPA	Visual Resources
		to large levels of visual prominence that attracts and holds but may or may not dominate the viewer's attention; and has a moderate effect on the viewer's visual experience. The viewer receptor sensitivity/susceptibility/value is medium to low. Moderate impacts are typically associated with medium viewer receptor sensitivity (combination of susceptibility/value) in areas where the view's character has medium levels of change; or low viewer receptor sensitivity in areas where the view's character has large changes. If the value, susceptibility, and viewer concern for change is high, then evaluate the nature of the sensitivity to determine if elevating the impact to the next level is justified.
Major	Adverse effects on historic properties as defined at 36 CFR 800.5(a)(1) could occur; at least some would require mitigation to resolve.	SLIA: The project would introduce features that would have dominant levels of visual prominence within the geographic area of an ocean/seascape/landscape character unit. The project would introduce a visual character that is inconsistent with the character of the unit, which may have a major negative effect to the unit's features, elements, or key qualities. The concern for change (combination of susceptibility/value) to the character unit is high.
		VIA: The visibility of the project would introduce a major level of character change to the view; will attract, hold, and dominate the viewer's attention; and have a moderate to major effect on the viewer's visual experience. The viewer receptor sensitivity/susceptibility/value is medium to high. If the magnitude of change to the view's character is medium, but the susceptibility or value at the KOP is high, then evaluate the nature of the sensitivity to determine if elevating the impact to major is justified. If the susceptibility and value at the KOP is low in an area where the magnitude of change is large, then evaluate the nature of the sensitivity to determine if lowering the impact to moderate is justified.

M.3. SLIA Results

M.3.1 Impacts of the Proposed Action on Scenic and Visual Resources

Visual simulation from representative viewpoints included in the COP's Visual Impact Assessment Technical Report (COP, Appendix I-1, I-2; Dominion Energy 2023) indicate that daytime and nighttime visibility of WTGs and OSSs would be noticeable to the casual observer from seascape character areas, the open ocean character area, landscape character areas, and viewer viewpoints.

M.3.1.1. Offshore Seascape, Open Ocean, and Landscape Character Areas

Table M-3 lists the acreages of character areas overall in the offshore geographic analysis area and within the offshore WTA viewshed based on Table I-1-4 in the COP's VIA Technical Report (Dominion Energy 2023). Applicable effects from the Proposed Action and alternatives on seascape character areas, the open ocean character area, and landscape character areas are listed throughout this appendix.

Table M-3 Seascape, Open Ocean, and Landscape Character Areas within the Offshore Project Area Viewsheds

Character Areas	Total Area within Visual Study Area in Square Miles (square kilometers)	Percentage of Character Area in the Zone of Potential Visual Influence								
Open Ocean Character Area										
Open Ocean ¹	6,302.55 (16,323.5)	2,540.79 (6,580.6)	100 ¹							
Seascape Character Area	IS									
Lower Coastal Plain/Tide Water	113.7 (294.5)	60.86 (157.6)	53.5							
Inland Bay	405.87 v1,051.2)	215.46 (558.0)	53.1							
Virginia Beach/Tourism	1.45 (3.75)	0.28 (0.73)	19.3							
Beach ²	0.42 (1.1)	0.42 (1.1)	100							
Beachfront Residential ²	0.69 (1.8)	0.55 (1.4)	79.7							
Barrier Island Residential	5.92 (15.3)	4.93 (12.8)	83.3							
Industrial/Military ^{2, 3}	23.58 (61.1)	3.4 (8.8)	14.4							
Recreation ^{2, 3}	38.13 (98.7)	10.68 (27.7)	28.0							
Landscape Character Are	eas									
Agriculture	126.65 (328.1)	9.24 (23.9)	7.3							
Coastal Development	114.88 (375.2)	6.17 (16.0)	5.4							
Rural Coastal Plain ³	89.16 (231.0)	11.29 (29.2)	12.7							
Important Designated Are	eas									
NRHP-listed Historic Districts	8.12 (21.0)	1.49 (3.9)	18.3							
Designated Environmental Justice Communities Source: COP, Appendix I-1, Tal	700.97 (1,815.5)	391.12 (1,013.0)	55.8							

Source: COP, Appendix I-1, Table I-1-4, (Dominion Energy 2023).

Summary descriptions of offshore geographic analysis area character areas are informed by the COP's VIA Technical Report (COP, Appendix I; Dominion Energy 2023).

M.3.1.1.1 Open Ocean Character Area

The open ocean zone includes the open water of the Atlantic Ocean off the coast of Virginia and North Carolina. The defining characteristic of this character area is the presence of open water as a dominant element and unobstructed views in all directions. There are three existing built structures in the open ocean off the coast of Virginia Beach. The Chesapeake Light Tower is located 15 miles offshore, and two existing WTGs associated with the Coastal Virginia Offshore Wind Pilot Project are located adjacent to the Lease Area. The COP only analyzed the landward-facing open ocean area (COP, Appendix I-1, Figure

¹ The Open Ocean character area within the zone of potential visual influence as described in the COP includes only the landward-facing ocean area as shown in COP, Appendix I-1, Figure I-1-3.

² The Beach character area calculation as described and illustrated in COP, Appendix I-1, Attachment I-3 maps includes approximately 13 linear miles of beach from the southern boundary of Fort Story to Croatan Beach in Virginia and the beach paralleling the Barrier Island Residential character area in the Corolla area of South Carolina.

³ These character types are not differentiated between Seascape and Landscape character areas in the COP. They

are listed under Seascape here because most of the area within the zone of potential influence is within the seascape. A small area of Rural Coastal Plain has ocean visibility and is categorized as Landscape throughout this document. These character types also include their adjacent beaches.

I-1-3; Dominion Energy 2023). The open ocean area analyzed in the EIS includes the 360 degree viewshed around the Lease Area; therefore, approximately 93 percent of open ocean is within the zone of potential visual influence with variable levels of WTG visibility depending on distance, viewer height, and atmospheric conditions.

M.3.1.1.2 Seascape Character Areas

M.3.1.1.2.1 Lower Coastal Plain/Tidewater

The Lower Coastal Plain/Tidewater character area consists of the large lowland network of saltmarsh and brackish open water bays common between the mainland and barrier islands of Virginia and North Carolina. These barrier island landforms also include several named beaches that are only accessible by boat: Parramore Island Beach, Myrtle Island Beach, and Smith Island Beach. Most of this area is conservation land including National Wildlife Refuges (NWR), coastal reserves, state wildlife management areas, and others. Access from land is limited to boat ramp facilities. Oyster/Cobb Island Station and Horse Island Trail (KOP-5), Virginia NWR (KOP-9), and Currituck NWR are representative of this character type. The barrier island beaches of this character area are closest to the WTG lease area; 2.73 square miles (7.07 square kilometers) of the Lower Coastal Plain Tidewater character area has hubup visibility and 0.4 square mile (1.04 square kilometers) has rotors-only visibility.

M.3.1.1.2.2 Inland Bay

The Inland Bay character area includes non-ocean open water bodies like Chesapeake Bay, Lynnhaven Bay, Broad and Linkhorn Bays, and Back Bay. It does not include the Back Bay NWR. In addition to saltwater bays, it includes inland freshwater lakes like Lake Rudee, Lake Wesley, and Lake Christine. This character area also includes the numerous inland channels and rivers within the visual study area including the North Landing River Natural Area Preserve. The North Landing River is also part of the Atlantic Intracoastal Waterway.

M.3.1.1.2.3 Virginia Beach/Tourism

The Virginia Beach city center is within 0.5 mile (0.8 kilometer) of the shoreline and features the Virginia Beach Boardwalk. The boardwalk is a tourist destination which parallels the shoreline from 40th Street to 3rd Street, approximately 2.5 miles (4 kilometers) in length and situated 325 feet (99 meters) from the surf. This urban district is characterized by dense development such as high-rise hotels, condominiums, restaurants, and retail shops. The number of people (viewers) in Virgina Beach varies seasonally, with large influxes of tourists during summer. KOP 22, 23, and 26 are in this popular destination.

M.3.1.1.2.4 Beach

The Beach character area is identified as shoreline areas with minimal development and includes rolling, vegetated dunes that lead to an open sandy beach that slopes gently to the water line. The dunes create a transition to the adjacent seascape, which includes residential development, military sites, public conservation, or recreation lands. The most prominent visual characteristic of beaches is the unobstructed distant views to the north and south, including sand and surf, and distant eastward views over the ocean. The visual character is highly variable depending on the season and weather conditions. During fair summer weather beaches adjacent to urban areas are lined with people sunbathing, swimming, and beachcombing, and the beaches are temporarily filled with beachgoer accessories. In some instances, human-made features such as break walls, stone jetties, or fishing piers extend from the beach out into the ocean.

The Beach character area calculation as described and illustrated in COP, Appendix I-1, Attachment I-3 (Dominion Energy 2023) includes approximately 13 linear miles of beach from the southern boundary of Fort Story to Croatan Beach in Virginia and beach paralleling the Barrier Island Residential character area in the Corolla area of South Carolina. It does not measure beach areas along the barrier islands of the Delmarva Peninsula, the Beachfront Residential character area of Sandbridge neighborhood/historic district, Industrial/Military character areas including Fort Story and Dam Neck (KOP-31), or Recreation character areas including False Cape State Park. KOP 15a and 15b represent the Beach character area as calculated in the COP.

For the NEPA analysis, all beaches are considered within the character unit including all sandy shoreline areas within the study area. The total area of beach including beaches in other character areas is 5.83 square miles (15.10 square kilometers) of which 96 percent has project visibility. Total Beach character area with hub-up visibility is 4.26 square miles (11.04 square kilometers). Total Beach character area with rotor blade only visibility is 1.35 square miles (3.50 square kilometers). Beach area was measured from the low water breakers to the base of the dune vegetation as visible on Google Earth (2023) imagery.

M.3.1.1.2.5 Beachfront Residential

The Beachfront Residential character area is a narrow subset of residential properties in Virginia Beach set on the seascape primarily along Ocean Front Avenue (near North End Beach), South Atlantic Avenue (near Croatan Beach), and Sandfiddler Road in the Sandbridge neighborhood. The single-family homes are arranged parallel to the shore, with narrow, tightly spaced lots and many homes with ocean views, upper story decks, and private beach access. The Sandbridge neighborhood is identified as a proposed Historic District in the Historic Resources Visual Effects Analysis. The beach area is 0.28 square mile (0.74 square kilometer).

M.3.1.1.2.6 Barrier Island Residential

The Barrier Island Residential character area is a narrow subset of residential properties along the barrier island of Corolla, North Carolina. Unlike the Beachfront Residential areas north of downtown Virginia Beach, the homes in Corolla are modern, large, multi-story residences on large lots. Residences sit behind and above the dunes, have ocean views, upper story decks, and private beach access that is typically an elevated boardwalk with a shaded viewing structure and stairs down to the beach. Whale Head Bay Residential (KOP-49a) and Whale Head Bay Albacore Entrance (KOP-49g) depict this character area. 0.24 square mile (0.62 square kilometer) of Barrier Island Residential area is beach with rotors-only visibility.

M.3.1.1.2.7 Industrial/Military

The Industrial/Military character area encompasses large military complexes around Virginia Beach including Fort Story, Joint Expeditionary Base Little Creek-Fort Story, Oceana Naval Air Station, Dam Neck Naval Base, and the State Military Reservation. These facilities are located within the seascape and landscape character areas; however, only the facilities within seascape fall into the zone of potential influence from the project. These include Fort Story, Dam Neck Naval Base, and State Military Reservation, which are all located adjacent to the coastline and have views of the ocean. These areas also have beaches and dune features that separate built facilities from the ocean. The beaches along these military bases are accounted for under this character area (0.13 square mile (0.34 square kilometer) of beach is visible from hub up), not under the Beach character area (COP, Appendix I-1, Attachment I-1-3, page 3; Dominion Energy 2023). This character area is represented by Fort Story Lighthouse (KOP-13) and Picnic Views on Beach (KOP-31). Fort Story, Dam Neck Annex, and Camp Pendelton are also Historic Districts.

M.3.1.1.2.8 Recreation

The Recreation character area includes both natural conservation areas and public open spaces along the seascape and private open spaces like golf courses in the inland landscape. These areas of recreation areas exhibit a wide range of environmental characteristics from natural undeveloped landscapes with the intention of protecting native habitat and wildlife species to developed and highly maintained artificial landscapes. First Landing State Park and False Cape State Park in Virginia both fall within the Seascape character area and would have views of the proposed project. Inland private and public recreation areas fall into the landscape character area and would not have views of the project due to surrounding forest vegetation and relative distance. The beaches along these recreation areas are accounted for under this character area, not under the Beach character area (COP, Appendix I-1, Attachment I-1-3 page 4; Dominion Energy 2023). Seascape recreation amounts to 0.56 square mile (1.46 square kilometers) of beach. Active seascape recreation is illustrated in KOP 29 and 30c. Natural conservation areas are represented by KOPs 5, 8, and 44.

M.3.1.1.3 Landscape Character Areas

M.3.1.1.3.1 Agriculture

The Agriculture character area is distinguished by relatively level terrain and expansive views of working agricultural fields broken up by dense mixed vegetation, forests, and hedgerows. The majority are farmed as row crops, but there are some small orchards. Within the visual study area, agriculture is located inland and south of Virginia Beach. Residences found throughout the agriculture character type are widely spaced and often screened by landscaping.

M.3.1.1.3.2 Coastal Development

Coastal Development is a broad character area in the landscape character area encompassing urban and suburban development set back from the shoreline. It includes high-, medium-, and low-density residential areas and commercial developments in Virginia Beach, Chesapeake, and Norfolk, Virginia, and Corolla, North Carolina. This character area includes all the typical elements of cities and communities: neighborhoods, shopping centers, office parks, streets and highways, schools, and infrastructure. This landscape character area offers very limited views of the shoreline except from special elevated vantage points such as high-rise buildings. This character type also includes several scenic byways: U.S. Routes 13 and 60, Sandbridge Road Scenic Byway, and Virginia Scenic Byway along Blackwater Road/Pungo Ferry Road/Princess Anne Road.

M.3.1.1.3.3 Rural Coastal Plain

This character area is primarily located inland on the Delmarva Peninsula of Virginia, but also includes the rural residential neighborhoods of North Carolina. Like agriculture, it is characterized by a flat rural landscape. Residences are situated far apart and interspersed by the occasional commercial building.

Views of the project on the Delmarva Peninsula are located along the immediate eastern shore where views of the ocean are present. The rural residential community of Carova, North Carolina, is a seascape character area. Carova's modern multi-story rural residential neighborhoods with unpaved sand streets and natural dune landscape presents a remote quality; 0.1 square mile (0.26 square kilometer) of Seascape Rural Coastal Plain beach has hub-up visibility while the majority, 0.67 square mile (1.74 square kilometers), has rotors-only visibility.

M.3.1.2. Onshore Landscape Character Areas

Onshore landscape character areas were identified and described, but not numerically quantified. The following nine landscape character areas are used to evaluate impacts from onshore facilities.

- Transportation Corridors: Areas along major roads or railroads, or surrounding airports or other transportation hubs. Transportation corridors are often linear, and are characterized by extensive paved areas, collocated utilities, signage, and appurtenant structures such as traffic signals.
- **Developed—Suburban Residential:** Areas characterized primarily by single-family detached homes on individual lots, often with landscaped yards. This includes planned residential communities and subdivisions with consistent architectural and landscaping standards.
- **Developed—Rural Residential:** Areas characterized by single-family homes, generally on large lots, with a variety of vegetation and landscaping patterns. These typically occur along rural roads, and are often surrounded by agriculture, open lands, or forested areas.
- **Developed—Commercial:** Areas characterized by retail (ranging from individual stores to shopping malls) or office uses. Commercial areas typically have low buildings with substantial parking and circulation and varied landscaping.
- **Developed—Industrial:** Areas characterized by activities involving production, storage, or distribution of bulk materials. Structures are typically low-lying, set amid paved areas, with minimal landscaping or vegetation.
- Agricultural and/or Open, Undeveloped Lands: Lands characterized by active agricultural uses (i.e., row crops, pasture, livestock grazing and feeding) or inactive, open fields with low vegetation. Views are often expansive, terminated by distant treelines, with homes or other structures on adjacent properties visible but not prominent.
- **Open Water:** Areas where inland lakes and rivers are the dominant feature. As with agricultural and open lands, views over the water can be extensive, and are terminated by vegetation along the banks.
- **Forested:** Areas primarily characterized by trees and forests. Surrounding uses may be visible along the periphery but are not the focus of the view. Forests may be on dry land (upland forests) interspersed with standing water, marshes, or other wetlands (forested wetlands).
- **Developed Recreational Areas:** Locations developed for specific types of active recreation, ranging from playgrounds and picnic areas to collections of athletic fields with associated stadium, restroom, and service facilities. Views primarily focus on the recreational facilities themselves, while other visible landscape features (e.g., vegetation or surrounding development) are secondary.

M.3.1.3. Visibility, Distances, Character-Changing Effects, Scale, Prominence, and Visual Contrasts

Atmospheric conditions offshore and near the shoreline limit views more than the typically drier-air conditions in inland areas. Visual simulations from representative viewpoints included as Appendix I-1 to the *Coastal Virginial Offshore Wind Visual Impact Assessment Report* (COP, Appendix I; Dominion Energy 2023) indicate that daytime and nighttime visibility of WTGs would be noticeable to the casual observer from beach viewpoints. The OSSs are not visible from beaches. Although 94 feet of the nearest OSS is visible from the upper floor restaurant of the Marriott Virginia Beach Oceanfront Hotel (KOP-26) it is 30 miles from shore. OSS views are completely obscured from the Cape Henry Lighthouse (KOP-13) and the Currituck Beach Lighthouse (KOP-47). The nearest view beaches are found along Myrtle Island, northwest of the PDE. The nearest mainland view beaches are found at False Cape State Park, Virginia. The farthest view conditions are found along Parramore Island, Virginia, north of the PDE and Corolla Beach, North Carolina, south of the PDE.

Distances to the Proposed Action WTG and OSSs array would be as follows.

- **Parramore Island Nature Preserve:** Range from 40 miles (64.4 kilometers) at the nearest WTG to 54.8 miles (88.2 kilometers).
- **Myrtle Island Beach.** Range from 23.7 miles (38.14 kilometers) at the northwestern-most WTG to 42 miles (67.5 kilometers) at the southeastern-most WTG.
- Little Island Park/False Cape State Park (KOP-44). Range from 26.85 miles (43.21 kilometers) at the nearest WTG to 44.18 miles (71.1 kilometers).
- **Corolla Beach**: Range from 40 miles (64.4 kilometers) at the nearest WTG to 57.5 miles (92.5 kilometers) on the southern-most WTG.

The noticeable daytime and nighttime elements of the Project's WTGs and their viewshed distances are listed in Table M-4. Each WTG would have two L-864 flashing red obstruction lights on the top of the nacelle, one of which is required to be lit (BOEM 2021). WTGs would have additional intermediate lighting on the tower utilizing low-intensity red-flashing (L-810) obstruction lighting (COP, Appendix HH; Dominion Energy 2023). Light mitigation has been incorporated into the project as is described later in this section. Line-of-sight calculations for onshore viewers (5-foot [1.5-meter] eye level) are based on intervening EC screening (7.98 inches [20.3 centimeters] height per mile). Heights of WTG and substation components are stated relative to MHW and highest astronomical tide (HAT).

Table M-5 and Table M-6 indicate the Proposed Action's effects based on horizontal FOV and vertical FOV, respectively, defined as the extent of the observable landscape seen at any given moment, usually measured in degrees (BOEM 2021). The horizontal FOV for each KOP is listed in COP, Appendix I-1, Attachment I-1-4 (Dominion Energy 2023). FOVs are one of several valid and reliable indicators of the Proposed Action facilities magnitude of impact. Typical human perception extends to 124° in the horizontal axis and 55° in the vertical axis. The nearest shoreline viewers would be 24.1 miles (38.8 kilometers) from the Wind Farm Area. At this distance, the EC reduces the observable height of the nearest WTG from 869 feet (265 meters) MHW to 602.3 feet (183.5 meters), resulting in 0.4° and 0.73 percent of the overall view above the horizon. WTGs would further diminish in perceived size with distance and EC.

Table M-4 Heights of Noticeable¹ 16-MW WTG Elements and Substations and Visible Distances²

Noticeable Element	Height in Feet (meters)	Visible Distance ² in Miles (kilometers)
Rotor Blade Tip	869 (265) MHW	0–39 (62.8)
Aviation Obstruction Light	508 (162) MHW	0-30.5 (49.1)
Nacelle	498 (152) MHW	0-30.2 (48.6)
Indicative Hub Height	489 (149) MHW	0-29.9 (48.1)
OSS	177 (54) HAT	0–19.2 (30.9)
Mid-tower Light	244.5 (74.5) MHW	0–22 (35.4)
Yellow Tower Base Color	50 (15) MHHW	0–11.5 (18.5)

¹ Perception of Project elements, from 5.5-foot (1.7 meter) human eye level while standing at mean sea level, involves static distance-related sizes, forms, lines, colors, and textures; variable daytime lighting conditions; variable nighttime light conditions; and variable meteorological conditions.

HAT = highest astronomical tide

² Based on intervening EC and clear-day conditions.

Table M-5 Horizontal FOV Occupied by the Proposed Action

Noticeable Element	Width in Miles (kilometers)	Distance in Miles (kilometers)	Horizontal FOV	Human FOV	Percent of FOV
Wind Farm	17.8 (28.6)	24.1 (38.8)	36.4°	124°	29%

Table M-6 Vertical FOV Occupied by the Proposed Action

Noticeable Element	Height in Feet (meters)	Distance in Miles (kilometers)	Height Above Horizon¹ in Feet (meters)	Vertical FOV	Human FOV	Percent of FOV
Rotor Blade Tip	869 feet (265) MHW	24.1 (38.8)	569 (173.4)	0.28°	55°	.01%

¹ Based on intervening EC and clear-day conditions.

The visual analysis considers the introduction of WTGs and OSSs to an open ocean baseline. The scale, size, contrast, and prominence of change focuses on the following.

- Arrangement of WTGs and OSSs in the view.
- Horizontal FOV and vertical FOV scale of the wind farm array, based on WTG and OSS size and number.
- Position of the array in the open ocean.
- Position of the array in the view.
- Turbine array's distance from the viewer.

Visibility, character-changing effects, scale, prominence, and visual contrasts reduce steadily with distance from the observation point. Visibility, character-changing effects, scale, prominence, and visual contrasts increase with elevated observer position in comparison with the wind farm. Visibility thresholds have been described and rated through the research by Robert Sullivan at the Argonne Nation Laboratory based on WTGs in England. Table M-8 describes Visibility Threshold levels and ratings based on this work. This research along with distance and observer elevation considerations, informed by the VIA simulations (COP, Appendix I-1, Attachment I-1-5; Dominion Energy 2023), EC calculations, horizontal FOV, and vertical FOV in undeveloped open ocean provide the basis for evaluating visibility.

The wind farm and nearest WTGs would be as follows.

- Unavoidably dominant features in the view between 0 and 12 miles (0 and 19.3 kilometers) distance.
- Strongly pervasive features between 12 and 20 miles (19.3 and 32.2 kilometers) distance.
- Clearly visible features between 20 and 28 miles (19.3 and 45.1 kilometers) distance.
- Low on the horizon, but persistent features in the view between 28 and 31 miles (45.1 and 49.9 kilometers) distance.
- Intermittently noticed features between 31 and 39.6 miles (49.9 and 63.7 kilometers) distance.
- Below the horizon beyond 39.6 miles (63.7 kilometers) distance.

Visual contrast determinations involve comparisons of characteristics of the seascape, open ocean, and landscape before and after Project implementation. The range of potential contrasts includes strong, moderate, weak, and none (BOEM 2021). The strongest daytime contrasts would result from tranquil and flat seas combined with front-lit WTG towers, nacelles, flickering rotors, and a yellow tower base color against a dark background sky and an undifferentiated foreground. There would be daily variation in WTG color contrast as sun angles change from backlit to front-lit (sunrise to sunset), and the backdrop would vary under different lighting and atmospheric conditions. The weakest daytime contrasts would

result from turbulent seas combined with overcast daylight conditions on WTG towers, nacelles, and rotors against an overcast background sky and a foreground modulated by varied landscape elements. The strongest nighttime contrasts would result from dark skies (absent moonlight) combined with navigation lights, activated lighting on the OSSs, mid-tower lights, and Project lighting reflections on low clouds and active (non-reflective) surf, and the dark-sky light dome. The weakest nighttime contrasts would result from moonlit, cloudless skies; tranquil (reflective) seas; Aircraft Detection Lighting System (ADLS) is not activated (aviation warning lights off); and mid-tower lights on.

The seascape character units, landscape character units, and viewer experiences would be affected by the Proposed Action's noticeable features, applicable distances and FOV extents, open views versus view framing and intervening foregrounds, and form, line, color, and texture contrasts, scale of change, and prominence in the characteristic seascape and landscape. Higher impact levels would stem from unique, extensive, and long-term appearance of strongly contrasting, large, and prominent vertical structures in the otherwise horizontal seascape environment; where structures are an unexpected element and viewer experience is of formerly open views of high-sensitivity seascape and landscape; and from high-sensitivity view receptors.

Viewer experience would change throughout the life cycle of the project. Construction operations involving moving and stationary barges, cranes, and lighting may have a greater visual effect on viewers than operational and decommissioning activities. However, construction impacts would be temporary and include the following.

- Daytime and nighttime movement of installation vessels, cranes, and other equipment visible in the seascape in and around the Lease Area.
- Dawn, dusk, and nighttime construction lighting on WTGs and OSSs.
- Beach, other sensitive land-based, and boat and cruise ship views of WTGs and OSSs under construction.
- Laying of the offshore and onshore buried export cables and the connections between offshore and
 onshore export cables near the Croatan Parking Lot east of Lake Christine, within the State Military
 Reservation.
- Activities along the onshore landfalls, export cable routes, Harpers Switching Station, and Fentress onshore substations.

Operational effects of the WTGs and transporting crews for maintenance would be long term and fully reversible.

Proposed Action impacts on high-sensitivity seascape character would be **moderate**. The daytime and nighttime (lighting) presence of the WTGs, OSSs, and construction and O&M vessel traffic would change perception of this area from natural, undeveloped seascape to a developed wind energy environment characterized by plainly visible WTGs with clear sky conditions in the afternoon.

Maintenance activities would cause **minor** effects on seascape character by increased O&M vessel traffic to and from the Wind Farm Area. Increases in these vessel movements would be noticeable to offshore viewers but are unlikely to have a significant effect.

Decommissioning would involve the removal of all offshore structures and is expected to follow the reverse of the construction activity. Decommissioning activities would cause effects similar to those of construction activities.

Viewshed analyses (COP, Appendix I-1; Dominion Energy 2023) determined that clear-weather visibility of the WTGs would occur within the Proposed Action's zone of visual influence. The Proposed Action

would be visible along the eastern beaches. The majority of overland visibility would occur between 24 and 28 miles (39 and 45 kilometers) of the Proposed Action over inland bays. Visibility would diminish significantly between 28 and 40 miles (45 and 64 kilometers), contributing to the zone of visual influence. Due to coastal meteorological conditions, Proposed Action daytime views with visibility at 20 nautical miles for 50-percent of the day would occur approximately 20 percent of the year or 66 days per year, approximately 1 out of 5 days.

Daytime lighting of WTGs is not required. Nighttime aviation warning lights create a major impact. ADLS report (COP, Appendix T; Dominion Energy 2023) indicates that based on historical air traffic data for flights passing through the light activation zone would activate obstruction lights for a total of 25 hours 33 minutes and 49 seconds over a one-year period. March would have the highest proportion of ADLS night lighting activation and September would have the smallest proportion. Considering the local sunrise and sunset times, an ADLS-controlled obstruction lighting system would result in over a 99 percent reduction in system activated duration as compared to a traditional always-on obstruction lighting system; therefore, greatly reducing the impact levels from major to minor. Residual impacts would result from the presence of continuously flashing lights, sky light dome, and reflections on clouds during those limited hours. Lights of the three OSSs, when lit for maintenance, would not be visible from beaches and adjoining land during hours of darkness. Lights from the OSS nearest to shore would be visible from the upper floors of the Marriott Virginia Beach Oceanfront Hotel (KOP-26). The nighttime sky light dome and cloud lighting caused by reflections from the water surface may be seen from distances beyond the 40-mile (64-kilometer) geographic analysis area, depending on variable ocean surface and meteorological reflectivity. The incorporation of National Park Service (NPS) sustainable lighting best practices, (e.g., use LEDs in warm colors; recess and fully down-shield lights; use fixtures that include motion timers, motion detectors, hue adaptors, and dimmers; reduce light intensity to lowest lumens possible; and install lights properly) will minimize direct observation of onshore substation nighttime safety lighting in their immediate neighborhoods during hours of darkness.

Table M-7 Wind Farm Distances, FOVs, Noticeable Elements, Visual Contrasts, Scale of Change, and Prominence

	Offshore Components Distance in Miles Proposed													
		kilom) Components l	ieters)		Proposed Action FOV Degrees (% of 124°)				Coi	ntrast, Scale	of Change,	and Prominence	.	
КОР	Proposed Action	Alternative B	Alternative C	Alternative D	Visual Sim FOV Degrees % of image ¹	Noticeable Elements ² & Impact Level	Proposed Action Form	Proposed Action Line	Proposed Action Color	Proposed Action Texture	Proposed Action Scale	Proposed Action Prominence ³	Alternatives B and C	Alternative D
KOP-5 Oyster Village Horse Island Trail	32.6 (52.5)	NA	NA	NA	14° (11%) 35.8%	R Negligible	Weak	Weak	Weak	None	Negligible	1	Same as Proposed Action	Same as Proposed Action
KOP-8 Eastern Shore of Virginia NWR	28.2 (45.4)	NA	NA	NA	14° (11%) 25.5%	R, AL, N, and H Negligible	Weak	Weak	Weak	Weak	Negligible	1	Same as Proposed Action	Same as Proposed Action
KOP-13 (elevated) Cape Henry Lighthouse	29.1 (46.8)	NA	NA	NA	21° (17%) 48.8%	R, AL, N, and H Moderate	Moderate	Moderate	Moderate	Weak	Medium	3	Same as Proposed Action	Same as Proposed Action
KOP-15a Beach Residential 1	28.1 (45.2)	NA	NA	NA	22° (18%) 73.3%	R, AL, N, and H Minor	Weak	Weak	Weak	Weak	Small	2	Same as Proposed Action	Same as Proposed Action
KOP-15b Beach Residential – Nighttime	28.1 (45.2)	NA	NA	NA	23° (18.5%) 41.8%	AL (ADLS) Negligible	Weak	Strong	Strong	Weak	Small	5	Same as Proposed Action	Same as Proposed Action
KOP-22 Neptune Statue/ V. B. Boardwalk	27.9 (45)	NA	NA	NA	23° (18.5%) 57.5%	R, AL, N, and H Minor	Weak	Weak	Moderate	Weak	Small	3	Same as Proposed Action	Same as Proposed Action
KOP-23 National Aviation Monument Park	27.9 (45)	NA	NA	NA	23° (18.5%) 57.5%	R, AL, N, and H Minor	Weak	Weak	Weak	Weak	Small	2	Same as Proposed Action	Same as Proposed Action
KOP-24a Virginia Beach Boardwalk – 17 th St Park	27.8 (33.9)	NA	NA	NA	23° (18.5%) 60.5%	R, AL, N, and H Minor	Moderate	Moderate	Moderate	Weak	Small	4	Same as Proposed Action	Same as Proposed Action
KOP-24b Virginia Beach Boardwalk – 16 th Street Nighttime	27.8 (33.9)	NA	NA	NA	23° (18.5%) 54.8%	AL (ADLS) Negligible	Weak	Strong	Strong	Weak	Small	5	Same as Proposed Action	Same as Proposed Action
KOP-24d Virginia Beach Boardwalk Fishing Pier	27.6 (44.4)	NA	NA	NA	23° (18.5%) 48%	R, AL, N, and H Minor	Moderate	Moderate	Strong	Weak	Small	4	Same as Proposed Action	Same as Proposed Action
KOP-24d Virginia Beach Boardwalk Fishing Pier – Nighttime	27.6 (44.4)	NA	NA	NA	23° (18.5%) 48%	AL (ADLS) Negligible	Weak	Strong	Strong	Weak	Small	5	Same as Proposed Action	Same as Proposed Action
KOP-26 (elevated) Marriott Virginia Beach	28 (45)	NA	NA	NA	23° (18.5%) 57.5%	R, AL, N, O, and H Moderate	Moderate	Moderate	Moderate	Weak	Medium	4	Same as Proposed Action	Same as Proposed Action
KOP-29 Grommet Island Park	27.7 (44.6)	NA	NA	NA	23° (18.5%) 51%	R, AL, N, and H Minor	Weak	Weak	Weak	Weak	Small	2	Same as Proposed Action	Same as Proposed Action
KOP-30a Croatan Beach A – North (cloudy)	27.7 (44.6)	NA	NA	NA	22.5° (18%) 46%	R, AL, N, and H Minor	Weak	Moderate	Moderate	Weak	Small	3	Same as Proposed Action	Same as Proposed Action
KOP-30c Croatan Beach C – South (cloudy)	27.7 (44.6)	NA	NA	NA	22.5° (18%) 35%	R, AL, N, and H Minor	Weak	Weak	Weak	Weak	Small	2	Same as Proposed Action	Same as Proposed Action
KOP-31 Picnic Views at State Military Reserve1	27.7 (44.6)	NA	NA	NA	22° (18%) 55%	R, AL, N, and H Minor	Weak	Weak	Weak	Weak	Small	3	Same as Proposed Action	Same as Proposed Action
KOP-44 Little Island Park (revised)	26.8 (43.1)	NA	NA	NA	26° (21%) 66.7%	R, AL, N, and H Moderate	Moderate	Moderate	Moderate ⁴	Weak	Small	4	Same as Proposed Action	Same as Proposed Action

¹ The SMR beachfront is not exclusively recreational in use. The SMR beachfront platform is also an observation point, because the beachfront and oceanfront environment are also used for training activities at the SMR.

		Components	neters)		Proposed Action FOV Degrees (% of 124°)				Co	ntrast, Scale	of Change, a	and Prominence	е	
КОР	Proposed Action	Alternative B	Alternative C	Alternative D	Visual Sim FOV Degrees % of image ¹	Noticeable Elements ² & Impact Level	Proposed Action Form	Proposed Action Line	Proposed Action Color	Proposed Action Texture	Proposed Action Scale	Proposed Action Prominence ³	Alternatives B and C	Alternative D
KOP-47 Currituck National Wildlife Refuge	34.7 (55.8)	NA	NA	NA	12.5° (10%) 35.7%	R Negligible	Weak	Weak	Weak	None	Small	1	Same as Proposed Action	Same as Proposed Action
KOP-48 Currituck Beach Lighthouse (elevated)	36.8 (59.2)	NA	NA	NA	22.5° (18%) 55%	R Minor	Moderate	Weak	Moderate	Weak	Small	3	Same as Proposed Action	Same as Proposed Action
KOP-49a Whale Head Bay – Residential	36.6 (58.9)	NA	NA	NA	14.5° (12%) 30.2%	R Negligible	Weak	Weak	Weak	Weak	Small	1	Same as Proposed Action	Same as Proposed Action
KOP-49g Whale Head Bay – Albacore Street	39.1 (62.9)	NA	NA	NA	9° (7%) 24.3%	R Negligible	Weak	Weak	Weak	Weak	Small	1	Same as Proposed Action	Same as Proposed Action
KOP-50 Fishing and Tour Boats	0–40 (0–64)	NA	NA	NA	NA	R, AL, N, H, and Y Major	Strong	Strong	Strong	Strong	Large	6	Same as Proposed Action	Same as Proposed Action
KOP-51 Commercial and Cruise Ships	0–40 (0–64)	NA	NA	NA	NA	R, AL, N, H, and Y Major	Strong	Strong	Strong	Strong	Large	6	Same as Proposed Action	Same as Proposed Action
Onshore Components														
IC Route 1 KOP-3 Harpers Switching Station	1,000 (304.8)	Same as Prop. Act.	Same as Prop. Act.	NA	NA	SS Major	Strong	Strong	Strong	Strong	Large	6	Same as Proposed Action	NA
KOP-5	WPC	Same as Prop. Act.	Same as Prop. Act.	NA	NA	IC Major	Strong	Strong	Moderate	Moderate	Large	5	Same as Proposed Action	NA
KOP-10 Fentress Substation	1,056 (231.8)	Same as Prop. Act.	Same as Prop. Act.	NA	NA	S Major	Moderate	Moderate	Strong	Moderate	Large	5	Same as Proposed Action	NA
KOP-11	1584 (482.8)	Same as Prop. Act.	Same as Prop. Act.	NA	NA	IC Moderate	Moderate	Moderate	Moderate	Moderate	Medium	4	Same as Proposed Action	NA
KOP-12	1584 (482.8)	Same as Prop. Act.	Same as Prop. Act.	NA	NA	IC Negligible	None	None	None	None	Not Visible	0	Same as Proposed Action	NA
KOP-13	1,000 (304.8)	Same as Prop. Act.	Same as Prop. Act.	NA	NA	IC Negligible	None	None	None	None	Not Visible	0	Same as Proposed Action	NA
KOP-14a	WPC	Same as Prop. Act.	Same as Prop. Act.	NA	NA	IC Moderate	Moderate	Major	Moderate	Moderate	Large	5	Same as Proposed Action	NA
KOP-14b	WPC	Same as Prop. Act.	Same as Prop. Act.	NA	NA	IC Moderate	Moderate	Moderate	Moderate	Moderate	Large	4	Same as Proposed Action	NA
KOP-17	WPC	Same as Prop. Act.	Same as Prop. Act.	NA	NA	IC Moderate	Moderate	Moderate	Moderate	Moderate	Medium	3	Same as Proposed Action	NA
IC Hybrid Route 6 KOP-10 Fentress Substation	1,056 (231.8)	Same as Prop. Act.	Same as Prop. Act.	Same as Prop. Act.	NA	S Major	Moderate	Moderate	Strong	Moderate	Large	5	Same as Proposed Action	Same as Proposed Action
KOP-11	1584 (482.8)	Same as Prop. Act.	Same as Prop. Act.	Same as Prop. Act.	NA	IC Minor	Minor	Minor	Moderate	Moderate	Medium	3	Same as Proposed Action	Same as Proposed Action
KOP-12	1584 (482.8)	Same as Prop. Act.	Same as Prop. Act.	Same as Prop. Act.	NA	IC Negligible	None	None	None	None	Not Visible	0	Same as Proposed Action	Same as Proposed Action

		Offshore Components Distance in Miles (kilometers) Onshore Components Distance from Viewer in Feet (meters)		(kilometers) Action FOV Onshore Components Distance from Viewer in Degrees						Contrast, Scale of Change, and Prominence						
КОР	Proposed Action	Alternative B	Alternative C	Alternative D	Visual Sim FOV Degrees % of image ¹	Noticeable Elements ² & Impact Level	Proposed Action Form	Proposed Action Line	Proposed Action Color	Proposed Action Texture	Proposed Action Scale	Proposed Action Prominence ³	Alternatives B and C	Alternative D		
KOP-13	1,000 (304.8)	Same as Prop. Act.	Same as Prop. Act.	Same as Prop. Act.	NA	IC Negligible	None	None	None	None	Not Visible	0	Same as Proposed Action	Same as Proposed Action		
KOP-14a	WPC	Same as Prop. Act.	Same as Prop. Act.	Same as Prop. Act.	NA	IC Moderate	Moderate	Major	Moderate	Moderate	Large	4	Same as Proposed Action	Same as Proposed Action		
KOP-14b	WPC	Same as Prop. Act.	Same as Prop. Act.	Same as Prop. Act.	NA	IC Moderate	Moderate	Moderate	Moderate	Moderate	Large	3	Same as Proposed Action	Same as Proposed Action		
KOP-17	WPC	Same as Prop. Act.	Same as Prop. Act.	Same as Prop. Act.	NA	IC Moderate	Moderate	Moderate	Moderate	Moderate	Medium	5	Same as Proposed Action	Same as Proposed Action		
KOP- 18 Chicory Switching Station	528 (160)	Same as Prop. Act.	Same as Prop. Act.	Same as Prop. Act.	NA	Negligible	Not Visible	Not Visible	Not Visible	Not Visible	Not Visible	0	Same as Proposed Action	Same as Proposed Action		

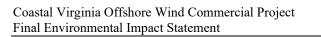
¹Horizontal Field of View is measured both in human visual perspective as a percentage of 124 degrees. The visual simulations (found in CVOW-C COP, Appendix I-1 Attachment I-1-5, Dominion 2022) calculate and illustrate FOV as a percentage of the photographic image.

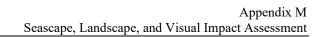
² Noticeable elements: R = rotor, AL = aviation light, N = nacelle, H = hub, O = OSS, M = mid-tower light, Y = yellow tower base color, SS = Switching Station, IC = Interconnecting Cable, S = Substation

³ WTGs, OSS (onshore), and offshore component visibility based on the visual simulations: 0 = Not visible. 1 = Visible only after extended study; otherwise not visible. 2 = Visible when viewing in general direction of the wind farm; otherwise, likely to be missed by casual observer. 3 = Visible after brief glance in general direction of the wind farm; unlikely to be missed by casual observer. 4 = Plainly visible; could not be missed by casual observer but does not strongly attract visual attention or dominate view. 5 = Strongly attracts viewers' attention to the wind farm, moderate to strong contrasts in form, line, color, or texture, luminance, or motion fill most of the horizontal FOV or vertical FOV (NAEP 2012).

HF = Harpers to Fentress, WPC = Within Proposed Corridor.

⁴ The revised simulation for KOP-44 uses RAL 7035 light grey color to depict WTGs and is expected to diminish the WTGs overall contrast with the sky.





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Table M-8 Visibility Threshold Levels

Visibility Rating	Description
Visibility level 1. Visible only after extended, close viewing; otherwise, invisible.	An object/phenomenon that is near the extreme limit of visibility. It could not be seen by a person who was unaware of it in advance and looking for it. Even under those circumstances, the object can be seen only after looking at it closely for an extended period.
Visibility level 2. Visible when scanning in the general direction of the subject; otherwise, likely to be missed by casual observers.	An object/phenomenon that is very small and/or faint, but when the observer is scanning the horizon or looking more closely at an area, can be detected without extended viewing. It could sometimes be noticed by casual observers; however, most people would not notice it without some active looking.
Visibility level 3. Visible after a brief glance in the general direction of the study subject and unlikely to be missed by casual observers.	An object/phenomenon that can be easily detected after a brief look and would be visible to most casual observers, but without sufficient size or contrast to compete with major landscape/seascape elements.
Visibility level 4. Plainly visible, so could not be missed by casual observers, but does not strongly attract visual attention or dominate the view because of its apparent size, for views in the general direction of the study subject.	An object/phenomenon that is obvious and with sufficient size or contrast to compete with other landscape/seascape elements, but with insufficient visual contrast to strongly attract visual attention and insufficient size to occupy most of an observer's visual field.
Visibility level 5. Strongly attracts the visual attention of views in the general direction of the study subject. Attention may be drawn to the strong contrast in form, line, color, or texture, luminance, or motion.	An object/phenomenon that is not large but contrasts with the surrounding landscape elements so strongly that it is a major focus of visual attention, drawing viewer attention immediately and tending to hold attention. Has strong contrasts in form, line, color, and texture. In addition, bright light sources and moving objects contribute substantially to drawing viewer attention. The study subject's visual prominence noticeably interferes with views of nearby landscape/seascape elements.
Visibility level 6. Dominates the view because the study subject fills most of the visual field of views in its general direction. Strong contrasts in form, line, color, texture, luminance, or motions may contribute to view dominance.	An object/phenomenon with strong visual contrasts that is so large it occupies most of the visual field, and views cannot be avoided except by turning one's head more than 45 degrees from a direct view of the object. The phenomenon is the major focus of visual attention, and its large apparent size is a major factor in its view dominance. The study subject's visual prominence noticeably detracts from views of other landscape /seascape elements.

Source: Sullivan et. al 2013.

Table M-9 lists the Proposed Action's noticeable features based on their heights, distances, and EC.

Table M-9 Noticeable Elements and Impacts by Seascape Character Area, Open Ocean Character Area, Landscape Character Areas, and KOP for the Proposed Action

Noticeable Elements ¹ Impacts	Seascape, Open Ocean, and Landscape Character Areas, and Offshore and Onshore Key Observation Points
R, AL, N, H, O, M, and Y Major	Open Ocean Character Area, Historic Resources (Chesapeake Light Station)
_	KOP-50 Recreational Fishing, Pleasure, and Tour Boat Area
	KOP-51 Cruise Ship Shipping Lanes
R, AL, N, and H Moderate	Open Ocean Character Area Seascape Character Areas: Barrier Island Residential, Beach, Beachfront Residential, Recreation, Virginia Beach/Tourism, Historic and
	Disadvantage Communities, Industrial/Military Landscape Character Area: Inland Bay
	KOP-13 Cape Henry Lighthouse/Fort Story Military Base2 KOP-24a Virginia Beach Boardwalk – 17 th Street Park KOP-24d Virginia Beach Boardwalk – Fishing Pier KOP-26 Marriott Virginia Beach Oceanfront Hotel KOP-44 Little Island Park/Back Bay National Wildlife Refuge
R, AL, N, and H Minor	Open Ocean Character Area Seascape Character Areas: Lower Coastal Plain/Tide Water Landscape Character Area: Inland Bay, Rural Coastal Plain KOP-8 Eastern Shore of Virginia NWR KOP-15a North End Beach – Residential View KOP-22 King Neptune Statue/Boardwalk KOP-23 Naval Aviation Monument Park KOP-29 Grommet Island Park/Boardwalk KOP-30a Croatan Beach A KOP-30b Croatan Beach C KOP-31 Picnic Views at SMR KOP-47 Currituck NWR
Harris	KOP-48 Currituck Beach Lighthouse KOP-49a Whale Head Bay Residential View 4 KOP-49g Whale Head Bay Albacore Street Entrance – Elevated
Unseen	Landscape Character Areas: Agriculture, Coastal Development
Negligible	KOP-15b North End Beach – Residential View – Nighttime (ALDS) ² KOP-24d Virginia Beach Boardwalk – Fishing Pier Nighttime (ALDS) ² KOP-24a Virginia Beach Boardwalk – 16 th Street Entrance Nighttime (ALDS) ²

R = rotor, AL = aviation light, N = nacelle, H = hub, O = OSS, M = mid-tower light, Y = yellow tower base color

Table M-10 summarizes the Proposed Action's wind farm distance, percent of FOV occupied by the wind farm, and effects on the seascape areas, open ocean area, landscape areas, and KOPs.

² Negligible impacts with implementation of ALDS.

SMR = State Military Reservation, NWR = National Wildlife Refuge.

² The Fort Story Military Base in the VIA refers to the Joint Expeditionary Base Little Creek-Fort Story, of which the Fort Story Historic District is a part.

Table M-10 Wind Farm Distance Effects by Seascape Character Areas, Open Ocean Character Area, Landscape Character Areas, and KOP for the Proposed Action

Distance in Miles (kilometers) Effects	Seascape, Open Ocean, and Landscape Character Areas, and Offshore and Onshore Key Observation Points
0-40.0 (0-64.4)	Open Ocean Character Area
Dominant/Major to Minor Noticeability	Historic Resources (Chesapeake Light Station)
	KOP-50 Recreational Fishing, Pleasure, and Tour Boat Area
5.0–40.0 (8.0–64.4) Dominant/Major to Minor	Open Ocean Character Area
Noticeability	KOP-51 Cruise Ship Shipping Lanes
13 to 28 (20.9 to 45.1) High Noticeability	Open Ocean Character Area
Nighttime Views ¹	KOP-24d Virginia Beach Boardwalk – Fishing Pier Nighttime ¹ KOP-24a Virginia Beach Boardwalk – 16 th Street Entrance Nighttime ¹ KOP-15b North End Beach – Residential View – Nighttime ¹
24.1 to 28 (38.8 to 43.5) Moderate Noticeability	Seascape Character Areas: Beach, Beachfront Residential, Recreation, Virginia Beach/Tourism, Historic Resources and Disadvantaged Communities
	KOP-44 Little Island Park/Back Bay National Wildlife Refuge
28 to 29.1 (45.1 to 46.8) Moderate Noticeability Elevated Views	Seascape Character Areas: Recreation (Historic), Virginia Beach/Tourism
	KOP-13 Cape Henry Lighthouse/Fort Story Military Base KOP-26 Marriott Virginia Beach Oceanfront Hotel
28.1 to 31 (43.6 to 49.9) Minor Noticeability	Seascape Character Areas: Beach, Barrier Island Residential, Recreation, Historic Resources and Disadvantaged Communities, Lower Coastal Plain/Tide Water Industrial/Military
	KOP-15a North End Beach – Residential View KOP-22 King Neptune Statue/Boardwalk
	KOP-23 Naval Aviation Monument Park
	KOP-24a Virginia Beach Boardwalk – 17 th Street Park
	KOP-24d Virginia Beach Boardwalk – Fishing Pier
	KOP-29 Grommet Island Park/Boardwalk
	KOP-30a Croatan Beach A
	KOP-30b Croatan Beach C
	KOP-31 Picnic Views at SMR
36.8 (59.2) Minor Noticeability	Seascape Character Areas: Recreation (Historic)
Elevated Views	KOP-48 Currituck Beach Lighthouse

Distance in Miles (kilometers) Effects	Seascape, Open Ocean, and Landscape Character Areas, and Offshore and Onshore Key Observation Points
31–40.0 (45.1–64.4) Negligible Noticeability	Landscape Character Areas: Those areas not within the zone of visual influence
	KOP-5 Oyster Village Horse Island Trail KOP-8 Eastern Shore of Virginia NWR KOP-47 Currituck NWR KOP-49a Whale Head Bay Residential View 4 KOP-49g Whale Head Bay Albacore Street Entrance – Elevated

¹ Negligible with ALDS

SMR = State Military Reservation, NWR = National Wildlife Refuge.

Table M-11 summarizes the Proposed Action's wind farm distance, percent of FOV occupied by the wind farm, and effects on the KOPs.

Table M-11 Wind Farm Percent FOV and Effects by KOP for the Proposed Action

Percent (°) of 124° FOV POV¹ Effects	Offshore and Onshore Key Observation Points
100% (124°) to 16% (20°) Dominant/Major to Minor	KOP-50 Recreational Fishing, Pleasure, and Tour Boat Area
41% (51°) to 16% (20°) Dominant/Major to Minor	KOP-51 Cruise Ship Shipping Lanes
33% (37.6°) to 29% (36°) Moderate	none
28% (35°) to 20% (25°) Minor	KOP-44 Little Island Park/Back Bay NWR
20% (25°) to 7% (9°) Minor to Negligible	KOP-5 Oyster Village Hoarse Island Trail KOP-8 Eastern Shore of Virginia NWR KOP-13 Cape Henry Lighthouse KOP-15a North End Beach Residential View 1 KOP-15b North End Beach Residential View 1 nighttime KOP-22 King Neptune Statue/Boardwalk KOP-23 Naval Aviation Monument Park KOP-24a Virginia Beach Boardwalk – 17 th Street Park KOP-24b Virginia Beach Boardwalk – 16 th Street Entrance nighttime KOP-24d virginal Beach Boardwalk – Fishing Pier & Nighttime KOP-26 Marriott Virginia Beach Oceanfront Hotel KOP-29 Grommet Island Park/Boardwalk KOP-30a Croatan Beach A KOP-30b Croatan Beach C KOP-31 Picnic Views at SMR KOP-47 Currituck Beach Lighthouse KOP-48 Currituck NWR
1 December of views	KOP-49a Whale Head Bay Residential View 4 KOP-49g Whale Head Albacore Street Entrance – Elevated

¹ Percent of view.

SMR = State Military Reservation, NWR = National Wildlife Refuge.

Foreground influence assessments, involving the presence of intervening or framing elements and their influence on effects of Project characteristics, are based on each KOP's locale photography and visual simulations (COP, Appendix I; Dominion Energy 2023) and are summarized in Table M-12.

Table M-12 Foreground View Framing and Intervening Elements for the Proposed Action

Foreground Element(s) Influence ¹	Seascape, ² Open Ocean, and Landscape Character Areas, ² and Offshore and Onshore Key Observation Points
Open Ocean	Open Ocean Character Area: Ocean
Negligible Influence	VIA:
	KOP-26 Marriott Oceanfront Hotel
	KOP-24d Virginia Beach Boardwalk Fishing Pier
	KOP-24d Virginia Beach Boardwalk Fishing Pier Nighttime
	KOP-50 Recreational Fishing, Pleasure, and Tour Boat Area
	KOP-51 Cruise Ship Shipping Lanes
Beach, Dunes, and	KOP-15a Beach Residential 1
Ocean	KOP-15b Beach Residential 1 nighttime
Minor Influence	KOP-22 Neptune Statue Boardwalk
	KOP-23 National Aviation Monument Park
	KOP-24a Virginia Beach Boardwalk 17 th Street Park
	KOP-29 Grommet Island Park
	KOP-30a Croatan Beach A – North
	KOP-30c Croatan Beach A – South
	KOP-31 Picnic Views at SMR
	KOP-44 Little Island Park
	KOP-48 Currituck NWR
	KOP-49a Whale Head Beach Residential
	KOP-49g Whale Head Beach Albacore Street Entrance
Buildings, Vegetation,	KOP-5 Horse Island Trail
and Topography	KOP-8 Eastern Shore Virginia NWR
Moderate to Dominant	KOP-13 Cape Henry Lighthouse
Influence	KOP-24b Virginia Beach Boardwalk 16th Street Entrance Nighttime
	KOP-48 Currituck Beach Lighthouse
	Onshore Components
	KOP-3 (IC Route 1)
	KOP-5 (IC Route 1)
	KOP-10 (IC Routes 1 and 6 Hybrid)
	KOP-11 (IC Route 1 and 6 Hybrid)
	KOP-12 (IC Routes 1 and 6 Hybrid)
	KOP-13 (IC Routes 1 and 6 Hybrid)
	KOP-14a (IC Routes 1 and 6 Hybrid)
	KOP-14b (IC Routes 1 and 6 Hybrid)
	KOP-17 (IC Routes 1 and 6 Hybrid)
	KOP-18 (IC Route 6 Hybrid)

SMR = State Military Reservation, NWR = National Wildlife Refuge, HF = Harpers to Fentress.

¹ Based on conditions portrayed by representative photography contained in COP, Appendix I-1 and I-2; Dominion Energy 2023, nearby view receptor locations may vary from screened to open views of the WTA.

² Variable foreground element conditions and influences within seascape and landscape character areas.

Proposed Action contrasts in the characteristic seascape and landscape, as perceived in views from each KOP, are based on visual simulations (COP, Appendix I, Attachment I-1-5; Dominion Energy 2023). Seascape unit view contrasts are estimated based on similar open view conditions in ocean environments. Landscape and seascape compatibility and photography conditions for each viewpoint are presented in COP, Appendix I, Attachment I-1-4 (Dominion Energy 2023). The COP landscape and seascape evaluation scale ranges from faint, apparent, conspicuous, and prominent to dominant. No onshore viewpoints would result in either prominent or dominant conditions. Offshore potential viewpoints' evaluations range from faint to dominant. Visual contrast determinations involve comparisons of characteristics of the seascape and landscape before and after Proposed Action implementation. The range of potential contrasts includes strong, moderate, weak, and none. The strongest daytime contrasts would result from tranquil and flat seas combined with sunlit WTG towers, nacelles, flickering rotors, and the yellow tower 50-foot (15.2-meter) base color against a dark background sky and an undifferentiated foreground. The weakest daytime contrasts would result from turbulent seas combined with overcast daylight conditions on WTG towers, nacelles, and rotors against an overcast background sky and a foreground modulated by varied landscape elements. The strongest nighttime contrasts would result from dark skies (absent moonlight) combined with navigation lights, activated lighting on the OSSs, mid-tower lights, and Project lighting reflections on low clouds and active (non-reflective) surf, and the dark-sky light dome. The weakest nighttime contrasts would result from moonlit, cloudless skies, tranquil (reflective) seas, ADLS activation, and only mid-tower lights.

Photographic comparisons of characteristics of the seascape's and landscape's existing conditions and Proposed Action implementation are included in Attachment I-1-5 of COP, Appendix I-1 (Dominion Energy 2023) for each of the KOPs in the following summary tables. Visual contrast determinations are listed in Table M-13.

Table M-13. Visual Contrasts to Seascape, Open Ocean, and Landscape Character Areas, and KOPs for the Proposed Action

Contrast Rating Effects	Seascape, Open Ocean, and Landscape Character Areas, and Offshore and Onshore Key Observation Points
Strong Contrasts	Open Ocean Character Area
Major	
	KOP-50 Recreational Fishing, Pleasure, and Tour Boat Area
	KOP-51 Cruise Ship Shipping Lanes
	KOP-15b North End Beach Residential View 1 nighttime
	KOP-24b Virginia Beach Boardwalk – 16 th Street Entrance nighttime
	KOP-24d Virginia Beach Boardwalk – Fishing Pier nighttime
	Onshore Components
	Landscape Character Areas: Developed – Suburban Residential, Open Water
	KOP-3 (IC Routes 1)
	KOP-4a/b (IC Route 1 and 6 Hybrid)
Moderate Contrasts Moderate	Open Ocean Character Area: Historic Resources (Chesapeake Light Station) Seascape Character Areas: Barrier Island Residential, Beach, Beachfront Residential, Recreation ¹ , Industrial/Military ¹ , Virginia Beach/Tourism, Historic Resources and Disadvantaged Communities
	KOP-13 Cape Henry Lighthouse KOP-24a Virginia Beach Boardwalk – 17 th Street Park
	KOP-26 Marriott Virginia Beach Oceanfront Hotel
	Onshore Components

Contrast Rating Effects	Seascape, Open Ocean, and Landscape Character Areas, and Offshore and Onshore Key Observation Points
	Landscape Character Areas: Agriculture/Open Land, Developed – Rural Residential, Forested KOP-5 (IC Routes 1) KOP-14b (IC Routes 1 and 6) KOP-17 (IC Routes 1 and 6)
Weak Contrasts Minor	Seascape Character Areas: Lower Coastal Plain/Tidewater Landscape Character Areas: Inland Bay, Rural Coastal Plain, Recreation¹ KOP-15a North End Beach Residential View 1 KOP-22 King Neptune Statue/Boardwalk KOP-23 Naval Aviation Monument Park KOP-29 Grommet Island Park/Boardwalk KOP-30a Croatan Beach A KOP-30b Croatan Beach C KOP-31 Picnic Views at SMR KOP-44 Little Island Park (raining) KOP-48 Currituck Beach Lighthouse Onshore Components Landscape Character Areas: Transportation Corridor, Developed Recreation Area, Developed – Industrial KOP-10 (IC Routes 1 and 6) KOP-11 (IC Route 1and 6)
None (No Contrasts) Negligible	KOP-14a (IC Routes 1 and 6) Landscape Character Areas: Agriculture, Coastal Development, Industrial/Military¹ KOP-5 Oyster Village Hoarse Island Trail KOP-8 Eastern Shore of Virginia NWR KOP-47 Currituck NWR KOP-49a Whale Head Bay Residential View 4 KOP-49g Whale Head Albacore Street Entrance – Elevated Onshore Components Landscape Character Areas: Developed – Commercial KOP-12 (IC Routes 1 and 6) KOP-13 (IC Routes 1 and 6) KOP-18 (IC Route 6)

¹ Combined area for Seascape and Landscape character area. Areas within the Seascape are considered moderate impact because of their ocean facing views. Areas within the Landscape are considered minor to negligible because they fall outside of the WTG viewshed and/or have minor susceptibility.

SMR = State Military Reservation, NWR = National Wildlife Refuge.

M.3.1.4. Impact Levels on Seascape Character, Open Ocean Character, and Landscape Character

Table M-14 summarizes Proposed Action impacts on the seascape character areas, open ocean character area, landscape character areas, and viewer experience (KOP locations) throughout the geographic analysis area. The seascape, open ocean, landscape, and viewer experience criteria listed in Table M-2 and consideration of the preceding assessments would result in impact levels to viewer experience for KOPs as shown in Table M-14.

Table M-14 Proposed Action Impact on Seascape Character, Open Ocean Character, Landscape Character, and Viewer Experience

Impact Level	Seashore, Open Ocean, and Landscape Character Areas, and Offshore and Onshore Key Observation Points
Major	Open Ocean Character Area KOP-50 Recreational Fishing, Pleasure, and Tour Boat Area KOP-51 Cruise Ship Shipping Lanes
	Onshore Components Landscape Character Areas: Developed – Suburban Residential, Open Water KOP-3 (IC Routes 1) KOP-5 (IC Routes 1)
Moderate	Open Ocean Character Area (around Chesapeake Light Station) Seascape Character Area: Beach, Beachfront Residential, Recreation, Virginia Beach/Tourism VIA KOP-13 Cape Henry Lighthouse/Fort Story Military Base KOP-15a North End Beach – Residential View KOP-15b North End Beach – Residential View – Nighttime KOP-22 King Neptune Statue/Boardwalk KOP-23 Naval Aviation Monument Park
	KOP-24d Virginia Beach Boardwalk – Fishing Pier KOP-24d Virginia Beach Boardwalk – Fishing Pier Nighttime KOP-24a Virginia Beach Boardwalk – 17 th Street Park KOP-24a Virginia Beach Boardwalk – 16 th Street Entrance Nighttime KOP-26 Marriott Virginia Beach Oceanfront Hotel KOP-29 Grommet Island Park/Boardwalk KOP-30a Croatan Beach A KOP-30b Croatan Beach C KOP-31 Picnic Views at SMR KOP-44 Little Island Park/Back Bay NWR
	Onshore Components Landscape Character Units: Agriculture/Open Land, and Developed – Rural Residential, Forested KOP-14a/b (IC Routes 1 and 6) KOP-17 (IC Routes 1and 6) KOP-18 (IC Route 6)

Impact Level	Seashore, Open Ocean, and Landscape Character Areas, and Offshore and Onshore Key Observation Points
Minor	Seascape Character Area: Barrier Island Residential, Historic Resources and Disadvantaged Communities, Industrial/Military¹ Landscape Character Areas: Rural Coastal Plain VIA: KOP-47 Currituck Beach Lighthouse KOP-48 Currituck NWR KOP-49a Whale Head Bay Residential View 4 KOP-49g Whale Head Bay Albacore Street Entrance – Elevated Onshore Components Landscape Character Areas: Developed – Industrial, Developed Recreation Area, Transportation Corridor KOP-11 (IC Route 1and 6)
Negligible	Seascape Character Area: Lower Coastal Plain/Tidewater Landscape Character Areas: Agriculture, Inland Bay, Coastal Development, Industrial/Military, Recreation KOP-5 Oyster Village Horse Island Trail KOP-8 Eastern Shore of Virginia NWR Onshore Components Landscape Character Areas: Developed – Commercial KOP-12 (IC Routes 1 and 6) KOP-13 (IC Routes 1 and 6)

¹ These character areas are combined in the COP, Appendix I-1 (Dominion Energy 2023). They are differentiated and analyzed both as Seascape and Landscape character areas in the EIS based on their location and ocean views. SMR = State Military Reservation, NWR = National Wildlife Refuge, HF = Harpers to Fentress.

M.3.1.5. Impact Levels on the Viewer Experience

Table M-15 summarizes Proposed Action impacts on the viewer experience (KOP location) throughout the geographic analysis area. The seascape, landscape, and viewer experience criteria listed in Table M-14 and consideration of the preceding assessments would result in impact levels for KOPs as shown in Table M-15.

Table M-15 Impact Levels on Viewer Experience for the Proposed Action

Impact Level	Seashore Character Units, Open Ocean Unit, Landscape Character Units, and Offshore and Onshore Key Observation Points
Major	Open Ocean Character Area
	KOP-50 Recreational Fishing, Pleasure, and Tour Boat Area KOP-51 Cruise Ship Shipping Lanes Onshore Components Landscape Character Areas: Developed – Suburban Residential, Open Water KOP-3 (IC Routes 1) KOP-5 (IC Routes 1)

	Seashore Character Units, Open Ocean Unit, Landscape Character Units, and
Impact Level	Offshore and Onshore Key Observation Points
Moderate	Open Ocean (around Chesapeake Light Station) Seascape Character Areas: Beach, Beachfront Residential, Recreation, ² Virginia Beach/Tourism VIA KOP-13 Cape Henry Lighthouse/Fort Story Military Base KOP-15a North End Beach – Residential View KOP-26 Marriott Virginia Beach Oceanfront Hotel KOP-44 Little Island Park/Back Bay NWR
	Onshore Components Landscape Character Units: Agriculture/Open Land, and Developed – Rural Residential, Forested KOP-14a/b (IC Routes 1 and 6) KOP-17 (IC Routes 1, and 6) KOP-18 (IC Route 6)
Minor	Seascape Character Area: Barrier Island Residential, Historic Resources/Disadvantaged Communities, Industrial/Military,² Landscape Character Areas: Rural Coastal Plain VIA: KOP-22 King Neptune Statue/Boardwalk KOP-23 Naval Aviation Monument Park KOP-24a Virginia Beach Boardwalk – 17 th Street Park KOP-24d Virginia Beach Boardwalk – Fishing Pier KOP-29 Grommet Island Park/Boardwalk KOP-30a Croatan Beach A KOP-30b Croatan Beach C KOP-31 Picnic Views at SMR KOP-47 Currituck Beach Lighthouse KOP-48 Currituck NWR KOP-49a Whale Head Bay Residential View 4 KOP-49g Whale Head Bay Albacore Street Entrance – Elevated Onshore Components Landscape Character Areas: Developed – Industrial, Developed Recreation Area, Transportation Corridor KOP-11 (IC Route 1and 6)

Impact Level	Seashore Character Units, Open Ocean Unit, Landscape Character Units, and Offshore and Onshore Key Observation Points
Negligible	Seascape Character Area: Inland Bay, Lower Coastal Plain/Tide Water Landscape Character Areas: Agriculture, Coastal Development, Industrial/Military, ²
	Recreation ²
	KOP-5 Oyster Village Horse Island Trail
	KOP-8 Eastern Shore of Virginia NWR
	KOP-15b North End Beach – Residential View – Nighttime¹
	KOP-24d Virginia Beach Boardwalk – Fishing Pier Nighttime ¹
	KOP-24a Virginia Beach Boardwalk – 16 th Street Entrance Nighttime ¹
	Onshore Components
	Landscape Character Areas: Developed – Commercial
	KOP-12 (IC Routes 1 and 6)
	KOP-13 (IC Routes 1 and 6)

¹ ADLS.

M.3.1.6. Reasonably Foreseeable Planned Actions

NEPA requires consideration of other reasonably foreseeable activities in the Project's viewshed and the Project's incremental effects on seascape character, open ocean character, landscape character, and viewer experience. These effects include direct physical effects on the seascape, open ocean, and landscape or changes to the distinct character of the seascape, open ocean, and landscape.

Effects on seascape character, open ocean character, and landscape character can occur in the following conditions (BOEM 2021: Chapter 8).

- Multi-project WTGs and OSS visible within or from the open ocean character unit as overlapping or adjacent features and elements
- Multi-project WTGs and OSS visible from seascape character units as overlapping or adjacent features and elements
- Multi-project WTGs and OSS visible from landscape character units as overlapping or adjacent features and elements

Effects on viewer experience can occur in the following conditions (BOEM 2021: Chapter 8).

- Multi-project WTGs and OSS visible as overlapping features and elements
- Multi-project WTGs and OSS visible as adjacent features and elements
- Multi-project WTGs and OSS visible as viewers move through the seascape, open ocean, and landscape

Attachment M-2 presents simulations of the incremental effects of the Project in the context of other planned wind farms.

Consideration of effects of other planned wind farms on seascape character, open ocean character, and landscape character is listed in Table M-16.

Consideration of effects on viewer experience of other planned wind farms is listed in Table M-17.

² These character areas are combined in the COP, Appendix I-1 (Dominion Energy 2023). They are differentiated and analyzed both as Seascape and Landscape character areas in the EIS based on their location and ocean views.

Consideration of effects on seascape character, open ocean character, and landscape character of other planned wind farms in combination with the Proposed Action is listed in Table M-18.

Consideration of effects on viewer experience of other planned wind farms in combination with the Proposed Action is listed in Table M-19.

Table M-16 Other Planned Wind Farms' Seascape, Open Ocean, and Landscape Units Cumulative Wind Farm Distances, FOVs, Noticeable Elements, Visual Contrasts, Scale of Change, and Prominence

		Character Unit	
	Seascape (Beaches) ¹	Open Ocean	Landscape⁴
Distance in miles (kild	ometers)		
Kitty Hawk	28 (45)	0 to 42.5 (0 to 68.4)	Variable to 42.5 (68.4)
Kitty Hawk South	37 (59.5)	0 to 42.5 (0 to 68.4)	Variable to 42.5 (68.4)
FOV Degrees (1% of 124°)	35° (28%)	82° to 360° (66 to 290%)	35° (28%)
Noticeable Elements ² & Impact Level	R, AL, N, H Moderate R, AL, N, H, O, M, and Y Major		R, AL, N, H Minor
Contrast, scale of cha	inge, and prominence		
Form	Moderate to Weak	Strong	Moderate to Weak
Line	Moderate to Weak	Strong	Moderate to Weak
Color	Strong to Weak	Strong	Moderate to Weak
Texture	Weak	Strong	Weak
Scale	Small	Large	Small
Prominence ³	3	6	3

¹ The most conservative onshore case involves the seaward edge of the beach nearest the projects. The seascape unit edge is 3.45 miles (5.6 kilometers) offshore (New Jersey jurisdictional boundary).

Table M-17 Other Planned Wind Farms' Cumulative Viewer Experience Wind Farm Distances, FOVs, Noticeable Elements, Visual Contrasts, Scale of Change, and Prominence

			KOP ¹		
	KOP-26	KOP-31	KOP-45	KOP-47	KOP-49a
Distance in m	niles (kilometers)				
Kitty Hawk	45.9 (73.8)	43.0 (69.2)	33.2 (53.4)	28.3 (45.5)	27.9 (44.9)
Kitty Hawk South	54.0 (86.9)	52.9 (85.1)	43.5 (70.0)	38.5 (62.0)	38.2 (61.5)

² Noticeable elements: R = rotor, AL = aviation light, N = nacelle, H = hub, O = OSS, M = mid-tower light, Y = yellow tower base color

³ WTGs and OSS Prominence (visibility): 0 = Not visible. 1 = Visible only after extended study; otherwise not visible.

^{2 =} Visible when viewing in general direction of the wind farm; otherwise, likely to be missed by casual observer.

^{3 =} Visible after brief glance in general direction of the wind farm; unlikely to be missed by casual observer.

^{4 =} Plainly visible; could not be missed by casual observer but does not strongly attract visual attention or dominate view. 5 = Strongly attracts viewers' attention to the wind farm; moderate to strong contrasts in form, line, color, or texture, luminance, or motion. 6 = Dominates view; strong contrasts in form, line, color, texture, luminance, or motion fill most of the horizontal FOV or vertical FOV (NAEP 2012).

⁴ The seaward edge between landscape and seascape varies. The most conservative case is a 1.0-mile (1.6-kilometer) distance from the seaward beach edge.

			KOP ¹		
	KOP-26	KOP-31	KOP-45	KOP-47	KOP-49a
Cumulative FOV Degrees (% of 124°)	9° (50%)	9° (50%)	13° (11%)	24° (19%)	24° (19%)
Noticeable Elements ² & Impact Level	R, AL, N, H Moderate	Not Visible Negligible	R Minor	R, AL, N, H, M, O Moderate	R, AL, N, H Minor
Contrast, sca	le of change, and	prominence			
Form	Moderate	Not Visible	Weak	Moderate	Weak
Line	Moderate	Not Visible	Weak	Moderate	Weak
Color	Moderate	Not Visible	Weak	Moderate	Weak
Texture	Weak	Not Visible	Weak	Moderate	Weak
Scale	Medium	Not Visible	Small	Medium	Small
Prominence ³	3	0	1	4	3

¹ KOP-26 Marriott Virginia Beach Oceanfront Hotel, KOP-31 Picnic/Beach Views at State Military Reserve; KOP-45 False Cape State Park, KOP-47 Currituck Beach Lighthouse; KOP-49a Whale Head Bay Residential Area.

Table M-18 CVOW-C and Other Planned Wind Farms' Seascape, Open Ocean, and Landscape Cumulative Wind Farm Distances, FOVs, Noticeable Elements, Visual Contrasts, Scale of Change, and Prominence

		Character Area			
	Seascape (Beaches) ¹	Open Ocean	Landscape⁴		
Distance in miles (kilo					
Proposed Action	23.7 (38.14)	0 to 40 (0 to 64.4)	Variable to 40 (64.4)		
Alternative B	Same as Proposed Action	Same as Proposed Action	Same as Proposed Action		
Alternative C	Same as Proposed Action	Same as Proposed Action	Same as Proposed Action		
Alternatives D-1 and D-2	Same as Proposed Action	Same as Proposed Action	Same as Proposed Action		
Kitty Hawk North	28 (45)	0 to 42.5 (0 to 68.4)	Variable to 42.5 (68.4)		
Kitty Hawk South	37 (59.5)	0 to 42.5 (0 to 68.4)	Variable to 42.5 (68.4)		
FOV Degrees (% of 124°)	92° (74%)	92° to 124° (74 to 100%)	85° (68%)		
Noticeable Elements ² & Impact Level	R, AL, N, H Moderate	R, AL, N, H, O, M, and Y to R Major	R, AL, N, H Moderate		

² Noticeable elements: R = rotor, AL = aviation light, N = nacelle, H = hub, O = OSS, M = mid-tower light,

Y = yellow tower base color

³ WTGs and OSS (onshore) visibility: 0 = Not visible. 1 = Visible only after extended study; otherwise not visible.

^{2 =} Visible when viewing in general direction of the wind farm; otherwise, likely to be missed by casual observer.

^{3 =} Visible after brief glance in general direction of the wind farm; unlikely to be missed by casual observer.

^{4 =} Plainly visible; could not be missed by casual observer but does not strongly attract visual attention or dominate view. 5 = Strongly attracts viewers' attention to the wind farm; moderate to strong contrasts in form, line, color, or texture, luminance, or motion. 6 = Dominates view; strong contrasts in form, line, color, texture, luminance, or motion fill most of the horizontal FOV or vertical FOV (NAEP 2012).

		Character Area	
	Seascape (Beaches) ¹	Open Ocean	Landscape ⁴
Contrast, Scale of Cha	ange, and Prominence		
Form	Moderate to Weak	Strong	Moderate to Weak
Line	Moderate to Weak	Strong	Moderate to Weak
Color	Moderate to Weak	Strong	Moderate to Weak
Texture	Weak	Strong	Weak
Scale	Small	Large	Small
Prominence ³	4	6	4

The most conservative onshore case involves the seaward edge of the beach nearest the projects. The seascape unit edge is 3.45 miles (5.6 kilometers) offshore (New Jersey jurisdictional boundary).

Table M-19 CVOW-C and Other Planned Wind Farms' Cumulative Viewer Experience Wind Farm Distances, FOVs, Noticeable Elements, Visual Contrasts, Scale of Change, and Prominence

			KOP ¹		
	KOP-26	KOP-31	KOP-45	KOP-47	KOP-49a
Distance in mile	es (kilometers)				
Proposed Action	28.0 (45.0)	27.6 (44.4)	27.1 (43.6)	36.8 (59.2)	39.1 (62.9)
Alternative B	Same as Proposed Action				
Alternatives C	Same as Proposed Action				
Alternatives D-1 and D-2	Same as Proposed Action				
Kitty Hawk	45.9 (73.8)	43.0 (69.2)	33.2 (53.4)	28.3 (45.5)	27.9 (44.9)
Kitty Hawk South	54.0 (86.9)	65 (52.4)	43.5 (70.0)	38.5 (62.0)	38.2 (61.5)
Cumulative FOV Degrees (1% of 124°) 61° (50%)		64° (52%)	85° (68%)	76° (61%)	84° (68%)
Noticeable Elements ² & Impact Level	R, AL, N, H Major	R, AL, N, H Minor	R, AL, N, H Moderate	R, AL, N, H Moderate	R, AL, N, H Minor

² Noticeable elements: R = rotor, AL = aviation light, N = nacelle, H = hub, O = OSS, M = mid-tower light, Y = yellow tower base color

³ WTGs and OSS (onshore) visibility: 0 = Not visible. 1 = Visible only after extended study; otherwise not visible.

^{2 =} Visible when viewing in general direction of the wind farm; otherwise, likely to be missed by casual observer.

^{3 =} Visible after brief glance in general direction of the wind farm; unlikely to be missed by casual observer.

^{4 =} Plainly visible; could not be missed by casual observer but does not strongly attract visual attention or dominate view. 5 = Strongly attracts viewers' attention to the wind farm; moderate to strong contrasts in form, line, color, or texture, luminance, or motion. 6 = Dominates view; strong contrasts in form, line, color, texture, luminance, or motion fill most of the horizontal FOV or vertical FOV (NAEP 2012).

⁴ The seaward edge between landscape and seascape varies.

			KOP ¹							
	KOP-26 KOP-31 KOP-45 KOP-47									
Contrast, scale	of change, and p	prominence								
Form	Moderate	Weak	Moderate	Moderate	Weak					
Line	Moderate	Weak	Moderate	Moderate	Weak					
Color	Moderate	Weak	Moderate	Moderate	Weak					
Texture	Weak	Weak	Moderate	Moderate	Weak					
Scale	Medium	Small	Medium	Medium	Small					
Prominence ³	4	3	4	4	3					

¹ KOP-26 Marriott Virginia Beach Oceanfront Hotel, KOP-31 Picnic/Beach Views at State Military Reserve; KOP-45 False Cape State Park, KOP-47 Currituck Beach Lighthouse; KOP-49a Whale Head Bay Residential Area.

M.3.2 Impacts of Alternatives B and C on Scenic and Visual Resources

Visual contrast assessments—including form, line, color, and texture comparisons of characteristics of the seascape, open ocean, and landscape before and after implementation of Alternatives B and C—are indicated in Table M-7. The difference in contrasts between Alternatives B and C and the Proposed Action due to the removal of between 26 and 30 14-megawatt (MW) WTG positions from the northern end of the Lease Area would have a minor effect on visual resources. Table M-20 and Table M-21 list Alternatives B and C wind farm width-, height-, and distance-related occupation of views from the nearest shoreline area. Distance and FOV comparisons with the Proposed Action indicate similar effects. These results indicate perceptible changes to the FOV results compared to the Proposed Action would be minor (Table M-20 and Table M-21).

Table M-20 Horizontal FOV Occupied by Alternatives B and C

Noticeable Element	Width ¹ in Miles (kilometers)	Distance ² in Miles (kilometers)	Horizontal FOV	Human FOV	Percent of FOV
14-MW WTGs	17.8 (28.6)	24.1 (38.8)	36.4°	124°	29%

¹ Maximum extent of the wind farm array.

Table M-21 Vertical FOV Occupied by Alternatives B and C

Noticeable Element	Height in Feet (meters) MHW	Distance in Miles (kilometers)	Visible Height ¹ in Feet (meters)	Vertical FOV	Human FOV	Percent of FOV
Hub Up	836 (255)	24.1 (38.8)	586 (178.6)	0.26°	55°	0.01%

¹ Based on intervening EC, clear-day, and clear-night conditions.

² Noticeable elements: R = rotor, AL = aviation light, N = nacelle, H = hub, O = OSS, M = mid-tower light, Y = yellow tower base color

³ WTGs and OSS (onshore) visibility: 0 = Not visible. 1 = Visible only after extended study; otherwise not visible.

^{2 =} Visible when viewing in general direction of the wind farm; otherwise, likely to be missed by casual observer.

^{3 =} Visible after brief glance in general direction of the wind farm; unlikely to be missed by casual observer.

^{4 =} Plainly visible; could not be missed by casual observer but does not strongly attract visual attention or dominate view. 5 = Strongly attracts viewers' attention to the wind farm; moderate to strong contrasts in form, line, color, or texture, luminance, or motion. 6 = Dominates view; strong contrasts in form, line, color, texture, luminance, or motion fill most of the horizontal FOV or vertical FOV (NAEP 2012).

² Nearest onshore distance to the wind farm array.

M.3.3 Impacts of Alternative D on Scenic and Visual Resources

Visual contrast assessments—including form, line, color, and texture comparisons of characteristics of the seascape, open ocean, and landscape before and after implementation of Alternative D—are indicated in Table M-7. There would be a substantial difference in contrasts between Alternative D and the Proposed Action due to the undergrounding of 4.5 miles (7.2 kilometers) of Transmission Corridor and constructing the Chicory Switching Station instead of the Harpers Switching Station. The Interconnection Cable Route 6 (Hybrid) would follow Interconnection Cable Route 1 in its entirety but would remain underground between Harpers Road and the Chicory Switching Station site in Virginia Beach. This would avoid visual impacts on an area of suburban residential development (Castleton and Pine Ridge) at the eastern end of the route. The Chicory Switching Station would replace primarily forested areas adjacent to a Transportation Corridor (Princess Anne Road—a multi-lane divided highway flanked by forest). Existing ROW within or near the subdivisions would be expanded to accommodate the underground portion of the route, but no new structures would be built in these areas. The northern edge of the Chicory Switching Station could be visible from adjacent subdivisions, across an existing transmission right-of-way and through trees along the facility's northern boundary. As a result, Interconnection Cable Route 6 would have lower impacts on suburban residential Landscape Character Units than other alternatives.

M.4. Seascape, Open Ocean, and Landscape Impact Assessment Summary

The SLIA considers the impacts on the physical elements and features that make up a seascape, open ocean, or landscape and the aesthetic, perceptual, and experiential aspects of the seascape, open ocean, or landscape that contribute to its distinctive character. These impacts affect the "feel," "character," or "sense of place" of an area of seascape, open ocean, or landscape. Table M-22 summarizes the effects of the character of the offshore and onshore components of the Project with the aspects that contribute to the distinctive character of the seascape, open ocean, and landscape areas from which the Project would be visible (BOEM 2021).

The magnitude of the visual impact is determined by considering the size or scale of the change to the view, the geographic extent of the area experiencing impacts, and the duration and reversibility of the expected impacts. The size or scale of the change to the view refers not to the size or scale of the project itself, but rather the relative degree of change to the view caused by the visual presence of the project, as determined by assessing its visual contrast (BOEM 2021).

High magnitudes of visual impact would occur in the seascape character areas and diminish to low and negligible as distance increases and screening effects increase from topography, structures, and vegetation in landscape character areas. Visual contrasts to industrial/military character types and coastal development character types result in smaller size or scale changes to views than those of the open ocean character area, beach character types, and seascape recreation character types. Medium size or scale changes to views would occur in all other seascape character areas. Impacts of the Proposed Action on seascape character, open ocean character, and landscape character range from **negligible** to **major**.

M.5. Visual Impact Assessment Summary

The VIA considers the characteristics of the view receptor, characteristics of the view toward the Project facilities, and experiential impacts of the Project. Table M-23 summarizes the viewer sensitivity, view receptor susceptibility, view value, and measures of effects from the visible character and magnitude of the offshore and onshore components of the Project (BOEM 2021). Impacts of the Proposed Action on viewer experiences range from **negligible** to **major**.

Table M-22 Seascape, Open Ocean, and Landscape Character Areas; and Geographic Extent, Scale, Contrasts, Size and Scale; and Duration Impact of the Proposed Action

Character Area	Alternatives B and C Impact Level Same as Proposed Action
Character Area	•
Seascape Character Areas	Same as Proposed Action
Barrier Island Residential	Danie as i Toposed Action
Beach Second Se	
Beachfront Residential3	Same as Proposed Action
Historic Resources and Disadvantaged Communities	Same as Proposed Action
Industrial/Military ^{3, 4}	Same as Proposed Action
Lower Coastal Plain/Tidewater X	Same as Proposed Action
Recreation 3, 4	Same as Proposed Action
Virginial Beach/Tourism X	Same as Proposed Action
Landscape Character Areas Agriculture X X X X X X X X X X Inland Bay X	Same as Proposed Action
Agriculture X <th< td=""><td>Same as Proposed Action</td></th<>	Same as Proposed Action
Inland Bay	
Coastal Development X X X X X X X X Industrial/Military ^{3,4} X X	Same as Proposed Action
Industrial/Military ^{3, 4} X X <td>Same as Proposed Action</td>	Same as Proposed Action
Recreation ^{3, 4} X X	Same as Proposed Action
Rural Coastal Plain X X X X X X X X X X X X X X X X X X X	Same as Proposed Action
Onshore Landscape Character Areas	Same as Proposed Action
	Same as Proposed Action
Agriculture, Open, and Undeveloped Lands X X X X X X X X	-
	Same as Proposed Action
Developed – Commercial X X X X X X X X	Same as Proposed Action
Developed – Suburban Residential X X X X X X	Same as Proposed Action
Developed – Industrial X X X X X X X	Same as Proposed Action
Developed Recreation Areas X X X X X X X X	Same as Proposed Action
Developed – Rural Residential X X X X X X X	Same as Proposed Action
Forested X X X X X X X	Same as Proposed Action
Open Water X X	
Inland Streets and Highways X X X X X X X	Same as Proposed Action

¹ Not calculated for Onshore character areas

² The area of Open Ocean analyzed in this EIS includes the 360 degree viewshed around the Lease Area; therefore, approximately 92.8% of open ocean is within the zone of potential visual influence.

The Beach character area calculation as described and illustrated in COP, Appendix I-1, Attachment I-3 maps includes approximately 13 linear miles of beach from the southern boundary of Fort Story to Croatan Beach in Virginia and the beach paralleling the Barrier Island Residential character area in the Corolla area of South Carolina (Dominion Energy 2023). It does not measure beach areas along the barrier islands of the Delmarva Peninsula, the Beachfront Residential character area of Sandbridge neighborhood/historic district, Industrial/Military character areas including Fort Story and Dam Neck (KOP-31), or Recreation character areas including False Cape State Park. For the NEPA analysis, beaches are considered as whole character unit including all sandy shoreline areas within the study area.

⁴ These character areas are combined in the COP, Appendix I-1 (Dominion Energy 2023). They are differentiated and analyzed both as Seascape and Landscape character areas in this document based on their location and ocean views.

Table M-23 Seascape Character, Open Ocean Character, and Landscape Character Impact Levels

		Affe	cted En	vironm	nent								posed		•	Onarac	<u> </u>			Impact Levels				
	Area S	Suscep			rea Val	ue	Р	roject '	Visibilit	y		aracter l	Key	Cha	aracter lent ² Ch			aracter lity ³ Ch		Pr	Proposed Action			Alternatives B and C
Character Area	High	Medium	Low	High	Medium	Low	Dominant	Substantial	Low	Unseen	High	Medium	Low	High	Medium	Low	High	Medium	Low	Major	Moderate	Minor	Negligible	Impact Level
Open Ocean ⁴	Х			X			Х				X			Х			Х			Х				Same as Proposed Action
Seascape Character Areas	, , ,													Λ.						, , ,				Same as Proposed Action
Barrier Island Residential		Х		X					Х		X			Х			X					X		Same as Proposed Action
Beach⁵	X			Х				Х				Х			Х			Х			Х			Same as Proposed Action
Beachfront Residential ^{5, 6}	X			Х				Х			Х			Х			Х				Х			Same as Proposed Action
Historic and Disadvantaged Communities			Х	Х				Х	Х			Х			Х			Х				Х		Same as Proposed Action
Industrial/ Military ^{5, 6}	Х				Х			Х			Х				Х			Х				Х		Same as Proposed Action
Lower Coastal Plain/Tidewater			Х	Х					Х				Х	Х				Х					Х	Same as Proposed Action
Recreation ^{5, 6}	Х			Х				Х			Х			Х			Х				Х			Same as Proposed Action
Virginial Beach/Tourism	Х			Х				Х					Х		Х			Х			Х			Same as Proposed Action
Landscape Character Areas																								Same as Proposed Action
Agriculture			Х		Х					Χ			Χ			Х			X				Х	Same as Proposed Action
Inland Bay			Х	Х					Х				Χ	Х					Х				Х	Same as Proposed Action
Coastal Development			Х		Х					Χ			Х			X			X				X	Same as Proposed Action
Industrial/Military ^{5, 6}			Х		Х					Χ			Х			Х			Х				X	Same as Proposed Action
Recreation ^{5, 6}			Х	X						Χ			Х			Х			Х				X	Same as Proposed Action
Rural Coastal Plain		Х		X					X			Х			Х				X			Х		Same as Proposed Action
Onshore Landscape Character Areas																								
Agriculture, Open, and Undeveloped Lands		Х			X			X				Х		Х				Х			X			Same as Proposed Action
Developed – Commercial			Х			Х				Х			Х			Х			Х				Х	Same as Proposed Action
Developed – Suburban Residential			Х		Х		Х				Χ			Х			Х			Х				Same as Proposed Action
Developed – Industrial			X			Х			Х			Х				Х		Χ				Х		Same as Proposed Action
Developed Recreation Areas		Х			Х			X				Х				X		Х				Х		Same as Proposed Action
Developed – Rural Residential			Х		Х			Х				Х		Х				Х			Х			Same as Proposed Action
Forested	X			Х				Х			Χ			Х				Х			Х			Same as Proposed Action
Open Water	X			Х				Х			Х			Χ				Χ		Х				Same as Proposed Action
Inland Streets and Highways			Х		X			Х				X			Х			X				Х		Same as Proposed Action

¹ Key Features = The distinctive visual attributes of the seascape, open ocean, or landscape character area.

² Key Elements = The essential visual components of the seascape, open ocean, or landscape character area.

³ Key Quality = The main value factor of the seascape, open ocean, or landscape character area.

⁴ The area of Open Ocean analyzed in this EIS includes the 360 degree viewshed around the lease area; therefore, approximately 92.8% of open ocean is within the zone of potential visual influence.

⁵ The Beach character area calculation as described and illustrated in COP, Appendix I-1, Attachment I-3 maps includes approximately 13 linear miles of beach from the southern boundary of Fort Story to Croatan Beach in Virginia and the beach paralleling the Barrier Island Residential character area in the Corolla area of South Carolina (Dominion Energy 2023). It does not measure beach areas along the barrier islands of the Delmarva Peninsula, the Beachfront Residential character area of Sandbridge neighborhood/historic district, Industrial/Military character areas including Fort Story and Dam Neck (KOP-31), or Recreation character areas including False Cape State Park. For the NEPA analysis, beaches are considered as whole character unit including all sandy shoreline areas within the study area.

⁶ These character areas are combined in the COP, Appendix I-1 (Dominion Energy 2023). They are differentiated and analyzed both as Seascape and Landscape character areas in this document based on their location and ocean views.

Table M-24 Viewer Sensitivity, Receptor Susceptibility, View Value, Viewer Experience, and Impact Levels

			Aff	ected	Envii	ronme	ent			Vie	wer Ex	xperie	nce				Impa	act Levels		
KOP¹		/iewe nsitiv			ecept ceptil		Vie	ew Va	lue	Ele VI	ance-lement FOV-Cale-Pro Effe	s-HFC ontra)V- st-			erred native		Alternatives		
	High	Medium	Low	High	Medium	Low	High	Medium	Low	Dominant	Moderate	Minor	Unseen	Major	Moderate	Minor	Negligible	B and C		
KOP-5	Χ			Х			Χ					Х					Χ	Same as Proposed Action		
KOP-8	Χ			Х			Χ					Х					Χ	Same as Proposed Action		
KOP-13 ²	Χ			Х			Χ				Χ				Χ			Same as Proposed Action		
KOP-15a	Χ	Χ		Х			Χ					Χ				Χ		Same as Proposed Action		
KOP-15b ³	Х			Х			Χ						Х				Χ	Same as Proposed Action		
KOP-22	Х			Х				Х				Х				Χ		Same as Proposed Action		
KOP-23		Χ		Х			Χ					Х				Χ		Same as Proposed Action		
KOP-24a	Х			Х			Χ					Х				Χ		Same as Proposed Action		
KOP-24b ³		Χ		Х			Χ						Х				Χ	Same as Proposed Action		
KOP-24d	Χ			Χ			Χ					Χ				Χ		Same as Proposed Action		
KOP-24d ³	Χ			Х			Χ						Х				Χ	Same as Proposed Action		
KOP-26 ²	Χ			Χ			Χ				Χ				Χ			Same as Proposed Action		
KOP-29		Χ		Х				Х				Χ				Χ		Same as Proposed Action		
KOP-30a	Χ			Х			Χ					Χ				Χ		Same as Proposed Action		
KOP-30b	Χ			Χ			Х					Х				Χ		Same as Proposed Action		
KOP-31		Χ		Х			Χ					Χ				Χ		Same as Proposed Action		
KOP-44	Χ			Х			Χ				Χ				Х			Same as Proposed Action		
KOP-47 ²	Χ			Χ			Χ				Χ	Χ					Χ	Same as Proposed Action		

			Aff	ected	Envir	ronme	ent			Vie	wer E	xperie	nce				Impa	act Levels		
KOP ¹		Viewe ensitiv			ecept ceptik		Vie	ew Va	lue	El VI	ement FOV-C ale-Pro	Notice s-HFC ontras omine ects)V- st-		_	erred native		Alternatives		
	High	Medium	Low	High	Medium	Low	High	Medium	Low	Dominant	Moderate	Minor	Unseen	Major	Moderate	Minor	Negligible	B and C		
KOP-48	Х			Х			Х					Х				Х		Same as Proposed Action		
KOP-49a		Х		Х				Х				Х					Х	Same as Proposed Action		
KOP-49g		Х		Х				Х				Х					Х	Same as Proposed Action		
KOP-50	Х			Х			Х			Х				Х				Same as Proposed Action		
KOP-51	Х			Х			Х			Х				Х				Same as Proposed Action		
Onshore Co	mpon	ents																		
IC Route 1 KOP-3		Х			Х			Х		Х				Х						
KOP-5		Х			Х			Х			Х			Х				Same as Proposed Action		
KOP-10			Χ		Х				Х			Х		Х				Same as Proposed Actio		
KOP-11			Χ		Х				Х			Х			Х			Same as Proposed Action		
KOP-12			Χ		Х				Х				Х				Х	Same as Proposed Action		
KOP-13			Χ		Х				Х				Х				Х	Same as Proposed Action		
KOP-14a		Х			Χ			Х				Х			Х			Same as Proposed Action		
KOP-14b		Х			Χ			Х			Χ				Х			Same as Proposed Action		
KOP-17			Χ		Х				Х		Х			Х				Same as Proposed Action		
IC Hybrid Route 6 KOP-10			X		Х				X			X		Х						
KOP-11			Χ		Х				Х			Х			Х			Same as Proposed Action		
KOP-12			Χ		Х				Х				Х		Х			Same as Proposed Action		

		Affected Environment										kperie	nce				Impa	act Levels
KOP ¹		Viewe ensitiv	_		ecept ceptik		Vie	ew Va	lue	Ele VI	ement FOV-C lle-Pro	Notice s-HFC ontras omine ects	V- st-			erred native		Alternatives
	High	Medium	Low	High	Medium	Low	High	Medium	Low	Dominant			Unseen	Major	Major Moderate Minor		Negligible	B and C
KOP-13			Х		Х				Х				Х				Х	Same as Proposed Action
KOP-14a		Х			Х			Χ				Х			Х			Same as Proposed Action
KOP-14b		Х			Х			Χ			Χ				Х			Same as Proposed Action
KOP-17			Х		Х				Х		Χ			Х				Same as Proposed Action
KOP-18		Х												Х				Same as Proposed Action

¹ KOP-5 Oyster Village Horse Island Trail; KOP-8 Eastern Shore of Virginia NWR; KOP-13 Cape Henry Lighthouse/Fort Story Military Base; KOP-15a North End Beach – Residential View – Nighttime; KOP-22 King Neptune Statue/Boardwalk; KOP-23 Naval Aviation Monument Park KOP-24a Virginia Beach Boardwalk – 17th Street Park; KOP-24b Virginia Beach Boardwalk – 16th Street Entrance Nighttime; KOP-24d Virginia Beach Boardwalk – Fishing Pier, KOP-24d Virginia Beach Boardwalk – Fishing Pier – Nighttime, KOP-26 Marriott Virginia Beach Oceanfront Hotel, KOP-29 Grommet Island Park/Boardwalk, KOP-30a Croatan Beach A, KOP-30b Croatan Beach C, KOP-31 Picnic Views at SMR, KOP-44 Little Island Park/Back Bay NWR, KOP-47 Currituck Beach Lighthouse, KOP-48 Currituck National Wildlife Refuge, KOP-49a Whale Head Bay Residential View 4, KOP-49g Whale Head Bay Albacore Street Entrance – Elevated, KOP-50 Fishing and Tour Boats, KOP-51 Commercial and Cruise Ships, KOP-3 Harpers Switching Station, KOP-5 Interconnection Cable, KOP-10 Fentress Substation, KOP-11 All Interconnection Cable Route Alternatives, KOP-12 Interconnection Cable (Alternative 1 and Overhead Portion of Hybrid Alternative), KOP-14a Interconnection Cable (Alternative 1 and Overhead Portion of Hybrid Alternative), KOP-14b Interconnection Cable (Alternative 1 and Overhead Portion of Hybrid Alternative), KOP-17 Interconnection Cable, KOP-18 Chicory Switching Station.

² Elevated observation deck or lighthouse.

³ With implementation of ALDS the effect of aviation obstruction lighting becomes negligible. HFOV = horizontal field of vision; VFOV = vertical field of vision

M.5.1 Impacts of Alternative B on Scenic and Visual Resources

Visual contrast assessments—including form, line, color, and texture comparisons of characteristics of the seascape, open ocean, and landscape before and after implementation of Alternative B—are indicated in Table M-7. The difference in contrasts between Alternative B and the Proposed Action due to the removal of between 26 14-MW WTG positions from the northern end of the Lease Area would have a minor effect on visual resources. Table M-25 and Table M-26 list Alternative B wind farm width-, height-, and distance-related occupation of views from the nearest shoreline area. Distance and FOV comparisons with the Proposed Action indicate similar effects. Although three WTGs at the northwestern corner of the wind farm are removed for navigational safety and eight along the northern edge are removed to protect a Fish Haven area, views of the northern boundary of the wind farm have limited access. Additional WTGs proposed for removal are located on the interior of the wind farm. These results indicate perceptible changes to the FOV results compared to the Proposed Action would be minor.

Table M-25 Horizontal FOV Occupied by Alternative B

Noticeable Element	Width ¹ in Miles (kilometers)	Distance ² in Miles (kilometers)	Horizontal FOV	Human FOV	Percent of FOV
14-MW WTGs	17.8 (28.6)	24.1 (38.8)	36.4°	124°	29%

¹ Maximum extent of the wind farm array.

Table M-26 Vertical FOV Occupied by Alternative B

Noticeable	Height in Feet	Distance in Miles	Visible Height ¹ in Feet	Vertical	Human	Percent
Element	(meters) MHW	(kilometers)	(meters)	FOV	FOV	of FOV
Hub Up	836 (255)	24.1 (38.8)	586 (178.6)	0.26°	55°	0.01%

¹ Based on intervening EC, clear-day, and clear-night conditions.

M.5.2 Impacts of Alternative C on Scenic and Visual Resources

Visual contrast assessments—including form, line, color, and texture comparisons of characteristics of the seascape, open ocean, and landscape before and after implementation of Alternative C—are indicated in Table M-7. The difference in contrasts between Alternative C and the Proposed Action due to the removal of four 14-MW WTG positions from the sand ridge habitat area of the Lease Area, resulting in 172 total WTGs, would have a minor effect on visual resources. The horizontal FOV difference between the 14-MW (in Alternative C) and the 16-MW WTGs (in the Proposed Action) of 33 feet (10 meters) is imperceptible at 24.1 miles (38.8 milometers).

Table M-27 and Table M-28 list Alternative C wind farm width-, height-, and distance-related occupation of views from the nearest shoreline area. Although three WTGs at the northwestern corner of the wind farm are removed for navigational safety and eight along the northern edge are removed to protect a Fish Haven area, views of the northern boundary of the wind farm have limited access. Additional WTGs proposed for removal are on the wind farm's interior. This may slightly reduce the visible mass of the wind farm from certain shoreline locations during clear afternoons, but it will not reduce the overall horizontal FOV. These results indicate perceptible changes to the FOV results compared to the Proposed Action would be **minor**.

² Nearest onshore distance to the wind farm array.

Table M-27 Horizontal FOV Occupied by Alternative C

Noticeable Element	Width ¹ in Miles (kilometers)	Distance 22222 ² in Miles (kilometers)	Horizontal FOV	Human FOV	Percent of FOV
14-MW WTGs	17.8 (28.6)	24.1 (38.8)	36.4°	124°	29%

¹ Maximum extent of the wind farm array.

Table M-28 Vertical FOV Occupied by Alternatives C-1, C-2 and C-3

WTG Size	Noticeable Element	Height in Feet (meters) MHW	Distance in Miles (kilometers)	Visible Height ¹ in Feet (meters)	Vertical FOV	Human FOV	Percent of FOV
14-MW	Hub Up	836 (255)	24.1 (38.8)	536 (163.4)	0.26°	55°	0.01%

¹ Based on intervening EC, clear-day, and clear-night conditions.

M.5.3 Impacts of Alternative D on Scenic and Visual Resources

Visual contrast assessments—including form, line, color, and texture comparisons of characteristics of the seascape, open ocean, and landscape before and after implementation of Alternative D-2—are indicated in Table M-29. There would be a substantial difference in contrasts between Alternative D-2 and the Proposed Action D-1 due to the undergrounding of 4.5 miles (7.2 kilometers) of Transmission Corridor and constructing the Chicory Switching Station instead of the Harpers Switching Station. Alternative D-2 Interconnection Cable Route 6 (Hybrid Route) would follow Interconnection Cable Route 1 (Alternative D-1) in its entirety but would remain underground between Harpers Road and the Chicory Switching Station site in Virginia Beach. This would avoid visual impacts on an area of suburban residential development (Castleton and Pine Ridge) at the eastern end of the route. The Chicory Switching Station would replace primarily forested lands adjacent to a Transportation Corridor (Princess Anne Road—a multi-lane divided highway flanked by forest). The existing right-of-way within or near the subdivisions would be expanded to accommodate the underground portion of the route, but no new structures would be built in these areas. The northern edge of the Chicory Switching Station would likely be visible from adjacent subdivisions, across an existing transmission ROW and through trees along the facility's northern boundary. The photo simulation for KOP-18 indicates the Chicory Switching Station is not visible from the street during the summer when trees are in leaf. However, the switching station would clearly be visible to residences from rear and second story windows, especially in the winter months when trees are out of leaf. Overall, Interconnection Cable Route 6 would have lower impacts on suburban residential character areas than other alternatives. This change to Developed - Suburban Residential character area is represented in Table M-29.

² Nearest onshore distance to the wind farm array.

Table M-29 Landscape Character and Impact Levels for Onshore Components Alternative D-2

	Af	fected	d Env	iron	men	t						Alte	rnati	ive D)-2					In	npac	t Lev	vels
	Unit Susceptibility				Unit Value			Project Visibility				Character Key Feature Change			Character Key Element Change			Character Key Quality Change			Alternative D-2		
Character Unit	High	Medium	Low	High	Medium	Low	Major	Moderate	Minor	Negligible	High	Medium	Low	High	Medium	Low	High	Medium	Low	Major	Moderate	Minor	Negligible
Agriculture, Open, and Undeveloped Lands		Х			Х			Х				X		Х				Х				Х	
Developed – Commercial			Х			Χ				Χ		Χ			Χ				Х				Χ
Developed – Suburban Residential			Х		Х			Х			Х			Х			Х				Х		
Developed – Industrial			Х			Χ				Χ		Χ				Χ		Х				Х	
Developed Recreation Areas		Х			Χ				Χ			Χ				Χ		Х				Х	
Developed – Rural Residential			Х		Χ		Χ					Χ		Χ				Х			Χ		
Forested	Х			Χ			Χ				Χ			Χ				Х			Χ		
Open Water	Х			Χ			Χ				Χ			Χ				Х		Χ			
Inland Streets and Highways			Х		Χ				Χ			Χ			Χ			Χ				Χ	

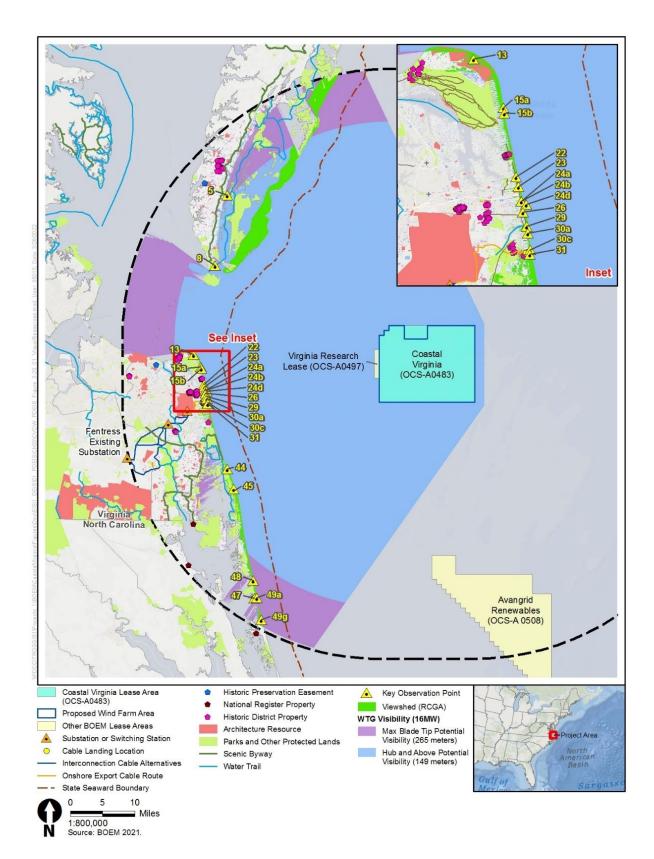
M.6. References

- Bureau of Ocean Energy Management (BOEM). 2021. Assessment of Seascape, Landscape, and Visual Impacts of Offshore Wind Energy Developments on the Outer Continental Shelf of the United States. OCS Study BOEM 2021-032. April.
- Dominion Energy, LLC (Dominion Energy). 2021. Coastal Virginia Offshore Wind Construction and Operations Plan, Appendix I-1 Offshore Visual Impact Assessment and Appendix I-2 Onshore Visual Impact Assessment. October. Available: https://www.boem.gov/renewable-energy/state-activities/cvow-construction-and-operations-plan.
- Dominion Energy, Inc. (Dominion Energy). 2023. Construction and Operations Plan, Coastal Virginia Offshore Wind Commercial Project. Prepared by Tetra Tech, Inc. February.
- National Association of Environmental Professionals (NAEP). 2012. *Offshore Wind Turbine Visibility and Visual Impact Thresholds*. Available: https://blmwyomingvisual.anl.gov/docs/EnvPractice_Offshore%20Wind%20Turbine%20Visibility%20and%20Visual%20Impact%20Threshold%20Distan ces.pdf.

oastal Virginia Offshore Wind Commercial Project inal Environmental Impact Statement	Appendix M Seascape, Landscape, and Visual Impact Assessment
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ATTACHMENT M-1 SCENIC RESOURCES OVERVIEW MAP

Coastal Virginia Offshore Wind Commercial Project Final Environmental Impact Statement	Appendix M Seascape, Landscape, and Visual Impact Assessment
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Scenic Resources and Key Observation Points

ATTACHMENT M-2 CUMULATIVE VISUAL SIMULATIONS

oastal Virginia Offshore Wind Commercial Project inal Environmental Impact Statement	Appendix M Seascape, Landscape, and Visual Impact Assessment
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Coastal Virginia Offshore Wind Commercial Project

Cumulative Effects Simulations

Coastal Virginia Offshore Wind Commercial Project: Cumulative Effects Simulations



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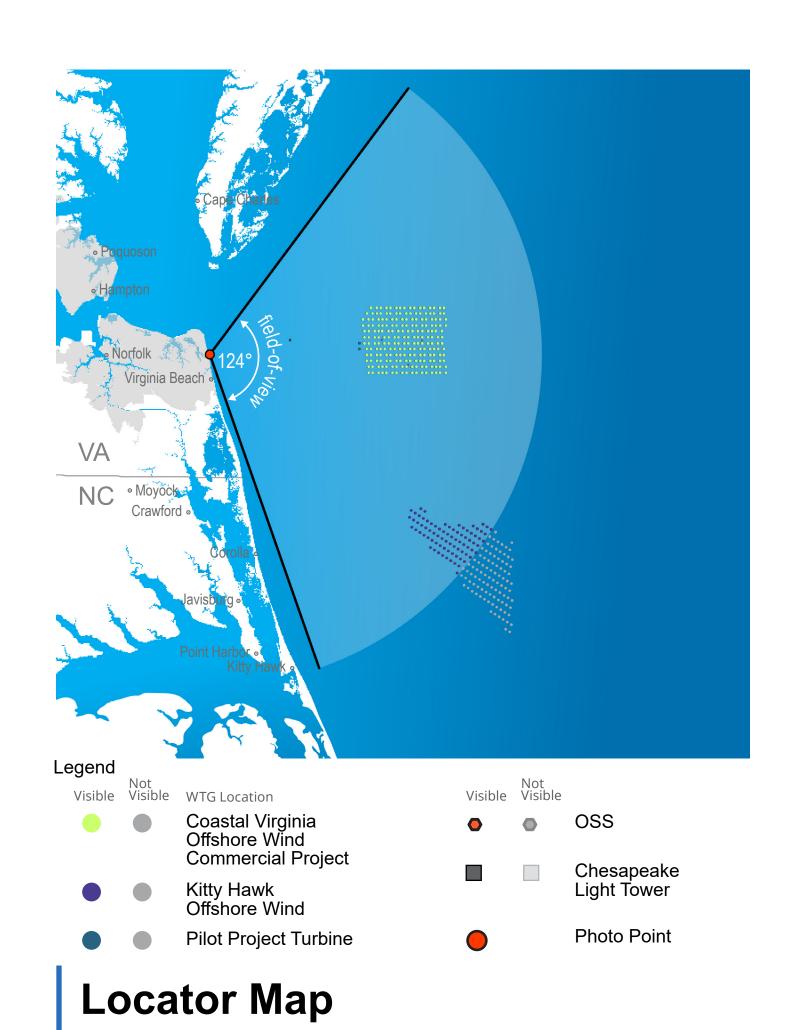
Simulation Location 1: Oceanfront Hotel Rooftop Virginia Beach, Virginia	
Simulation Location 2: Beach Views at State Military Reservation Virginia Beach, Virginia	10
Simulation Location 3: False Cape State Park Virginia Beach, Virginia	19
Simulation Location 4: Currituck Beach Lighthouse Corolla, North Carolina	28
Simulation Location 5: Whale Head Bay Residential Area Corolla, North Carolina	37

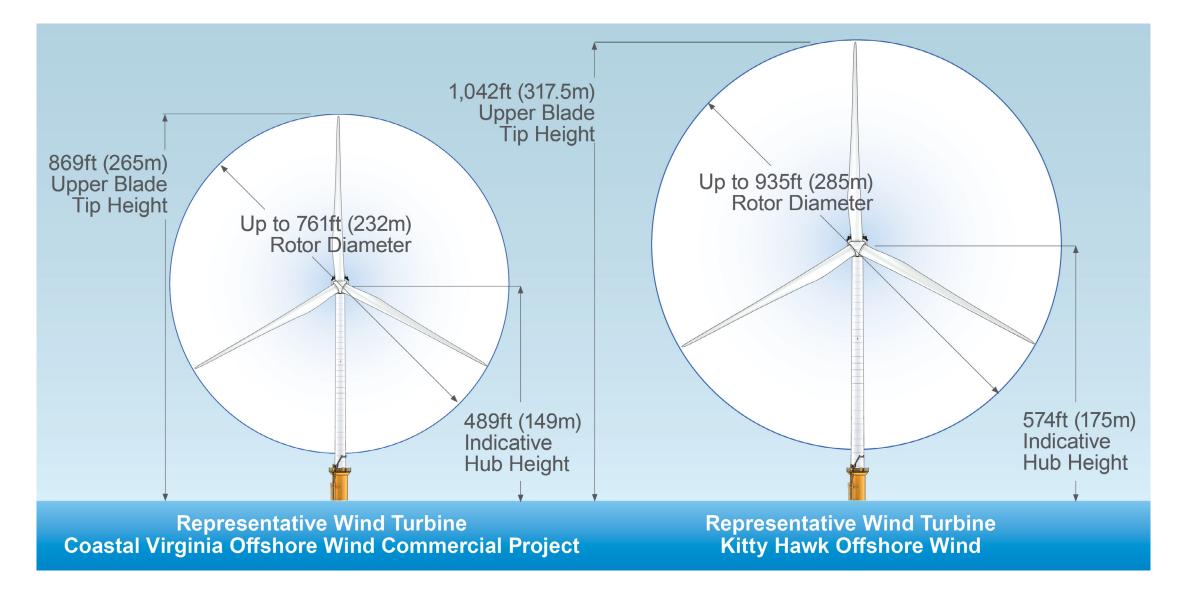




Existing Condition

View of the existing condition at Marriott Virginia Beach Oceanfront





Project	to the closest WTG (mi)	to the farthest
Coastal Virginia Offshore Wind Commercial Project WTG	28.0	42.8
Kitty Hawk Offshore Wind WTG	45.9	58.1

Turbine Data

Viewpoint Location:	Oceanfront Hotel Rooftop
Date of Photograph:	September 29, 2021
Time of Photograph:	10:56AM (EDT)
Latitude:	36.8617° N
Longitude:	-75.9856° W
Viewing Direction:	East
Ground Elevation + Tripod	Height: 236 feet

ENVIRONMENTAL	
Temperature:	71° F
Humidity:	61%
Wind Direction:	NNE
Wind Speed:	10 mph
Weather Condition:	Fair

Photograph Information

CAMERA			
	Type	Brand	Model
Camera	Mirrorless	Nikon	Z6
Lens NIKKOR Z 50mm			R Z 50mm

Focal Length	50 mr
•	

^{*}The image on this page approximates the full horizontal field-of-view of typical human eyesight (124° horizontal)





Simulation 1A.1: CVOWC

*The simulation image includes approximately 62° horizontal field of view.

Simulation illustrating Coastal Virginia Offshore Wind Commercial Project without other foreseeable future changes









Simulation 1A.2: CVOWC + Kitty Hawk

*The simulation image includes approximately 62° horizontal field of view.

Simulation illustrating full lease buildout showing foreseeable projects located in leased area with Coastal Virginia Offshore Wind Commercial Project.

Kitty Hawk is not present in this view angle.









Simulation 1A.2: CVOWC + Kitty Hawk - Annotated

*The simulation image includes approximately 62° horizontal field of view.

Simulation illustrating full lease buildout showing foreseeable projects located in leased area with Coastal Virginia Offshore Wind Commercial Project.

Kitty Hawk is not present in this view angle.









Simulation 1A.3: Kitty Hawk

*The simulation image includes approximately 62° horizontal field of view.

Simulation illustrating full lease buildout not including Coastal Virginia Offshore Wind Commercial Project. Kitty Hawk is not present in this view angle.









Simulation 1B.1: CVOWC

*The simulation image includes approximately 62° horizontal field of view.

Simulation illustrating Coastal Virginia Offshore Wind Commercial Project without other foreseeable future changes



Complete Panoramic View



Oceanfront Hotel Rooftop





Simulation 1B.2: CVOWC + Kitty Hawk

*The simulation image includes approximately 62° horizontal field of view.

Simulation illustrating full lease buildout showing foreseeable projects located in leased area with Coastal Virginia Offshore Wind Commercial Project





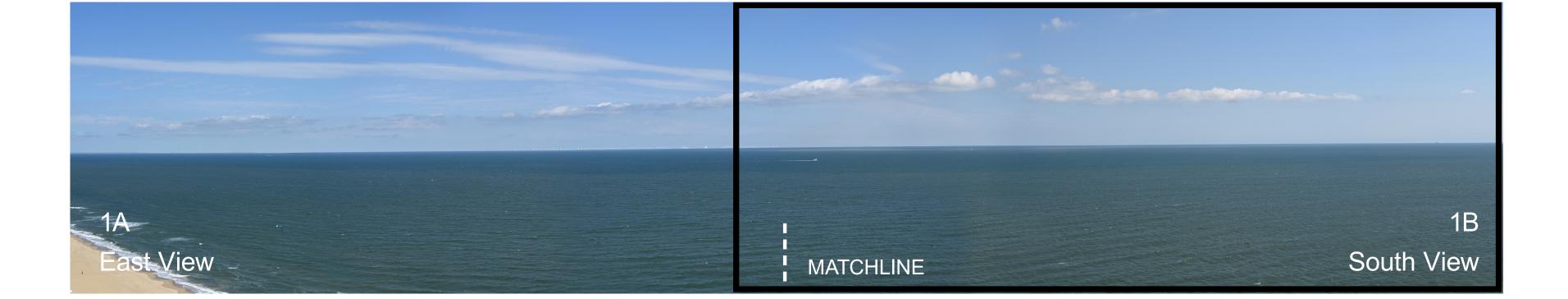




Simulation 1B.2: CVOWC + Kitty Hawk - Annotated

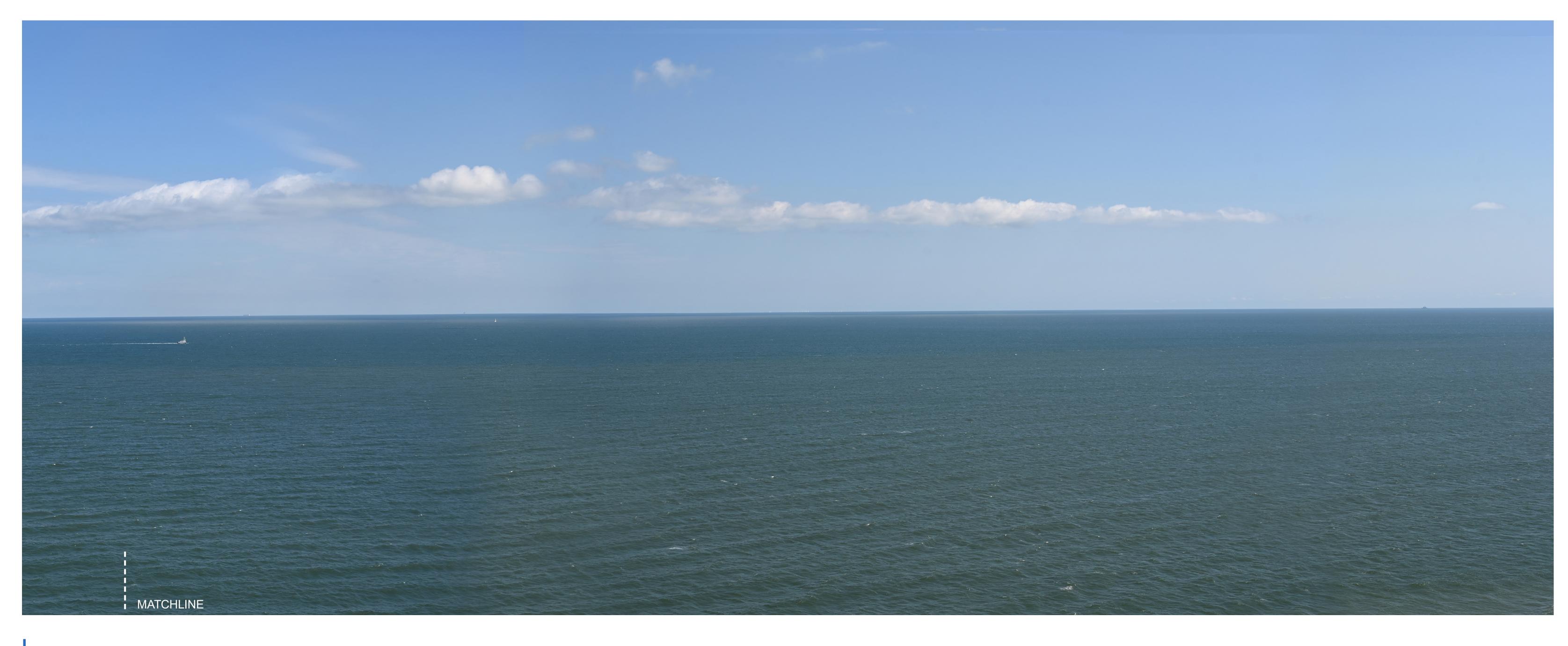
*The simulation image includes approximately 62° horizontal field of view.

Simulation illustrating full lease buildout showing foreseeable projects located in leased area with Coastal Virginia Offshore Wind Commercial Project









Simulation 1B.3: Kitty Hawk

*The simulation image includes approximately 62° horizontal field of view.

Simulation illustrating full lease buildout not including Coastal Virginia Offshore Wind Commercial Project

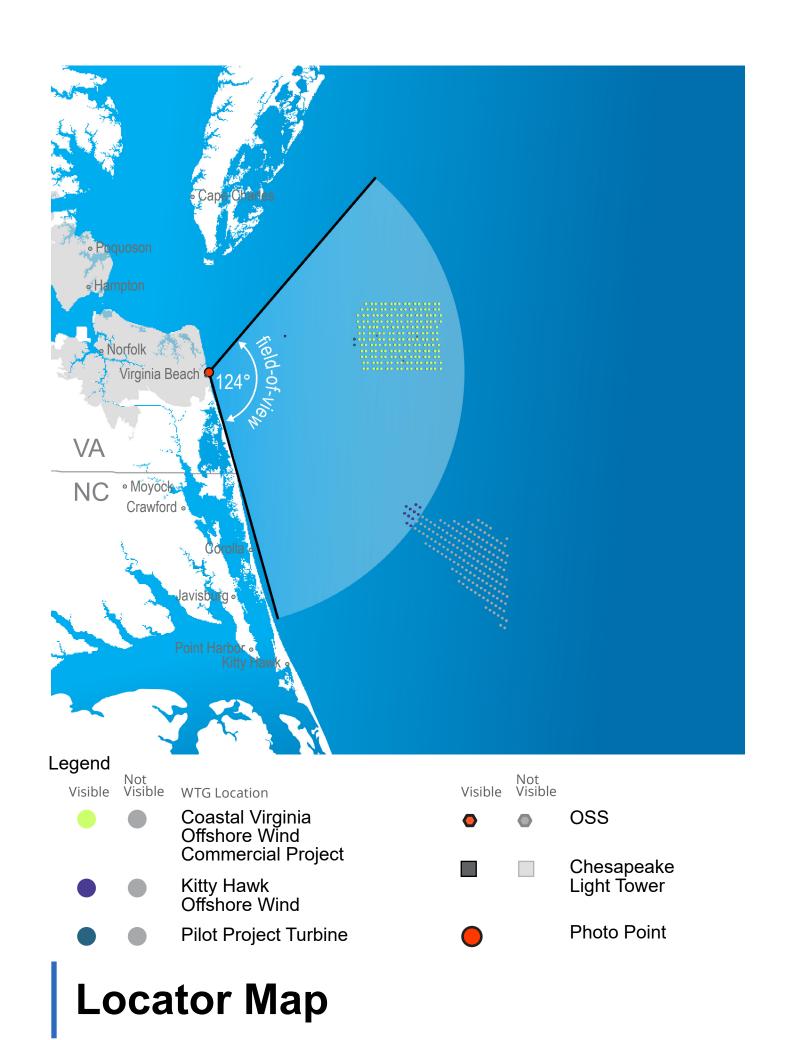
1A 1B South View

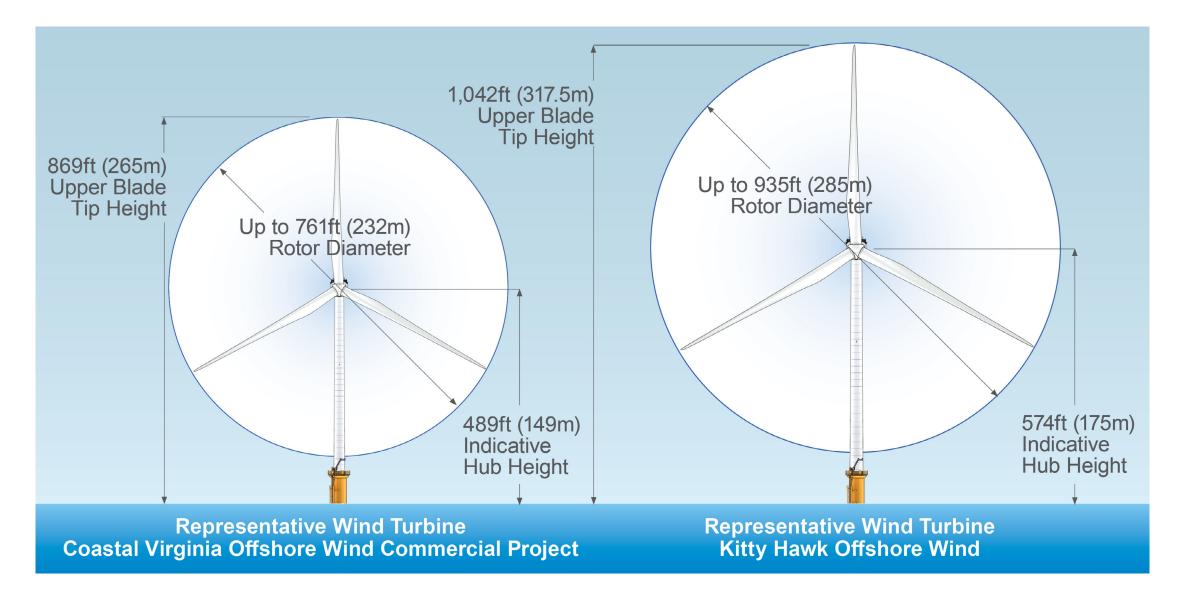




Existing Condition

Beach view of the existing condition at State Military Reservation





Project	Distance to the closest WTG (mi)	Distance to the farthest WTG (mi)
Coastal Virginia Offshore Wind Commercial Project WTG	27.6	41.5
Kitty Hawk Offshore Wind WTG	43.0	44.8

Turbine Data

Viewpoint Location:	State Military Reservation
Date of Photograph:	September 28, 2021
Time of Photograph:	1:11pm (EDT)
Latitude:	36.815716° N
Longitude:	-75.966839° W
Viewing Direction:	East
Ground Elevation + Tripod	Height: 14 feet

ENVIRONMENTAL	
Temperature:	82° F
Humidity:	51%
Wind Direction:	SW
Wind Speed:	9 mph
Weather Condition:	Fair

Photograph Information

	CAMERA	A		
Type		Brand	Model	
	Camera	Mirrorless	Nikon	Z6
Lens Focal Length		NIKKOF	R Z 50mm	
			50 mm	

*The image on this page approximates the full horizontal field-of-view of typical human eyesight (124° horizontal)



Simulation 2A.1: CVOWC

Simulation illustrating Coastal Virginia Offshore Wind Commercial Project without other foreseeable future changes







Simulation 2A.2: CVOWC + Kitty Hawk

Simulation illustrating full lease buildout showing foreseeable projects located in leased area with Coastal Virginia Offshore Wind Commercial Project. Kitty Hawk is not present in this view angle.







Simulation 2A.2: CVOWC + Kitty Hawk - Annotated

Simulation illustrating full lease buildout showing foreseeable projects located in leased area with Coastal Virginia Offshore Wind Commercial Project. Kitty Hawk is not present in this view angle.







Simulation 2A.3: Kitty Hawk

Simulation illustrating full lease buildout not including Coastal Virginia Offshore Wind Commercial Project. Kitty Hawk is not present in this view angle.



Complete Panoramic View



This location is included in the CVOW Commercial Project VIA as KOP 31, Picnic Views on Beach.





Simulation 2B.1: CVOWC

Simulation illustrating Coastal Virginia Offshore Wind Commercial Project without other foreseeable future changes



Complete Panoramic View



This location is included in the CVOW Commercial Project VIA as KOP 31, Picnic Views on Beach.





Simulation 2B.2: CVOWC + Kitty Hawk

Simulation illustrating full lease buildout showing foreseeable projects located in leased area with Coastal Virginia Offshore Wind Commercial Project. Coastal Virginia Offshore Wind Commercial Project is not present in this view angle.









Simulation 2B.2: CVOWC + Kitty Hawk - Annotated

Simulation illustrating full lease buildout showing foreseeable projects located in leased area with Coastal Virginia Offshore Wind Commercial Project. Coastal Virginia Offshore Wind Commercial Project is not present in this view angle.



Complete Panoramic View



This location is included in the CVOW Commercial Project VIA as KOP 31, Picnic Views on Beach.





Simulation 2B.3: Kitty Hawk

Simulation illustrating full lease buildout not including Coastal Virginia Offshore Wind Commercial Project



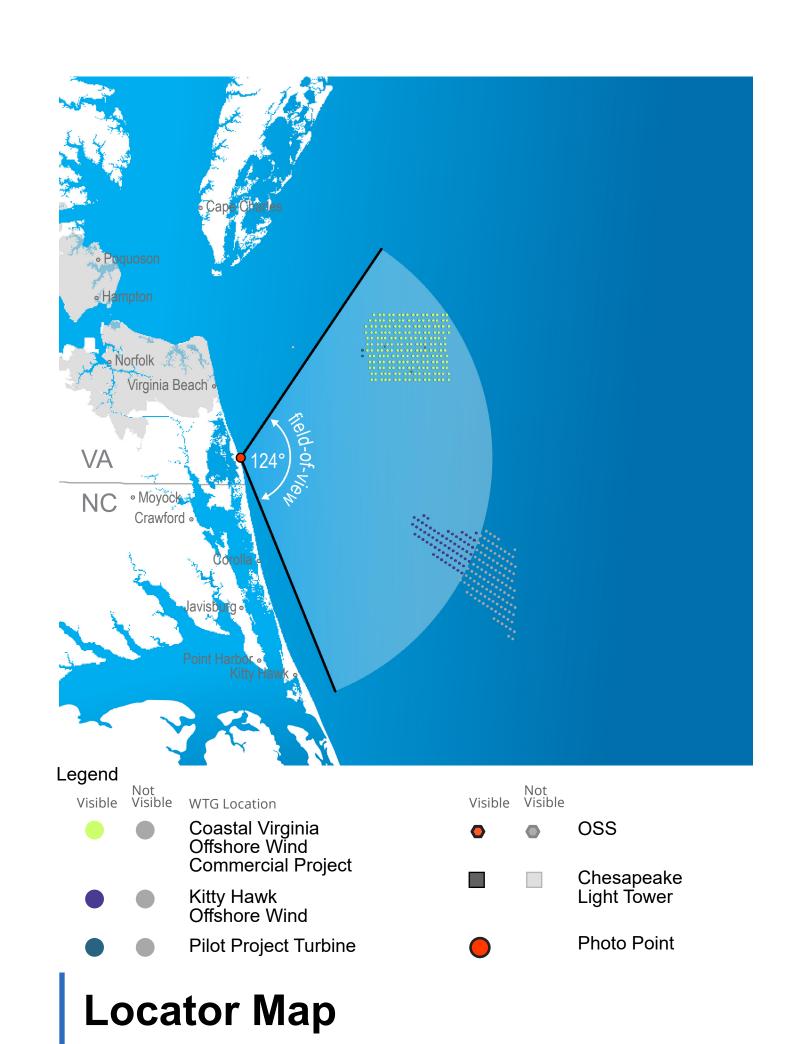


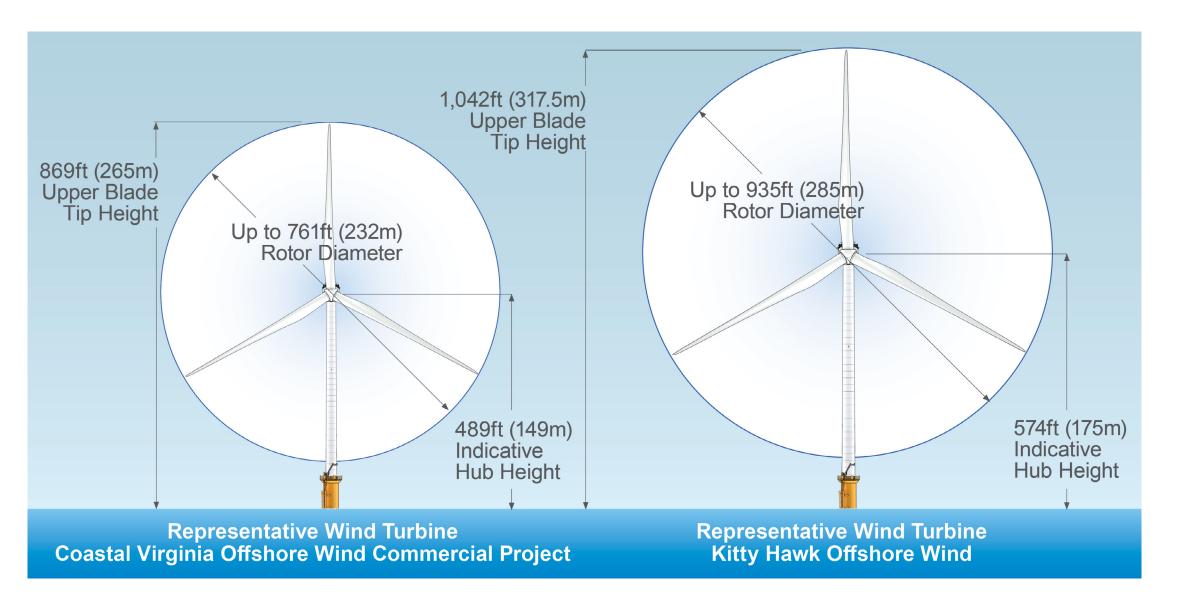




Existing Condition

View of the existing condition at False Cape State Park





Project	Distance to the closest WTG (mi)	Distance to the farthest WTG (mi)
Coastal Virginia Offshore Wind Commercial Project WTG	27.1	40.9
Kitty Hawk Offshore Wind WTG	33.2	44.2

Turbine Data

Viewpoint Location:	False Cape State Park
Date of Photograph:	September 26, 2021
Time of Photograph:	12:55pm (EDT)
Latitude:	36.6252° N
Longitude:	-75.8885° W
Viewing Direction:	Southeast
Ground Elevation + Tripod He	eight: 15 feet

ENVIRONMENTAL	
Temperature:	73° F
Humidity:	41%
Wind Direction:	N
Wind Speed:	7 mph
Weather Condition:	Fair

Photograph Information

CAMERA				
	Type	Brand	Model	
Camera	Mirrorless	Nikon	Z6	
Lens	NIKKOR Z 50mm			
Focal Lei	Focal Length		50 mm	

*The image on this page approximates the full horizontal field-of-view of typical human eyesight (124° horizontal)





Simulation 3A.1: CVOWC

*The simulation image includes approximately 62° horizontal field of view.

Simulation illustrating Coastal Virginia Offshore Wind Commercial Project without other foreseeable future changes









Simulation 3A.2: CVOWC + Kitty Hawk

*The simulation image includes approximately 62° horizontal field of view.

Simulation illustrating full lease buildout showing foreseeable projects located in leased area with Coastal Virginia Offshore Wind Commercial Project.

Kitty Hawk is not present in this view angle.









Simulation 3A.2: CVOWC + Kitty Hawk - Annotated

Simulation illustrating full lease buildout showing foreseeable projects located in leased area with Coastal Virginia Offshore Wind Commercial Project.

Kitty Hawk is not present in this view angle.

Complete Panoramic View



False Cape State Park





Simulation 3A.3: Kitty Hawk

Simulation illustrating full lease buildout not including Coastal Virginia Offshore Wind Commercial Project. Kitty Hawk is not present in this view angle.

MATCHLINE







Simulation 3B.1: CVOWC

*The simulation image includes approximately 62° horizontal field of view.

Simulation illustrating Coastal Virginia Offshore Wind Commercial Project without other foreseeable future changes









Simulation 3B.2: CVOWC + Kitty Hawk

Simulation illustrating full lease buildout showing foreseeable projects located in leased area with Coastal Virginia Offshore Wind Commercial Project.

Coastal Virginia Offshore Wind Commercial Project is not present in this view angle.









Simulation 3B.2: CVOWC + Kitty Hawk - Annotated

Simulation illustrating full lease buildout showing foreseeable projects located in leased area with Coastal Virginia Offshore Wind Commercial Project.

Coastal Virginia Offshore Wind Commercial Project is not present in this view angle.









Simulation 3B.3: Kitty Hawk

*The simulation image includes approximately 62° horizontal field of view.

Simulation illustrating full lease buildout not including Coastal Virginia Offshore Wind Commercial Project

3A East View MATCHLINE South View

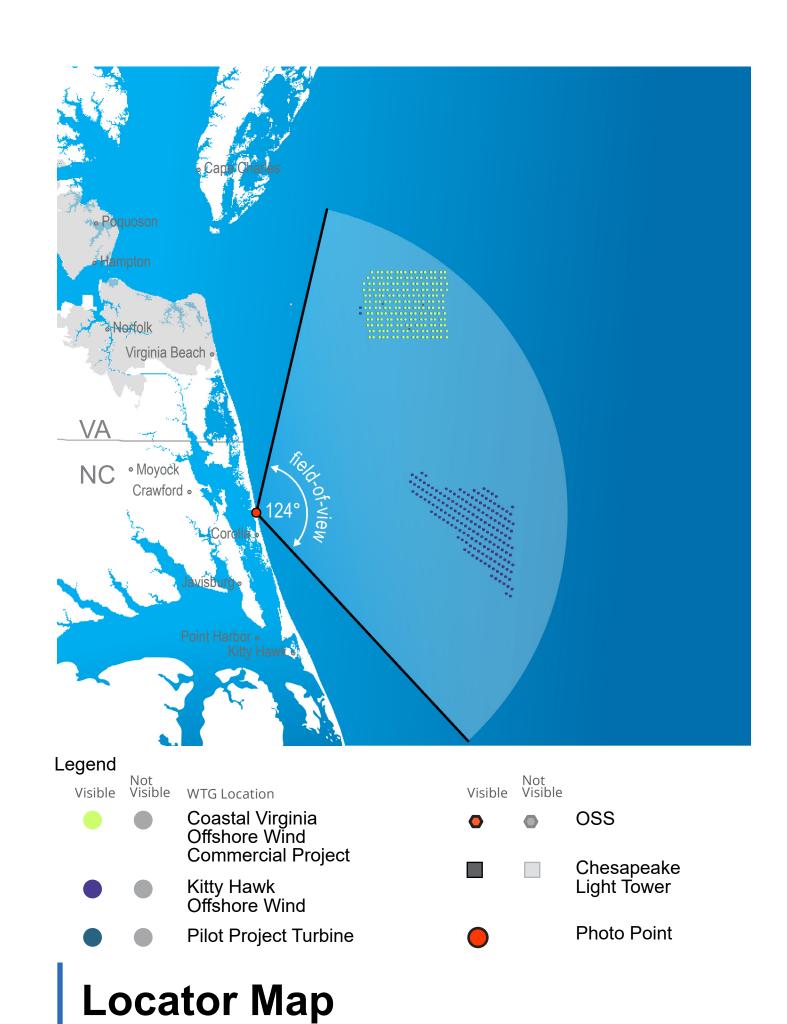


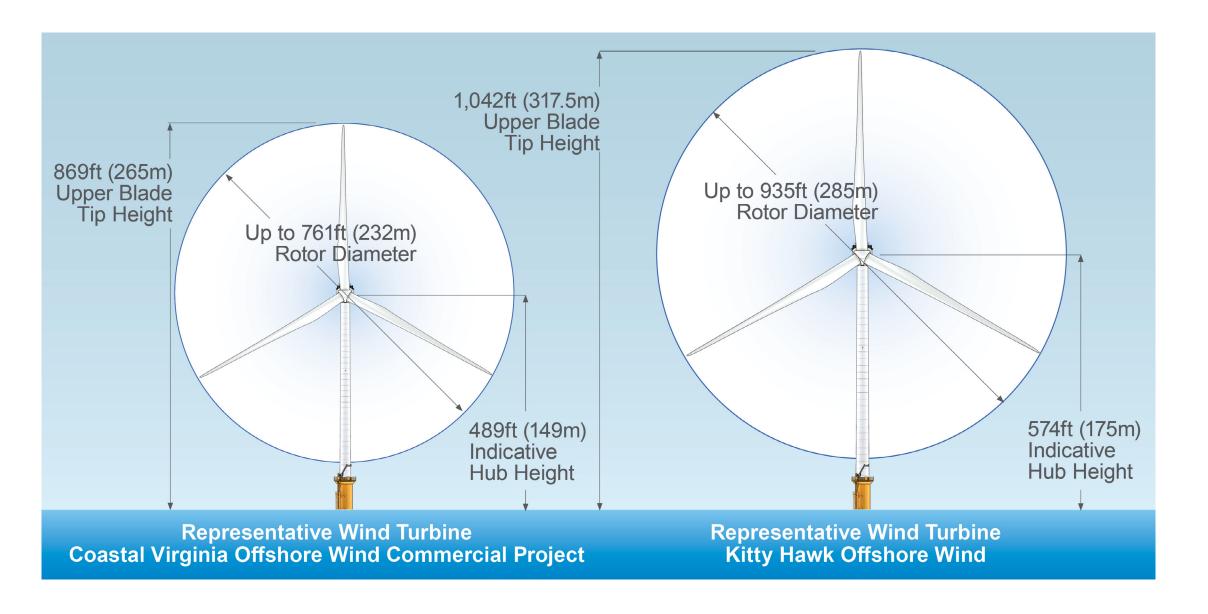




Existing Condition

View of the existing condition at Currituck Beach Lighthouse





Project	Distance to the closest WTG (mi)	to the farthest
Coastal Virginia Offshore Wind Commercial Project WTG	36.8	51.4
Kitty Hawk Offshore Wind WTG	28.3	39.1

Turbine Data

Viewpoint Location: 0	Currituck Beach Lighthouse
Date of Photograph:	July 7, 2021
Time of Photograph:	2:40 PM (EDT)
Latitude:	36.3767° N
Longitude:	-75.8307° W
Viewing Direction:	Northeast
Ground Elevation + Tripo	d Height: 155 feet

ENVIRONMENTAL	
Temperature:	93° F
Humidity:	38%
Wind Direction:	S
Wind Speed:	14 mph

Clear

Photograph Information

Weather Condition:

CAMERA			
	Туре	Brand	Model
Camera	Mirrorless	Nikon	Z6
Lens NIKKOR Z 50mn			R Z 50mm
Focal Length 50		50 mm	

*The image on this page approximates the full horizontal field-of-view of typical human eyesight (124° horizontal)





Simulation 4A.1: CVOWC

Simulation illustrating Coastal Virginia Offshore Wind Commercial Project without other foreseeable future changes









Simulation 4A.2: CVOWC + Kitty Hawk

Simulation illustrating full lease buildout showing foreseeable projects located in leased area with Coastal Virginia Offshore Wind Commercial Project









Simulation 4A.2: CVOWC + Kitty Hawk - Annotated

Simulation illustrating full lease buildout showing foreseeable projects located in leased area with Coastal Virginia Offshore Wind Commercial Project









Simulation 4A.3: Kitty Hawk

Simulation illustrating full lease buildout not including Coastal Virginia Offshore Wind Commercial Project









Simulation 4B.1: CVOWC

Simulation illustrating Coastal Virginia Offshore Wind Commercial Project without other foreseeable future changes









Simulation 4B.2: CVOWC + Kitty Hawk

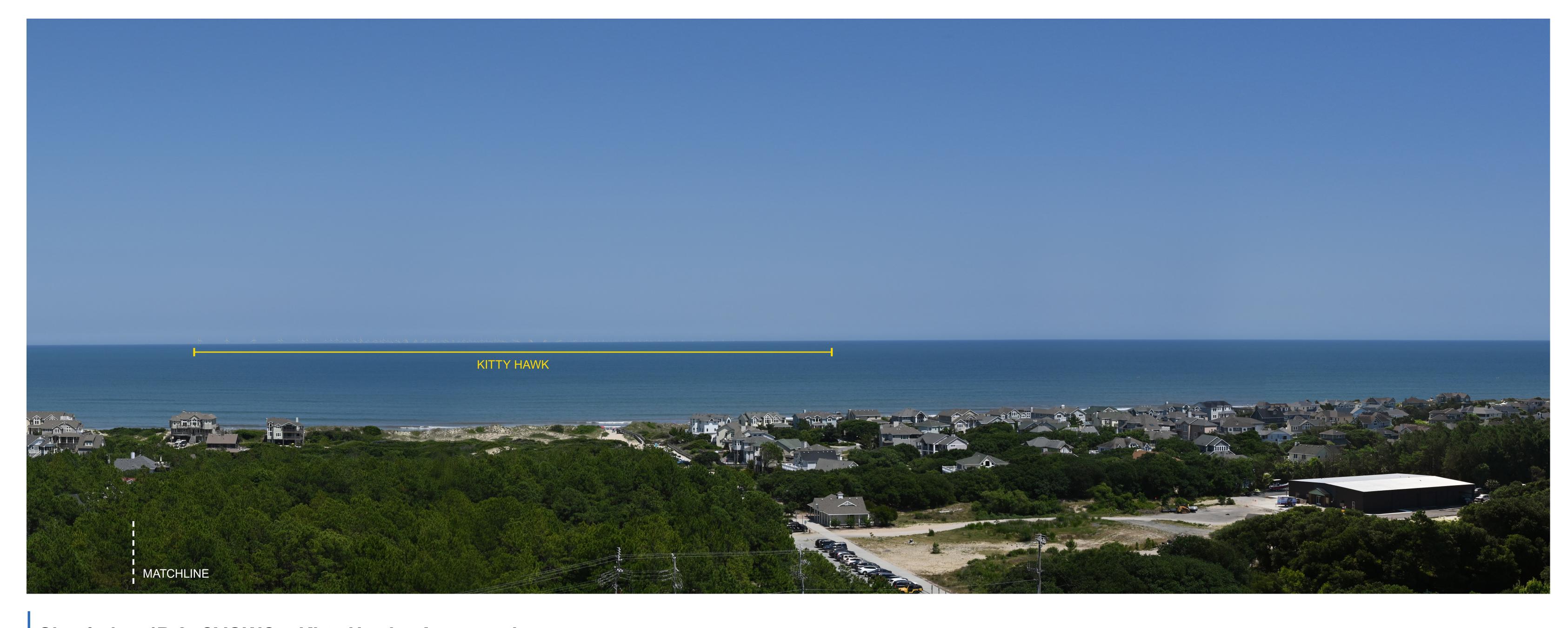
Simulation illustrating full lease buildout showing foreseeable projects located in leased area with Coastal Virginia Offshore Wind Commercial Project.

Coastal Virginia Offshore Wind Commercial Project is not present in this view angle.









Simulation 4B.2: CVOWC + Kitty Hawk - Annotated

Simulation illustrating full lease buildout showing foreseeable projects located in leased area with Coastal Virginia Offshore Wind Commercial Project.

Coastal Virginia Offshore Wind Commercial Project is not present in this view angle.









Simulation 4B.3: Kitty Hawk

Simulation illustrating full lease buildout not including Coastal Virginia Offshore Wind Commercial Project

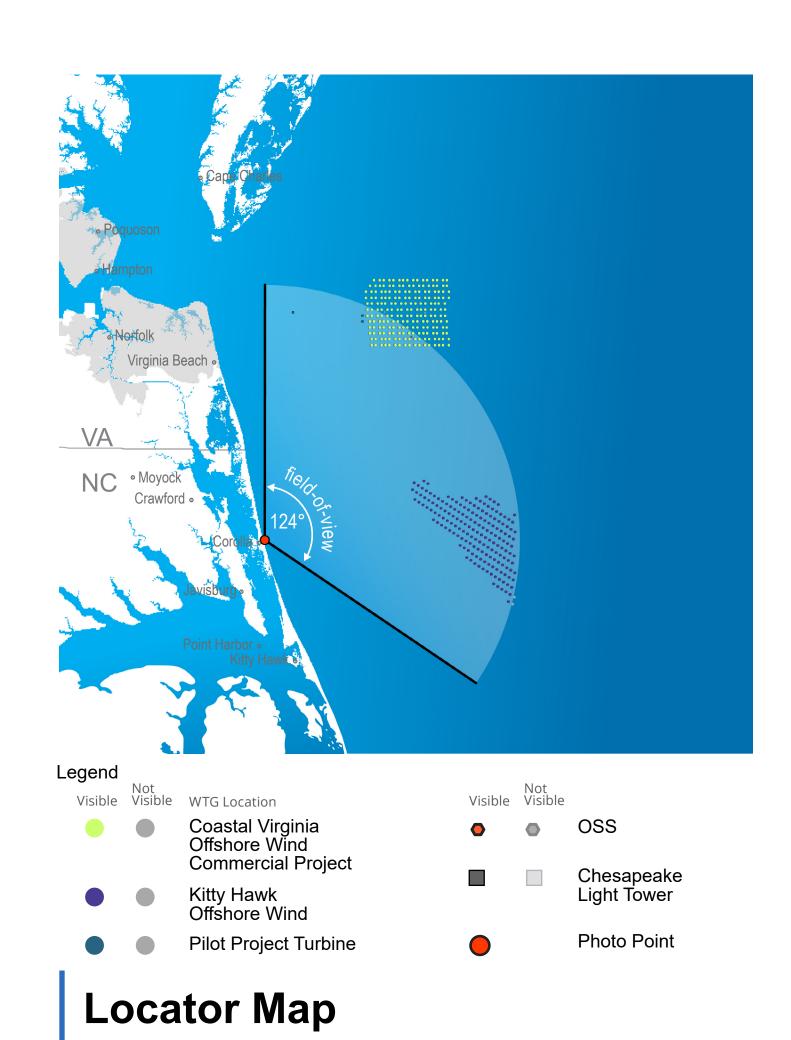


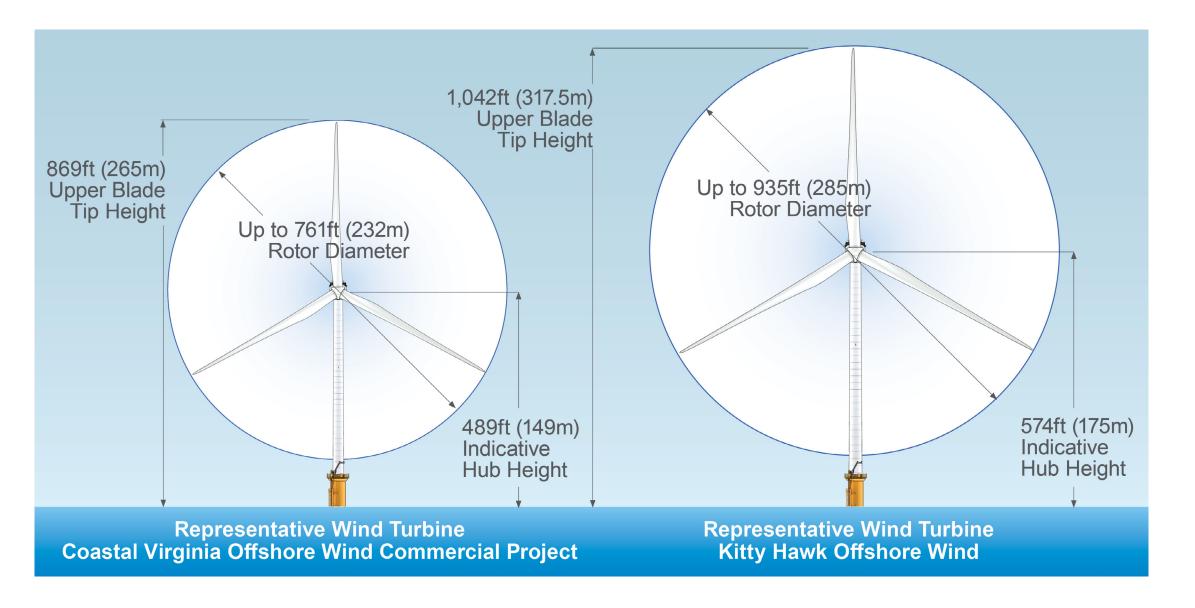




Existing Condition

View of the existing condition at Whale Head Bay Residential Area





Project	Distance to the closest WTG (mi)	Distance to the farthest WTG (mi)
Coastal Virginia Offshore Wind Commercial Project WTG	39.1	41.4
Kitty Hawk Offshore Wind WTG	27.9	37.6

Turbine Data

Viewpoint Location:	Whale Head Bay Residential Area
Date of Photograph:	July 7, 2021
Time of Photograph:	12:20 PM (EDT)
Latitude:	36.3776° N
Longitude:	-75.8242° W
Viewing Direction:	Northeast
Ground Elevation + Tripod Height:	25 feet
ENVIRONMENTAL	

91° F

48%

SW

Fair

13 mph

Temperature:

Wind Direction:

Weather Condition:

Wind Speed:

Humidity:

CAMERA	\		
CAIVIERA			
	Type	Brand	Model
Camera	Mirrorless	Nikon	Z6
Lens	Lens NIKKOR Z 50r		R Z 50mm
Focal Ler	Focal Length		50 mm

*The image on this page approximates the full horizontal field-of-view of typical human eyesight (124° horizontal)







Simulation 5A.1: CVOWC

*The simulation image includes approximately 62° horizontal field of view.

Simulation illustrating Coastal Virginia Offshore Wind Commercial Project without other foreseeable future changes









Simulation 5A.2: CVOWC + Kitty Hawk

Simulation illustrating full lease buildout showing foreseeable projects located in leased area with Coastal Virginia Offshore Wind Commercial Project.

Kitty Hawk is not present in this view angle.









Simulation 5A.2: CVOWC + Kitty Hawk - Annotated

Simulation illustrating full lease buildout showing foreseeable projects located in leased area with Coastal Virginia Offshore Wind Commercial Project. Kitty Hawk is not present in this view angle.









Simulation 5A.3: Kitty Hawk

Simulation illustrating full lease buildout not including Coastal Virginia Offshore Wind Commercial Project









Simulation 5B.1: CVOWC

*The simulation image includes approximately 62° horizontal field of view.

Simulation illustrating Coastal Virginia Offshore Wind Commercial Project without other foreseeable future changes









Simulation 5B.2: CVOWC + Kitty Hawk

Simulation illustrating full lease buildout showing foreseeable projects located in leased area with Coastal Virginia Offshore Wind Commercial Project.

Coastal Virginia Offshore Wind Commercial Project is not present in this view angle.









Simulation 5B.2: CVOWC + Kitty Hawk - Annotated

Simulation illustrating full lease buildout showing foreseeable projects located in leased area with Coastal Virginia Offshore Wind Commercial Project.

Coastal Virginia Offshore Wind Commercial Project is not present in this view angle.









Simulation 5B.3: Kitty Hawk

*The simulation image includes approximately 62° horizontal field of view.

Simulation illustrating full lease buildout not including Coastal Virginia Offshore Wind Commercial Project





ATTACHMENT M-3 VISUAL SIMULATIONS OF ACTION ALTERNATIVES

oastal Virginia Offshore Wind Commercial Project inal Environmental Impact Statement	Appendix M Seascape, Landscape, and Visual Impact Assessment
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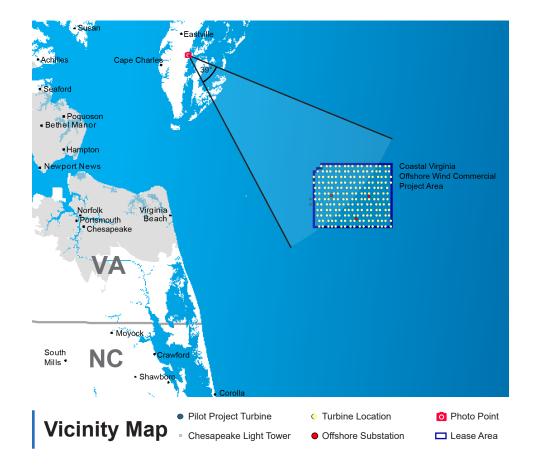


Coastal Virginia Offshore Wind Commercial Project

Attachment I-1-6: Visual Simulations

KOP 5: Oyster Village Horse Island Trail

Northhampton County, VA



869ft (265m)

> up to 761ft (232m) Rotor Diameter

> > **16-MW Wind Turbine**

(33m) Lower

Blade Tip Height 489ft (149m)



Existing Panoramic ViewLocated near Oyster Village Horse Island Trail

137 125 137 125 14-MW Wind Turbine Wind Turbine

Turbine Visibility

FIELD ID # 5

PHOTO INFORMATION		
Date	7/12/2021	
Time	10:12 AM	
Latitude	37.287571°	
Longitude	-75.917941°	
Direction of View	SE	
Elevation	10'	
Horizontal Field of View Represented in Simulated Image	39°	
PROJECT INFRASTRUCTURE		

PROJECT INFRASTRUCTURE	
Turbines	205
Offshore Substations	3

Image Data

ENVIRONMENTAL

Temperature	87° F
Humidity	63%
Wind Direction	SW
Wind Speed	13 mph
Weather Condition	Partly Cloudy

PROJECT VIEW

Distance to Nearest Turbine	32.5 miles
Horizontal Area Occupied by Visible Turbines	14°
Area Occupied by Visible Turbines as a Percent of the Horizontal FOV	35.8%
Vertical Area Occupied by Visible Turbines	0.1°



14-MW Wind Turbine

▼ Tip Height ▼



836ft (255m) Upper Blade Tip Height

Not Visible

Blade Tip

Rotor Swept Area
Entire Turbine

Hub Up





Visual Simulation: 14-MW Wind Turbine



This sheet should be printed at 11 by 17 inches; full size with no scaling; and viewed at arm's length (24 inches). If viewed on a computer monitor, the document should be scaled to 100 percent and viewed at arm's length (24 inches).

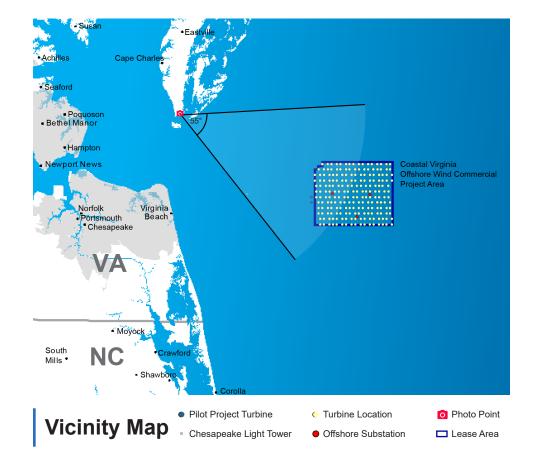


Visual Simulation: 16-MW Wind Turbine



KOP 8: Eastern Shore of Virginia National Wildlife Refuge

Northhampton County, VA



869ft (265m)

Indicative

(33m) Lower

Blade Tip Height

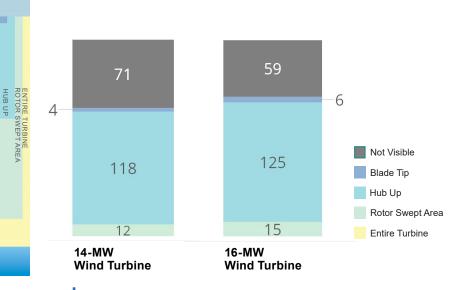
up to 761ft (232m) Rotor Diameter

16-MW Wind Turbine

Hub Height



Existing Panoramic View Located on Wise Point Boat Ramp



Turbine Visibility

FIELD ID#8

PHOTO INFORMATION		
Date	7/12/2021	
Time	10:12 AM	
Latitude	37.127849°	
Longitude	-75.949910°	
Direction of View	SE	
Elevation	8'	
Horizontal Field of View Represented in Simulated Image	55°	
PROJECT INFRASTRUCTURE		
Turbines	205	
Offshore Substations	3	

Image Data

/IROI		ITAI
/IKUI	יו 🗕 ועו ע	

Temperature	92° F
Humidity	52%
Wind Direction	SW
Wind Speed	8.7 mph
Weather Condition	Partly Cloudy

PROJECT VIEW

Distance to Nearest Turbine	28.1 miles
Horizontal Area Occupied by Visible Turbines	14°
Area Occupied by Visible Turbines as a Percent of the Horizontal FOV	25.5%
Vertical Area Occupied by Visible Turbines	0.15°

Turbine Dimensions

14-MW Wind Turbine

▼ Tip Height ▼



836ft (255m) Upper Blade Tip Height

KOP 8: Eastern Shore of Virginia National Wildlife Refuge

Northhampton County, VA

This sheet should be printed at 11 by 17 inches; full size with no scaling; and viewed at arm's length (24 inches). If viewed on a computer monitor, the document should be scaled to 100 percent and viewed at arm's length (24 inches).



Visual Simulation: 14-MW Wind Turbine



This sheet should be printed at 11 by 17 inches; full size with no scaling; and viewed at arm's length (24 inches). If viewed on a computer monitor, the document should be scaled to 100 percent and viewed at arm's length (24 inches).



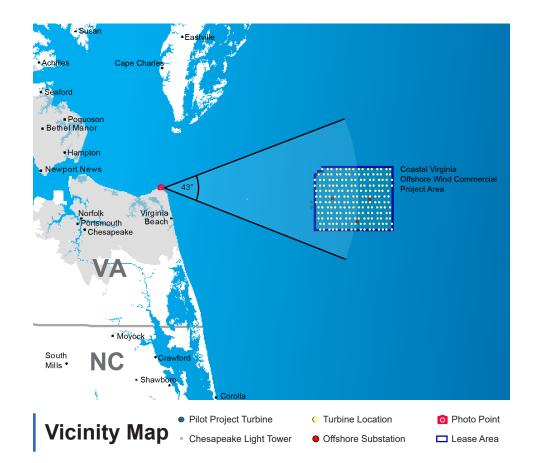


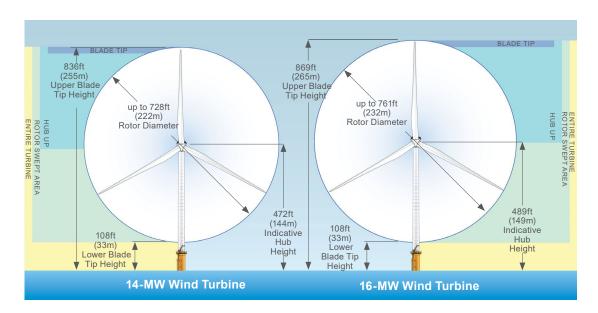
Visual Simulation: 16-MW Wind Turbine



KOP 13: Cape Henry Lighthouse

Virginia Beach, VA



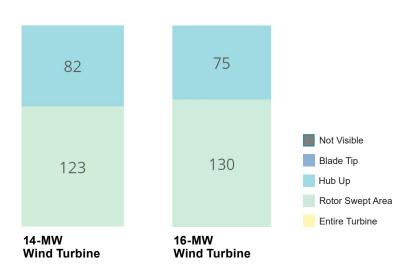


Turbine Dimensions



Existing Panoramic View

Located inside the Cape Henry Lighthouse



Turbine Visibility

FIELD ID # 13

PHOTO INFORMATION	N	
Date	7/9/2021	
Time	9:18 AM	
Latitude	36.925742°	
Longitude	-76.008139°	
Direction of View	ENE	
Elevation	90'	
Horizontal Field of View Represented in Simulated Image	43°	
PROJECT INFRASTRUCTURE		
Turbines	205	
Offshore Substations	3	

Image Data

ENVIRONMENTAL

Temperature	80° F
Humidity	74%
Wind Direction	WSW
Wind Speed	9 mph
Weather Condition	Fair

PROJECT VIEW

Distance to Nearest Turbine	29.1miles
Horizontal Area Occupied by Visible Turbines	21°
Area Occupied by Visible Turbines as a Percent of the Horizontal FOV	48.8%
Vertical Area Occupied by Visible Turbines	0.25°



Print Guide / Image Notes: This sheet should be printed at 11 by 17 inches; full size with no scaling; and viewed at arm's length (24 inches). If viewed on a computer monitor, the document should be scaled to 100 percent and viewed at arm's length (24 inches).





KOP 13: Cape Henry Lighthouse *Virginia Beach, VA*

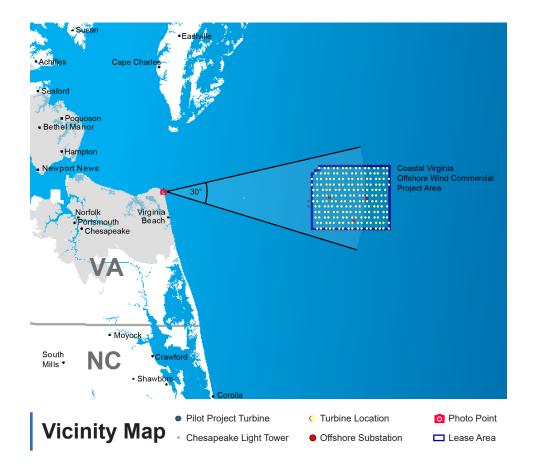
Print Guide / Image Notes: This sheet should be printed at 11 by 17 inches; full size with no scaling; and viewed at arm's length (24 inches). If viewed on a computer monitor, the document should be scaled to 100 percent and viewed at arm's length (24 inches).





KOP 15a: Beach Residential 1

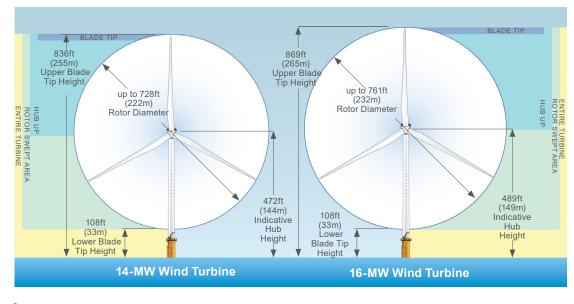
Virginia Beach, VA



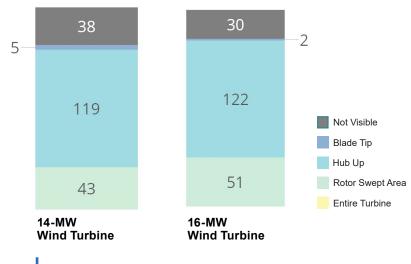


Existing Panoramic View

Located on North End Beaches, near 70th St.







Turbine Visibility

FIELD ID # 15a

PHOTO INFORMATION	1	
Date	7/9/2021	
Time	10:00 AM	
Latitude	36.898335°	
Longitude	-75.986696°	
Direction of View	E	
Elevation	15'	
Horizontal Field of View Represented in Simulated Image	30°	
PROJECT INFRASTRU	JCTURE	
Turbines	205	
Offshore Substations	3	

Image Data

ENVIRONMENTAL

Temperature	83° F
Humidity	69%
Wind Direction	WSW
Wind Speed	6 mph
Weather Condition	Fair

Distance to Nearest Turbine	28.1 miles
Horizontal Area Occupied by Visible Turbines	22°
Area Occupied by Visible Turbines as a Percent of the Horizontal FOV	73.3%
Vertical Area Occupied by Visible Turbines	0.2°



Print Guide / Image Notes:
This sheet should be printed at 11 by 17 inches; full size with no scaling; and viewed at arm's length (24 inches). If viewed on a computer monitor, the document should be scaled to 100 percent and viewed at arm's length (24 inches).

Virginia Beach, VA





Print Guide / Image Notes:
This sheet should be printed at 11 by 17 inches; full size with no scaling; and viewed at arm's length (24 inches). If viewed on a computer monitor, the document should be scaled to 100 percent and viewed at arm's length (24 inches).

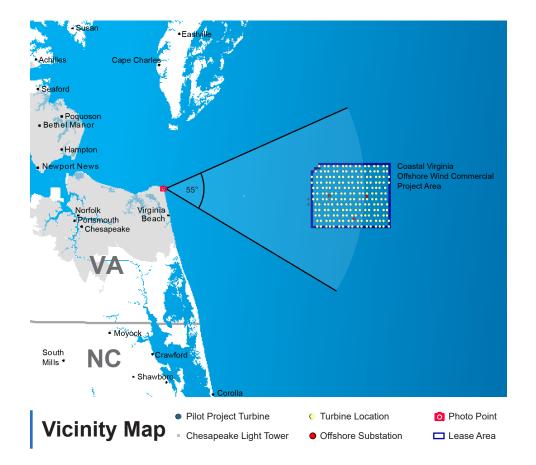
Virginia Beach, VA





KOP 15b: Beach Residential 1 - Nighttime

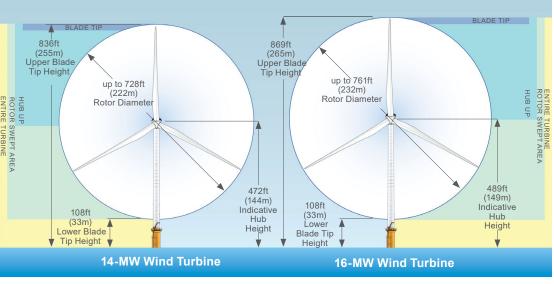
Virginia Beach, VA



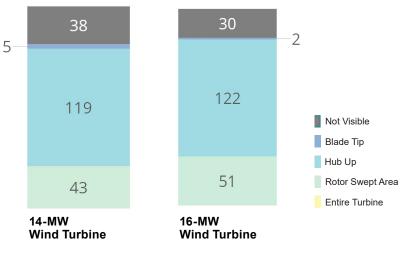


Existing Panoramic View

Located on North End Beaches, near 70th St.







Turbine Visibility

FIELD ID # 15b

PHOTO INFORMATION	<u> </u>	
Date	7/10/2021	
Time	10:27pm	
Latitude	36.898335°	
Longitude	-75.986696°	
Direction of View	E	
Elevation	15'	
Horizontal Field of View Represented in Simulated Image	55°	
PROJECT INFRASTRUCTURE		
Turbines	205	
Offshore Substations	3	

Image Data

ENVIRONMENTA	EN'	VIRO	NMEN	ATN
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Temperature	78° F
Humidity	64%
Wind Direction	SSE
Wind Speed	6 mph
Weather Condition	Fair

Distance to Nearest Turbine	28.1 miles
Horizontal Area Occupied by Visible Turbines	23°
Area Occupied by Visible Turbines as a Percent of the Horizontal FOV	41.8%
Vertical Area Occupied by Visible Turbines	0.2°



KOP 15b: Beach Residential 1 - Nighttime

Virginia Beach, VA

This sheet should be printed at 11 by 17 inches; full size with no scaling; and viewed at arm's length (24 inches). If viewed on a computer monitor, the document should be scaled to 100 percent and viewed at arm's length (24 inches).

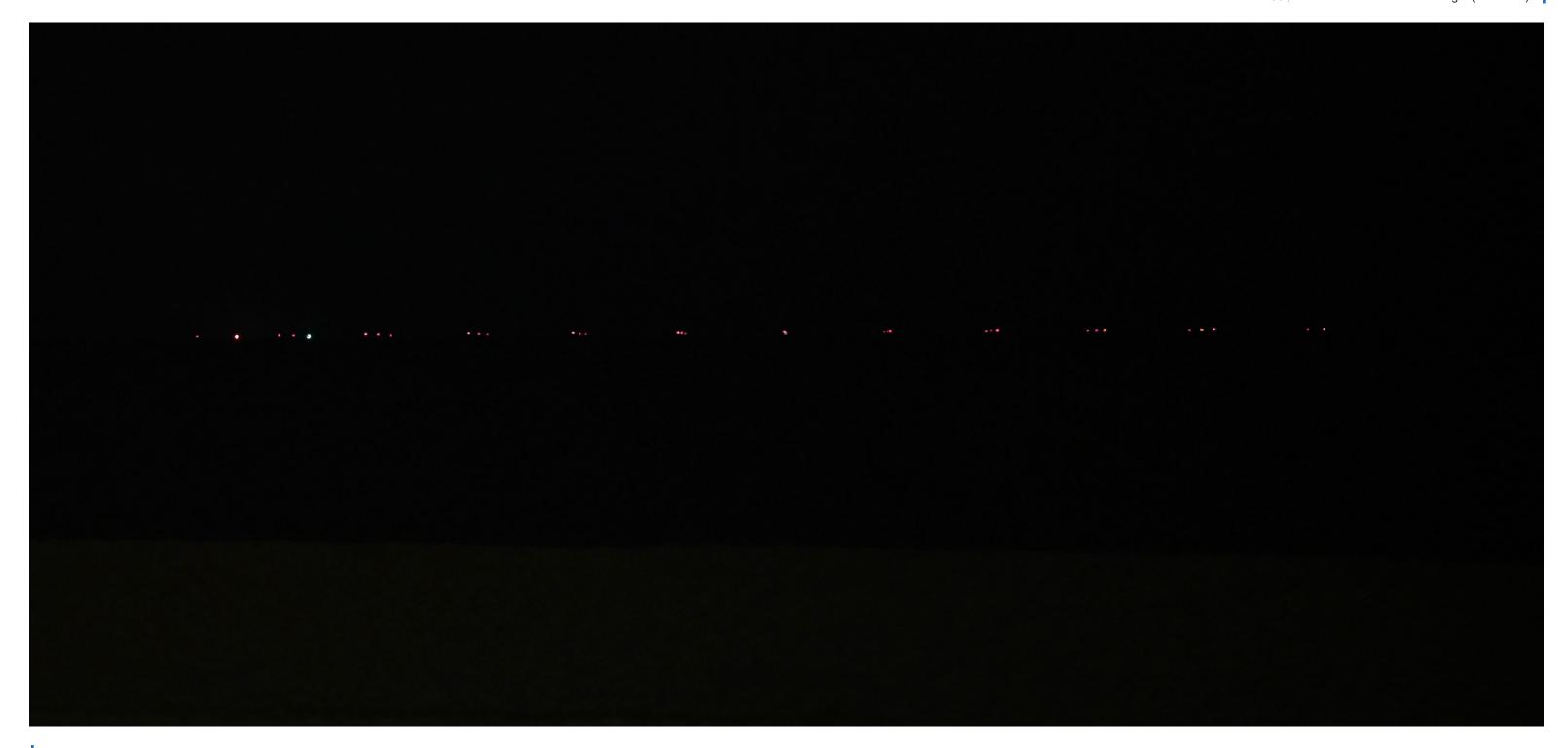




KOP 15b: Beach Residential 1 - Nighttime

Virginia Beach, VA

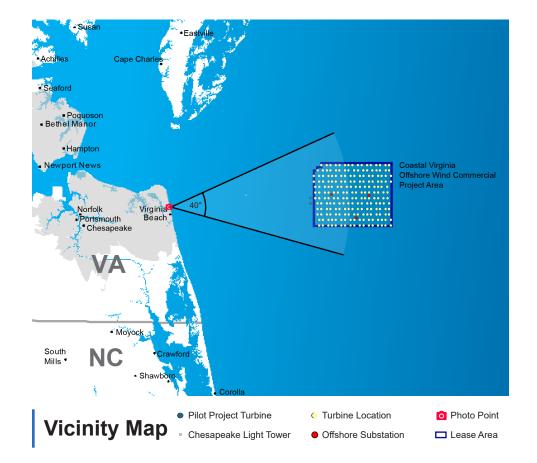
This sheet should be printed at 11 by 17 inches; full size with no scaling; and viewed at arm's length (24 inches). If viewed on a computer monitor, the document should be scaled to 100 percent and viewed at arm's length (24 inches).

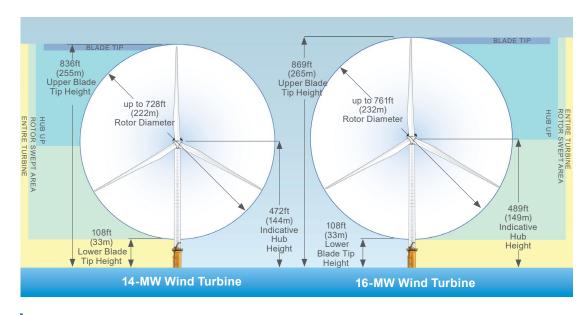




KOP 22: Neptune Statue/Boardwalk

Virginia Beach, VA



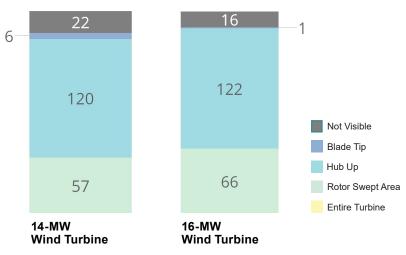


Turbine Dimensions



Existing Panoramic View

Located on the Virginia Beach Boardwalk near the Neptune Statue



Turbine Visibility

FIELD ID # 22

PHOTO INFORMATION	l	
Date	7/7/2021	
Time	2:40 PM	
Latitude	36.859392°	
Longitude	-75.977296°	
Direction of View	Е	
Elevation	20'	
Horizontal Field of View Represented in Simulated Image	40°	
PROJECT INFRASTRUCTURE		
Turbines	205	
Offshore Substations	3	

Image Data

ENVI	RONM	ENTA
------	------	------

Temperature	88° F
Humidity	59%
Wind Direction	SW
Wind Speed	10 mph
Weather Condition	Fair

27.9 miles
23°
57.5%
0.2°



This sheet should be printed at 11 by 17 inches; full size with no scaling; and viewed at arm's length (24 inches). If viewed on a computer monitor, the document should be scaled to 100 percent and viewed at arm's length (24 inches).





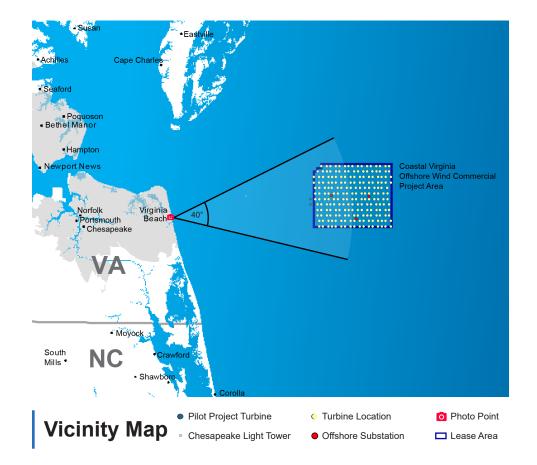
This sheet should be printed at 11 by 17 inches; full size with no scaling; and viewed at arm's length (24 inches). If viewed on a computer monitor, the document should be scaled to 100 percent and viewed at arm's length (24 inches).

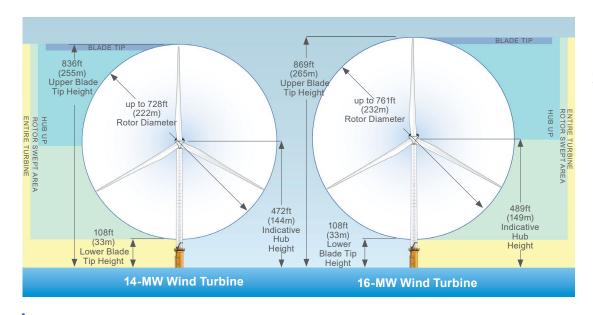




KOP 23: Naval Aviation Monument Park

Virginia Beach, VA



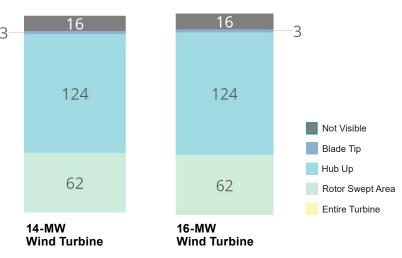


Turbine Dimensions



Existing Panoramic View

Located on Virginia Beach Boardwalk, near Naval Aviation Monument - 25th St.



Turbine Visibility

FIELD ID # 23

PHOTO INFORMATION	I	
Date	7/9/2021	
Time	12:20 PM	
Latitude	36.853785°	
Longitude	-75.975655°	
Direction of View	NE	
Elevation	18'	
Horizontal Field of View Represented in Simulated Image	40°	
PROJECT INFRASTRUCTURE		

Offshore Substations

Image Data

Turbines

ENVIRONMENTAL

Temperature	89° F
Humidity	57%
Wind Direction	SSW
Wind Speed	12 mph
Weather Condition	Fair

PROJECT VIEW

205

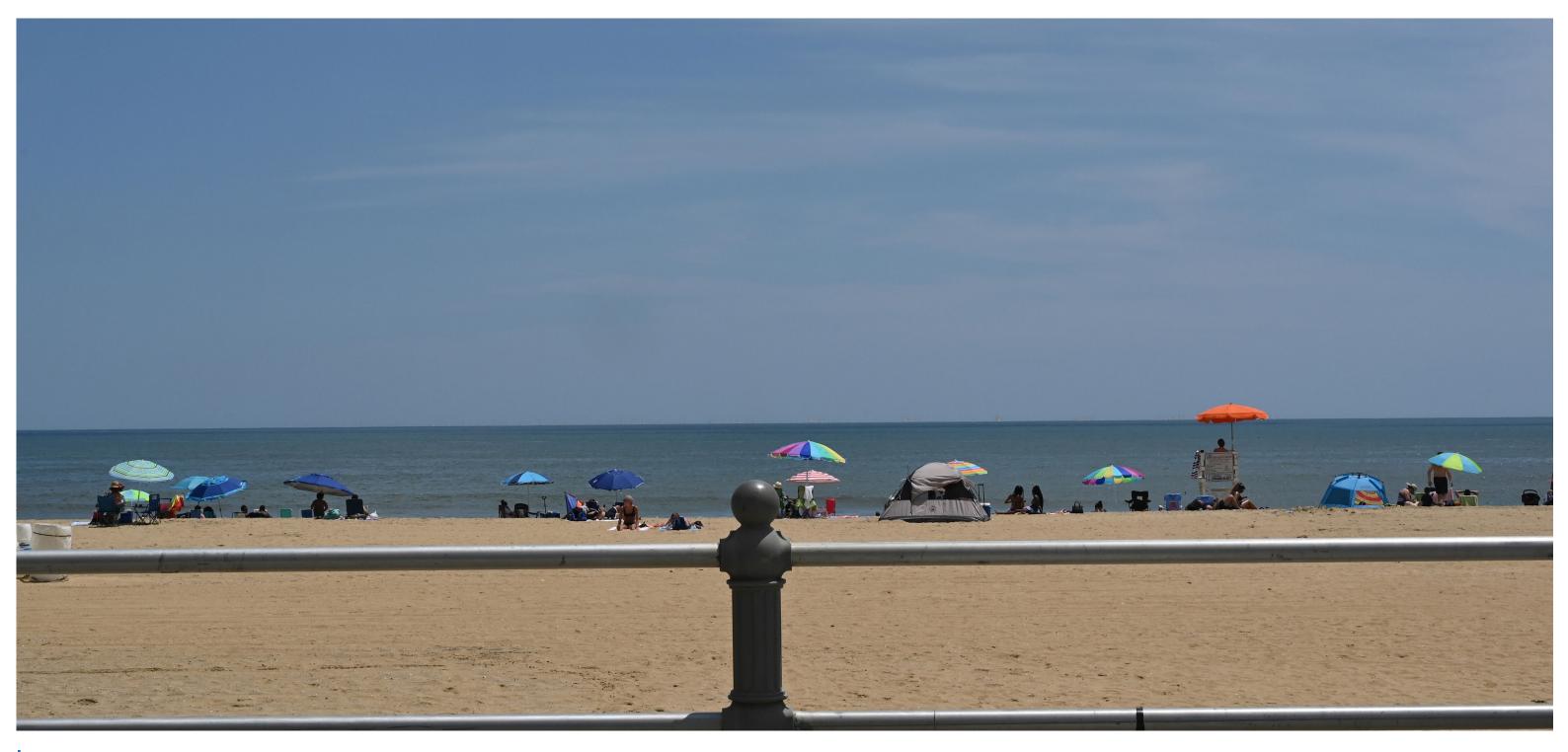
3

Horizontal Area Occupied by Visible Turbines Area Occupied by Visible Turbines as a Percent of the Horizontal FOV Vertical Area Occupied by Visible	
Visible Turbines Area Occupied by Visible Turbines as a Percent of the Horizontal FOV Vertical Area Occupied by Visible	Nearest Turbine 27.8 miles
as a Percent of the Horizontal FOV Vertical Area Occupied by Visible	, , , , , , , , , , , , , , , , , , ,
• •	5/5%
Turbines	Occupied by Visible 0.3°



This sheet should be printed at 11 by 17 inches; full size with no scaling; and viewed at arm's length (24 inches). If viewed on a computer monitor, the document should be scaled to 100 percent and viewed at arm's length (24 inches).

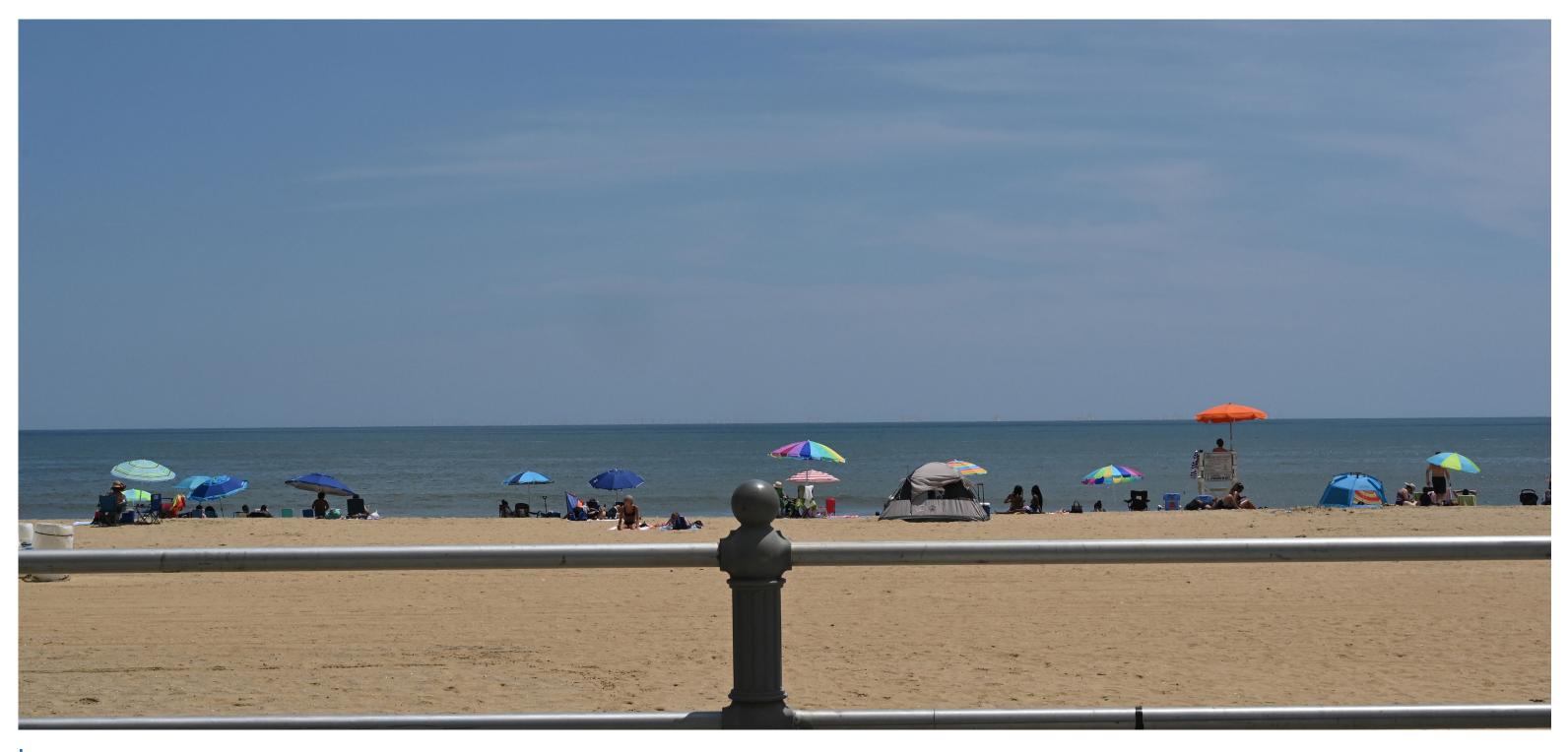
Virginia Beach, VA





This sheet should be printed at 11 by 17 inches; full size with no scaling; and viewed at arm's length (24 inches). If viewed on a computer monitor, the document should be scaled to 100 percent and viewed at arm's length (24 inches).

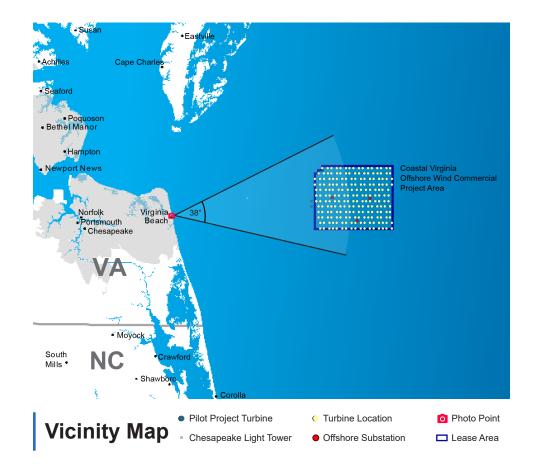
Virginia Beach, VA

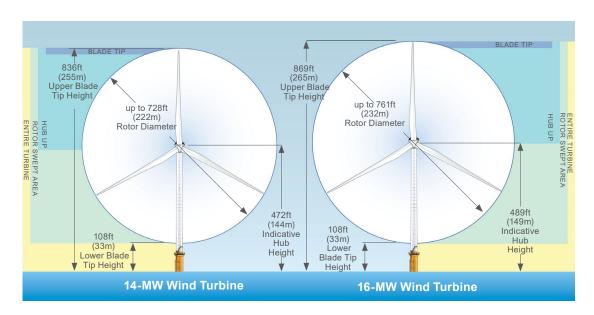




KOP 24a: Virginia Beach Boardwalk - 17th St Park

Virginia Beach, VA



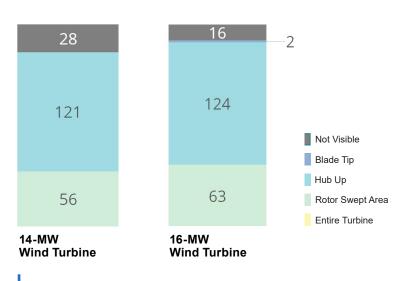


Turbine Dimensions



Existing Panoramic View

Located on Virginia Beach Boardwalk, near 17th St Park



Turbine Visibility

FIELD ID # 24a

PHOTO INFORMATION	
Date	7/9/2021
Time	1:33 pm
Latitude	36.845523°
Longitude	-75.973333°
Direction of View	E
Elevation	18'
Horizontal Field of View Represented in Simulated Image	38°
PROJECT INFRASTRU	CTURE
Turbines	205

Image Data

Offshore Substations

ENVIRONMENTAL

Temperature	91° F
Humidity	53%
Wind Direction	WSW
Wind Speed	5 mph
Weather Condition	Partly Cloudy

Distance to Nearest Turbine	27.8 miles
Horizontal Area Occupied by Visible Turbines	23°
Area Occupied by Visible Turbines as a Percent of the Horizontal FOV	60.5%
Vertical Area Occupied by Visible Turbines	0.2°



KOP 24a: Virginia Beach Boardwalk - 17th St Park Virginia Beach, VA

This sheet should be printed at 11 by 17 inches; full size with no scaling; and viewed at arm's length (24 inches). If viewed on a computer monitor, the document should be scaled to 100 percent and viewed at arm's length (24 inches).





KOP 24a: Virginia Beach Boardwalk - 17th St Park Virginia Beach, VA

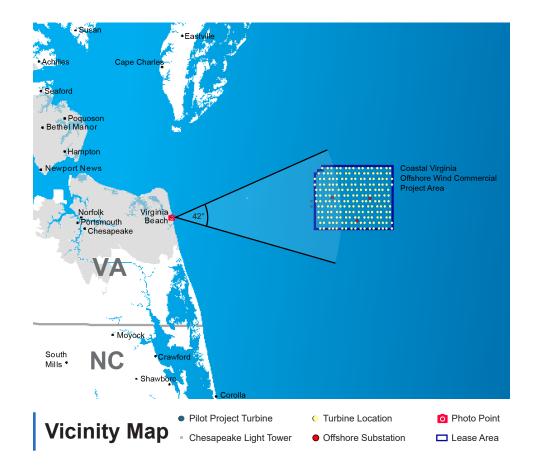
This sheet should be printed at 11 by 17 inches; full size with no scaling; and viewed at arm's length (24 inches). If viewed on a computer monitor, the document should be scaled to 100 percent and viewed at arm's length (24 inches).

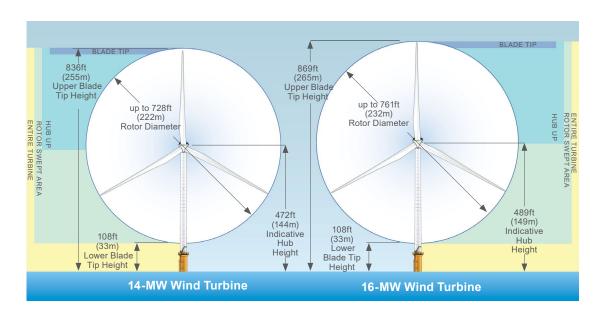




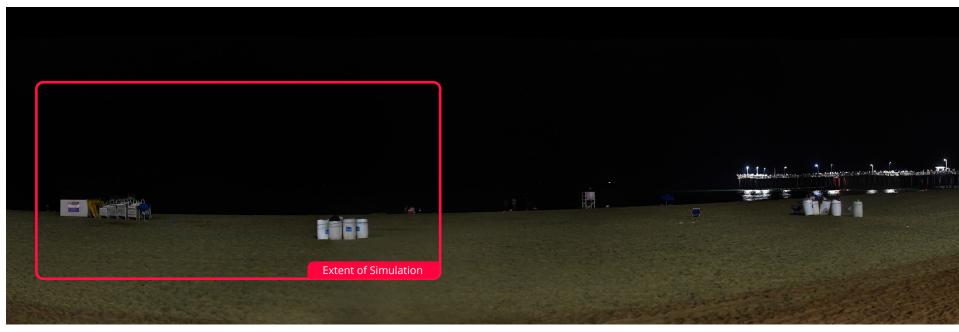
KOP 24b: Virginia Beach Boardwalk - 16th St Entrance - Nighttime

Virginia Beach, VA



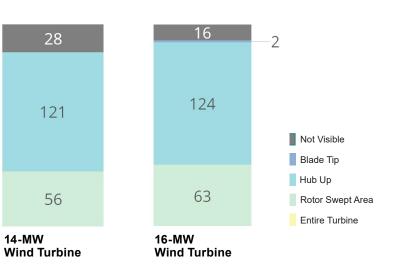


Turbine Dimensions



Existing Panoramic View

Located on Virginia Beach Boardwalk, near 16th St Entrance



Turbine Visibility

FIELD ID # 24b

PHOTO INFORMATION	
Date	7/10/2021
Time	9:54 pm
Latitude	36.844775°
Longitude	-75.973125°
Direction of View	E
Elevation	18'
Horizontal Field of View Represented in Simulated Image	42°
PROJECT INFRASTRU	ICTURE
Turbines	205
Offshore Substations	3

Image Data

ENVIRONMENTAL

Temperature	78° F
Humidity	68%
Wind Direction	SSE
Wind Speed	6 mph
Weather Condition	Fair

Distance to Nearest Turbine	27.7 miles
Horizontal Area Occupied by Visible Turbines	23°
Area Occupied by Visible Turbines as a Percent of the Horizontal FOV	54.8%
Vertical Area Occupied by Visible Turbines	0.2°



KOP 24b: Virginia Beach Boardwalk - 16th St Entrance - Nighttime Virginia Beach, VA

This sheet should be printed at 11 by 17 inches; full size with no scaling; and viewed at arm's length (24 inches). If viewed on a computer monitor, the document should be scaled to 100 percent and viewed at arm's length (24 inches).





KOP 24b: Virginia Beach Boardwalk - 16th St Entrance - Nighttime Virginia Beach, VA

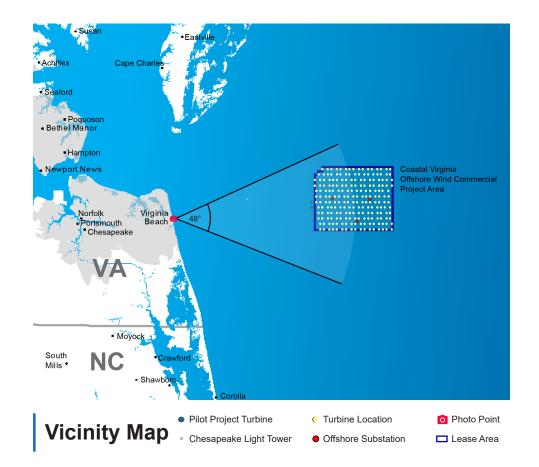
This sheet should be printed at 11 by 17 inches; full size with no scaling; and viewed at arm's length (24 inches). If viewed on a computer monitor, the document should be scaled to 100 percent and viewed at arm's length (24 inches).

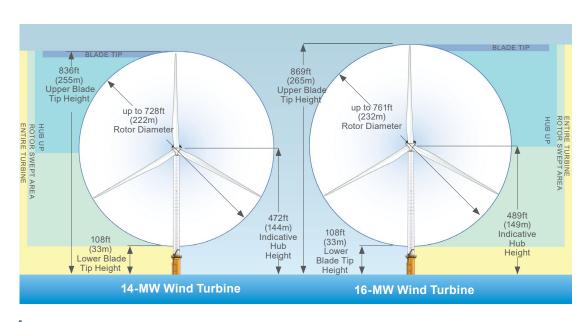




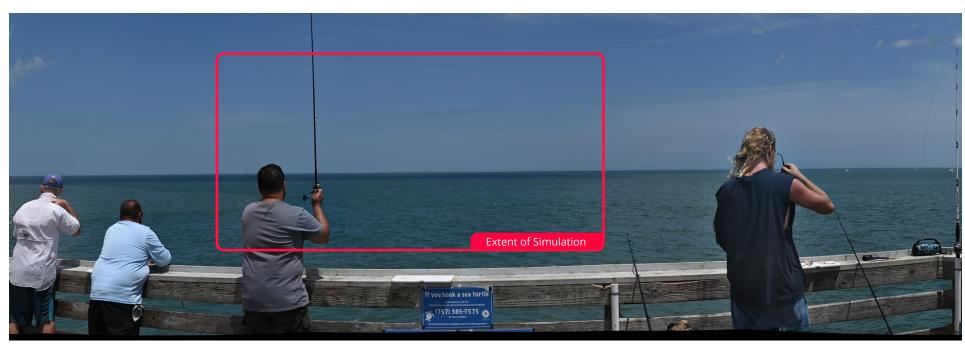
KOP 24d: Virginia Beach Boardwalk - Fishing Pier

Virginia Beach, VA



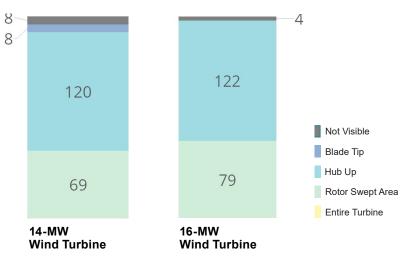


Turbine Dimensions



Existing Panoramic View

Located on Virginia Beach Boardwalk Fishing Pier



Turbine Visibility

FIELD ID # 24d

Date	7/9/2021
Time	1:50 pm
Latitude	36.843709°
Longitude	-75.969876°
Direction of View	Е
Elevation	25'
Horizontal Field of View Represented in Simulated Image	48°
PROJECT INFRASTRU	JCTURE
Turbines	205
Offshore Substations	3

Image Data

ENVIRONMENTAL

Temperature	91° F
Humidity	53%
Wind Direction	WSW
Wind Speed	5 mph
Weather Condition	Partly Cloudy

Distance to Nearest Turbine	27.6 miles
Horizontal Area Occupied by Visible Turbines	23°
Area Occupied by Visible Turbines as a Percent of the Horizontal FOV	47.9%
Vertical Area Occupied by Visible Turbines	0.2°





This sheet should be printed at 11 by 17 inches; full size with no scaling; and viewed at arm's length (24 inches). If viewed on a computer monitor, the document should be scaled to 100 percent and viewed at arm's length (24 inches).





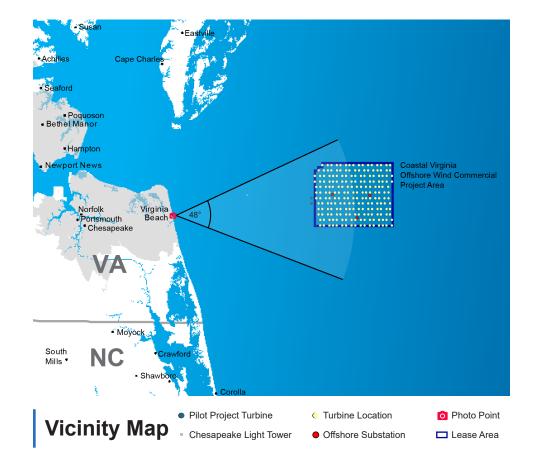
This sheet should be printed at 11 by 17 inches; full size with no scaling; and viewed at arm's length (24 inches). If viewed on a computer monitor, the document should be scaled to 100 percent and viewed at arm's length (24 inches).

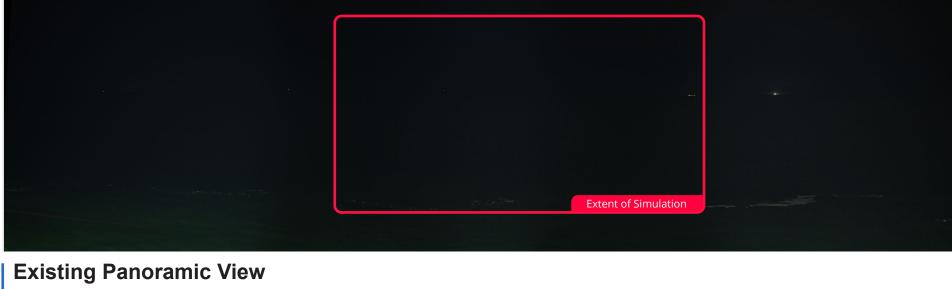




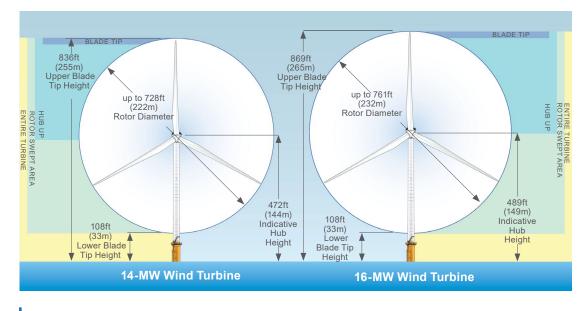
KOP 24d: Virginia Beach Boardwalk - Fishing Pier Nighttime

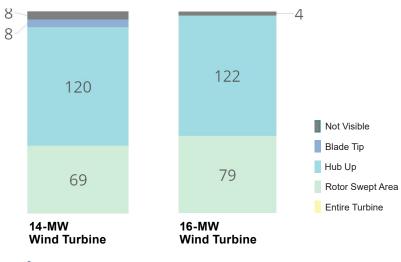
Virginia Beach, VA





Located on Virginia Beach Boardwalk Fishing Pier





Turbine Visibility

FIELD ID # 24d

Image Data

N
7/10/2021
9:37 pm
36.843709°
-75.969876°
E
25'
48°
JCTURE
205
3

ENVI	RONM	IENTAL
------	------	--------

Temperature	78° F
Humidity	6%
Wind Direction	SSE
Wind Speed	6 mpł
Weather Condition	Fai

PROJECT VIEW

Distance to Nearest Turbine	27.6 miles
Horizontal Area Occupied by Visible Turbines	23°
Area Occupied by Visible Turbines as a Percent of the Horizontal FOV	47.9%
Vertical Area Occupied by Visible Turbines	0.2°

Turbine Dimensions



KOP 24d: Virginia Beach Boardwalk - Fishing Pier Nighttime Virginia Beach, VA

This sheet should be printed at 11 by 17 inches; full size with no scaling; and viewed at arm's length (24 inches). If viewed on a computer monitor, the document should be scaled to 100 percent and viewed at arm's length (24 inches).





KOP 24d: Virginia Beach Boardwalk - Fishing Pier Nighttime Virginia Beach, VA

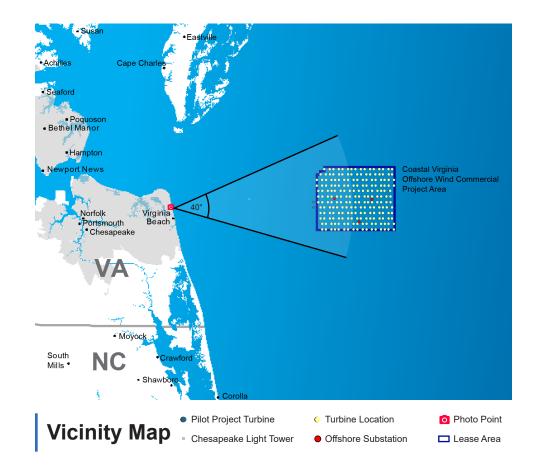
This sheet should be printed at 11 by 17 inches; full size with no scaling; and viewed at arm's length (24 inches). If viewed on a computer monitor, the document should be scaled to 100 percent and viewed at arm's length (24 inches).

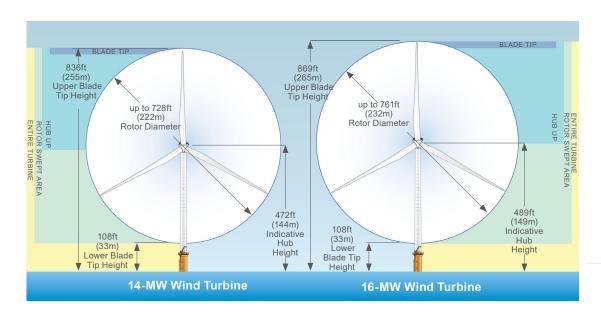




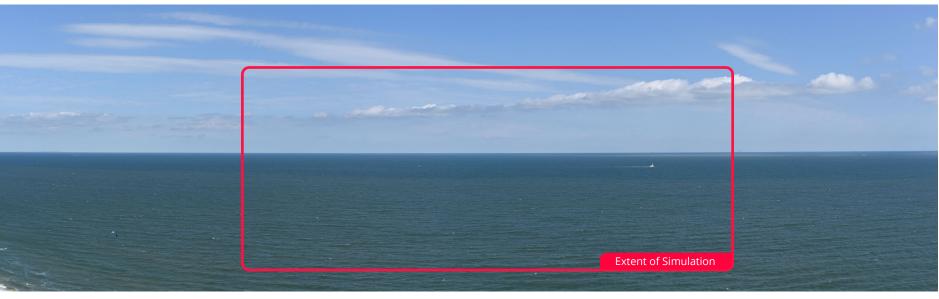
KOP 26: Marriott Virginia Beach Oceanfront Hotel

Virginia Beach, VA



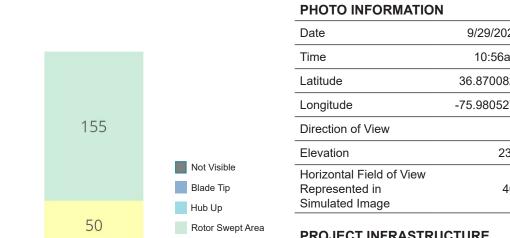


Turbine Dimensions



Existing Panoramic View

Located on rooftop of Marriott Virginia Beach Oceanfront hotel



Entire Turbine

Turbine Visibility

16-MW

Wind Turbine

155

50

14-MW

Wind Turbine

FIELD ID # 26

PHOTO INFORMATION	l
Date	9/29/2021
Time	10:56am
Latitude	36.870082°
Longitude	-75.980527°
Direction of View	E
Elevation	236'
Horizontal Field of View Represented in Simulated Image	40°

PROJECT INFRASTRUCTURE	
Turbines	205
Offshore Substations	3

Image Data

ENVIRONMENTAL

Temperature	71° F
Humidity	61%
Wind Direction	NNE
Wind Speed	10 mph
Weather Condition	Fair

Distance to Nearest Turbine	28.0 miles
Horizontal Area Occupied by Visible Turbines	23°
Area Occupied by Visible Turbines as a Percent of the Horizontal FOV	57.5%
Vertical Area Occupied by Visible Turbines	0.3°



KOP 26: Marriott Virginia Beach Oceanfront Hotel

Virginia Beach, VA

This sheet should be printed at 11 by 17 inches; full size with no scaling; and viewed at arm's length (24 inches). If viewed on a computer monitor, the document should be scaled to 100 percent and viewed at arm's length (24 inches).

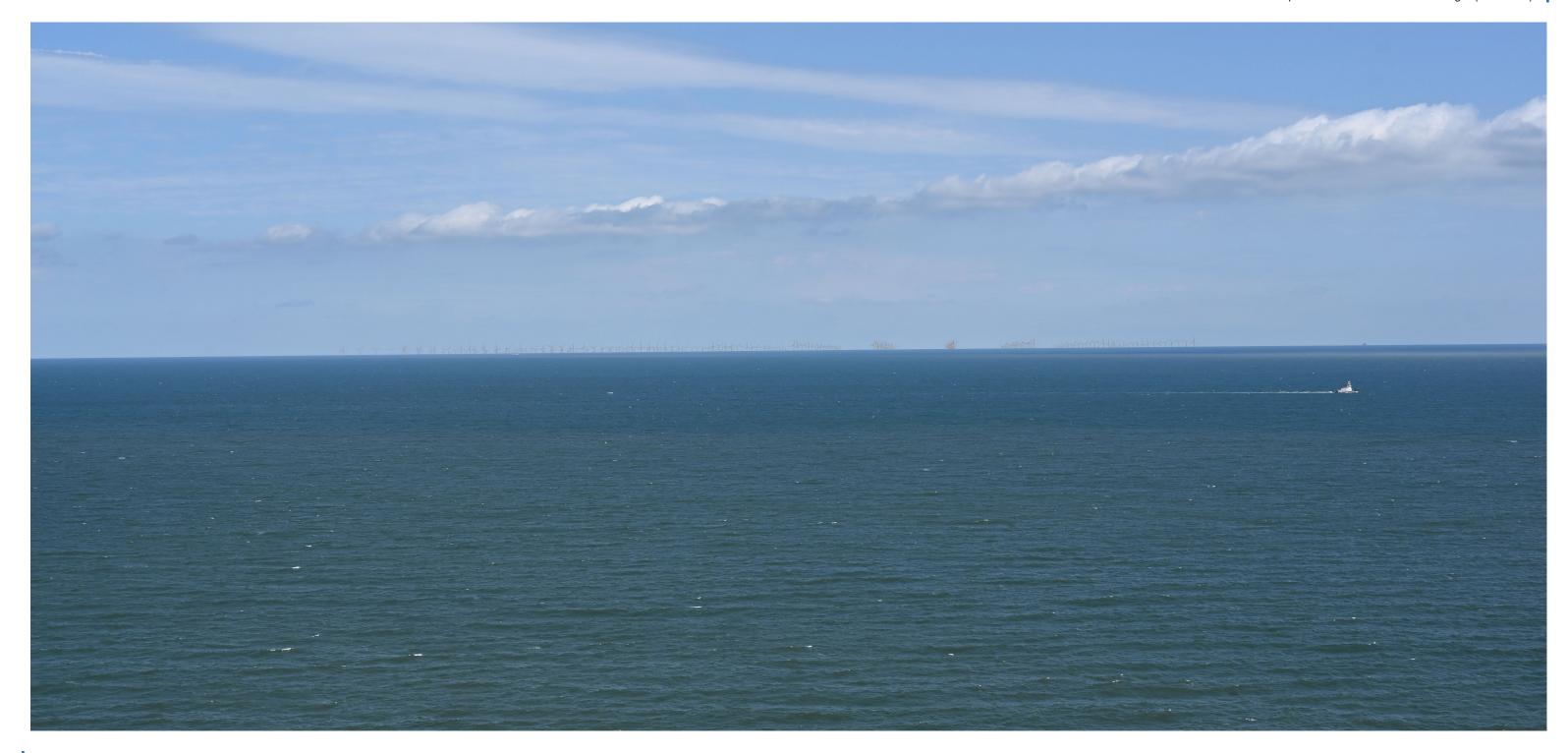




KOP 26: Marriott Virginia Beach Oceanfront Hotel

Virginia Beach, VA

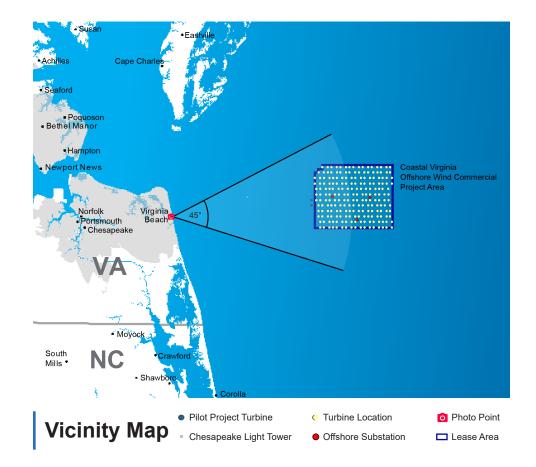
This sheet should be printed at 11 by 17 inches; full size with no scaling; and viewed at arm's length (24 inches). If viewed on a computer monitor, the document should be scaled to 100 percent and viewed at arm's length (24 inches).

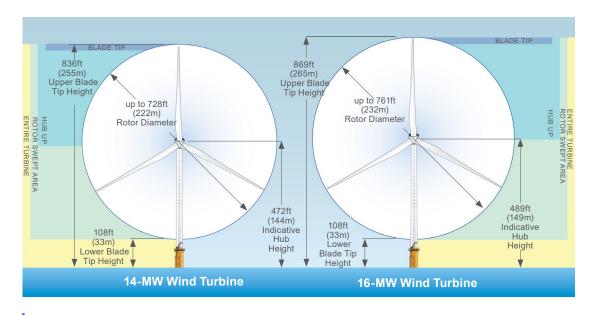




KOP 29: Grommet Island Park

Virginia Beach, VA



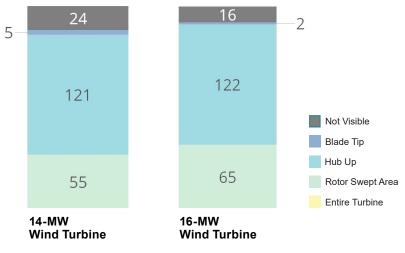


Turbine Dimensions



Existing Panoramic View

Located on Virginia Beach Boardwalk, near Grommet Island Park



Turbine Visibility

FIELD ID # 29

PHOTO INFORMATION	<u> </u>
Date	7/8/2021
Time	12:04pm
Latitude	36.831427°
Longitude	-75.969656°
Direction of View	E
Elevation	18'
Horizontal Field of View Represented in Simulated Image	45°
PROJECT INFRASTRUCTURE	

PROJECT INFRASTRUCTURE	
Turbines	205
Offshore Substations	3

Image Data

ENVIRONMENTAL

Temperature	82° F
Humidity	79%
Wind Direction	S
Wind Speed	18 mph
Weather Condition	Rain

Distance to Nearest Turbine	27.7 miles
Horizontal Area Occupied by Visible Turbines	23°
Area Occupied by Visible Turbines as a Percent of the Horizontal FOV	51.1%
Vertical Area Occupied by Visible Turbines	0.2°



Print Guide / Image Notes: This sheet should be printed at 11 by 17 inches; full size with no scaling; and viewed at arm's length (24 inches). If viewed on a computer monitor, the document should be scaled to 100 percent and viewed at arm's length (24 inches).

Virginia Beach, VA





Print Guide / Image Notes: This sheet should be printed at 11 by 17 inches; full size with no scaling; and viewed at arm's length (24 inches). If viewed on a computer monitor, the document should be scaled to 100 percent and viewed at arm's length (24 inches).

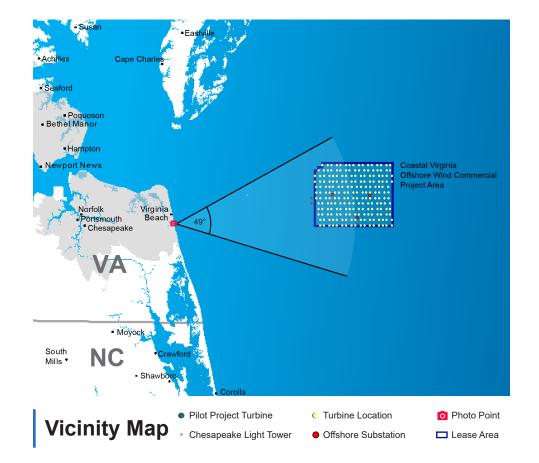
Virginia Beach, VA

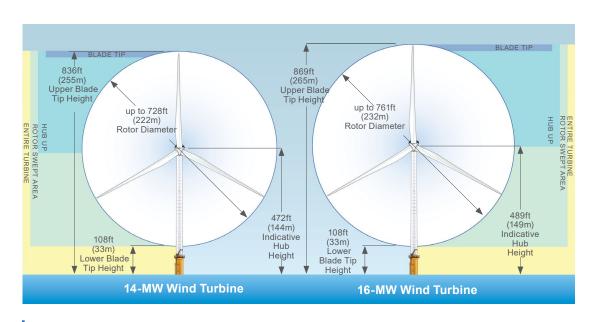




KOP 30a: Croatan Beach A - North

Virginia Beach, VA





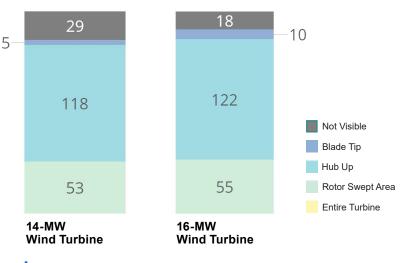
Turbine Dimensions



Existing Panoramic View

Located on Croatan Beach

Turbine Visibility



FIELD ID # 30a

PHOTO INFORMATION	
Date	7/8/2021
Time	11:00 AM
Latitude	36.827570°
Longitude	-75.968610°
Direction of View	ENE
Elevation	15'
Horizontal Field of View Represented in Simulated Image	49°

PROJECT INFRASTRUCTURE		
Turbines	205	
Offshore Substations	3	

Image Data

ENVIRONMENTAL

Temperature	84° F
Humidity	72%
Wind Direction	SSW
Wind Speed	15 mph
Weather Condition	Overcast

Distance to Nearest Turbine	27.6 miles
Horizontal Area Occupied by Visible Turbines	22.5°
Area Occupied by Visible Turbines as a Percent of the Horizontal FOV	45.9%
Vertical Area Occupied by Visible Turbines	0.2°



KOP 30a: Croatan Beach A - North

Virginia Beach, VA

Print Guide / Image Notes:
This sheet should be printed at 11 by 17 inches; full size with no scaling; and viewed at arm's length (24 inches). If viewed on a computer monitor, the document should be scaled to 100 percent and viewed at arm's length (24 inches).





KOP 30a: Croatan Beach A - North

Virginia Beach, VA

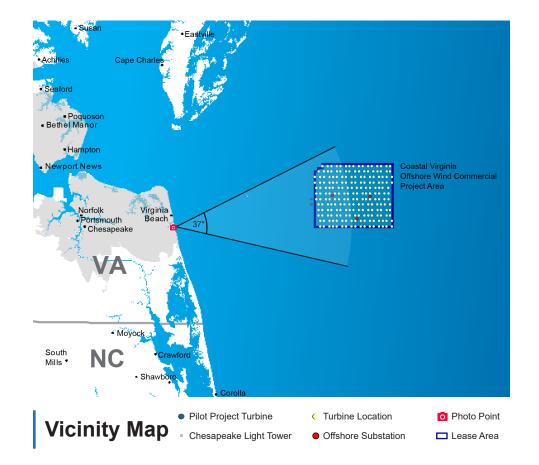
Print Guide / Image Notes:
This sheet should be printed at 11 by 17 inches; full size with no scaling; and viewed at arm's length (24 inches). If viewed on a computer monitor, the document should be scaled to 100 percent and viewed at arm's length (24 inches).

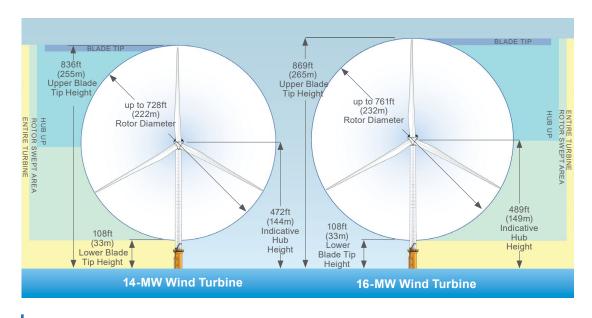




KOP 30c: Croatan Beach C - South

Virginia Beach, VA



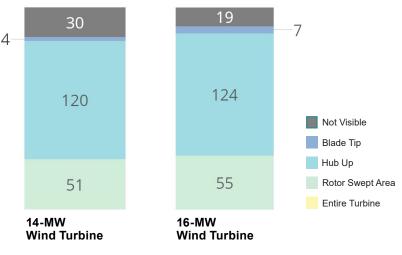


Extent of Simulation

Existing Panoramic View

Located on Croatan Beach

Turbine Visibility



FIELD ID # 30c

PHOTO INFORMATION	I	
Date	7/8/2021	
Time	11:18 am	
Latitude	36.823557°	
Longitude	-75.968028°	
Direction of View	NE	
Elevation	15'	
Horizontal Field of View Represented in Simulated Image	37°	
PROJECT INFRASTRUCTURE		
Turbines	205	
Offshore Substations	3	

Image Data

FN\		\sim	184		
	,,,	, ,,		-	

Temperature	84° F
Humidity	72%
Wind Direction	SSW
Wind Speed	15 mph
Weather Condition	Mostly Cloudy

Distance to Nearest Turbine	27.6 miles
Horizontal Area Occupied by Visible Turbines	22.5°
Area Occupied by Visible Turbines as a Percent of the Horizontal FOV	60.8%
Vertical Area Occupied by Visible Turbines	0.2°





Virginia Beach, VA

Print Guide / Image Notes:
This sheet should be printed at 11 by 17 inches; full size with no scaling; and viewed at arm's length (24 inches). If viewed on a computer monitor, the document should be scaled to 100 percent and viewed at arm's length (24 inches).





Print Guide / Image Notes:
This sheet should be printed at 11 by 17 inches; full size with no scaling; and viewed at arm's length (24 inches). If viewed on a computer monitor, the document should be scaled to 100 percent and viewed at arm's length (24 inches).

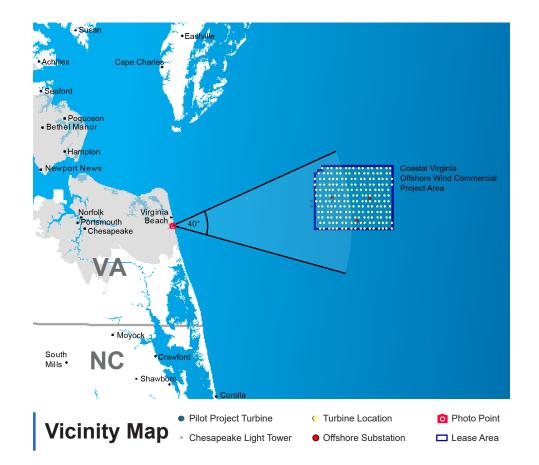
Virginia Beach, VA

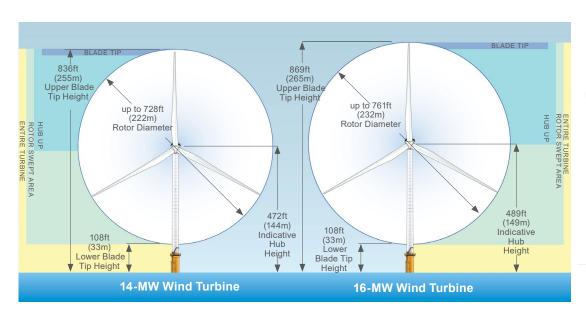




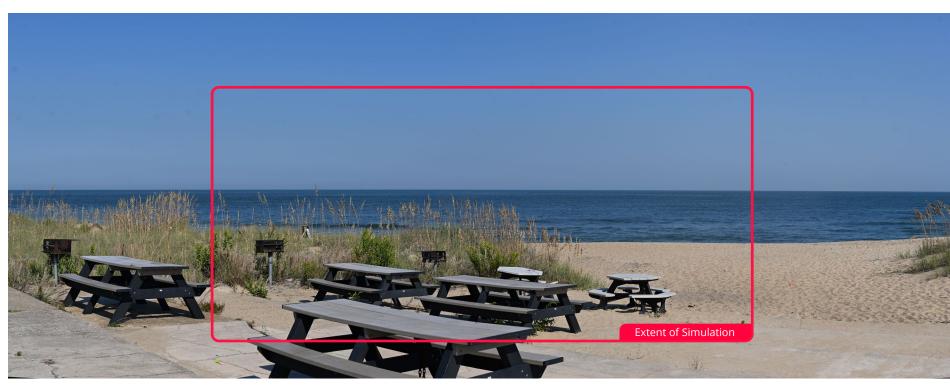
KOP 31: Picnic Views at State Military Reservation

Virginia Beach, VA



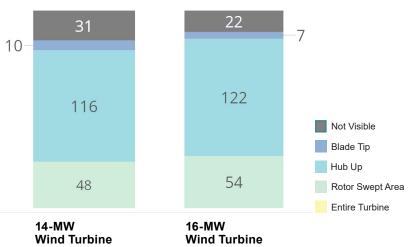


Turbine Dimensions



Existing Panoramic View

Located on Picnic Area near State Military Reservation



Turbine Visibility

FIELD ID # 31

PHOTO INFORMATION	I
Date	9/28/2021
Time	1:11pm
Latitude	36.815689°
Longitude	-75.967075°
Direction of View	Е
Elevation	14'
Horizontal Field of View Represented in Simulated Image	40°
PROJECT INFRASTRU	ICTURE

Turbines 205 Offshore Substations 3

Image Data

ENVIRONMENTAL

Temperature	82° F
Humidity	51%
Wind Direction	SW
Wind Speed	9 mph
Weather Condition	Fair

Distance to Nearest Turbine	27.6 miles
Horizontal Area Occupied by Visible Turbines	22°
Area Occupied by Visible Turbines as a Percent of the Horizontal FOV	55.0%
Vertical Area Occupied by Visible Turbines	0.2°



KOP 31: Picnic Views at State Military Reservation

Virginia Beach, VA

Print Guide / Image Notes: This sheet should be printed at 11 by 17 inches; full size with no scaling; and viewed at arm's length (24 inches). If viewed on a computer monitor, the document should be scaled to 100 percent and viewed at arm's length (24 inches).





Virginia Beach, VA

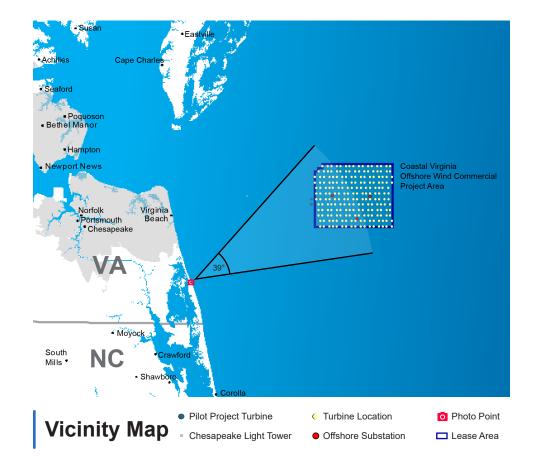
Print Guide / Image Notes: This sheet should be printed at 11 by 17 inches; full size with no scaling; and viewed at arm's length (24 inches). If viewed on a computer monitor, the document should be scaled to 100 percent and viewed at arm's length (24 inches).

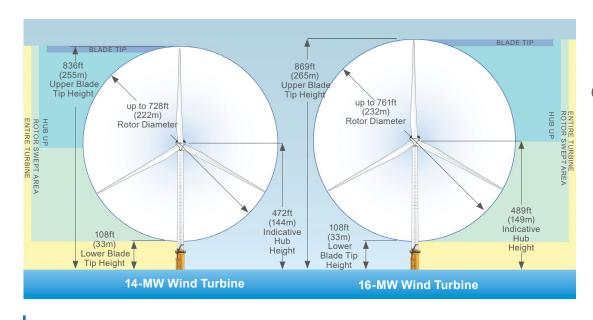




KOP 44a: Little Island Park/Back Bay NWR

Virginia Beach, VA

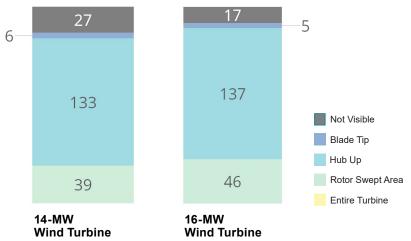






Existing Panoramic View

Located on Little Island Park near Sandpiper Rd.



Turbine Visibility

FIELD ID # 44a

PHOTO INFORMATION	
Date	8/11/2023
Time	11:30 AM
Latitude	36.668282°
Longitude	-75.909911°
Direction of View	NE
Elevation	15'
Horizontal Field of View Represented in Simulated Image	39°
PROJECT INFRASTRUCTURE	

Turbines	205
Offshore Substations	3

Image Data

CAMERA+LENS

Canon EOS R5, Canon RF 50mm

ENVIRONMENTAL

Temperature	84° F
Humidity	49%
Wind Direction	VAR
Wind Speed	5 mph
Weather Condition	Clear

PROJECT VIEW

PROJECT VIEW	
Distance to Nearest Turbine	26.8 miles
Horizontal Area Occupied by Visible Turbines	26°
Area Occupied by Visible Turbines as a Percent of the Horizontal FOV	66.7%
Vertical Area Occupied by Visible Turbines	0.2°

Note: The WTG's at KOP 44a have been rendered with RAL7035 as described in the VIA



Turbine Dimensions

This sheet should be printed at 11 by 17 inches; full size with no scaling; and viewed at arm's length (24 inches). If viewed on a computer monitor, the document should be scaled to 100 percent and viewed at arm's length (24 inches).

Virginia Beach, VA





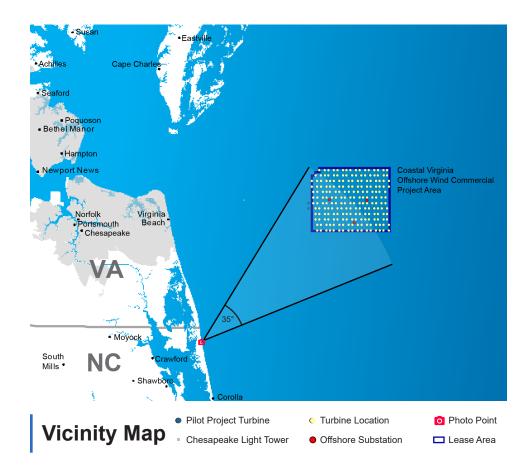
This sheet should be printed at 11 by 17 inches; full size with no scaling; and viewed at arm's length (24 inches). If viewed on a computer monitor, the document should be scaled to 100 percent and viewed at arm's length (24 inches).

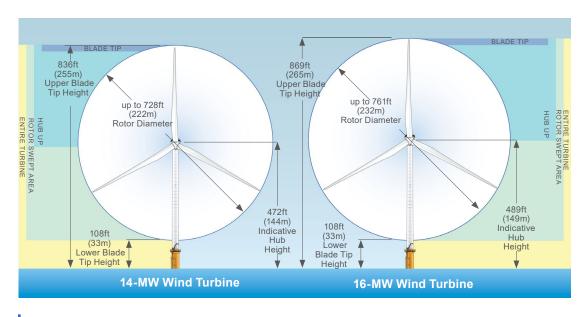
Virginia Beach, VA





KOP 47: Currituck National Wildlife Refuge *Corolla, NC*



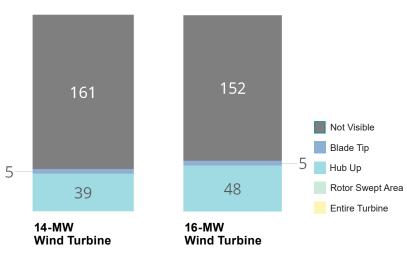


Turbine Dimensions



Existing Panoramic View

Located on Currituck National Wildlife Refuge near N Beach Access Rd 12



Turbine Visibility

FIELD ID # 47

PHOTO INFORMATION	I
Date	7/7/2021
Time	10:58am
Latitude	36.417169°
Longitude	-75.834243°
Direction of View	NE
Elevation	15'
Horizontal Field of View Represented in Simulated Image	35°
PROJECT INFRASTRUCTURE	
Turbines	205

Image Data

Offshore Substations

ENVIRONMENTAL

Temperature	88° F
Humidity	57%
Wind Direction	SSW
Wind Speed	9 mph
Weather Condition	Fair

Distance to Nearest Turbine	34.6 miles
Horizontal Area Occupied by Visible Turbines	12.5°
Area Occupied by Visible Turbines as a Percent of the Horizontal FOV	35.7%
Vertical Area Occupied by Visible Turbines	0.15°



KOP 47: Currituck National Wildlife Refuge Corolla, NC

Print Guide / Image Notes: This sheet should be printed at 11 by 17 inches; full size with no scaling; and viewed at arm's length (24 inches). If viewed on a computer monitor, the document should be scaled to 100 percent and viewed at arm's length (24 inches).





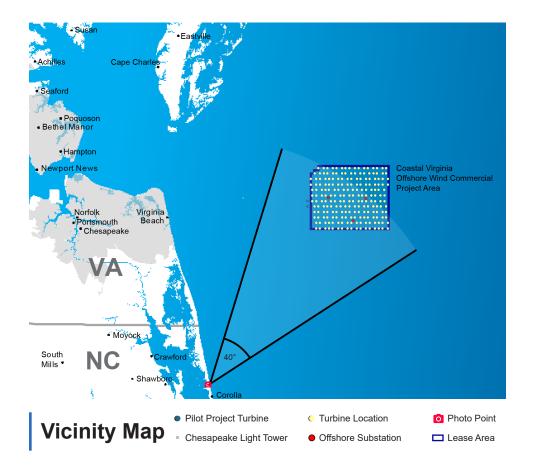
KOP 47: Currituck National Wildlife Refuge Corolla, NC

Print Guide / Image Notes: This sheet should be printed at 11 by 17 inches; full size with no scaling; and viewed at arm's length (24 inches). If viewed on a computer monitor, the document should be scaled to 100 percent and viewed at arm's length (24 inches).





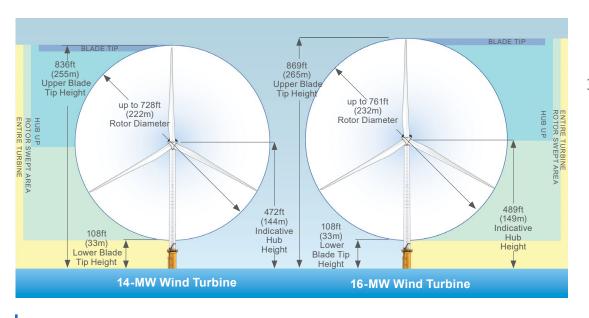
KOP 48: Currituck Beach Lighthouse *Corolla, NC*



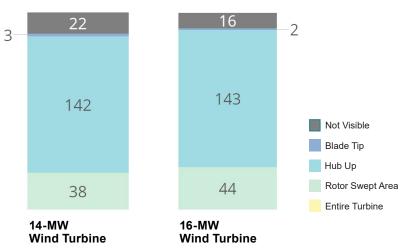


Existing Panoramic View

Located on the Currituck Beach Lighthouse observation deck.



Turbine Dimensions



Turbine Visibility

FIELD ID # 48

PHOTO INFORMATION	
Date	7/7/2021
Time	2:40 PM
Latitude	36.376709°
Longitude	-75.830790°
Direction of View	NE
Elevation	155'
Horizontal Field of View Represented in Simulated Image	40°
PROJECT INFRASTRUCTURE	
Turbines	205

Image Data

Offshore Substations

ENVIRONMENTAL

Temperature	93° F
Humidity	38%
Wind Direction	S
Wind Speed	14 mph
Weather Condition	Clear

Distance to Nearest Turbine	36.8 miles
Horizontal Area Occupied by Visible Turbines	22°
Area Occupied by Visible Turbines as a Percent of the Horizontal FO	55 HV
Vertical Area Occupied by Visible Turbines	0.4°



This sheet should be printed at 11 by 17 inches; full size with no scaling; and viewed at arm's length (24 inches). If viewed on a computer monitor, the document should be scaled to 100 percent and viewed at arm's length (24 inches).



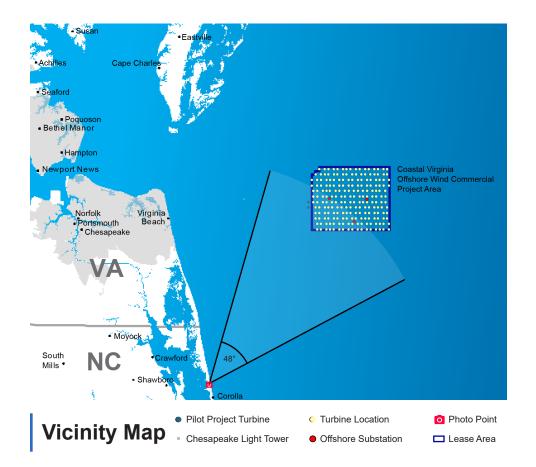


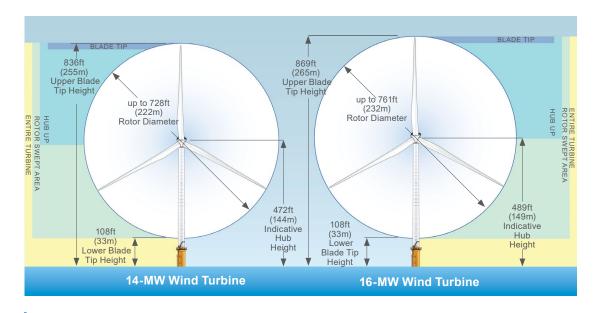
This sheet should be printed at 11 by 17 inches; full size with no scaling; and viewed at arm's length (24 inches). If viewed on a computer monitor, the document should be scaled to 100 percent and viewed at arm's length (24 inches).



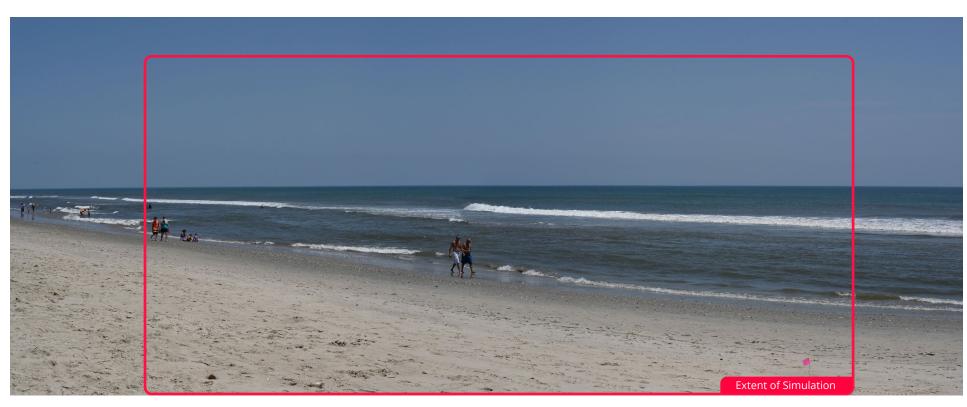


KOP 49a: Whale Head Bay - Residential *Corolla, NC*



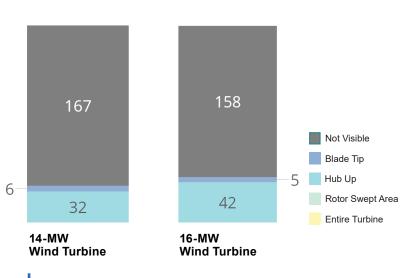


Turbine Dimensions



Existing Panoramic View

Located on Corolla Beach, near Corolla Beach Rd.



Turbine Visibility

FIELD ID # 49a

PHOTO INFORMATION	1
Date	7/7/2021
Time	12:20 PM
Latitude	36.377628°
Longitude	-75.824152°
Direction of View	NE
Elevation	25'
Horizontal Field of View Represented in Simulated Image	48°
PROJECT INFRASTRU	JCTURE
Turbines	205
Offshore Substations	3

Image Data

ENVIRONMENTAL

Temperature	91° F
Humidity	48%
Wind Direction	SW
Wind Speed	13 mph
Weather Condition	Fair

Distance to Nearest Turbine	36.6 miles
Horizontal Area Occupied by Visible Turbines	14.5°
Area Occupied by Visible Turbines as a Percent of the Horizontal FOV	30.2%
Vertical Area Occupied by Visible Turbines	0.1°



KOP 49a: Whale Head Bay - Residential *Corolla, NC*

Print Guide / Image Notes:
This sheet should be printed at 11 by 17 inches; full size with no scaling; and viewed at arm's length (24 inches). If viewed on a computer monitor, the document should be scaled to 100 percent and viewed at arm's length (24 inches).





KOP 49a: Whale Head Bay - Residential *Corolla, NC*

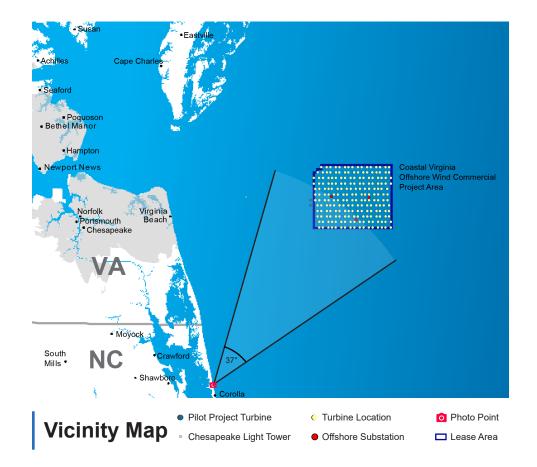
Print Guide / Image Notes:
This sheet should be printed at 11 by 17 inches; full size with no scaling; and viewed at arm's length (24 inches). If viewed on a computer monitor, the document should be scaled to 100 percent and viewed at arm's length (24 inches).

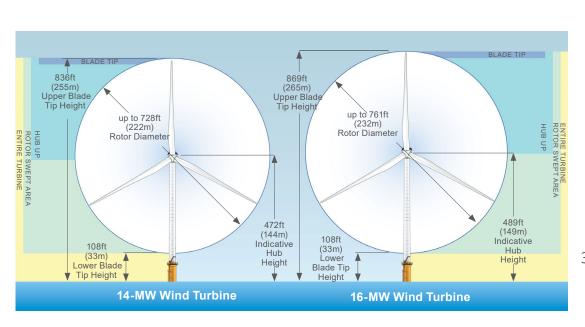




KOP 49g: Whale Head Bay - Albacore St Entrance

Corolla, NC



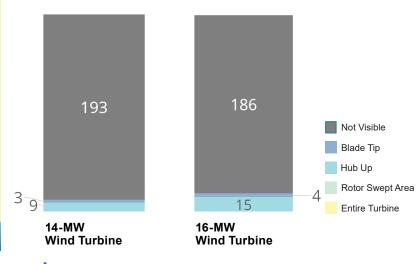


Turbine Dimensions



Existing Panoramic View

Located on Corolla Beach, near Corolla Beach Rd.



Turbine Visibility

FIELD ID # 49g

PHOTO INFORMATION	1	
Date	7/7/2021	
Time	12:20 PM	
Latitude	36.328344°	
Longitude	-75.810450°	
Direction of View	NE	
Elevation	25'	
Horizontal Field of View Represented in Simulated Image	37°	
PROJECT INFRASTRU	JCTURE	
Turbines	205	
Offshore Substations	3	

Image Data

ENVIRONMENTAL

Temperature	93° F
Humidity	42%
Wind Direction	S
Wind Speed	12 mph
Weather Condition	Fair

Distance to Nearest Turbine	39.1 miles
Horizontal Area Occupied by Visible Turbines	9°
Area Occupied by Visible Turbines as a Percent of the Horizontal FOV	24.3%
Vertical Area Occupied by Visible Turbines	0.05°



KOP 49g: Whale Head Bay - Albacore St Entrance *Corolla, NC*

Print Guide / Image Notes: by 17 inches: full size with no scaling:

This sheet should be printed at 11 by 17 inches; full size with no scaling; and viewed at arm's length (24 inches). If viewed on a computer monitor, the document should be scaled to 100 percent and viewed at arm's length (24 inches).





KOP 49g: Whale Head Bay - Albacore St Entrance

Corolla, NC

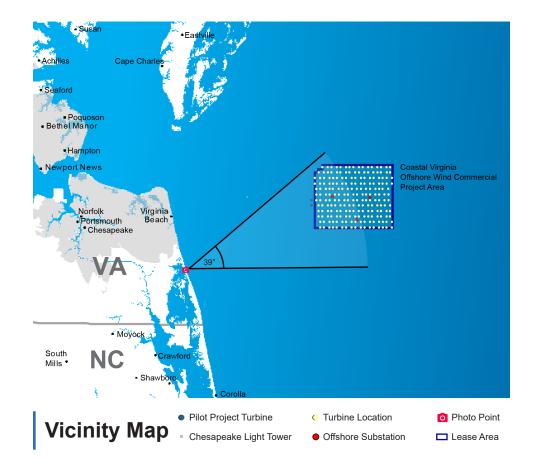
This sheet should be printed at 11 by 17 inches; full size with no scaling; and viewed at arm's length (24 inches). If viewed on a computer monitor, the document should be scaled to 100 percent and viewed at arm's length (24 inches).

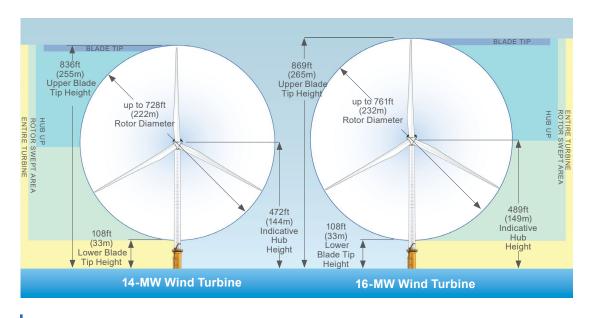




KOP 50: Little Island Park/Back Bay NWR - Nighttime

Virginia Beach, VA



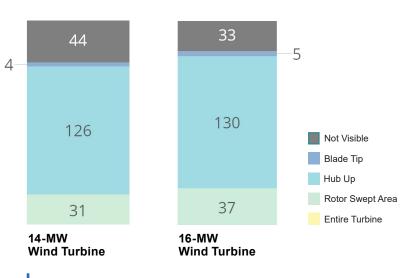


Turbine Dimensions



Existing Panoramic View

Located on Little Island Park, approx. .3mi south of the Sandbridge Fishing Pier



Turbine Visibility

FIELD ID # 50

PHOTO INFORMATION	J
Date	8/11/2023
Time	9:50 PM
Latitude	36.689965°
Longitude	75.921312°
Direction of View	NNE
Elevation	10'
Horizontal Field of View Represented in Simulated Image	39°
DDO IFOT INFRACTRI	IOTUDE

PROJECT INFRASTRUCTURE Turbines 205 Offshore Substations 3

Image Data

CAMERA+LENS

Canon EOS R5, Canon RF 50mm

ENVIRONMENTAL

Temperature	77° F
Humidity	84%
Wind Direction	NW
Wind Speed	5mpł
Weather Condition	Partly Cloudy

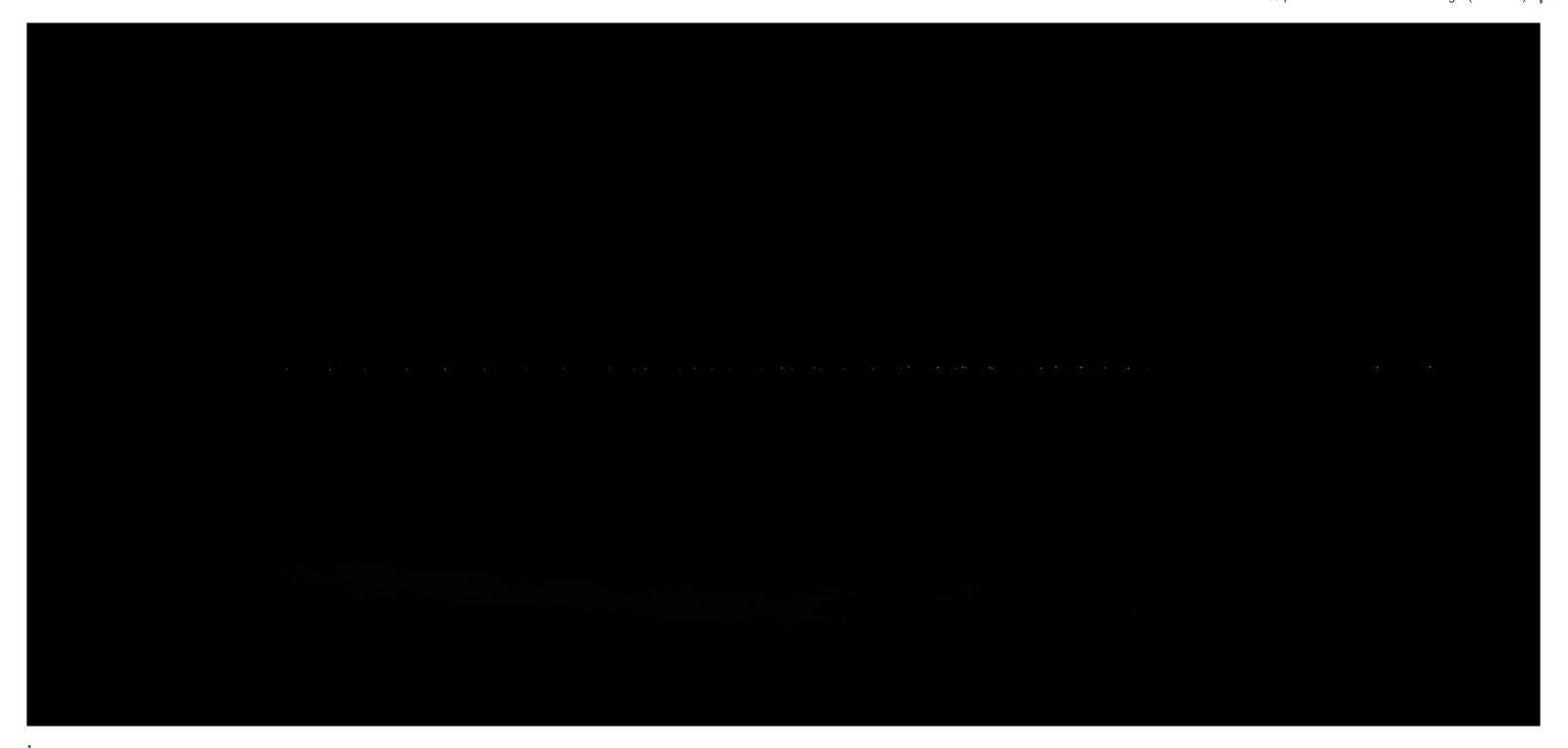
Distance to Nearest Turbine	26.9 miles
Horizontal Area Occupied by Visible Turbines	26°
Area Occupied by Visible Turbines as a Percent of the Horizontal FOV	66.6%
Vertical Area Occupied by Visible Turbines	0.17°



KOP 50: Little Island Park/Back Bay NWR - Nighttime Virginia Beach, VA

Print Guide / Image Notes:

This sheet should be printed at 11 by 17 inches; full size with no scaling; and viewed at arm's length (24 inches). If viewed on a computer monitor, the document should be scaled to 100 percent and viewed at arm's length (24 inches).





KOP 50: Little Island Park/Back Bay NWR - Nighttime Virginia Beach, VA

Print Guide / Image Notes:

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