

Appendix H

Seascape, Landscape, and Visual Impact Assessment

Appendix H: Seascape, Landscape, and Visual Impact Assessment

H.1 Introduction

This appendix describes the ocean, seascape, landscape, and visual impact assessment (SLVIA) methodology and key findings that BOEM used to identify the potential impacts of offshore wind structures (WTGs and OSSs) on scenic and visual resources within the geographic analysis area. This SLVIA methodology applies to any offshore wind energy development proposed for the 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 H.2, *Method of Analysis*, describes the specific methodology used to apply the SLVIA methodology to the COP and Section H.3, *Results,* summarizes the WTA distances, fields of view (FOVs), noticeable elements, visual contrasts, scale of change, and prominence that contributed to the determination of impact levels for ocean, seascape, and landscape and each KOP under the Proposed Action and each of the action alternatives that include modifications to WTG array layouts (Alternatives C1, C2, C3, D1, D2, D3, and E). 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 H-1, *Cumulative Visual Simulations*. Visual simulations of the Alternatives are presented in Attachment H-2, *Alternative Simulations*.

H.2 Method of Analysis

The SLVIA has two separate but linked parts: the open ocean, seascape, and landscape impact assessment (SLIA) and the visual impact analysis (VIA). The SLIA analyzes and evaluates the *sensitivity* of the receptor and the *magnitude of change* in consideration of impacts on both the physical elements and features that make up an open ocean, seascape, or landscape. The VIA analyzes and evaluates the impacts on people by comparing the existing view from selected viewpoints to changes to these views from the proposed development, and how these changes affect the viewers' activities and experience. The inclusion of both the SLIA and VIA in the 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.

H.2.1 SLIA Methodology

The SLIA inventories and describes the visual character of the ocean and the coastal landscape and seascape. It is an analysis and evaluation of the *magnitude of change* and the *sensitivity* of the receptor and in consideration of impacts on both the physical elements and features that make up an open ocean, seascape, or landscape. The magnitude of change depends on a project's scale or degree of change, geographic extent, and duration and reversibility.

Sensitivity is measured by the impact receptor's susceptibility to change, its ability to accommodate the impacts of a proposed project without changing its basic character, and its perceived value to society. These impacts affect the "feel," "character," or "sense of place" of an area of open ocean, seascape, or landscape, rather than the composition of a view from a particular place. Social value is based on the aesthetic, perceptual, and experiential aspects of the open ocean, seascape, or landscape that make it distinctive. In the SLIA, the impact receptors (the entities that are potentially affected by the proposed Project) are the open ocean/seascape/landscape itself and its components, both its physical features and its distinctive character.

H.2.2 VIA Methodology

The VIA analyzes and evaluates the impacts on people by comparing simulated views of the proposed development to existing views from selected viewpoints, referred to as key observation points (KOPs). It also evaluates the change to the composition of the view itself caused by the addition of the wind energy project components, such as seeing wind turbines instead of an open ocean horizon and assesses how the people who are likely to be at that viewpoint may be affected by the change to the view. How the addition of the Project to the view affects the viewers' experiences and their responses depends in part on who they are, what they are doing when viewing the facility, and how much they value the view. Enjoyment of a particular view is dependent on the viewer, and, in the VIA, the impact receptors are people rather than the seascape or landscape. The VIA methodology and parameters for the Project consider four broad categories of users that are likely to experience changes within the landscape and seascape with varying sensitivities. These groups include residents, commuters, tourists and vacationers, and the fishing community.

H.2.3 Project Visibility Factors

WTG visibility would vary throughout the day depending on many factors. View angle, sun angle, and atmospheric conditions would affect the WTG visibility. Visual contrast of WTGs would also vary throughout the day 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. These effects are also influenced by varying atmospheric conditions, direction of view, distance between the viewer and the WTGs, and elevation of the viewer.

At closer distances, approximately 12 miles or less, 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 visual contrast under certain visual conditions that gives visual definition to the WTG's form and line. As the elevation of the viewer increases, earth curvature (EC) has a decreasing effect on the visible height of individual WTGs, allowing a greater proportion of the turbine infrastructure to be seen.

This analysis discloses the maximum visual impacts that may occur because of the Project. The impacts on open ocean, seascape, and landscape character and viewers are assessed based on a WTG height corresponding to the maximum design parameters of the tower and OSSs. Onshore to offshore view

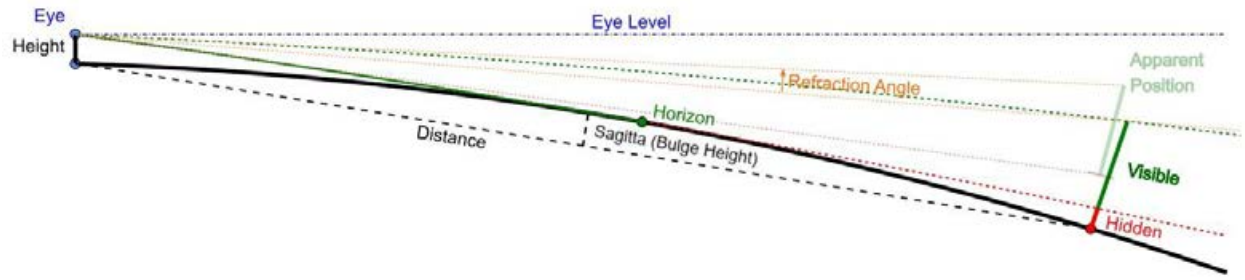
distances to the Project WTA range from 8.7 miles (14.0 kilometers) to 45.1 miles (72.4 kilometers). At the 8.7-mile (14.0-kilometer) distance, the Project WTA would occupy 59.7° (48 percent) of the typical human's 124° horizontal FOV and 1.4° (2.5 percent) of the typical 55° vertical FOV (measured from eye level). This vertical measure also indicates the perceived proportional size and relative height of the WTA. At 40 miles (64.4 kilometers) distance, the Project may appear 0.03° above the horizon and 16° along the horizon, 0.04 percent and 12 percent of the human vertical and horizontal FOV, respectively. WTG and OSS visibility would be variable throughout the day depending on specific factors. View angle, sun angle, atmospheric conditions, and distance would affect the visibility and noticeability. Variations through the course of the day may result in periods of moderate to major visual effects while at other times of day would have minor or negligible effects.

While the coastal 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 towards 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 make-up of the horizon's backdrop. The sunrise and sunsets 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.

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's vertical form and line contrast to the ocean's horizontal character and the line where the sea meets sky, or visually dissipates 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 wind turbines, placing some WTGs in the shadow and making them appear a 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. Variations through the course of the day may result in periods of moderate to major visual effects while at other times of day would have minor or negligible effects.

WTG blade motion also affects visibility. Empirical studies of offshore visibility of wind turbines 500 feet (152.4 meters) to tip of blade have shown that WTG blade movement is routinely visible at distances of 21 miles (34 kilometers) or less and as far as 26 miles (42 kilometers) (Sullivan 2013). In a visually empty seascape, the rotational movement of the turbines can dominate the scene during the day. Contrary to static turbine noticeability, blade motion is visible regardless of lighting conditions, sun angle, and sky contrast levels. Blade motion contributes substantially to visual contrast and may contribute relatively more at shorter viewing distances (Sullivan 2013). Blade movement noticeability would be dependent on meteorological conditions. It is critical to note that the studies cited above were conducted on smaller WTGs than those proposed on this or other offshore wind projects along the U.S. eastern seaboard, therefore noticeability distances would increase with larger wind turbines.

Atmospheric refraction of light rays causes fluctuations in the extents and appearances of offshore and onshore facilities. It results from the bending of light rays between viewers and objects due to current air temperature, water vapor, and barometric pressure (Bislins 2022; Figure H-1). Based on the average sea level refraction calculation coefficient of 0.17 (Bislins 2022) applied to the turbine blade tip viewshed distance of 42.5 miles (68.4 kilometers), the 1,046.6-foot (319-meter) turbines may be projected upward to increased visibility from 0.0 feet (0.0 meters) to 194.6 feet (59.3 meters) above the horizon. The nearest beach viewers, located at 8.7 miles (14.0 kilometers) from the Lease Area, may see increased visibility of the 1,046.6-foot (319.0-meter) turbines from 1,024 feet (312.1 meters) to 1,029.7 feet (313.9 meters) above the horizon. Daytime and nighttime atmospheric refraction-based visibility varies with sea level's continuous increases and decreases in temperature, water vapor, and barometric pressure.



Source: Bislins 2022

Figure H-1. Effects of atmospheric refraction and earth curvature on WTG visibility

H.2.4 Geographic Scope

The geographic scope of potential impacts is described in Section 3.6.9, *Scenic and Visual Resources,* of the Final EIS. An overview map of visual resources present in the geographic analysis area is provided on Figure H-2. The SLVIA offshore geographic analysis area consists of the EC based extent of the zone of theoretical visibility and zones of visual influence (COP, Appendix II-M1; Atlantic Shores 2024), as follows.

- The geographic analysis area includes the offshore turbine array area, where the WTGs and OSSs would be located, plus a 45.1-mile (72.6-kilometer) radius area. This geographic extent is based on the extent of potential visibility within which a seascape, landscape, or visual effect could occur, given the maximum height of the WTG rotor (1,046.6 feet [319 meters]) from a viewer's 5.9-foot (1.8-meter) eye level above sea level (42.5 miles [68.4 kilometers]) and extended 2.6 miles (4.2 kilometers) to capture the elevated viewpoint at Cape May Lighthouse to equal 45.1 miles (72.6 kilometers).

- The OSS (maximum height of 296 feet [90.2 meters]) would potentially be visible from a distance of 23.8 miles (38.3 kilometers).

The onshore geographic analysis area includes submarine export cable landfall sites, buried onshore export cables, onshore substations and/or converter stations, and transmission connections to the

electric grid. The visual impacts of onshore components are assessed in Section 3.6.9 of the Final EIS, along with analysis in this appendix.

The demarcation line between open ocean and seascape is the U.S. state's jurisdictional boundary, 3 nautical miles (3.45 statute miles) (5.5 kilometers) seaward from the coastline (U.S. Congress Submerged Lands Act, 1953). This line coincides with shoreline visibility toward the ocean surface. The line defining the separation of seascape and landscape is based on the juxtaposition of seacoast and landward landscape elements, including topography, water (bays and estuaries), vegetation, and structures.

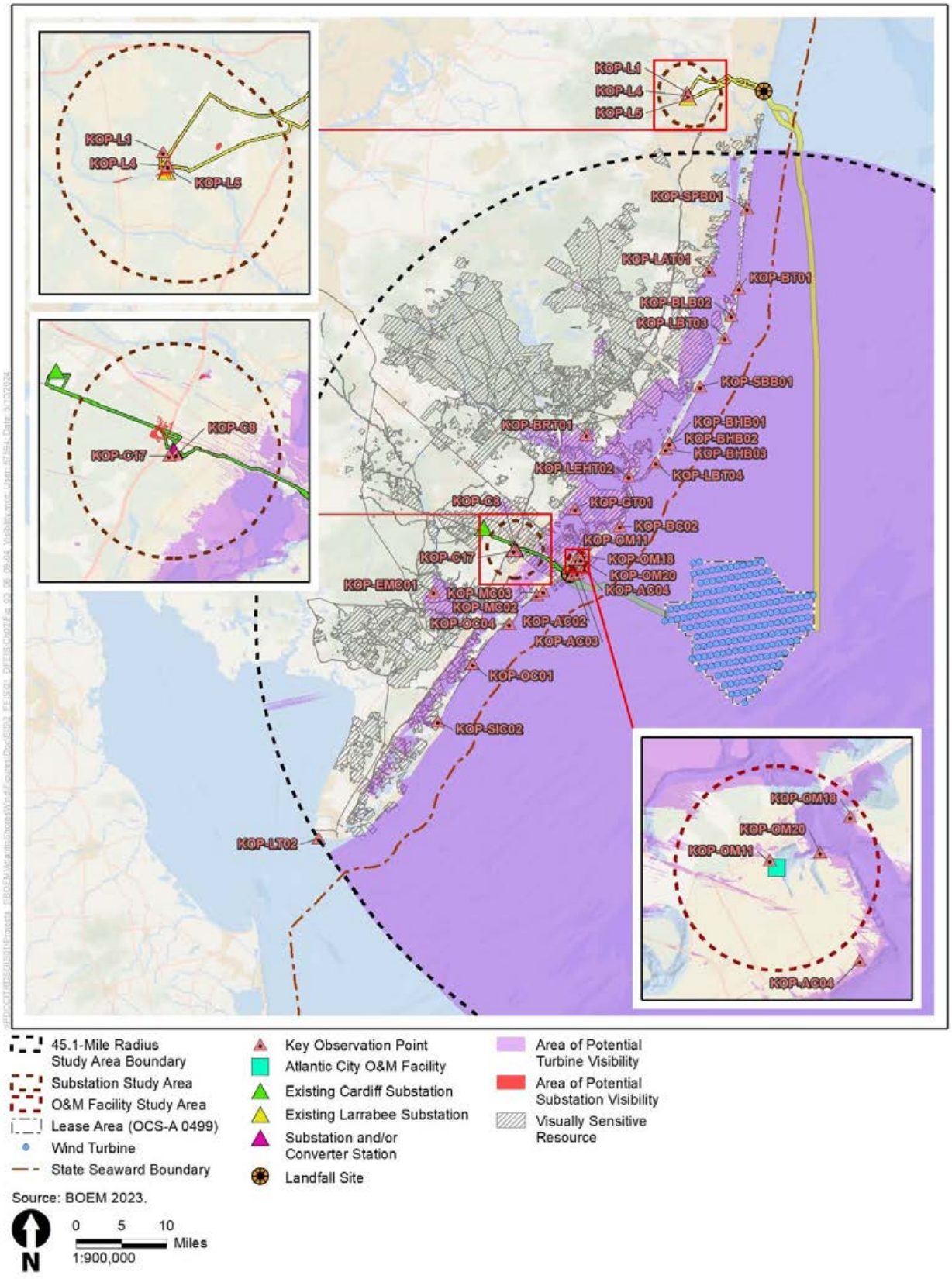


Figure H-2. Scenic resources, visibility, and geographic area overview map

H.2.5 Defining Potential Impacts

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 H-1.

Table H-1. Definitions of potential adverse impact levels for SLIA and VIA

Impact Level	Impact Type	Definition
Negligible	Adverse	**SLIA**: Very little or no effect on seascape/landscape unit character, features, elements, or key qualities either because unit lacks distinctive character, features, elements, or key qualities; values for these are low; or Project visibility would be minimal. **VIA**: Very little or no effect on viewers' visual experience because view value is low, viewers are relatively insensitive to view changes, or Project visibility would be minimal.
Minor	Adverse	**SLIA**: The Project would introduce features that may have 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 slightly inconsistent with the character of the unit, which may have minor to medium negative effects on 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 that has a high level of viewer concern (combination of susceptibility/value), may justify adjusting to a moderate level of impact.
Moderate	Adverse	**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 on 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 a moderate 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 (combination of susceptibility/value) in areas where the view's character has large changes to the character. 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.

Impact Level	Impact Type	Definition
Major	Adverse	**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 on 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 sensitivity (combination of susceptibility/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.

H.3 SLVIA Results

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

Visual simulations from representative viewpoints included in the COP *Visual Impact Assessment Technical Report* (Appendix II-M1; Atlantic Shores 2024) indicate that daytime and nighttime visibility of WTGs and OSSs would be noticeable to the casual observer from the open ocean character area, seascape character areas, landscape character areas, and viewer viewpoints. Figure H-3 provides an overview of seascape and landscape in the geographic analysis area, including the KOP locations. Figures H-4, H-5, and H-6 provide detailed maps of the character areas and KOP locations for the onshore substations and the O&M facility, respectively.

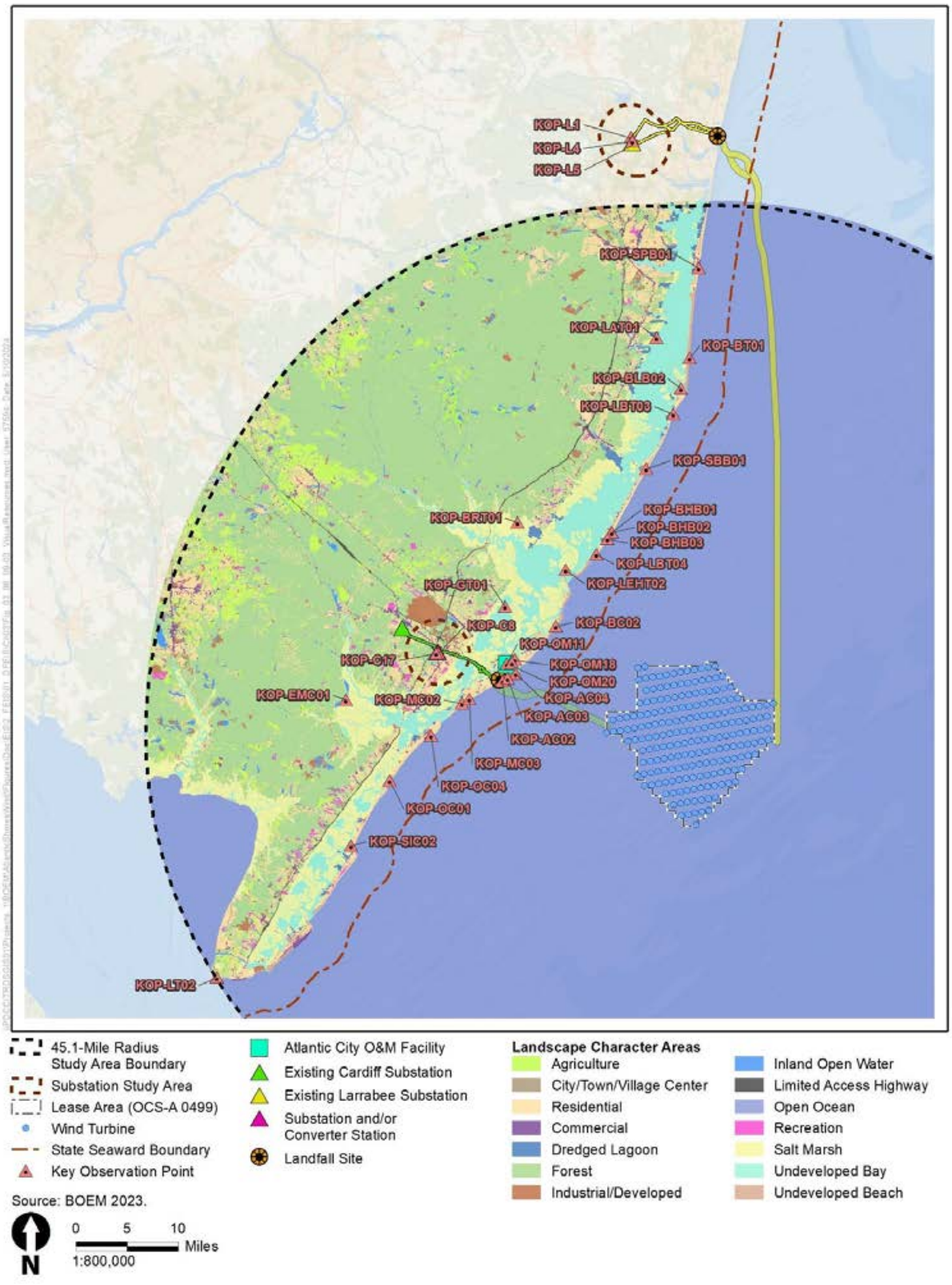


Figure H-3. Project character areas and KOPs overview

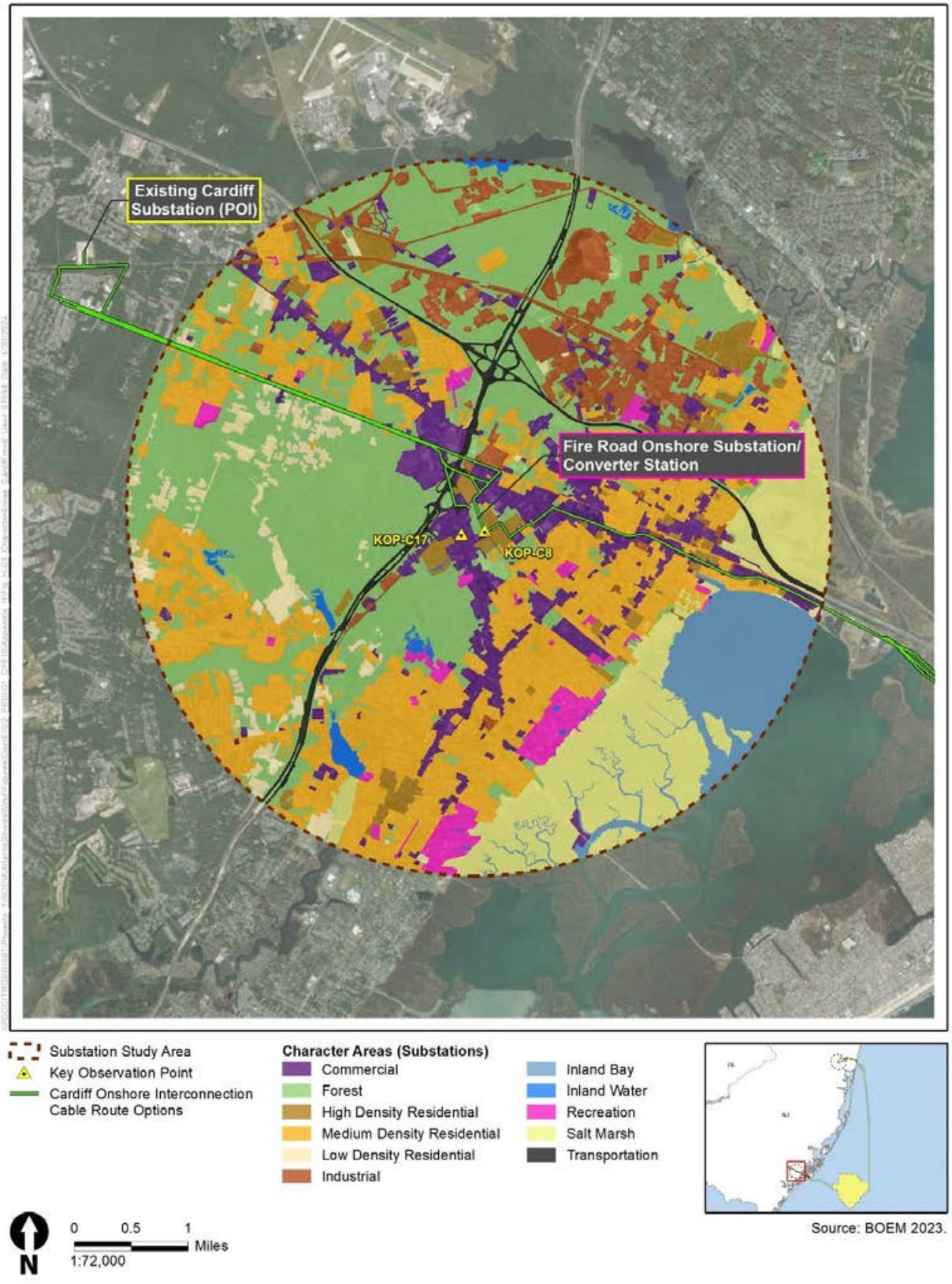


Figure H-4. Character areas and KOPs in the Cardiff Onshore Project area

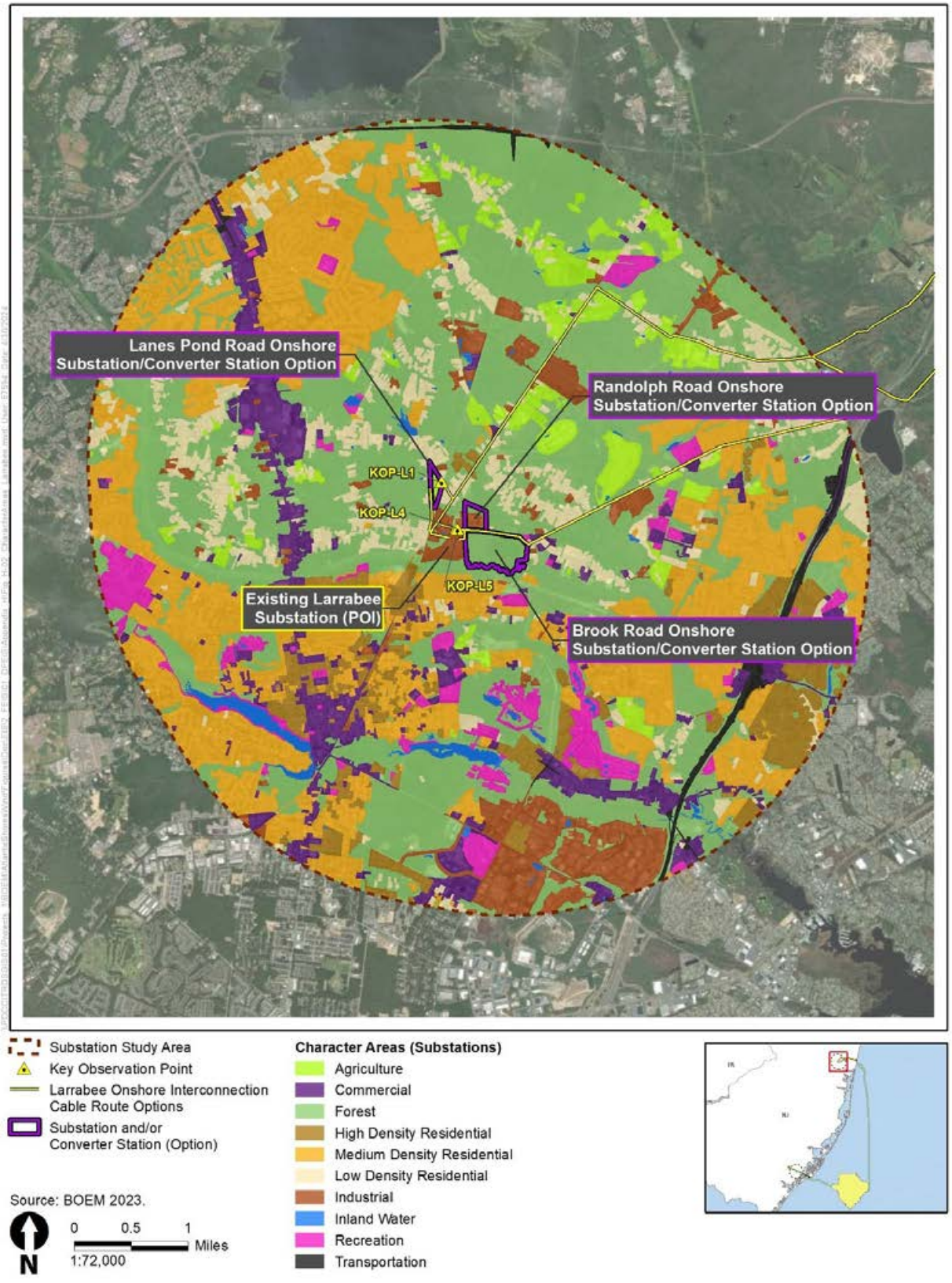


Figure H-5. Character areas and KOPs in the Larrabee Onshore Project area

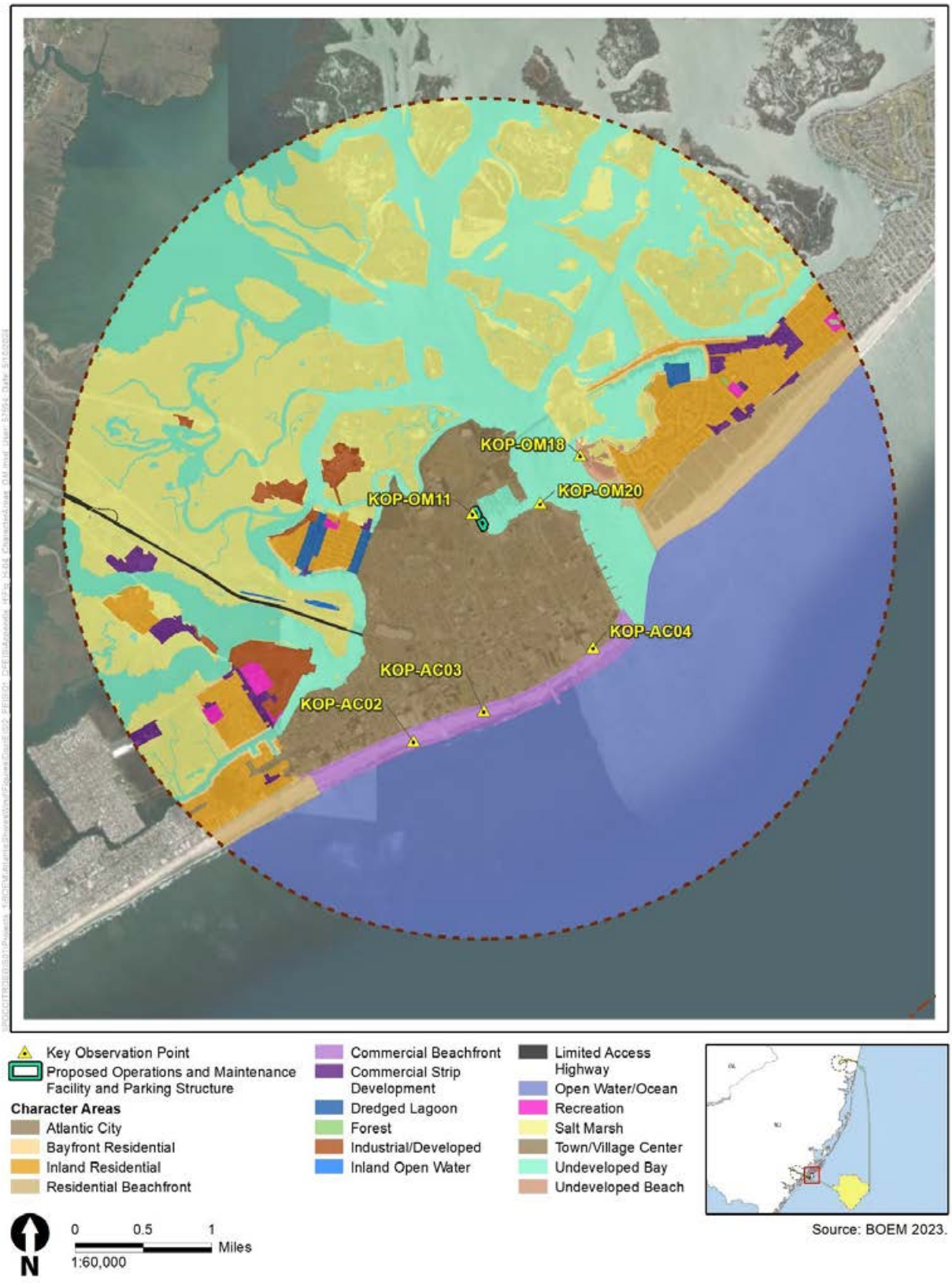


Figure H-6. Character areas and KOPs in the O&M Onshore Project area

H.3.1.1 Offshore Open Ocean, Seascape, and Landscape Character

Based on COP VIA Technical Report Table 1.2-2 (Atlantic Shores 2024), acreages of character areas overall in the offshore geographic analysis area and within the offshore WTA viewshed are listed in Table H-2. Applicable effects from the Proposed Action and alternatives on the open ocean character area, seascape character areas, and landscape character areas are listed throughout this appendix. Salt Marsh, Dredged Lagoon, Recreation, and Inland Open Water character areas are identified in both seascape and landscape in the COP VIA Technical Report (Appendix II-M1; Atlantic Shores 2024). Portions of Bayfront Residential, Town/Village Center, Inland Residential, and Commercial Strip character areas are also mapped on both the mainland and the barrier islands which are culturally and economically part of the seascape character environment even though they may not have direct views of the ocean (see Figures 1.2-2 through 1.2-6 of Appendix II-M1; Atlantic Shores 2024). These character areas are presented in either seascape or landscape in this appendix as shown in Table H-2, but not both.

Table H-2. Open ocean, seascape, and landscape character areas within the Offshore Project area viewsheds

Character Area	Square Miles (Square Kilometers) of Ocean, Seascape, and Landscape Character Area	Square Miles (Square Kilometers) Within the Zone of Potential Visual Influence	Percentage of Character Area in the Zone of Potential Visual Influence
Open Ocean Character Area			
Open Ocean	6,657.8 (17,243.6)	6,657.8 (17,243.6)	100
Seascape Character Areas			
Atlantic City	3.1 (112.68)	0.2 (0.5)	6.9
Commercial Beachfront	1.4 (3.6)	0.9 (2.3)	68.7
Dredged Lagoon [1]	14.3 (37.0)	3.5 (9.1)	3.3
Recreation [1]	20.2 (52.3)	0.6 (1.6)	3.2
Residential Beachfront	8.2 (21.3	3.1 (7.9)	37.0
Salt Marsh [1]	214.7 (556.1)	112 (290.1)	52.1
Town/Village Center [1]	2.6 (6.7)	<0.1 (<0.3)	0.3
Undeveloped Bay	209.1 (549.7)	155.6 (403.1)	74.4
Undeveloped Beach	7.9 (20.5)	3.05 (7.9)	38.5
Landscape Character Areas			
Agriculture	110.2 (8.0)	<0.1 (<0.1)	<0.1
Bayfront Residential	3.3 (8.5)	0.2 (0.5)	6.1
Commercial Strip Development [1]	29.5 (76.4)	0.4 (1.0)	1.5
Forest	1,273.1 (3,297.3)	2.1 (5.4)	0.2
Industrial Developed	37.8 (97.9)	2.6 (6.7)	6.8
Inland Open Water [1]	26.6 (68.9)	0.7 (1.8)	2.6
Inland Residential [1]	223.8 (579.6)	1.1 (2.8)	0.5
Limited Access Highway	9.6 (24.9)	0.3 (7.8)	3.6

Source: COP Appendix II-M1, Table 1.2-2; Atlantic Shores 2024.

[1] Character areas occur in both seascape and landscape in the COP VIA technical report (Appendix II-M1; Atlantic Shores 2024).

Summary descriptions of offshore geographic analysis area character areas are informed by the COP VIA Technical Report (Appendix II-M1; Atlantic Shores 2024). For a more detailed description of the character areas and representative photographs, please refer to the COP VIA Technical Report.

Open Ocean Character Area and Summary of Effects

The open ocean zone includes the open water of the Atlantic Ocean off the coast of New Jersey and portions of Delaware Bay. The defining characteristic of this character area is the presence of open water as a dominant element and unobstructed views in all directions. Human-made features in the water are limited but may include occasional jetties, buoys, and boats. Views from within this character area toward shore contain components of other character areas including Atlantic City, Undeveloped Beach, Residential Beachfront, and Oceanfront Commercial. The visibility, breadth, and detail of the proposed Project and the features in adjacent character areas correspond to the viewer's distance from the Lease Area and from shore. Features such as Atlantic City's high-rise buildings would be visible from significant distances, but lower-profile features such as beaches and forest would diminish completely once a few miles offshore due to EC. Human activity on the water can be extensive, especially near major ports, inlets, navigation channels, and in proximity to marinas during the recreation season. Activity beyond the nearshore is typically concentrated within the designated shipping lanes located between 4 and 10 miles (6.4 and 16.1 kilometers) offshore. The Ocean character area is locally valued for above average visual quality.

Summary of Impact: 100 percent of the open ocean falls within the affected viewshed and views from within this character area cross open water and extend to the horizon. The Ocean character area is a significant contributor to the scenic quality of adjacent seascape character and the Proposed Action takes place entirely within the Ocean character area. While the Ocean character area within these distance zones is currently pristine and undeveloped, views from within it may contain a heavily developed shoreline in some directions. On the other hand, some views bring a sense of vast openness that would be altered by the presence of the WTGs and OSSs when viewing the ocean from cruise boats, offshore fisheries, and freight vessels within or beyond the Project area or from smaller recreational vessels in nearshore areas.

Seascape Character Area Descriptions and Summary of Effects

Atlantic City

The Atlantic City character area is defined by an eclectic mix of large casino/hotel properties, single-family homes, multi-family residential complexes, large and small commercial properties, traditional mixed-use downtown structures, and vacant lots. A wide range of urban uses are present in a variety of conditions. Traditional or expected city center patterns of development are frequently interrupted by urban renewal demolition, poorly maintained structures, or new construction. There is a general gradient in which casinos located closer to the boardwalk and beach are backed by large chain hotels and motels, mixed-use commercial, then residential townhouses and apartments, finally giving way to small-lot single-family residences. However, casinos and affiliated tourist accommodations/attractions such as hotels, shopping, and amusement areas are scattered throughout this character area. The

resulting scene is visually complicated as multiple land uses and building styles are observable from almost any viewpoint within the city. From the seascape, the COP VIA rated Atlantic City as locally valued with above average visual quality with views of the ocean and seascape, but human development and landscape modification is apparent and expected and may be a contributor of scenic quality when viewed from within other character areas.

Summary of Impact: 6.9 percent (138 acres or less than 0.25 square miles [0.57 square kilometers]) of this character area falls within the affected viewshed and is localized to the zone adjacent to the Oceanfront Commercial character area. Unlike other character areas in the GAA, Atlantic City is characterized by large imposing buildings. While the Ocean and Commercial Beachfront are important adjacent character areas that compose the overall seascape setting, the addition of the offshore wind turbines is not visually discordant with the urban structure, the assortment architectural styles, and various vertical scales of commercial and residential development within the character area. The addition of offshore WTGs and OSS would not detract from the character area's overall sense of place.

Commercial Beachfront

The commercial beachfront character area consists of a wooden boardwalk or walkway, ocean piers, and commercial development bordering a shoreline beach or ocean. Commercial uses include adventure/amusement piers, recreation centers such as the Ocean City Music Pier, and commercial structures such as snack shops or bars. Structures in this character area range in size from small single-story snack shops to multi-story municipal structures or piers. Some portions of Commercial Beachfront afford wide open views of the ocean, while other areas are framed by dunes, commercial structures, piers, jetties, and other human-made structures. However, along the sandy shorelines or along piers extending into the nearshore ocean, the horizon and coastal landscape is expansive. One side of this character area is always connected to the ocean, while the inland side borders the built environment. The boardwalk area in Atlantic City is classified as Commercial Beachfront. It has a prominent commercial component that not only lines the inland beach front, but also extends across beaches and over the ocean in the form of large adventure piers/amusement parks containing midway areas and a variety of carnival rides accented by flashing and colorful light features. Beaches in this area are heavily trafficked during the tourist season. Some locations are dedicated to specific activities such as beach volleyball or extensions of hotel bars. These locations generally offer views to the horizon, but these views are frequently interrupted by the presence of large structures and piers that extend up to 800 feet (245 meters) into the ocean, eliminating major portions of the horizon from view. From the seascape, the COP VIA rated Commercial Beachfront as locally valued with above average visual quality with views of the ocean and seascape, but human development and landscape modification is apparent and expected and may be a contributor of scenic quality when viewed from within other character areas.

Summary of Impact: 89 percent of the Commercial Beachfront character area falls within the affected viewshed of the Project. The seascape nature of Commercial Beachfront suggests the proposed Project may dramatically alter the sense of place; however, the WTGs and OSSs at 10–20 miles (16–32 kilometers) are similar in scale to the commercial quality of this altered seascape with nighttime lights

and vertical amusement structures and unlikely to substantially affect the character area's sense of place. This condition is represented in the KOP-AC02 Atlantic City and KOP-OC04 Ocean City photosimulations.

Dredged Lagoon

This character area typically occurs in conjunction with the Undeveloped Bay or Salt Marsh character areas and is characterized by residential neighborhoods with seasonal and year-round homes situated along an artificial dredged waterway. Marinas associated with the housing developments are sometimes included in this character area. Neighborhoods in this character area are arranged along a tight, well-organized grid of local streets and water channels that run between the backyards of adjacent residences. Individual homes have private docks along these channels which provide access to the adjacent waterway. The separation of land created by water channels and roadways ending in cul-de-sacs allows individual streets to function as discrete neighborhoods, which together, comprise a larger residential community. Consequently, communities within this zone have a more spacious and spread-out character when compared to the neighboring landlocked subdivisions within the viewshed. Depending on a residence's position within the zone, outward views across open expanses of water may be available, but in general views from this character area are screened or tightly framed by nearby residences and moored boats. Properties on the periphery have more extensive views of the bay, salt marsh, and occasionally the ocean beyond the intervening barrier islands. However, outward water-level views from the dredged channels are generally completely screened by the structures that line the channels. From the seascape, the COP VIA rated Dredged Lagoon character areas as locally valued with above average visual quality with occasional views of the ocean and seascape but human development and landscape modification is apparent and may be a contributor of scenic quality when viewed from within other character areas. Examples of the Dredged Lagoon character area within the viewshed include developments in Beach Haven West, Sunrise Beach, and Windsor Park. Typical user activities in this character area include residential activities, boating, and fishing.

Summary of Impact: 3.3 percent of the Dredged Lagoon character area is within the affected viewshed. KOP-LAT01 from the Edwin B. Forsythe National Wildlife Refuge (NWR) at the Woodmansee Estate is 32 miles (52 kilometers) from the Project area and has a noticeability rating of 4 – intermittently noticed. This suggests that the Project will contrast sufficiently with the scale of the Dredged Lagoon character area elements, especial in areas within closer range of the lease area, which could be as much as 235 acres (0.4 square miles [1 square kilometer]) of the character area.

Recreation

The Recreation character area encompasses a range of areas intended primarily for outdoor leisure and play. On the mainland, these areas include golf courses, sports fields, athletic complexes, campgrounds, and inland beaches. On the barrier islands these areas include community parks, small athletic complexes with their parking areas, and other developed areas within state parks. This character area typically contains landscaped or human-made features which support recreational activities; however, the visual character of these features varies widely. Golf courses, viewed by golfers or adjacent residents, feature long, sweeping views framed by the forest edge. By contrast, barrier island parks are

viewed by a variety of residents and tourists. These areas tend to be more visually cluttered with typical active and passive recreation park structures. Within the viewshed, this character area is most represented by shoreline recreation on barrier islands, locations associated with state park structures at elevations rising above the surrounding dunes and beach, and in locations where a recreation area may be situated at the end of a street oriented toward the Project. From the seascape, the COP VIA rated Recreation character areas as locally valued with above average visual quality with views of the ocean and seascape, but human development and landscape modification is apparent and expected and may be a contributor of scenic quality when viewed from within other character areas.

Summary of Impact: 3.2 percent of the Recreation character area occurs within the affected viewshed. This includes several parks near Brigantine and Atlantic City. These parks are located away from the shoreline and the ocean and seascape are not intrinsic to their sense of place. The view from KOP-BLB02 Barnegat Lighthouse provides an elevated example of visibility at 27 miles (43 kilometers) from this character area. Given the sensitivity associated with many recreation areas situated on the coast, the ocean can be an important character-defining feature. Because the ocean is typically seen as pristine and free of development, the Project could detract from the sense of place at some of these resources.

Residential Beachfront

The residential beachfront character area is characterized by year-round and seasonal homes, inns and hotels, and some large multi-unit buildings situated along the ocean shoreline. The defining characteristic of this zone is a broad, often elevated view (particularly from multi-story residences) of the ocean from a residential setting, with direct access to an adjacent beach. It is common for these residences and buildings to be separated from the beach by dunes, characterized by gently undulating sand features dominated by dune grasses and low shrubs in variable stages of succession. Wooden slat sand fencing is often present in this setting to protect the dunes from migration. This character area has a distinct visual quality where human development is apparent and expected but has high susceptibility to visual change due to the intactness of the existing landscape/seascape and lack of discordant elements.

Summary of Impact: 87 percent of the Residential Beachfront character area is within the 10-mile (16-kilometer) sphere of the Project. The ocean is a significant contributor to the visual character and sense of place associated with the Residential Beachfront. Homes were placed here specifically for the oceanfront setting. The presence of WTGs, OSSs, and met tower changes the undeveloped character of the ocean horizon by adding large, human-made infrastructure, which would be visible from shore on atmospherically clear days. The addition of vertical structures disrupting the open horizon are inconsistent with the sense of place of the Residential Beachfront character area and would result in potentially significant visual impacts during optimal atmospheric conditions. Visual simulations from KOP-SBB01 Ship Bottom Borough and the multiple views from KOP-BHB01-3 Beach Haven Borough illustrate views from the 10 to 20-mile (16 to 32-kilometer) distance range.

Salt Marsh

The Salt Marsh character area is characterized by coastal ponds and marshes that are connected to inlets or bays with one or more relatively narrow channels allowing tidal water to periodically flood portions of the character area. This character area occurs commonly along the bayside coastlines of the mainland and barrier islands. These areas are typically characterized by an expanse of low-growing herbaceous wetland vegetation interspersed with pockets of open water. Because these areas are subject to the influence of tides, they can include exposed mud banks and flats along their edges at low tide. The Salt Marsh character area also hosts some coastal scrub vegetation and is frequently bordered by forest. The transition zone may include infrequent woody shrubs and stunted trees on small upland patches. Views from within the Salt Marsh character area beyond these transition zones often offer sweeping views across the bay areas. Often these views are interrupted by the barrier island development associated with Atlantic City, Beach Haven Crest, and Margate City in the middle ground or background. The Salt Marsh character area may have views beyond the barrier islands and occasionally out into the ocean. This character area has a distinct visual quality with high susceptibility to visual change due to the intactness of the existing landscape/seascape and lack of discordant elements.

Summary of Impact: 52 percent of the character area falls within the affected viewshed. Although views from the Salt Marsh character area are often visually disconnected from the ocean by the presence of the barrier islands, approximately 1,087 acres is within 10 miles (16 kilometers) of the proposed Project. This includes the large salt marshes in the Galloway Township and Brigantine. A considerably larger portion of Salt Marsh character area (41,000 acres or 64 square miles [166 square kilometers]) falls within 10–20 miles (16–32 kilometers) of the Project area. This represents 57 percent of the total Salt Marsh character area within the viewshed. KOP-LEHT02 the Bay Boulevard Rutgers Field Station provides an example of potential visibility and represents one of the most open, unobstructed views from within this character area. The presence of the WTGs, OSSs, and met tower is incongruous with the Salt Marsh character area and, during periods of high atmospheric clarity, would significantly change the horizon and sense of place from within the character area.

Town/Village Center

The town/village center character area includes well-defined areas that occur in small pockets on the barrier islands and larger villages on the mainland. This area is characterized by moderate- to high-density residential and commercial development occurring along a main street or cluster of mixed-use blocks. This human-scale development features ample street trees, detailed streetscape treatments, massed commercial properties featuring vibrant window displays, and public amenities such as benches, water features, and public art. Examples of this character area include town centers within Sea Isle City, Margate City, Ventnor City, and Brigantine. In popular beach towns, tightly spaced commercial buildings cater to seasonal visitors and are the dominant feature within the character area, giving the community a distinct seascape sense of place. During the summer months, these areas can become crowded with tourists, as the commercial offerings typical of this character area draw tourists and vacationers from nearby beaches and neighborhoods. Mainland examples of Town/Village Center character area do not typically occur within the viewshed; therefore, this character is placed within

seascape character type for this analysis. From the seascape, the COP VIA rated Town/Village Center character areas as locally valued with above average visual quality with views of the ocean and seascape, but human development and landscape modification is apparent and expected and may be a contributor of scenic quality when viewed from within other character areas.

Summary of Impact: 0.3 percent of the Town/Village Center character area could have visibility of the WTGs and OSS on days with clear atmospheric conditions over the ocean. Although Town/Village Center character area on the barrier islands may not have direct views of the ocean, the sense of place in these areas is intrinsically tied to the seascape and the turbines are inconsistent with the overall scale and identity of the barrier island landscape. Town/Village Center character areas found on the mainland are not anticipated to experience significant change due to screening effects from shoreline topography, development, and the diminished experiential connection to the seascape.

Undeveloped Bay

The Undeveloped Bay character area includes the expansive bodies of water west of the barrier islands and is characterized by an expanse of open water bordered by the Salt Marsh, Dredged Lagoon, Bayfront Residential, and Forest character areas. The Undeveloped Bay character area flows through protected ecological areas such as the Absecon Wildlife Management Area (WMA), Cape May NWR, Edwin B. Forsythe NWR, Manahawkin WMA, and Great Bay WMA. Views are framed by developed barrier islands, and natural landforms with visible human-made infrastructure. Views to the Ocean character area are generally interrupted by development, sand dunes, or vegetation on the barrier islands. This character area has a distinct visual quality where human development is apparent but has high susceptibility to visual change due the intactness of the existing landscape/seascape and lack of discordant elements.

Summary of Impact: 74 percent of the Undeveloped Bay character area is within the viewshed zone of potential influence. Although most of this zone is distinct from the ocean and rarely contains ocean views, occurring behind the barrier islands, the turbines extend well above the barrier islands and could become a distinct and highly visible component of the seascape during periods of high atmospheric clarity. The vertical element of the turbines would disrupt the horizon and conflict with the overall open character of Undeveloped Bay. A small area, 570 acres or less than 1 square mile (2.3 square kilometers) is within 10 miles (16 kilometers) of the Lease Area. Much of the character area within the viewshed, 53 percent or 53,000 acres (83 square miles [214 square kilometers]) is within 10–20 miles (16–32 kilometers) of the Project area.

Undeveloped Beach

The undeveloped beach character area is characterized by shoreline areas with minimal development and includes rolling, vegetated dunes which lead to an open sandy beach that slopes gently to the water line. In some instances, human-made features such as break walls, or stone jetties extend from the beach out into the ocean, but the remainder of the landscape generally lacks evidence of development. The undeveloped beaches within the zone of visual influence are located on both barrier islands and islands within the back bays. Undeveloped beaches include Island Beach State Park on Barnegat

Peninsula, portions of the Edwin B. Forsythe NWR such as Holgate Nature Conservatory and Short Island (also known as Pullen Island), North Brigantine State Natural Area, Corson's Inlet State Park, Stone Harbor Point, Cape May NWR, and Malibu Beach WMA. The defining characteristic of this character area is an unobstructed, water-level view up and down the shoreline and across open water as one looks out to sea, with minimal to no encroachment of human-made structures or infrastructure in the foreground view. The Undeveloped Beach character area provides opportunities for uninterrupted views of the Ocean character area backed by vegetated dunes which minimize the opportunity for inland views. These views over the Ocean character area include 180 degrees or more of uninterrupted ocean, generally extending to the horizon, and are a defining characteristic of the Undeveloped Beach. Most users of this character area consider the Ocean the character-defining element of the beach and the focus of their activities typically relies on the presence of the ocean and ocean views. This character area has a distinct visual quality where human development is apparent and expected but has high susceptibility to visual change due to the intactness of the existing landscape/seascape and lack of discordant elements.

Summary of impact: 38.5 percent of Undeveloped Beach is within the viewshed zone of potential influence and the majority of this is within 10 miles (16 kilometers) of the Project. This character area contains some of the closest land-based views of the Project as illustrated in photosimulations from KOP BC02 North Brigantine Natural Area, KOP-OC01 Corson's Inlet State Park, and KOP-LBT04 Edwin B. Forsythe NWR. The ocean is a significant contributor to the visual character and sense of place and the presence of WTGs and OSS changes the undeveloped character of the ocean horizon by adding large, manmade infrastructure which would be visible from shore during most days.

Landscape Character Area Descriptions and Summary of Effects

Agriculture

The agriculture character area is primarily found inland and characterized by flat stretches of field that provide open views of crops, hedgerows, livestock, farm buildings, equipment, and homes. Crops include blueberries, corn, and a variety of vegetables. Orchards and equestrian facilities are also common. Locations of this character area within the zone of visual influence include small areas within Galloway Township and Hamilton Township. This character area has minimal visual quality and can tolerate substantial visual change. Views of the ocean and seascape are typically screened by vegetation or influenced by development and heavy landscape modification. These areas are viewed by farmers and farm staff working the land, families who inhabit adjacent residences, and drivers and passengers traveling on roads that cross through this character area. The Agriculture character area is most commonly adjacent to the Inland Residential and Forest character areas, which frame or limit outward views depending on their spatial relationship.

Summary of Impact: Less than 1 percent of the Agriculture character area is within the zone of potential visual influence. Although the Project is not characteristically similar to agricultural areas, this character area is inland with greatly limited influence from the turbines.

Bayfront Residential

This character area occurs in conjunction with naturally occurring bays, rivers, and coves. It is characterized by seasonal and year-round residences which are situated along the waterfront. The character area is often bordered by an adjacent Salt Marsh character area, or the waterfront at the edge of the neighborhood and is commonly found on the northwest side of the barrier islands. The Bayfront Residential character area frequently appears as suburban residential development from the street. Glimpses of bays or rivers may be available between densely situated homes. This character area is visually separated from the Ocean by the barrier islands and oceanfront development becomes a significant feature in the views from the Bayfront Residential character area. These views are typical from within the Bayfront Residential character area along the western shore of Absecon Bay, Reeds Bay, and Lakes Bay. However, where the shoreline is not dominated by development (west of Little Egg Harbor and north of Great Bay), extensive outward views across the bays or rivers can be available from within this character area and often extend over the Undeveloped Bay and occasionally beyond the barrier island dunes to the Ocean. The COP VIA rated Bayfront Residential character areas as locally valued with above average visual quality, but human development and landscape modification is apparent and expected and may be a contributor of scenic quality when viewed from within other character areas.

Summary of Impact: 6.1 percent of the Bayfront Residential character area is within the zone of potential visual influence. Approximately 4 acres occurs on the bay side of Brigantine and Chelsea Heights west of Atlantic City. In these areas, the Project will be sporadically noticeable and typically framed by intensely developed land. The ocean is typically not visible from these areas and the main character-defining features are the views over the bays, which are typically looking away from the Project. Generally, the Project is not anticipated to significantly alter the character of the Bayfront Residential areas.

Commercial Strip Development

The commercial strip development character area typically includes strip commercial development located along wide boulevards, around the edges of village centers, and sporadically throughout the geographic analysis area. The visual character of this character area is generally defined by modern, unadorned strip or stand-alone building stock, onsite parking, and circulation patterns favoring vehicular modes of transportation. Vegetation is limited to landscaped grounds, sparse street tree plantings, and narrow grassy medians and tree plantings within and adjacent to paved areas. Properties within this zone typically include retail businesses, restaurants, convenience stores, automobile dealers, shopping centers, malls, and office buildings. Outdoor commercial uses such as marinas and amusement parks may also be categorized within this character area.

Summary of Impact: 1.5 percent of the Commercial Strip Development character area is within the zone of potential visual influence. In these areas, the Project will be sporadically noticeable and typically framed by intensely developed land. The ocean is not typically visible or the main character-defining features of Commercial Strip Development areas and therefore the Project is not anticipated to affect character.

Forest

The forest character area contains tracts of forestland that occur sporadically throughout the region. Within this character area two primary forest types are represented: the New Jersey Pine Barrens (including the Atlantic Coastal pine barrens ecosystem) and the coastal scrub (maritime) forests, which typically occur in association with salt marshes and provide a transition into the pine barrens. Due to environmental protections or lack of development suitability, these forest areas typically occur between inland residential areas and bay areas. Large tracts of forestland with public access points typically include maintained recreation areas, such as state parks or nature preserves such as Island Beach State Park in Seaside Park. The maritime forest is characterized by dense woody and herbaceous vegetation, typically less than 20 feet (6 meters) in height, providing a transition between bayfront salt marshes and taller inland forests. Long-distance views within the forest character area are generally partially to fully screened by the forest overstory. When present, outward views typically occur on the periphery of the forest character area. The COP VIA rated Forest character areas as locally valued with above average visual quality and a contributor of scenic quality to other character areas.

Summary of Impact: Less than 0.3 percent of the Forest character area is within the zone of potential visual influence. Although the Project is not characteristically similar to natural forested areas, this character area is inland with sporadic views of the turbines. When the Project is viewed in context with the Forest character area, it is expected that the foreground features will be dominant.

Industrial/Developed

The industrial/developed character area includes developed landscapes defined by a variety of utilitarian functions, which are visually linked by a stark, severe aesthetic. Elements commonly found in this zone include expansive open areas, pavement, utility structures and buildings, screening or security fencing, machinery, equipment, and raw materials. Land uses include airports, military grounds, mines, power stations, industrial parks, warehouses, self-storage facilities, municipal maintenance lots, and transit stations. On the barrier islands, this character area is present on very small sites on the bay side of the islands in the form of power stations, maintenance lots, parking areas, and small airports. Views from this character area can be extensive when the sites are large, open, and adjacent to the Salt Marsh or Undeveloped Bay character area. However, on the barrier islands it is more typical for Industrial/Developed areas to be small, fenced, and adjacent to densely developed areas. The USCG Training Center on Cape May is the only instance of a site with views of the ocean. Industrial/Developed sites are typically screened by forest, except in cases when they are adjacent to commerce as a component of a regional commercial center. In general, the sense of place is stark, utilitarian, and focused on the purpose of the place.

Summary of Impact: 6.8 percent of Industrial/Developed character area is within the zone of potential visual influence. These areas are generally surrounded by areas of intensive land use or are in locations that lack significant visual character. Although minimal visibility does occur in this character area the Project will not change the character of the Industrial/Developed environment.

Inland Open Water

The Inland Open Water character area is an open expanse of flat water that is enclosed by a vegetated shoreline. The shorelines are typically dominated by deciduous and coniferous trees but are occasionally interrupted by human-made features, such as homes, boat launches, bridges, and roads. Human activity on these waterbodies and along the shoreline includes boating, kayaking, fishing, and swimming. Shoreline trees define the visible background in most views from inland lakes and ponds. Several waterbodies associated with active or reclaimed extraction mines are also included within this character area. Given their inland locations and extensive vegetative screening, views of the ocean from this character area are rare. This character area has minimal visual quality and can tolerate substantial visual change.

Summary of Impact: 2.6 percent of the Inland Open Water character area could have visibility of the project. Inland Open Water features contribute to scenic quality of the surrounding landscape when visible. However, the ocean is not a significant feature of these inland river basins, ponds, or lakes. The Inland Open Water features themselves are the defining characteristic and focus of interest in this character area and the Project is unlikely to detract from their quality or sense of place.

Inland Residential

The Inland Residential character area includes residential development located inland of the oceanfront and bayfront areas. This area is characterized by low-, medium-, and high-density residential neighborhoods. Development patterns in this character area include quaint walkable neighborhoods with sidewalks along streets which typically run perpendicular to the ocean or bays. This character area also includes sprawling suburban subdivisions which primarily occur within the mainland, where the presence of the ocean and bays becomes less apparent. The COP VIA rated Inland Residential character areas as locally valued with above average visual quality, but human development and landscape modification is apparent and expected and may be a contributor of scenic quality when viewed from within other character areas.

Summary of Impact: 24.8 percent of the Inland Residential character area could have visibility of the WTGs, OSSs, and met tower on days with clear atmospheric conditions over the ocean. This area is mainly concentrated in Brigantine where narrow bands of visibility extend inland along residential streets that are aligned with some portions of the Project. Although Inland Residential character area on the barrier islands may not have direct views of the ocean, the sense of place in these residential areas is intrinsically tied to the seascape and the turbines are inconsistent with the overall scale and identity of the barrier island landscape. Inland Residential character areas found on the mainland are not anticipated to experience significant change due to screening effects from shoreline topography, development, and the diminished experiential connection to the seascape.

Limited Access Highway

The Limited Access Highway character area includes primary, high-volume vehicular travel corridors dominated by automobiles, pavement, guardrails, and signs. This area is represented by fragments of

State Route 444/Garden State Parkway and the Atlantic City Expressway. Views from within this character area are generally focused on the roadway and associated traffic. Travel is at moderate to high speed, and outward peripheral views are fleeting. The surrounding scenery is variable but dominated by buildings, other structures, and trees, with limited elevated long-distance views. This character area has views of the bays and marshes, along with long-distance views in the direction of the ocean. This character area has minimal visual quality and can tolerate substantial visual change.

Summary of Impact: 3.6 percent of the Limited Access Highway character area is within the Project viewshed. The highway character is highly variable based on the adjacent character areas through which it runs which can result in highly variable scenic quality and defining features. However, this character area includes areas of intensive development, and it is unlikely the Project will detract from the features characterizing Limited Access Highway.

H.3.1.2 Onshore Landscape Character Types

Landscape character areas and acreages in the onshore Cardiff substation area are listed in Table H-3.

Table H-3. Area of landscape character types within the onshore Cardiff Project area viewshed

Character Area	Square Miles (Square Kilometers) of Landscape Character Area	Square Miles (Square Kilometers) Within the Zone of Potential Visual Influence	Percentage of Character Area in the Zone of Potential Visual Influence
Commercial	2.628 (6.806)	0.065 (0.168)	2.49
Forest	9.891 (25.617)	0.025 0.065)	0.25
High Density Residential	1.017 (2.634)	0.025(0.064)	2.43
Industrial	2.103 (5.049	0.020 (0.051)	0.97
Inland Bay	1.497 (3.877)	0.000 (0.000)	0.06
Inland Water	0.232 (0.602)	<0.001 (0.002)	<0.01
Low Density Residential	1.018 (2.638)	0.001 (0.003)	0.06
Medium Density Residential	7.732 (20.028)	0.004 (0.011)	0.97
Recreation	0.720 (1.865)	0.002 (0.004)	1.86
Salt Marsh	3.224 (8.351)	0.000 (0.000)	0.00
Transportation	0.556 (1.441)	0.010 (0.027)	0.3

Source: COP Appendix II-M1, Table 1.2-2; Atlantic Shores 2024.

Landscape character areas and acreages in the onshore Larrabee Brook Road substation and/or converter station area are listed in Table H-4.

Table H-4. Areas of landscape character types within the onshore Larrabee Brook Road Project area viewshed

Character Area	Square Miles (Square Kilometers) of Landscape Character Area	Square Miles (Square Kilometers) Within the Zone of Potential Visual Influence	Percentage of Character Area in the Zone of Potential Visual Influence
Agriculture	1.560 (4.041)	0.032 (0.084)	2.07
Commercial	2.505 (6.487)	0.004 (0.011)	0.16

Character Area	Square Miles (Square Kilometers) of Landscape Character Area	Square Miles (Square Kilometers) Within the Zone of Potential Visual Influence	Percentage of Character Area in the Zone of Potential Visual Influence
Forest	14.379 (37.243)	0.227 (0.587)	1.58
High Density Residential	2.081 (5.089)	0.001 (0.001)	0.03
Industrial	1.971 (5.104)	0.077 (0.199)	3.91
Inland Water	0.366 (0.949)	0.001 (0.001)	0.13
Low Density Residential	3.251 (8.419)	0.028 (0.073)	0.86
Medium Density Residential	9.426 (24.413)	0.003 (0.008)	0.03
Recreation	1.337 (4.463)	0.005 0.013)	0.37
Transportation	0.377 (0.977)	0.000 (0.000)	0.00

Source: COP, Appendix II-M1, Table 1.2-2; Atlantic Shores 2024.

Landscape character areas and acreages in the onshore Larrabee Randolph Road substation and/or converter station area are listed in Table H-5.

Table H-5. Areas of landscape character types within the onshore Larrabee Randolph Road Project area viewshed

Character Area	Square Miles (Square Kilometers) of Landscape Character Area	Square Miles (Square Kilometers) Within the Zone of Potential Visual Influence	Percentage of Character Area in the Zone of Potential Visual Influence
Agriculture	1.560 (4.041)	0.004 (0.013)	0.31
Commercial	2.505 (6.487)	0.000 (0.000)	0.00
Forest	14.379 (37.243)	0.035 (0.091)	0.25
High Density Residential	2.081 (5.089)	0.001 (0.003)	0.05
Industrial	1.971 (5.104)	0.67 (0.174)	3.41
Inland Water	0.366 (0.949)	<0.001 (<0.001)	0.02
Low Density Residential	3.251 (8.419)	0.006 (0.015)	0.18
Medium Density Residential	9.426 (24.413)	<0.001 (<0.001)	<0.01
Recreation	1.337 (4.463)	0.001 (0.003)	0.09
Transportation	0.377 (0.977)	0.000 (0.000)	0.00

Source: COP Appendix II-M1, Table 1.2-2; Atlantic Shores 2024.

Landscape character areas and acreages in the onshore Larrabee Lanes Pond Road substation and/or converter station area are listed in Table H-6.

Table H-6. Areas of landscape character types within the onshore Larrabee Lanes Pond Road Project area viewshed

Character Area	Square Miles (Square Kilometers) Of Landscape Character Area	Square Miles (Square Kilometers) Within the Zone of Potential Visual Influence	Percentage of Character Area in the Zone of Potential Visual Influence
Agriculture	1.560 (4.041)	0.019 (0.048)	1.19
Commercial	2.505 (6.487)	0.000 (0.000)	0.00

Character Area	Square Miles (Square Kilometers) Of Landscape Character Area	Square Miles (Square Kilometers) Within the Zone of Potential Visual Influence	Percentage of Character Area in the Zone of Potential Visual Influence
Forest	14.379 (37.243)	0.020 (0.052)	0.14
High Density Residential	2.081 (5.089)	<0.001 (<0.001)	<0.01
Industrial	1.971 (5.104)	<0.001 <0.001)	0.54
Inland Water	0.366 (0.949)	<0.001 <0.001)	0.26
Low Density Residential	3.251 (8.419)	0.028 (0.072)	0.85
Medium Density Residential	9.426 (24.413)	0.001 (0.001)	0.01
Recreation	1.337 (4.463)	<0.001 (<0.001)	<0.01
Transportation	0.377 (0.977)	0.000 (0.000)	0.00

Source: COP, Appendix II-M1, Table 1.2-2; Atlantic Shores 2024.

Landscape character areas and acreages in the onshore O&M facility area are listed in Table H-7.

Table H-7. Areas of seascape and landscape character types within the onshore O&M Facility Project area viewshed

Regional Landscape and Character Area	Acres (Hectares) of Open Ocean, Seascape, and Landscape Character Area	Acres (Hectares) Within the Zone of Potential Visual Influence	Percentage of Character Area[1,2] in the Zone of Potential Visual Influence
Open Ocean Character Area			
Open Ocean	5,358.5 (2,168.5)	2,131.4 [862.5]	33.3
Seascape Character Areas			
Atlantic City	2,012.2 (814.3)	207.2 [83.9]	3.2
Commercial Beachfront	272.0 (110.1)	0.6 [0.2]	<0.1
Dredged Lagoon	64.6 (26.1)	0.3 [0.1]	<0.1
Recreation	48.2 (19.5)	5.9 [2.4]	0.1
Residential Beachfront	564.5 (228.4)	82.8 [335.1]	1.3
Salt Marsh	4,906.5 (1,985.6)	2,010.2 [813.5]	31.4
Town/Village Center	2.8 (1.1)	Not visible	Not visible
Undeveloped Bay	4,215.3 (1,705.9)	1,869.5 [756.5]	29.2
Undeveloped Beach	31.8 (12.9)	14.8 [6.0]	0.2
Landscape Character Areas			
Bayfront Residential	81.7 (33.1)	3.1 [1.3]	3.8
Commercial Strip Development	170.3 (68.9)	6.2 [2.5]	0.1
Forest	4.6 (1.9)	0.7 [0.3]	<0.1
Industrial Developed	198.3 (80.3)	63.8 [25.8]	1.0
Inland Open Water	8.4 (3.4)	0.1 [0.0]	<0.1
Inland Residential	838.0 (339.1)	8.4 [3.4]	0.1
Limited Access Highway	37.7 (15.3)	4.1 [1.7]	0.1

Source: COP, Appendix II-M2, Table 1.2-1; Atlantic Shores 2024.

[1] Area measurements in Chapter 3, Table 3.6.9-4 are in square miles and square kilometers.

[2] The visual study area is approximately 18,815.3 acres (7,614.3 hectares, 29.5 square miles) and the Zone of Potential Visual Influence (ZFI) is 6,409.6 acres (2,593.9 hectares). The percentage of character area is a fraction of the entire ZFI.

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

Designated KOP distances to the Proposed Action WTG and OSS array would range from:

- 38.9 miles (62.6 kilometers) from KOP-SPB01 Seaside Park Beach near the northern extent of the geographic analysis area;
- 9.0 miles (14.5 kilometers) from KOP-BC02 North Brigantine Natural Area, the closest KOP to the WTG array; and
- 45 miles (72.4 kilometers) from KOP-LT02 Cape May Point State Park Lighthouse at the southern extent of the geographic analysis area.

The noticeable daytime and nighttime elements of the Project's WTGs and OSSs and their viewshed distances are listed in Table H-8. Line-of-sight calculations for onshore viewers (5.9-foot [1.8-meter] eye level) are based on intervening EC screening (7.98-inch [20.3-centimeter] height per mile). Heights of WTG and substation components are stated relative to mean sea level.

Each WTG would have two L-864 flashing red obstruction lights at the top of the nacelle, both of which must be lit at the same time due to the presence of WTGs within 12 nautical miles (22 kilometers) of shore. WTGs would have additional intermediate lighting on the tower utilizing low-intensity red flashing (L-810) obstruction lighting (see Section 2.1.1.2, *Offshore Activities and Facilities,* in the Final EIS).

Tables H-9 and H-10 indicate the Proposed Action's effects based on horizontal 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 Appendix D to COP Appendix II-M1 (Atlantic Shores 2024). FOVs are valid and reliable indicators of the magnitude of view occupation by Proposed Action facilities.

Table H-8. Heights of noticeable[1] WTG elements, met tower, and OSS, and visible distances[2]

Noticeable Element	Height in Feet (Meters)	Visible Distance[2] in Miles (Kilometers)
Rotor Blade Tip	1,046.6 (319) AMSL	0–42.5 (68.4)
Aviation Light	595 (181.3) AMSL	0–32.6 (53.5)
Met Tower	590.6 (180) AMSL	0-32.5 (52.3)
Nacelle	585 (178.3) AMSL	0–32.4 (52.1)
Hub	574.2 (175) AMSL	0–32.1 (51.7)
Mid-tower Light	287 (87.5) AMSL	0–23.5 (37.8)
OSS	175.8-207.6 (53.5-63.3) MLLW	0–23.8 (38.3)
Yellow Tower Base/USCG navigation lights	50 (15.2) AMSL	0–11.4 (18.3)

[1] Perception of Project elements, from 5.9 feet (1.8 meters) 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.
[2] Based on intervening EC and clear-day conditions.
AMSL = above mean sea level, MLLW = man lower low water

Table H-9. Horizontal FOV occupied by the Proposed Action

Noticeable Element	Width[1] Miles (Kilometers)	Distance[2] Miles (Kilometers)	Horizontal FOV	Human FOV	Percent of FOV
WTA	15.0 (24.1)	8.7 (14.0)	59.7°	124°	48%

[1] Maximum extent of the WTA array.
[2] Nearest onshore distance to the WTA array.

Table H-10. Vertical FOV occupied by the Proposed Action

Noticeable Element	Height Feet (Meters)	Distance Miles (Kilometers)	Height Above Horizon[1] Feet (Meters)	Vertical FOV	Human FOV	Percent of FOV
Rotor Blade Tip	1,046.6 (391) AMSL	8.7 (14.0)	1,022.1 (311.5)	1.4°	55°	2.5%

[1] Based on intervening EC, clear-day, and clear-night conditions.
AMSL = above mean sea level

Table H-11 lists the WTA's distances, horizontal FOVs, noticeable features based on their heights and EC, and visual contrasts. The analysis considers the introduction of WTGs, met tower, and OSS to an open ocean baseline. The scale, size, contrast, and prominence of change focuses on the:

- Arrangement of WTGs, met tower, and OSS in the view;
- Horizontal and vertical FOV scale of the WTA array, based on WTG, met tower, and OSS size and number;
- Position of the array in the open ocean;
- Position of the array in the view; and
- 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 positions in comparison with the WTA. Distance and observer elevation considerations are informed by the COP VIA simulations (COP, Attachment E to Appendix II-M1; Atlantic Shores 2024), EC calculations, horizontal FOV, and vertical FOV in undeveloped open ocean. Under the most favorable viewing conditions, the WTA and nearest WTGs would be:

- Unavoidably dominant features in the boat and ship ocean view between 0 and 5 miles (0 and 8 kilometers) distance;
- Strongly pervasive features in the onshore to offshore view between 5 and 12 miles (8 and 19.3 kilometers) distance;

- Clearly visible features in the onshore to offshore view between 12 and 28 miles (19.3 and 45.1 kilometers) distance;
- Low on the horizon, but persistent features in the onshore to offshore view between 28 and 31 miles (45.1 and 49.9 kilometers) distance;
- Intermittently noticed features in the onshore to offshore view between 31 and 42.5 miles (49.9 and 68.4 kilometers) distance; and
- Below the horizon beyond 42.5 miles (68.4 kilometers) distance (except for viewpoints like Cape May Lighthouse, which has visibility at a greater distance due to the elevated viewing position).

Visual contrast determinations involve comparisons of characteristics of the open ocean, seascape, 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 sunlit 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 aviation 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.

Construction and installation involving moving and stationary visual feature contrasts to forms, lines, colors, and textures, scale, and prominence in formerly open seascape may have more effect on viewers than operational and decommissioning impacts, where the viewing context is existing WTGs and OSSs. Construction impacts would be temporary and include:

- 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 and installation lighting on WTGs and OSSs;
- Beach, other sensitive land-based, and boat and cruise ship views of WTGs and OSSs under construction and installation;
- Laying of the offshore and onshore buried export cables and the connections between offshore and onshore export cables at high-sensitivity Island Beach State Park and Ocean City beach landing sites; and

- Activities along the onshore landfalls, export cable routes, and Cardiff and Larrabee onshore substations and/or converter stations.

Table H-11. WTA distances, FOVs, noticeable elements, visual contrasts, scale of change, and prominence

KOP[1]	Distance in Miles (Kilometers)					Proposed Action FOV Degrees (% of 124°)	Noticeable Elements[2] and Impact Level	Contrast, Scale of Change, and Prominence							
	Proposed Action	Alternatives C1, C2, C3	Alternative D1	Alternative D2	Alternative D3			Proposed Action Form	Proposed Action Line	Proposed Action Color	Proposed Action Texture	Proposed Action Scale	Proposed Action Prominence[3]	Alternatives D1, D2, D3	Alternatives C1, C2, C3, E
KOP-AC02	11.4 (18.3)	11.4 (18.3)	13.6 (21.9)	14.2 (22.9)	11.4 (18.3)	43° (35%)	R, AL, N, H, M, O, Y **Major**	Strong	Strong	Strong	Moderate	Large	6	Same as Proposed Action	Same as Proposed Action
KOP-AC03 (Day)[4]	10.5 (16.9)	10.5 (16.9)	12.7 (20.4)	13.3 (21.4)	10.6 (17.1)	52.3° (42%)	R, AL, N, H, M, O, Y **Major**	Strong	Strong	Strong	Moderate	Large	6	Same as Proposed Action	Same as Proposed Action
KOP-AC03 (Night)[4]	10.5 (16.9)	10.5 (16.9)	12.7 (20.4)	13.3 (21.4)	10.6 (17.1)	52.3° (42%)	R, AL, N, H, M, O (ADLS) **Minor**	Weak	Weak	Weak	Weak	Small	3	Same as Proposed Action	Same as Proposed Action
KOP- AC04 (Day)[4]	10.5 (16.9)	10.5 (16.9)	12.7 (20.4)	13.3 (21.4)	10.6 (17.1)	52.3° (42%)	R, AL, N, H, M, O, Y **Major**	Strong	Strong	Strong	Moderate	Large	6	Same as Proposed Action	Same as Proposed Action
KOP-AC04 (Night)[4]	10.5 (16.9)	10.5 (16.9)	12.7 (20.4)	13.3 (21.4)	10.6 (17.1)	52.3° (42%)	R, AL, N, H, M, O (ADLS) **Minor**	Weak	Weak	Weak	Weak	Small	3	Same as Proposed Action	Same as Proposed Action
KOP- BC02	9.0 (14.5)	9.0 (14.5)	14.1 (22.7)	12.8 (20.6)	10.9 (17.5)	54.2° (44%)	R, AL, N, H, M, O, Y **Major**	Strong	Strong	Strong	Moderate	Large	6	Same as Proposed Action	Same as Proposed Action
KOP- BHB01 (Day)	13.5 (21.7)	13.5 (21.7)	15.1 (24.3)	15.4 (24.8)	14.9 (24.0)	50.9° (41%)	R, AL, N, H, M, O **Major**	Strong	Moderate	Strong	Moderate	Large	6	Same as Proposed Action	Same as Proposed Action
KOP- BHB01 (Night)	13.5 (21.7)	13.5 (21.7)	15.1 (24.3)	15.4 (24.8)	14.9 (24.0)	50.9° (41%)	AL (ADLS) **Negligible**	Weak	Weak	Weak	Weak	Small	2	Same as Proposed Action	Same as Proposed Action
KOP-BHB02	13.5 (21.7)	13.5 (21.7)	15.0 (24.1)	15.4 (24.8)	14.8 (23.9)	44.5° (36%)	R, AL, N, H, M, O **Major**	Strong	Moderate	Strong	Moderate	Large	6	Same as Proposed Action	Same as Proposed Action
KOP-BHB03	13.0 (20.9)	13.0 (20.9)	14.7 (23.7)	15.1 (24.3)	14.3 (23.1)	45.4° (37%)	R, AL, N, H, M, O **Major**	Strong	Moderate	Strong	Moderate	Large	6	Same as Proposed Action	Same as Proposed Action
KOP-BLB02	27.3 (44.0)	27.3 (44.0)	27.3 (44.0)	27.3 (44.0)	27.3 (44.0)	28.6° (23%)	R, AL, N, H **Moderate**	Moderate	Moderate	Moderate	Moderate	Medium	4	Same as Proposed Action	Same as Proposed Action
KOP- BRT01	18.5 (29.8)	18.5 (29.8)	21.2 (34.1)	22.1 (35.6)	20.4 (32.8)	34° (27%)	R, AL, N, H, M, O **Major**	Weak	Weak	Weak	Weak	Minor	2	Same as Proposed Action	Same as Proposed Action
KOP-BT01	30.3 (48.7)	30.3 (48.7)	30.3 (48.7)	30.3 (48.7)	30.3 (48.7)	26.1° (21%)	R, AL, N, H **Moderate**	Moderate	Weak	Moderate	Weak	Medium	3	Same as Proposed Action	Same as Proposed Action
KOP-EMC01	25.7 (41.4)	25.7 (41.4)	27.9 (44.9)	28.5 (45.9)	25.7 (41.4)	26° (21%)	R, AL, N, H **Moderate**	Weak	Weak	Weak	Weak	Minor	2	Same as Proposed Action	Same as Proposed Action
KOP-GT01	14.3 (23.1)	14.3 (23.1)	17.2 (27.7)	17.9 (28.8)	16.1 (25.9)	43.6° (35%)	R, AL, N, H, M, O **Major**	Strong	Moderate	Strong	Moderate	Large	6	Same as Proposed Action	Same as Proposed Action
KOP-LAT01 (Day)	32.2 (51.8)	32.2 (51.8)	32.2 (51.8)	32.2 (51.8)	32.2 (51.8)	43° (34%)	R, AL, N **Moderate**	Weak	Weak	Moderate	Weak	Medium	3	Same as Proposed Action	Same as Proposed Action
KOP-LAT01 (Night)	32.2 (51.8)	32.2 (51.8)	32.2 (51.8)	32.2 (51.8)	32.2 (51.8)	43° (34%)	AL (ADLS) **Negligible**	Weak	Weak	Weak	Weak	Small	3	Same as Proposed Action	Same as Proposed Action
KOP- LBT03	24.9 (40.1)	24.9 (40.1)	25.0 (40.2)	25.0 (40.2)	25.0 (40.2)	33.7° (27%)	R, AL, N, H **Moderate**	Moderate	Moderate	Moderate	Moderate	Medium	4	Same as Proposed Action	Same as Proposed Action
KOP-LBT04	11.8 (19.1)	11.8 (19.1)	13.9 (22.4)	15.1 (24.3)	13.4 (21.6)	46.6° (37%)	R, AL, N, H, M, O **Major**	Strong	Strong	Strong	Moderate	Large	6	Same as Proposed Action	Same as Proposed Action
KOP-LEHT02	11.9 (19.2)	11.9 (19.2)	14.6 (23.5)	15.2 (24.5)	13.8 (22.2)	46.4° (37%)	R, AL, N, H, M, O **Major**	Strong	Strong	Strong	Moderate	Large	6	Same as Proposed Action	Same as Proposed Action
KOP- LT02[4]	45.0 (72.4)	45.0 (72.4)	45.0 (72.4)	45.6 (72.6)	45.0 (72.4)	18° (14%)	R, AL, N, H **Minor**	Weak	Weak	Weak	Weak	Minor	2	Same as Proposed Action	Same as Proposed Action
KOP- MC02	14.4 (23.2)	14.4 (23.2)	16.6 (26.7)	17.3 (27.8)	16.6 (26.7)	43.4° (35%)	R, AL, N, H, M, O **Major**	Strong	Moderate	Strong	Moderate	Large	6	Same as Proposed Action	Same as Proposed Action

KOP[1]	Distance in Miles (Kilometers)					Proposed Action FOV Degrees (% of 124°)	Noticeable Elements[2] and Impact Level	Contrast, Scale of Change, and Prominence							
	Proposed Action	Alternatives C1, C2, C3	Alternative D1	Alternative D2	Alternative D3			Proposed Action Form	Proposed Action Line	Proposed Action Color	Proposed Action Texture	Proposed Action Scale	Proposed Action Prominence[3]	Alternatives D1, D2, D3	Alternatives C1, C2, C3, E
KOP-MC03	13.8 (22.2)	13.8 (22.2)	16.1 (25.9)	16.8 (27.0)	16.1 (25.9)	44.4° (35%)	R, AL, N, H, M, O **Major**	Strong	Moderate	Strong	Moderate	Large	6	Same as Proposed Action	Same as Proposed Action
KOP-OC01	21.7 (35.0)	21.7 (35.0)	23.6 (38.0)	24.2 (38.9)	23.6 (38.0)	33.7° (27%)	R, AL, N, H, M **Moderate**	Moderate	Weak	Moderate	Weak	Medium	4	Same as Proposed Action	Same as Proposed Action
KOP- OC04	17.2 (27.7)	17.2 (27.7)	19.3 (31.1)	19.9 (32.0)	17.2 (27.7)	50° (40%)	R, AL, N, H, M **Moderate**	Moderate	Weak	Moderate	Weak	Medium	4	Same as Proposed Action	Same as Proposed Action
KOP- OO1	0–42.5 (68.4)	0–42.5 (68.4)	0–42.5 (68.4)	0–42.5 (68.4)	0–42.5 (68.4)	124° (100%) to 21° (17%)	R, AL, N, H, M, O, Y **Major**	Strong	Strong	Strong	Strong	Large	6	Same as Proposed Action	Same as Proposed Action
KOP- OO2	0–42.5 (68.4)	0–42.5 (68.4)	0–42.5 (68.4)	0–42.5 (68.4)	0–42.5 (68.4)	58° (47%) to 21° (17%)	R, AL, N, H, O, M, Y **Major**	Strong	Strong	Strong	Strong	Large	6	Same as Proposed Action	Same as Proposed Action
KOP-SBB01	19.4 (31.1)	19.4 (31.1)	20.2 (32.5)	20.2 (32.5)	20.2 (32.5)	21° (17%)	R, AL, N, H, M, O **Moderate**	Moderate	Weak	Moderate	Weak	Medium	4	Same as Proposed Action	Same as Proposed Action
KOP- SIC02	27.3 (43.9)	27.3 (43.9)	28.2 (45.4)	28.8 (46.3)	28.2 (45.4)	43.6° (35%)	R, AL, N, H **Moderate**	Moderate	Weak	Moderate	Weak	Medium	4	Same as Proposed Action	Same as Proposed Action
KOP- SPB01	39.0 (62.8)	39.0 (62.8)	39.0 (54.6)	39.0 (56.6)	39.0 (56.6)	23.1° (19%)	R **Minor**	Weak	Weak	Weak	Weak	Small	2	Same as Proposed Action	Same as Proposed Action
KOP-C8	<0.1 (<0.1)	NA	NA	NA	NA	NA	Structures **Major**	Strong	Strong	Strong	Strong	Large	6	Same as Proposed Action	Same as Proposed Action
KOP-C17	0.1 (0.3)	NA	NA	NA	NA	NA	Structures **Negligible**	Weak	Weak	Weak	Weak	Large	1	Same as Proposed Action	Same as Proposed Action
KOP-L1	<0.1 (<0.1)	NA	NA	NA	NA	NA	Structures **Major**	Strong	Strong	Strong	Strong	Large	6	Same as Proposed Action	Same as Proposed Action
KOP-L4	<0.1 (<0.1)	NA	NA	NA	NA	NA	Structures **Moderate**	Moderate	Weak	Weak	Weak	Medium	3	Same as Proposed Action	Same as Proposed Action
KOP-L5	<0.1 (<0.1)	NA	NA	NA	NA	NA	Structures **Moderate**	Moderate	Weak	Weak	Weak	Medium	3	Same as Proposed Action	Same as Proposed Action
KOP-OM11	40 feet (12.2 meter)	NA	NA	NA	NA	121° (95%)	Structures **Major**	Strong	Strong	Strong	Strong	Large	6	Same as Proposed Action	Same as Proposed Action
KOP-OM18	0.88 (1.42)	NA	NA	NA	NA	9° (7%)	Structures **Minor**	Weak	Weak	Weak	Weak	Small	2	Same as Proposed Action	Same as Proposed Action
KOP-OM20	0.45 (0.72)	NA	NA	NA	NA	20° (16%)	Structures **Moderate**	Moderate	Moderate	Moderate	Moderate	Medium	4	Same as Proposed Action	Same as Proposed Action

[1] KOP-AC02 Jim Whelan Boardwalk Hall, Atlantic City Convention Center NHL, KOP-AC03 Madison Hotel, KOP-AC04 Ocean Casino Resort – Sky Garden, KOP-BC02 North Brigantine Natural Area, KOP-BHB01 Beach Haven Historic District, KOP-BHB02 Beach Haven, Center Street, KOP-BHB03 Beach Haven, Holyoke Street, KOP-BLB02 Barnegat Lighthouse State Park, KOP-BRT01 =Bass River State Forest, KOP-BT01 Island Beach State Park, KOP-EMC01 Tuckahoe WMA, KOP-GT01 Edwin B. Forsythe National Wildlife Refuge, KOP-LBT03 Long Beach Island Beach, KOP-LBT04 Edwin B. Forsythe NWR-Woodmansee Estate, Holyoke, KOP-LEHT02 Great Bay Boulevard WMA/Rutgers Field Station Great Bay Boulevard Wildlife Management Area, KOP-LT02 Cape May Point State Park Lighthouse, KOP-MC02 Lucy the Elephant National Historic Landmark, KOP-MC03 Huntington Park, KOP-OC01 Corson's Inlet State Park, KOP-OC04 Gillian's Wonderland Amusement, KOP-OO1 Recreational, Fishing, and Tour Boat Area, KOP-OO2 Commercial and Cruise Ship Shipping Lanes, KOP-SBB01 Ship Bottom Borough Municipal Park, KOP-SIC02 Townsend Inlet Bridge, KOP-SPB01 Seaside Park Beach, KOP-C8 Cardiff Tilton Club, KOP-C17 Cardiff Hingston Ave, KOP-L1 Larrabee Miller Road, KOP-L4 Larrabee Randolph Road NE (northeast view), KOP-L5 Larrabee Randolph Road SE (southeast view), KOP-OM11 North Maryland Ave SE, KOP-OM18 Cove Beach, and KOP-OM20 Atlantic City Aquarium.

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

[3] WTGs and offshore or onshore substation visibility: 0-Not visible. 1-Visible only after extended study; otherwise not visible. 2-Visible when viewing in general direction of the WTA; otherwise, likely to be missed by casual observer. 3-Visible after brief glance in general direction of the WTA; 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 WTA, 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 (Sullivan et al. 2013).

[4] Elevated observation deck or lighthouse.

The ocean character unit, 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.

Operational effects would be similar to those of end-stage construction and installation and would be long term and fully reversible.

Proposed Action impacts on high-sensitivity seascape character would be major to moderate. The daytime and nighttime (lighting) presence of the WTGs, OSSs, and construction and installation and O&M vessel traffic would change perception of this area from natural, undeveloped seascape to a developed wind energy environment characterized by visually dominant WTGs, met tower, and OSSs. See Table H-12 for noticeable impacts on character areas.

Maintenance activities would cause minor effects on seascape character by increased O&M vessel traffic to and from the WTA. 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 and installation activity. Decommissioning activities would cause effects similar to those of construction and installation activities.

Viewshed analyses (COP, Appendix II-M1; Atlantic Shores 2024) determined that clear-weather visibility of the WTGs, met tower, and OSSs would occur within the Proposed Action's zone of visual influence. The Proposed Action would be visible from the seascape and landscape, with diminishing visibility in the landscape due to distance. The majority of landward areas from which visibility may occur would not extend beyond 28 miles (45.1 kilometers) from the Proposed Action over inland bays. Visibility would diminish significantly between 28 miles (45.1 kilometers) and 42.5 miles (68.4 kilometers). Due to coastal meteorological conditions, Proposed Action visibility would be noticeably reduced on approximately 3 out of 4–5 days. Visibility calculated from Rutgers University Weather Research and Forecasting model data indicate "very clear days" 1 out of 4 or 5 days (23 percent) in the summer, which is defined as visibility greater than 20 miles (32 kilometers) throughout the majority of the onshore and offshore environment (COP Volume II, Appendix II, Attachment H; Atlantic Shores 2024).

Daytime lighting of WTGs and the met tower is not required. The nighttime lighting ADLS's substantially limited hours of lighting would reduce lighting impact levels from major to negligible. Residual minor impacts would result from the presence of turbines, the met tower, and OSSs in moonlit conditions. Lights of the five OSSs, as required by the Occupational Safety and Health Administration for the safety of O&M personnel, potentially would be visible from beaches and adjoining land and the built

environment during hours of darkness. The nighttime sky light dome and cloud lighting caused by reflections from the water surface may be seen from distances beyond the 45.1-mile (72.6-kilometer) geographic analysis area, depending on variable ocean surface and meteorological reflectivity. Onshore substation and/or converter station nighttime lighting would be visible in their immediate neighborhoods and result in minor to major impacts.

Table H-12 lists the Proposed Action's noticeable features based on their heights, distances, and EC.

Table H-12. Noticeable elements and impacts by seascape character area, open ocean character area, and landscape character area

Noticeable Elements Impacts	Open Ocean Area, Seascape Areas, and Landscape Character Areas
Rotor, Aviation Light, Nacelle, Hub, Mid-tower Light. Offshore Substation, Yellow Tower Base Color **Major**	Open Ocean Character Area: Ocean Seascape Character Areas: Atlantic City, Commercial Beachfront, Commercial Strip Development, Inland Residential, Ocean, Residential Beachfront, Recreation, Undeveloped Beach Landscape Character Areas: Atlantic City, Bayfront Residential, Commercial Strip Development, Dredged Lagoon, Forest, Inland Open Water, Inland Residential, Recreation, Salt Marsh, Town/Village Center, Undeveloped Bay
Rotor, Aviation Light, Nacelle, Hub, Mid-tower Light. Offshore Substation **Major**	Open Ocean Character Area: Ocean Seascape Character Areas: Atlantic City, Commercial Beachfront, Commercial Strip Development, Inland Residential, Ocean, Recreation, Residential Beachfront, Recreation, Undeveloped Bay, Undeveloped Beach Landscape Character Areas: Agriculture, Atlantic City, Bayfront Residential, Commercial Beachfront, Commercial Strip Development, Dredged Lagoon, Forest, Industrial/Developed, Inland Open Water, Inland Residential, Limited Access Highway, Oceanfront Residential, Recreation, River, Salt Marsh, Town/Village Center, Undeveloped Bay, Undeveloped Beach
Rotor, Aviation Light, Nacelle, Hub, Mid-tower Light. Offshore Substation **Moderate**	Open Ocean Character Area: Ocean Seascape Character Areas: Ocean, Residential Beachfront Landscape Character Areas: Agriculture, Bayfront Residential, Commercial Strip Development, Forest, Industrial/Developed, Inland Open Water, Limited Access Highway, Recreation, Salt Marsh, Undeveloped Bay
Rotor, Aviation Light, Nacelle, Hub **Moderate**	Open Ocean Character Area: Ocean Seascape Character Areas: Commercial Beachfront, Ocean, Recreation, Residential Beachfront, Undeveloped Bay, Undeveloped Beach Landscape Character Areas: Agriculture, Bayfront Residential, Commercial Strip Development, Forest, Industrial/Developed, Inland Open Water, Inland Residential, Limited Access Highway, Salt Marsh, Town/Village Center, Undeveloped Bay
Rotor, Aviation Light, Nacelle **Minor**	Open Ocean Character Area: Ocean Seascape Character Areas: Ocean, Residential Beachfront, Undeveloped Beach Landscape Character Areas: Bayfront Residential, Commercial Strip Development, Dredged Lagoon, Forest, Inland Residential, Recreation, Salt Marsh, Undeveloped Bay
Rotor, Aviation Light **Minor**	Open Ocean Character Area: Ocean Seascape Character Areas: Ocean, Residential Beachfront, Undeveloped Beach

Noticeable Elements Impacts	Open Ocean Area, Seascape Areas, and Landscape Character Areas
	Landscape Character Areas: Bayfront Residential, Commercial Strip Development, Dredged Lagoon, Forest, Industrial/Developed, Inland Residential, Recreation, Salt Marsh, Undeveloped Bay
Rotor **Minor**	Open Ocean Character Area: Ocean Seascape Character Areas: Commercial Strip Development, Ocean, Recreation, Residential Beachfront, Undeveloped Beach Landscape Character Areas: Agriculture, Bayfront Residential, Commercial Strip Development, Forest, Industrial/Developed, Inland Open Water, Limited Access Highway, Recreation, Salt Marsh, Town/Village Center, Undeveloped Bay

Table H-13 lists the Proposed Action's noticeable features based on their heights, distances, and EC.

Table H-13. Noticeable elements and impacts by KOPs

Noticeable Elements Impacts	Offshore and Onshore Observation Points
Rotor, Aviation Light, Nacelle, Hub, Mid-tower Light. Offshore Substation, Yellow Tower Base **Major**	VIA: KOP-AC02 Jim Whelan Boardwalk Hall, Atlantic City Convention Center NHL KOP-AC03 Madison Hotel (Daytime) KOP-AC04 Ocean Casino Resort – Sky Garden (Daytime) KOP-BC02 North Brigantine Natural Area KOP-OO1 Recreational Fishing, Pleasure, and Tour Boat Area KOP-OO2 Commercial and Cruise Ship Shipping Lanes
Rotor, Aviation Light, Nacelle, Hub, Mid-tower Light. Offshore Substation **Major**	VIA: KOP-BHB01 Beach Haven Historic District (Daytime) KOP-BHB02 Beach Haven, Center Street KOP-BHB03 Beach Haven, Holyoke Avenue KOP-LBT04 Edwin B. Forsythe NWR, Holyoke KOP-LEHT02 Great Bay Boulevard WMA/Rutgers Field Station KOP-MC02 Lucy The Elephant National Historic Landmark KOP-MC03 Huntington Park
Rotor, Aviation Light, Nacelle, Hub, Mid-tower Light. Offshore Substation **Moderate**	VIA: KOP-BRT01 Bass River State Forest KOP-SBB01 Ship Bottom Borough Municipal Park
Rotor, Aviation Light, Nacelle, Hub **Moderate**	VIA: KOP-BLB02 Barnegat Lighthouse State Park (elevated) KOP-BT01 Island Beach State Park KOP-LAT01 Edwin B. Forsythe National Wildlife Refuge-Woodmansee Estate (Daytime) KOP-LBT03 Long Beach Island Beach
Aviation Light, Nacelle **Minor**	KOP-AC03 Madison Hotel (Nighttime) KOP-AC04 Ocean Casino Resort – Sky Garden (Nighttime)
Rotor, Aviation Light, Nacelle **Minor**	VIA: KOP-LT02 Cape May Point State Park Lighthouse (elevated view)
Rotor **Minor**	VIA: KOP-SPB01 Seaside Park Beach

Noticeable Elements Impacts	Offshore and Onshore Observation Points
Aviation Light **Negligible**	KOP-BHB01 Beach Haven Historic District (Nighttime) KOP-LAT01 Edwin B. Forsythe National Wildlife Refuge-Woodmansee Estate (Nighttime)
Onshore Substation and/or Converter Station Structures and/or O&M Facility **Major**	KOP-C8 Cardiff Hingston Ave KOP-L1 Larrabee Miller Road KOP-L4 Randolph Road NE KOP-OM11 North Maryland Ave SE KOP-OM20 Atlantic City Aquarium
Onshore Substation and/or Converter Station Structures **Minor**	KOP-C17 Cardiff Tilton Road KOP-L5 Larrabee Randolph Road SE KOP-OM18 Cove Beach

Table H-14 summarizes the Proposed Action's WTA distance, percent of FOV occupied by the WTA, and effects on the open ocean unit, seascape units, and landscape units.

Table H-14. WTA distance effects by seascape character area, open ocean character area, and landscape character area for the Proposed Action

Distance in Miles (Kilometers) Noticeability Effects	Open Ocean Area, Seascape Areas, and Landscape Character Areas
0–42.5 (0–68.4) **Dominant/Major to Minor Noticeability**	Open Ocean Character Area: Ocean
8.7–19.4(14.0–31.1) **Dominant/Major Noticeability**	Seascape Character Areas: Atlantic City, Commercial Beachfront, Dredged Lagoon, Inland Open Water, Recreation, Residential Beachfront, Salt Marsh, Undeveloped Bay, Undeveloped Beach Landscape Character Areas: Agriculture, Bayfront Residential, Commercial Strip Development, Dredged Lagoon, Forest, Industrial/Developed, Inland Open Water, Inland Residential, Limited Access Highway, Recreation, Salt Marsh, Town/Village Center
45.1 (72.6) (Elevated Observers) **Moderate Noticeability**	VIA: KOP-LT02 Cape May Point State Park Lighthouse (eye level: 153.5 feet [46.7 meters] HAT)
21.7–32.6 (35.0–53.5) **Moderate Noticeability**	Seascape Character Areas: Dredged Lagoon, Inland Open Water, Recreation, Residential Beachfront, Salt Marsh, Undeveloped Bay, Undeveloped Beach Landscape Character Areas: Agriculture, Bayfront Residential, Commercial Strip Development, Dredged Lagoon, Forest, Industrial/Developed, Inland Open Water, Inland Residential, Limited Access Highway, Recreation, Salt Marsh, Town/Village Center
42.5 (68.4) **Negligible Noticeability**	Seascape Character Areas: None Landscape Character Areas: Those not within the zone of visual influence

HAT = highest astronomical tide.

Table H-15 summarizes the Proposed Action's WTA distance, percent of FOV occupied by the WTA, and effects on the KOPs.

Table H15. WTA distance effects on KOPs for the Proposed Action

Distance in Miles (Kilometers) Noticeability Effects	Offshore and Onshore Key Observation Points
0–42.5 (0–68.4) **Dominant/Major to Minor Noticeability**	VIA: KOP-OO1 Recreational Fishing, Pleasure, and Tour Boat Area KOP-OO2 Commercial and Cruise Ship Shipping Lanes
10.5 (16.9) (Elevated Observers) **Dominant/Major Noticeability**	VIA: KOP-AC03 Madison Hotel (Daytime) KOP-AC03 Madison Hotel (Nighttime) KOP-AC04 Ocean Casino Resort – Sky Garden (eye level: 117 feet [35.6 meters] HAT)
8.7–19.4(14.0–31.1) **Dominant/Major Noticeability**	VIA: KOP-AC02 Jim Whelan Boardwalk Hall, Atlantic City Convention Center NHL KOP-AC04 Ocean Casino Resort – Sky Garden KOP-BC02 North Brigantine Natural Area KOP-BHB01 Beach Haven Historic District KOP-BHB02 Beach Haven, Center Street KOP-BHB03 Beach Haven, Holyoke Avenue KOP-LBT04 Edwin B. Forsythe NWR, Holyoke KOP-LEHT02 Great Bay Boulevard WMA/Rutgers Field Station KOP-MC02 Lucy the Margate Elephant NHL KOP-OC04 Gillian's Wonderland Amusement Park KOP-SBB01 Ship Bottom Borough Municipal Park
21.7–32.6 (35.0–53.5) **Moderate Noticeability**	VIA: KOP-BLB02 Barnegat Lighthouse State Park Lighthouse eye level: 156 feet [47.5 meters] HAT) KOP-BT01 Island Beach State Park KOP-GT01 Edwin B. Forsythe NWR, Galloway Township KOP-LAT01 Edwin B. Forsythe NWR-Woodmansee Estate KOP-OC01 Corson's Inlet State Park KOP-SIC02 Townsend Inlet Bridge
45.1 (72.6) (Elevated Observers) **Minor Noticeability**	VIA: KOP-LT02 Cape May Point State Park Lighthouse (eye level: 153.5 feet [46.7 meters] HAT) KOP-BRT01 Bass River State Forest KOP-EMC01 Tuckahoe WMA KOP-SPB01 Seaside Park Beach
42.5 (68.4) **Negligible Noticeability**	VIA: None
0.1 to <0.1 (0.3 to <0.1) **Major Noticeability**	KOP-C8 Cardiff Hingston Ave KOP-L1 Larrabee Miller Road KOP-OM11 North Maryland Ave SE KOP-OM20 Atlantic City Aquarium
0.1 to <0.1 (0.3 to <0.1) **Minor Noticeability**	KOP-C17 Cardiff Tilton Road KOP-L4 Larrabee Randolph Road NE KOP-L5 Larrabee Randolph Road SE (southeast view) KOP-OM18 Cove Beach

HAT = highest astronomical tide.

Table H-16 summarizes the Proposed Action's WTA distance, percent of FOV occupied by the WTA, and effects on the KOPs.

Table H-16. WTA percent of FOV and effects by KOP for the Proposed Action

Percent (°) of 124° FOV Percent of View Effects[1]	Offshore Key Observation Points
100% (124°) to 17% (21°) **Dominant/Major to Minor**	VIA: KOP-OO1 Recreational Fishing, Pleasure, and Tour Boat Area KOP-OO2 Commercial and Cruise Ship Shipping Lanes
44% (54.2°) to 21% (26°) **Dominant/Major to Moderate**	VIA: KOP-AC02 Jim Whelan Boardwalk Hall, Atlantic City Convention Center NHL KOP-AC03 Madison Hotel (Daytime) KOP-AC03 Madison Hotel (Nighttime) KOP-AC04 Ocean Casino Resort – Sky Garden (Daytime) KOP-AC04 Ocean Casino Resort – Sky Garden (Nighttime) KOP-BC02 North Brigantine Natural Area KOP-BHB01 Beach Haven Historic District (Daytime) KOP-BHB02 Beach Haven, Center Street (Nighttime) KOP-BHB03 Beach Haven, Holyoke Avenue KOP-BLB02 Barnegat Lighthouse State Park KOP-BRT01 Bass River State Forest KOP-BT01 Island Beach State Park KOP-EMC01 Tuckahoe WMA KOP-GT01 Edwin B. Forsythe NWR, Galloway Township KOP-LAT01 Edwin B. Forsythe NWR-Woodmansee Estate (Daytime) KOP-LAT02 Edwin B. Forsythe NWR-Woodmansee Estate (Nighttime) KOP-LBT03 Long Beach Island Beach KOP-LBT04 Edwin B. Forsythe NWR, Holyoke KOP-LEHT02 Great Bay Boulevard WMA/Rutgers Field Station KOP-MC02 Lucy the Margate Elephant NHL KOP-OC01 Corson's Inlet State Park KOP-OC04 Gillian's Wonderland Amusement Park KOP-SIC02 Townsend Inlet Bridge KOP-SPB01 Seaside Park Beach
20% (24.8°) to 14% (18°) **Minor**	VIA: KOP-LT02 Cape May Point State Park Lighthouse KOP-SBB01 Ship Bottom Borough Municipal Park
Unseen[2] **Negligible**	VIA: None

[1] Seen, based on ArcGIS viewshed analyses.
[2] Unseen, based on ArcGIS viewshed analyses.

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 II-M1; Atlantic Shores 2024) and summarized in Table H-17.

Table H-17. Foreground view framing and intervening elements for the Proposed Action WTA

Foreground Element(s) Influence[1]	Open Ocean Area, Seascape Areas,[2] Landscape Areas,[2] and Offshore Key Observation Points
Open Ocean **Negligible Influence**	VIA: KOP-OO1 Recreational Fishing, Pleasure, and Tour Boat Area KOP-OO2 Commercial and Cruise Ship Shipping Lanes
Beach and Ocean **Minor Influence**	VIA: KOP-AC03 Madison Hotel (Daytime) KOP-AC03 Madison Hotel (Nighttime) KOP-AC04 Ocean Casino Resort – Sky Garden (Daytime) KOP-AC04 Ocean Casino Resort – Sky Garden (Nighttime) KOP-BC02 North Brigantine Natural Area KOP-LBT04 Edwin B. Forsythe NWR, Holyoke KOP-MC03 Huntington Park KOP-OC01 Corson's Inlet State Park
Dunes, Beach, and Ocean **Minor Influence**	VIA: KOP-BHB01 Beach Haven Historic District (Daytime) KOP-BHB01 Beach Haven Historic District (Nighttime) KOP-BHB02 Beach Haven, Center Street KOP-BHB03 Beach Haven, Holyoke Avenue KOP-BT01 Island Beach State Park KOP-LBT03 Long Beach Island Beach KOP-SBB01 Ship Bottom Borough Municipal Park KOP-SPB01 Seaside Park Beach
Structures, Dunes, and Beach **Moderate Influence**	VIA: KOP-SIC02 Townsend Inlet Bridge
Bay, Vegetation, and Topography **Minor Influence**	VIA: KOP-LEHT02 Great Bay Boulevard WMA/Rutgers Field Station
Bay, Vegetation, Roadway, and Structures **Minor Influence**	VIA: KOP-GT01 Edwin B. Forsythe NWR, Galloway Township
Landscape Structures, Vegetation, and Topography **Minor to Moderate Influence**	VIA: KOP-BRT01 Bass River State Forest KOP-LAT01 Edwin B. Forsythe NWR-Woodmansee Estate (Daytime) KOP-LAT01 Edwin B. Forsythe NWR-Woodmansee Estate (Nighttime)
Structures, Roadway, and Beach **Dominant/Major Influence**	VIA: KOP-MC02 Lucy the Margate Elephant NHL KOP-OC04 Gillian's Wonderland Amusement Park
Vegetation, Roadway, and Topography **Dominant/Major Influence**	VIA: KOP-EMC01 Tuckahoe WMA
Structures, Landscape Structures, Vegetation, and Topography **Minor to Moderate Influence**	VIA: KOP-BLB02 Barnegat Lighthouse State Park KOP-LT02 Cape May Point State Park Lighthouse
Structures, Dunes, Beach Structures, and Ocean **Dominant/Major Influence**	VIA: KOP-38 Jim Whelan Boardwalk Hall National Historic Landmark

[1] Based on conditions portrayed by representative photography contained in COP Appendix II-M1; Atlantic Shores 2024. 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 units.

Proposed Action contrasts in the characteristic seascape and landscape, as perceived in views from each KOP, are based on visual simulations for 14 representative KOPs (COP, Appendix II-M1; Atlantic Shores 2024). Open ocean 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 VIA Technical Report, Table 9.1 (Appendix II-M1; Atlantic Shores 2024). The COP seascape and landscape evaluation scale ranges from faint, apparent, conspicuous, and prominent to dominant. Onshore substation and/or converter station 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 implementation of the Proposed Action or the alternatives. 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 aviation lights, activated lighting on the OSS, 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.

Visual contrast comparisons of characteristics of the seascape's and landscape's existing conditions and Proposed Action implementation are included in the summary tables included herein. Visual contrast determinations in open ocean, seascape, and landscape are listed in Table H-18.

Table H-18. Visual contrasts to open ocean, seascape, and landscape for the Proposed Action

Contrast Rating Effects	Open Ocean, Seascape, and Landscape	Overall Area (square miles [square kilometers])	Impact Area (square miles [square kilometers])
Strong Contrasts **Major**	Atlantic City	3.1 [112.68]	0.12 [0.30]
	Bayfront Residential	3.3 [8.5]	0.02 [0.04]
	Commercial Beachfront	1.4 [3.6]	0.26 [0.66]
	Commercial Strip Development	29.5 [76.4]	0.04 [0.11]
	Dredged Lagoon	14.3 [37.0]	<0.01 [<0.01]
	Forest	1,273.1 [3,297.3]	0.02 [0.06]
	Inland Open Water	26.6 [68.9]	<0.01 [<0.01]
	Inland Residential	223.8 [579.6]	0.30 [0.78]
	Open Ocean	6,657.8 (17,243.6]	1,103.89 [2,859.05]
	Recreation	20.2 [52.3]	0.01 [0.03]
	Residential Beachfront	8.2 [21.3]	0.68 [1.76]
	Salt Marsh	214.7 [556.1]	8.26 [21.40]
	Town/Village Center	2.6 [6.7]	0.01 [0.03]
	Undeveloped Bay	209.1 [549.7]	4.64 [12.03]
	Undeveloped Beach	7.9 [20.5]	1.30 [3.36]
Moderate Contrasts	Agriculture	110.2 [8.0]	0.01 [0.03]

Contrast Rating Effects	Open Ocean, Seascape, and Landscape	Overall Area (square miles [square kilometers])	Impact Area (square miles [square kilometers])
Moderate	Atlantic City	3.1 [112.68]	0.10 [0.26]
	Bayfront Residential	3.3 [8.5])	0.14 [0.36]
	Commercial Beachfront	1.4 [3.6]	0.22 [0.58]
	Commercial Strip Development	29.5 [76.4])	0.32 [0.82])
	Dredged Lagoon	14.3 [37.0])	0.32 [0.83])
	Forest	1,273.1 [3,297.3]	0.01 [0.03]
	Industrial/Developed	37.8 [97.9]	2.21 [5.72]
	Inland Open Water	26.6 [68.9]	0.06 [0.16]
	Inland Residential	223.8 [579.6]	0.69 [1.79]
	Limited Access Highway	9.6 [24.9]	0.31 [0.80]
	Open Ocean	6,657.8 [17,243.6]	1,540.14 [3,988.93]
	Recreation	20.2 [52.3]	0.35 [0.90]
	Residential Beachfront	8.2 [21.3]	<0.01 [<0.03]
	Salt Marsh	214.7 [556.1]	76.70 [198.65]
	Undeveloped Bay	209.1 [549.7]	92.58 [239.78]
	Undeveloped Beach	7.9 [20.5]	0.58 [1.51]
Weak Contrasts **Minor**	Agriculture	110.2 [8.0]	0.02 [0.04]
	Bayfront Residential	3.3 [8.5]	0.05 [0.12]
	Commercial Beachfront	1.4 [3.6]	0.46 [1.21]
	Commercial Strip Development	29.5 [76.4]	0.09 [0.23]
	Dredged Lagoon	14.3 [37.0]	0.15 [0.38]
	Forest	1,273.1 [3,297.3]	1.65 [4.27]
	Industrial/Developed	37.8 [97.9]	0.38 [0.99]
	Inland Open Water	26.6 [68.9]	0.64 [1.65]
	Inland Residential	223.8 [579.6]	0.09 [0.25]
	Limited Access Highway	9.6 [24.9]	0.03 [0.08]
	Open Ocean	6,657.8 [17,243.6]	3.901.58 [10,105.03]
	Recreation	20.2 [52.3]	0.28 [0.72]
	Residential Beachfront	8.2 [21.3]	2.38 [6.17]
	Salt Marsh	214.7 [556.1]	27.01 [69.95]
	Town/Village Center	2.6 [6.7]	<0.01 [<0.03]
	Undeveloped Bay	209.1 [549.7]	58.43 [151.35]
	Undeveloped Beach	7.9 [20.5]	2.17 [5.63]
None (Unseen) **Negligible**	Unseen areas of Seascape Character Areas Unseen areas of Landscape Character Areas		

Visual contrast determinations for KOPs are listed in Table H-19.

Table H-19. Visual contrasts to KOPs for the Proposed Action

Contrast Rating Effects	Offshore and Onshore Key Observation Points
Strong Contrasts **Major**	OFFSHORE KOP-AC02 Jim Whelan Boardwalk Hall, Atlantic City Convention Center NHL KOP-AC03 Madison Hotel (Daytime) KOP-AC04 Ocean Casino Resort – Sky Garden (Daytime) KOP-BC02 North Brigantine Natural Area KOP-BHB01 Beach Haven Historic District (Daytime) KOP-BHB02 Beach Haven, Center Street KOP-BHB03 Beach Haven, Holyoke Avenue KOP-LBT04 Edwin B. Forsythe NWR, Holyoke KOP-LEHT02 Great Bay Boulevard WMA/Rutgers Field Station KOP-MC02 Lucy the Margate Elephant NHL KOP-MC03 Huntington Park KOP-OO1 Recreational Fishing, Pleasure, and Tour Boat Area KOP-OO2 Commercial and Cruise Ship Shipping Lanes ONSHORE KOP-L1 Larrabee Miller Road KOP-OM11 North Maryland Ave SE
Moderate Contrasts **Moderate**	OFFSHORE KOP-BLB02 Barnegat Lighthouse State Park KOP-BRT01 Bass River State Forest KKOP-BT01 Island Beach State Park KOP-EMC01 Tuckahoe WMA KOP-GT01 Edwin B. Forsythe NWR, Galloway Township KOP-LAT01 Edwin B. Forsythe NWR-Woodmansee Estate (Daytime) KOP-OC01 Corson's Inlet State Park KOP-OC04 Gillian's Wonderland Amusement Park KOP-SBB01 Ship Bottom Borough Municipal Park KOP-SIC02 Townsend Inlet Bridge ONSHORE KOP-OM20 Atlantic City Aquarium
Weak Contrasts **Minor**	OFFSHORE KOP-AC03 Madison Hotel (Nighttime) KOP-AC04 Ocean Casino Resort – Sky Garden (Nighttime) KOP-LT02 Cape May Point State Park Lighthouse KOP-SPB01 Seaside Park Beach ONSHORE KOP-L4 Larrabee Randolph Road NE KOP-L5 Larrabee Randolph Road SE KOP-OM18 Cove Beach
None (Unseen) **Negligible**	OFFSHORE KOP-BHB01 Beach Haven Historic District (Nighttime) KOP-LAT01 Edwin B. Forsythe NWR-Woodmansee Estate (Nighttime) ONSHORE KOP-C17 Cardiff Tilton Road

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

The SLIA considers the impacts on the physical elements and features that make up an open ocean, seascape, or landscape and the aesthetic, perceptual, and experiential aspects of the open ocean, seascape, or landscape that contribute to its distinctive character. These impacts affect the feel, character, or sense of place of an area of open ocean, seascape, or landscape. Tables H-20, H-21, H-22, and H-23 summarize the effects of the Project on the distinctive attributes of the character areas based on the SLIA impact factors presented in Table H-1, the geographic analysis area, and visibility (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 adjacent inland character areas and diminish to medium and low as distance increases and screening effects increase from topography, structures, and vegetation. Visual contrasts to industrial developed character areas and commercial strip development character areas result in small and substantially smaller size or scale changes to views than those of agriculture character areas, the open ocean character area, undeveloped bay character areas, and undeveloped beach character areas. Medium size or scale changes to views would occur in all other seascape character areas and landscape character areas. Tables H-24 and H-25 summarize Proposed Action impacts on the open ocean character unit, seascape character units, and landscape character units throughout the geographic analysis area for both offshore and onshore components. Impacts of the Proposed Action on open ocean character, seascape character, and landscape character range from **negligible** to **major**.

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Table H-20. Open ocean character, seascape character, landscape character magnitude and sensitivity impact levels of the Proposed Action

	Magnitude of Impact																Sensitivity			Impact Levels				
	Visibility			Geographic Extent			Contrast				Size and Scale			Duration			Susceptibility and Value			Proposed Action				Alternatives C1, C2, C3, D1, D2, D3, E, and F
Character Area	High	Medium	Low	High	Medium	Low	Strong	Moderate	Weak	None	Large	Medium	Small	Permanent	Long Term	Short Term	High	Moderate	Low	Major	Moderate	Minor	Negligible	Impact Level
Open Ocean	X			X			X				X				X		X			X				Same as Proposed Action
Agriculture			X			X		X				X			X		X				X			Same as Proposed Action
Atlantic City	X				X		X				X				X		X			X				Same as Proposed Action
Bayfront Residential		X			X			X				X			X			X			X			Same as Proposed Action
Commercial Beachfront	X			X			X				X				X		X			X				Same as Proposed Action
Commercial Strip Development			X			X			X				X		X				X			X		Same as Proposed Action
Dredged Lagoon	X			X			X				X				X		X			X				Same as Proposed Action
Forest			X			X			X				X		X				X			X		Same as Proposed Action
Industrial Developed			X			X			X				X		X				X				X	Same as Proposed Action
Inland Open Water			X			X		X				X			X			X			X			Same as Proposed Action
Inland Residential			X			X			X				X		X				X			X		Same as Proposed Action
Limited Access Highway			X			X			X				X		X				X			X		Same as Proposed Action
Recreation		X			X			X				X			X		X				X			Same as Proposed Action
Residential Beachfront	X			X			X				X				X		X			X				Same as Proposed Action
Salt Marsh				X			X				X				X		X				X			Same as Proposed Action
Town/Village Center	X			X			X				X				X		X			X				Same as Proposed Action
Undeveloped Bay	X			X			X				X				X		X			X				Same as Proposed Action
Undeveloped Beach	X			X			X				X				X		X			X				Same as Proposed Action

Table H-21. Onshore component landscape character magnitude and sensitivity impact levels of the Proposed Action

Character Area	Magnitude of Impact																Sensitivity			Impact Levels				
	Visibility			Geographic Extent			Contrast				Size and Scale			Duration			Susceptibility and Value			Proposed Action				Alternatives C1, C2, C3, D1, D2, D3, E, and F
	High	Medium	Low	High	Medium	Low	Strong	Moderate	Weak	None	Large	Medium	Small	Permanent	Long Term	Short Term	High	Moderate	Low	Major	Moderate	Minor	Negligible	Impact Level
Cardiff Project area viewshed																								
Commercial	X				X			X				X		X				X				X		Same as Proposed Action
Forest	X			X			X					X		X			X			X				Same as Proposed Action
High Density Residential	X				X		X					X		X				X		X				Same as Proposed Action
Industrial		X			X				X			X		X					X			X		Same as Proposed Action
Inland Bay			X		X								X	X			X						X	Same as Proposed Action
Inland Water			X			X							X	X			X						X	Same as Proposed Action
Low Density Residential			X		X		X							X			X			X				Same as Proposed Action
Medium Density Residential	X			X			X				X			X			X			X				Same as Proposed Action
Recreation		X			X		X				X			X			X			X				Same as Proposed Action
Salt Marsh			X		X					X			X	X			X						X	Same as Proposed Action
Transportation		X				X		X			X			X				X		X				Same as Proposed Action
Larrabee Brook Road Project area viewshed																								
Agriculture		X			X		X				X			X			X			X				Same as Proposed Action
Commercial		X			X			X				X		X				X			X			Same as Proposed Action
Forest	X			X			X					X		X			X			X				Same as Proposed Action
High Density Residential		X			X		X					X		X					X	X	X			Same as Proposed Action
Industrial	X				X				X			X		X					X		X			Same as Proposed Action
Inland Water		X				X	X				X			X			X				X			Same as Proposed Action
Low Density Residential		X			X		X				X			X			X				X			Same as Proposed Action
Medium Density Residential		X		X			X				X			X			X			X				Same as Proposed Action
Recreation		X			X		X				X			X			X			X				Same as Proposed Action
Transportation			X			X		X		X			X	X				X					X	Same as Proposed Action
Larrabee Randolph Road Project area viewshed																								
Agriculture			X		X		X				X			X			X					X		Same as Proposed Action
Commercial			X		X			X				X		X				X					X	Same as Proposed Action
Forest	X			X			X				X			X			X					X		Same as Proposed Action
High Density Residential			X		X		X					X		X					X			X		Same as Proposed Action
Industrial	X				X				X			X		X					X			X		Same as Proposed Action
Inland Water			X			X	X				X			X			X					X		Same as Proposed Action
Low Density Residential			X		X		X				X			X			X					X		Same as Proposed Action
Medium Density Residential			X	X			X				X			X			X					X		Same as Proposed Action
Recreation			X		X		X				X			X			X					X		Same as Proposed Action
Transportation			X			X		X		X			X	X				X					X	Same as Proposed Action
Larrabee Lanes Pond Project area viewshed																								
Agriculture	X				X		X				X			X				X		X				Same as Proposed Action

Character Area	Magnitude of Impact																Sensitivity			Impact Levels				
	Visibility			Geographic Extent			Contrast				Size and Scale			Duration			Susceptibility and Value			Proposed Action				Alternatives C1, C2, C3, D1, D2, D3, E, and F
	High	Medium	Low	High	Medium	Low	Strong	Moderate	Weak	None	Large	Medium	Small	Permanent	Long Term	Short Term	High	Moderate	Low	Major	Moderate	Minor	Negligible	Impact Level
Commercial			X		X			X		X			X	X					X				X	Same as Proposed Action
Forest	X			X			X				X			X			X			X				Same as Proposed Action
High Density Residential		X			X		X					X		X					X			X		Same as Proposed Action
Industrial		X			X		X					X		X					X			X		Same as Proposed Action
Inland Water		X				X	X				X			X			X					X		Same as Proposed Action
Low Density Residential	X				X		X				X			X			X			X				Same as Proposed Action
Medium Density Residential		X		X			X				X			X			X					X		Same as Proposed Action
Recreation		X			X		X				X			X			X					X		Same as Proposed Action
Transportation			X			X		X		X			X	X				X					X	Same as Proposed Action
Operations & Maintenance Facility area viewshed																								
Open Ocean			X			X	X					X		X			X						X	Same as Proposed Action
Atlantic City		X			X				X				X	X				X				X		Same as Proposed Action
Commercial Beachfront			X			X			X				X	X			X						X	Same as Proposed Action
Dredged Lagoon			X			X	X					X		X			X						X	Same as Proposed Action
Recreation			X			X	X						X	X			X						X	Same as Proposed Action
Residential Beachfront			X			X		X				X		X			X						X	Same as Proposed Action
Salt Marsh		X		X			X					X		X			X					X		Same as Proposed Action
Town/Village Center			X			X			X				X	X			X						X	Same as Proposed Action
Undeveloped Bay	X			X			X					X		X				X			X			Same as Proposed Action
Undeveloped Beach			X			X	X					X		X			X						X	Same as Proposed Action
Bayfront Residential			X			X		X					X	X			X						X	Same as Proposed Action
Commercial Strip Development			X			X			X				X	X					X				X	Same as Proposed Action
Forest			X			X	X					X		X			X						X	Same as Proposed Action
Industrial/Developed			X			X			X				X	X					X				X	Same as Proposed Action
Inland Open Water			X			X	X					X		X			X						X	Same as Proposed Action
Inland Residential			X			X	X					X		X			X						X	Same as Proposed Action
Limited Access Highway			X			X			X				X	X				X					X	Same as Proposed Action

Table H-22. Open ocean character, seascape character, and landscape character and impact levels

Character Area	Affected Environment																			Impact Levels				
	Area Susceptibility			Area Value			Proposed Action													Proposed Action				Alternatives C1, C2, C3, D1, D2, D3, E, and F
							Project Visibility				Character Key Feature[1] Change			Character Key Element[2] Change			Character Key Quality[3] Change							
	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	X			X			X				X			X			X			X				Same as Proposed Action
Agriculture	X			X				X			X			X			X				X			Same as Proposed Action
Atlantic City			X		X		X				X			X			X			X				Same as Proposed Action
Bayfront Residential		X		X				X				X			X			X			X			Same as Proposed Action
Commercial Beachfront	X			X			X				X			X			X			X				Same as Proposed Action
Commercial Strip Development			X			X		X					X			X						X		Same as Proposed Action
Dredged Lagoon	X			X			X				X			X			X			X				Same as Proposed Action
Forest			X		X				X				X			X			X			X		Same as Proposed Action
Industrial Developed			X			X			X				X			X			X				X	Same as Proposed Action
Inland Open Water	X			X				X				X			X			X			X			Same as Proposed Action
Inland Residential	X			X					X				X			X			X			X		Same as Proposed Action
Limited Access Highway			X			X			X				X			X			X			X		Same as Proposed Action
Recreation	X			X			X					X			X			X			X			Same as Proposed Action
Residential Beachfront	X			X			X				X			X			X			X				Same as Proposed Action
Salt Marsh	X			X			X				X			X			X			X				Same as Proposed Action
Town/Village Center	X			X			X				X			X			X			X				Same as Proposed Action
Undeveloped Bay	X			X			X				X			X			X			X				Same as Proposed Action
Undeveloped Beach	X			X			X				X			X			X			X				Same as Proposed Action

[1] Key Features = The distinctive visual attributes of the open ocean, seascape, or landscape character area. See Table H-20 for detail.
[2] Key Elements = The essential visual components of the open ocean, seascape, or landscape character area.
[3] Key Quality = The main value factor of the open ocean, seascape, or landscape character area.

Table H-23. Onshore facility character areas and impact levels

Character Area	Affected Environment						Proposed Action												Impact Levels				
	Area Susceptibility			Area Value			Project Visibility			Character Key Feature[1] Change			Character Key Element[2] Change			Character Key Quality[3] Change			Proposed Action				Alternatives C1, C2, C3, D1, D2, D3, E, and F
	High	Medium	Low	High	Medium	Low	Dominant	Substantial	Low	High	Medium	Low	High	Medium	Low	High	Medium	Low	Major	Moderate	Minor	Negligible	Impact Level
Cardiff Project area viewshed																							
Commercial		X			X		X				X			X			X				X		Same as Proposed Action
Forest	X			X			X			X			X			X			X				Same as Proposed Action
High Density Residential		X			X		X			X			X			X			X				Same as Proposed Action
Industrial			X			X		X				X			X			X			X		Same as Proposed Action
Inland Bay	X			X					X			X			X			X				X	Same as Proposed Action
Inland Water	X			X					X			X			X			X				X	Same as Proposed Action
Low Density Residential	X			X					X	X			X			X			X				Same as Proposed Action
Medium Density Residential	X			X			X			X			X			X			X				Same as Proposed Action
Recreation	X			X				X		X			X			X			X				Same as Proposed Action
Salt Marsh	X			X					X			X			X			X				X	Same as Proposed Action
Transportation		X			X			X			X			X			X		X				Same as Proposed Action
Larrabee Brook Road Project area viewshed																							
Agriculture	X			X				X		X			X			X			X				Same as Proposed Action
Commercial		X			X			X		X			X			X			X				Same as Proposed Action
Forest	X			X			X			X			X			X			X				Same as Proposed Action
High Density Residential			X			X		X		X			X			X			X				Same as Proposed Action
Industrial			X			X	X				X			X			X		X				Same as Proposed Action
Inland Water	X			X				X		X			X			X			X				Same as Proposed Action
Low Density Residential	X			X				X		X			X			X			X				Same as Proposed Action
Medium Density Residential	X			X				X		X			X			X			X				Same as Proposed Action
Recreation	X			X				X		X			X			X			X				Same as Proposed Action
Transportation		X			X				X			X			X			X				X	Same as Proposed Action
Larrabee Randolph Road Project area viewshed																							
Agriculture	X			X					X			X			X			X			X		Same as Proposed Action
Commercial		X			X				X			X			X			X				X	Same as Proposed Action
Forest	X			X			X			X			X			X					X		Same as Proposed Action
High Density Residential			X			X			X			X			X			X			X		Same as Proposed Action
Industrial			X			X	X					X			X			X			X		Same as Proposed Action
Inland Water	X			X					X	X			X			X					X		Same as Proposed Action
Low Density Residential	X			X					X			X			X			X			X		Same as Proposed Action
Medium Density Residential	X			X					X			X			X			X			X		Same as Proposed Action
Recreation	X			X					X			X			X			X			X		Same as Proposed Action
Transportation		X							X			X			X			X				X	Same as Proposed Action
Larrabee Lanes Pond Project area viewshed																							
Agriculture	X			X			X			X			X			X			X				Same as Proposed Action

Character Area	Affected Environment									Proposed Action									Impact Levels				
	Area Susceptibility			Area Value			Project Visibility			Character Key Feature[1] Change			Character Key Element[2] Change			Character Key Quality[3] Change			Proposed Action				Alternatives C1, C2, C3, D1, D2, D3, E, and F
	High	Medium	Low	High	Medium	Low	Dominant	Substantial	Low	High	Medium	Low	High	Medium	Low	High	Medium	Low	Major	Moderate	Minor	Negligible	Impact Level
Commercial		X			X				X			X			X			X				X	Same as Proposed Action
Forest							X			X			X			X			X				Same as Proposed Action
High Density Residential			X			X		X		X			X			X			X				Same as Proposed Action
Industrial			X			X		X		X			X			X			X				Same as Proposed Action
Inland Water	X			X				X		X			X			X			X				Same as Proposed Action
Low Density Residential	X			X			X			X			X			X			X				Same as Proposed Action
Medium Density Residential	X			X				X		X			X			X			X				Same as Proposed Action
Recreation	X			X				X		X			X			X			X				Same as Proposed Action
Transportation		X			X				X			X			X			X				X	Same as Proposed Action
O&M Facility area viewshed																							
Open Ocean	X			X					X	X					X			X				X	Same as Proposed Action
Atlantic City			X		X			X				X			X			X			X		Same as Proposed Action
Commercial Beachfront	X			X					X			X			X		X					X	Same as Proposed Action
Dredged Lagoon	X			X					X	X			X				X					X	Same as Proposed Action
Recreation	X			X					X		X			X			X					X	Same as Proposed Action
Residential Beachfront	X			X					X	X				X			X					X	Same as Proposed Action
Salt Marsh	X			X					X	X			X				X				X		Same as Proposed Action
Town/Village Center	X			X					X			X			X			X				X	Same as Proposed Action
Undeveloped Bay			X		X		X				X			X			X			X			Same as Proposed Action
Undeveloped Beach	X			X					X	X			X			X						X	Same as Proposed Action
Bayfront Residential	X			X					X	X				X				X				X	Same as Proposed Action
Commercial Strip Development			X			X			X			X			X			X				X	Same as Proposed Action
Forest	X			X					X	X			X			X						X	Same as Proposed Action
Industrial/Developed			X			X			X			X			X			X				X	Same as Proposed Action
Inland Open Water	X			X					X	X				X			X					X	Same as Proposed Action
Inland Residential	X			X					X		X				X		X					X	Same as Proposed Action
Limited Access Highway		X			X				X			X			X			X				X	Same as Proposed Action

[1] Key Features = The distinctive visual attributes of the open ocean, seascape, or landscape character area. See Table H-21 for detail.
[2] Key Elements = The essential visual components of the open ocean, seascape, or landscape character area.
[3] Key Quality = The main value factor of the open ocean, seascape, or landscape character area.

Table H-24. Impact levels on open ocean character, seascape character, and landscape character

Impact Level	Open Ocean Character Area, Seascape Character Areas, and Landscape Character Areas	Overall Character Area (square miles [square kilometers])	Impacted Character Area (square miles [square kilometers])
Major	Atlantic City	3.1 [112.68]	0.12 [.30]
	Bayfront Residential	3.3 [8.5]	0.02 [0.04]
	Commercial Beachfront	1.4 [3.6]	0.26 [0.66]
	Dredged Lagoon	14.3 [37.0]	<0.01 [<0.01]
	Open Ocean	6,657.8 (17,243.6]	1,103.89 [2,859.05]
	Residential Beachfront	8.2 [21.3]	0.68 [1.76]
	Salt Marsh	214.7 [556.1]	8.26 [21.40]
	Town/Village Center	2.6 [6.7]	0.01 [0.03]
	Undeveloped Bay	209.1 [549.7]	4.64 [12.03]
	Undeveloped Beach	7.9 [20.5]	1.30 [3.36]
Moderate	Agriculture	110.2 [8.0]	0.01 [0.03]
	Atlantic City	3.1 [112.68]	0.10 [0.26]
	Bayfront Residential	3.3 [8.5]	0.14 [0.36]
	Commercial Beachfront	1.4 [3.6]	0.22 [0.58]
	Dredged Lagoon	14.3 [37.0]	0.32 [0.83]
	Inland Open Water	26.6 [68.9]	0.06 [0.16]
	Inland Residential	223.8 [579.6]	0.69 [1.79]
	Limited Access Highway	9.6 [24.9]	0.31 [0.80]
	Open Ocean	6,657.8 [17,243.6]	1,540.14 [3,988.93]
	Recreation	20.2 [52.3]	0.35 [0.90]
	Residential Beachfront	8.2 [21.3]	<0.01 [<0.03]
	Salt Marsh	214.7 [556.1]	76.70 [198.65]
	Undeveloped Bay	209.1 [549.7]	92.58 [239.78]
	Undeveloped Beach	7.9 [20.5]	0.58 [1.51]
Minor	Agriculture	110.2 [8.0]	0.02 [0.04]
	Bayfront Residential	3.3 [8.5]	0.05 [0.12]
	Commercial Beachfront	1.4 [3.6]	0.46 [1.21]
	Commercial Strip Development	29.5 [76.4]	0.09 [0.23]
	Dredged Lagoon	14.3 [37.0]	0.15 [0.38]
	Forest	1,273.1 [3,297.3]	1.65 [4.27]
	Industrial/Developed	37.8 [97.9]	0.38 [0.99]
	Inland Open Water	26.6 [68.9]	0.64 [1.65]
	Inland Residential	223.8 [579.6]	0.09 [0.25]
	Limited Access Highway	9.6 [24.9]	0.03 [0.08]
	Open Ocean	6,657.8 [17,243.6]	3.901.58 [10,105.03]
	Recreation	20.2 [52.3]	0.28 [0.72]
	Residential Beachfront	8.2 [21.3]	2.38 [6.17]
	Salt Marsh	214.7 [556.1]	27.01 [69.95]
	Town/Village Center	2.6 [6.7]	<0.01 [<0.03]
	Undeveloped Bay	209.1 [549.7]	58.43 [151.35]
	Undeveloped Beach	7.9 [20.5]	2.17 [5.63]
Negligible	Unseen Seascape Character Areas and Landscape Character Areas		
Major	**Cardiff Onshore Area:**		
	Forest	9.891 [25.617]	0.025 [0.065]

Impact Level	Open Ocean Character Area, Seascape Character Areas, and Landscape Character Areas	Overall Character Area (square miles [square kilometers])	Impacted Character Area (square miles [square kilometers])
	High Density Residential	1.017 [2.634]	0.025 [0.064]
	Low Density Residential	1.018 [2.638]	0.001 [0.001]
	Medium Density Residential	7.732 [20.028]	0.004 [0.011]
	Recreation	0.720 [1.865]	0.002 [0.004]
	Transportation	0.556 [1.441]	0.010 [0.027]
Minor	**Cardiff Onshore Area:**		
	Commercial	2.628 [6.806]	0.066 [0.169]
	Industrial	2.103 [5.049]	0.020 [0.053]
Major	**Larrabee Brook Road Onshore Area:**		
	Agriculture	1.560 [4.041]	0.032 [0.084]
	Commercial	2.505 [6.487]	0.004 [0.011]
	Forest	14.379 [37.243]	0.227 [0.587]
	High Density Residential	2.081 [5.089]	0.001 [0.001]
	Industrial	1.971 [5.104])	0.077 [0.199]
	Inland Water	0.366 [0.949]	0.001 [0.001]
	Low Density Residential	3.251 [8.419]	0.028 [0.073]
	Medium Density Residential	9.426 [24.413]	0.003 [0.008]
	Recreation	1.337 [4.463]	0.005 [0.013]
Minor	**Larrabee Randolph Road Onshore Area:**		
	Agriculture	1.560 [4.041]	0.004 [0.013]
	Forest	14.379 [37.243]	0.035 [0.091]
	High Density Residential	2.081 [5.089]	0.001 [0.003]
	Industrial	1.971 [5.104]	0.67 [0.174]
	Inland Water	0.366 [0.949]	<0.001 [<0.001]
	Low Density Residential	3.251 [8.419]	0.006 [0.015]
	Medium Density Residential	9.426 [24.413]	<0.001 [<0.001]
	Recreation	1.337 [4.463]	0.001 [0.003]
Major	**Larrabee Lanes Pond Onshore Area (Miller Road):**	1.560 [4.041]	0.019 [0.048]
	Agriculture	14.379 [37.243]	0.020 [0.052]
	Forest	2.081 [5.089]	<0.001 [<0.001]
	High Density Residential	1.971 [5.104]	<0.001 [<0.001]
	Industrial	0.366 [0.949]	<0.001 [<0.001]
	Inland Water	3.251 [8.419]	0.028 [0.072]
	Low Density Residential	9.426 [24.413]	0.001 [0.001]
	Medium Density Residential	1.337 [4.463]	<0.001 [<0.001]
	Recreation		

Table H-25. Impact levels on O&M facility open ocean character, seascape character, and landscape character

Impact Level	Onshore O&M Open Ocean Character Areas, Seascape Character Areas, and Landscape Character Areas	Overall Character Area (acres [hectares])	Impacted Character Area (acres [hectares])
Major	None		
Moderate	Undeveloped Bay	4,215.3 [1,705.9]	1,869.5 [756.6]
Minor	Atlantic City	2,012.2 [814.3]	207.2 [83.9]
	Salt Marsh	4,906.5 [1,985.6]	2,010.2 [813.5]

Impact Level	Onshore O&M Open Ocean Character Areas, Seascape Character Areas, and Landscape Character Areas	Overall Character Area (acres [hectares])	Impacted Character Area (acres [hectares])
Negligible	Open Ocean	5,358.5 [2,168.5]	2,131.4 [862.5]
	Commercial Beachfront	272.0 [110.1]	0.6 [0.2]
	Dredged Lagoon	64.6 [26.1]	0.3 [0.1]
	Recreation	48.2 [19.5]	5.9 [2.4]
	Residential Beachfront	564.5 [228.4]	82.8 [33.5]
	Town/Village Center	2.8 [1.1]	Not visible
	Undeveloped Beach	31.8 [12.9]	14.8 [6.0]
	Bayfront Residential	81.7 [33.1]	3.1 [1.3]
	Commercial Strip Development	170.3 [68.9]	6.2 [2.5]
	Forest	4.6 [1.9]	0.7 [0.3]
	Industrial/Developed	198.3 [80.2]	63.8 [25.8]
	Inland Open Water	8.4 [3.4]	0.1 [0.0]
	Inland Residential	838.0 [330.1]	8.4 [3.4]
	Limited Access Highway	37.7 [15.3]	4.1 [1.7]

Source: COP Volume II, Appendix II-M5, Table 1.2-1, Atlantic Shores 2024.

H.3.1.5 Impact Levels on the Viewer Experience

The VIA considers the characteristics of the view receptor, characteristics of the view toward the Project facilities, and the experiential impacts of the Project. Based on VIA impact range factors presented in Table H-1 and the geographic analysis area viewer experience analyses in Table H-11, Table H-26 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). Table H-27 summarizes Proposed Action impacts on the viewer experience (KOP locations) throughout the geographic analysis area. Impacts of the Proposed Action on viewer experiences range from **negligible** to **major**.

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Table H-26. Viewer sensitivity, receptor susceptibility, view value, viewer experience, and impact levels

	Affected Environment									Viewer Experience				Impact Levels				
	Viewer Sensitivity			Receptor Susceptibility			View Value			Distance-Noticeable Elements-Horizontal FOV-Vertical FOV-Contrast-Scale-Prominence Effects				Proposed Action				Alternatives C1, C2, C3, D, E, F
KOP[1]	High	Medium	Low	High	Medium	Low	High	Medium	Low	Dominant	Moderate	Minor	Unseen	Major	Moderate	Minor	Negligible	Impact Levels
KOP-AC02		X			X		X			X					X			Same as Proposed Action
KOP-AC03 (Daytime)[4]	X			X			X			X				X				Same as Proposed Action
KOP-AC03 (Nighttime)[3, 4]	X			X			X				X					X		Same as Proposed Action
KOP-AC04 (Daytime)	X			X			X			X				X				Same as Proposed Action
KOP-AC04 (Nighttime)[3]	X			X			X				X					X		Same as Proposed Action
KOP-BC02	X			X			X			X				X				Same as Proposed Action
KOP-BHB01 (Daytime)[4]	X			X			X			X				X				Same as Proposed Action
KOP-BHB01 (Nighttime)	X			X			X					X				X		Same as Proposed Action
KOP-BHB02	X			X			X			X				X				Same as Proposed Action
KOP-BHB03[4]	X			X			X			X				X				Same as Proposed Action
KOP-BLB02	X			X			X				X				X			Same as Proposed Action
KOP-BRT01		X			X		X					X				X		Same as Proposed Action
KOP-BT01	X			X			X				X				X			Same as Proposed Action
KOP-EMC01		X			X		X					X				X		Same as Proposed Action
KOP-GT01	X			X			X				X				X			Same as Proposed Action
KOP-LAT01 (Daytime)	X			X			X				X				X			Same as Proposed Action
KOP-LAT01 (Nighttime)[3]	X			X			X					X					X	Same as Proposed Action
KOP-LBT03	X			X			X				X				X			Same as Proposed Action
KOP-LBT04	X			X			X			X				X				Same as Proposed Action
KOP-LEHT02	X			X			X			X				X				Same as Proposed Action
KOP-LT02[2]	X			X			X					X				X		Same as Proposed Action
KOP-MC02	X			X			X			X				X				Same as Proposed Action
KOP-MC03[4]	X			X			X			X				X				Same as Proposed Action
KOP-OC01[4]	X			X			X				X				X			Same as Proposed Action
KOP-OC04		X			X		X				X				X			Same as Proposed Action
KOP-OO1	X			X			X			X				X				Same as Proposed Action
KOP-OO2	X			X			X			X				X				Same as Proposed Action
KOP-SBB01	X			X			X				X				X			Same as Proposed Action
KOP-SPB01[4]	X			X			X				X					X		Same as Proposed Action
KOP-SIC02	X			X			X				X				X			Same as Proposed Action
KOP-C8	X			X			X			X				X				Same as Proposed Action
KOP-C17	X			X			X					X				X		Same as Proposed Action
KOP-L146-L	X			X			X			X				X				Same as Proposed Action
KOP-L4	X			X			X					X				X		Same as Proposed Action
KOP-L5	X			X			X					X				X		Same as Proposed Action
KOP-OM11	X				X		X			X				X				Same as Proposed Action
KOP-OM18	X			X			X					X				X		Same as Proposed Action
KOP-OM20	X			X			X				X				X			Same as Proposed Action

[1] KOP-AC02 Jim Whelan Boardwalk Hall, Atlantic City Convention Center NHL, KOP-AC03 Madison Hotel, KOP-AC04 Ocean Casino Resort – Sky Garden, KOP-BC02 North Brigantine Natural Area, KOP-BHB01 Beach Haven Historic District, KOP-BHB02 Beach Haven, Center Street, KOP-BHB03 Beach Haven, Holyoke Street, KOP-BLB02 Barnegat Lighthouse State Park, KOP-BRT01 Bass River State Forest, KOP-BT01 Island Beach State Park, KOP-EMC01 Tuckahoe WMA, KOP-GT01 Edwin B. Forsythe National Wildlife Refuge, KOP-LBT03 Long Beach Island Beach, KOP-LBT04 Edwin B. Forsythe NWR-Woodmansee Estate, Holyoke, KOP-LEHT02 Great Bay Boulevard WMA/Rutgers Field Station Great Bay Boulevard Wildlife Management Area, KOP-LT02 Cape May Point State Park Lighthouse, KOP-MC02 Lucy the Elephant National Historic Landmark, KOP-MC03 Huntington Park, KOP-OC01 Corson's Inlet State Park, KOP-OC04 Gillian's Wonderland Amusement, KOP-OO1 Recreational, Fishing, and Tour Boat Area, KOP-OO2 Commercial and Cruise Ship Shipping Lanes, KOP-SBB01 Ship Bottom Borough Municipal Park, KOP-SIC02 Townsend Inlet Bridge, KOP-SPB01 Seaside Park Beach, KOP-C8 Cardiff Tilton Club, KOP-C17 Cardiff Hingston Ave, KOP-L1 Larrabee Miller Road, KOP-L4 Larrabee Randolph Road NE (northeast view), KOP-L5 Larrabee Randolph Road SE (southeast view), KOP-OM11 North Maryland Ave SE, KOP-OM18 Cove Beach, and KOP-OM20 Atlantic City Aquarium.
[2] Elevated observation deck or lighthouse.
[3] Nighttime scenario with ADLS implemented.
[4] Video simulation available on BOEM website: https://www.boem.gov/renewable-energy/state-activities/atlantic-shores-south, "Visual Simulations" tab.

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Table H-27. Impact levels on the viewer experience for the Proposed Action

Impact Level	Offshore and Onshore Key Observation Points
Major	**OFFSHORE**KOP-AC02 Jim Whelan Boardwalk Hall, Atlantic City Convention Center NHL KOP-AC03 Madison Hotel (Daytime) KOP-AC04 Ocean Casino Resort – Sky Garden (Daytime) KOP-BC02 North Brigantine Natural Area KOP-BHB01 Beach Haven Historic District (Daytime) KOP-BHB02 Beach Haven, Center Street KOP-BHB03 Beach Haven, Holyoke Avenue KOP-LBT04 Edwin B. Forsythe NWR, Holyoke KOP-LEHT02 Great Bay Boulevard WMA/Rutgers Field Station KOP-MC02 Lucy the Margate Elephant NHL KOP-MC03 Huntington Park KOP-OO1 Recreational Fishing, Pleasure, and Tour Boat Area KOP-OO2 Commercial and Cruise Ship Shipping Lanes **ONSHORE** KOP-C8 Cardiff Tilton Club KOP-L1 Larrabee Miller Road KOP-OM11 North Maryland Ave SE
Moderate	**OFFSHORE** KOP-BLB02 Barnegat Lighthouse State Park KOP-BT01 Island Beach State Park KOP-GT01 Edwin B. Forsythe NWR, Galloway Township KOP-LAT01 Edwin B. Forsythe NWR-Woodmansee Estate (Daytime) KOP-OC01 Corson's Inlet State Park KOP-OC04 Gillian's Wonderland Amusement Park KOP-SBB01 Ship Bottom Borough Municipal Park KOP-SIC02 Townsend Inlet Bridge **ONSHORE** KOP-OM20 Atlantic City Aquarium
Minor	**OFFSHORE** KOP-AC03 Madison Hotel (Nighttime) KOP-AC04 Ocean Casino Resort – Sky Garden (Nighttime) KOP-BHB01 Beach Haven Historic District (Nighttime) KOP-EMC01 Tuckahoe WMA KOP-BRT01 Bass River State Forest KOP-LAT01 Edwin B. Forsythe NWR-Woodmansee Estate (Nighttime) KOP-LT02 Cape May Point State Park Lighthouse KOP-SPB01 Seaside Park Beach **ONSHORE** KOP-C17 Cardiff Tilton Road KOP-L4 Larrabee Randolph Road NE KOP-L5 Larrabee Randolph Road SE KOP-OM18 Cove Beach
Negligible	**ONSHORE** KOP-C17 Cardiff Tilton Road

H.3.1.6 Cumulative Impacts of the Proposed Action in Combination with Other Ongoing and Planned Activities

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

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

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

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

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

Attachment H-2 portrays simulations of the incremental effects of the Project in the context of other offshore wind projects, from eight KOPs: KOP-AC04 Ocean Casino Resort – Sky Garden; KOP-BC02 North Brigantine Natural Area; KOP-BHB03 Beach Haven, Holyoke Avenue; KOP-LEHT02 Great Bay Boulevard WMA/Rutgers Field Station; KOP-LT02 Cape May Point State Park Lighthouse; KOP-OC04 Gillian's Wonderland Amusement Park; KOP-SIC02 Townsend Inlet Bridge; and KOP-SPB01 Seaside Park Beach. Table H-21 displays the numeric incremental effects of the Project with these other offshore wind projects at the eight cumulative KOPs based on nearest WTG, horizontal FOV, number of visible WTGs, and impact. The table lists visibility by lease area and additive changes based on anticipated buildout date.

The KOP-based visual simulations portray five incremental construction and installation scenarios:

- Scenario 1: 2023–2025 Project Construction (Empire Wind OCS-A 0512, Empire Wind II OCS-A 0512, Ocean Wind OCS-A-0498)
- Scenario 2: 2025–2027 Atlantic Shores South OCS-A 0499 Project Construction with prior 2023–2025 Project Construction (Ocean Wind OCS-A-0498 from Scenario 1).

- Scenario 3: 2024–2030 Project Construction added after Atlantic Shores South OCS-A 0499 (Atlantic Shores Offshore Wind Bight OCS-A 0541, Atlantic Shores North OCS-A 0539, Attentive Energy OCS-A 0538, Community Offshore Wind OCS-A 0539, Garden State OCS-A 0482, Invenergy Wind Offshore OCS-A 0542, Ocean Wind OCS-A-0498, Ocean Wind II OCS-A532, Skipjack OCS-A 0519, and US Wind OCS-A 0490). Due to unnoticeable wind turbine blade tip visibility at greater than a 38.7-mile (62.3-kilometer) distance (EC) from the nearest KOP studied, Mid-Atlantic Offshore Wind OCS-A 0544 and Bluepoint Wind OCS-A 0537, are eliminated from KOP cumulative analysis consideration.
- Scenario 4 (full buildout): 2023–2025 Project Construction (Atlantic Shores Offshore Wind Bight OCS-A 0541, Atlantic Shores Offshore Wind North OCS-A 0539, Attentive Energy OCS-A 0538, Community Offshore Wind OCS-A 0539, Garden State OCS-A 0482, Invenergy Wind Offshore OCS-A 0542, Ocean Wind OCS-A-0498, Ocean Wind II OCS-A532, Skipjack OCS-A 0519, and US Wind OCS-A 0490) without Atlantic Shores Offshore Wind South OCS-A 0499 Project Construction.
- Scenario 5: The Project Construction (Atlantic Shores Offshore Wind South OCS-A 0499) without other foreseeable planned activities.

The number of offshore wind structures simulated in Attachment H-2 differs from the number of structures assumed in Appendix D, *Ongoing and Planned Activities Scenario*. This is due to the timing of when Appendix D and simulations documents were developed and the assumptions used in developing the layouts for the simulations. The number of offshore structures identified in both documents are estimates of reasonably foreseeable offshore wind development and are subject to change as lessees submit COPs and refine their development plans. BOEM believes the simulations presented in Attachment H-2 provide a reasonable approximation of the scale, contrast, and prominence of visual impacts that would occur from development of the Proposed Action in combination with other ongoing and planned offshore wind projects.

The effects of other WTAs on open ocean character, seascape character, and landscape character are described listed in Table H-28. Increased impacts to the open ocean character area, seascape character areas, and landscape character areas stem from the effects of additional WTAs in view of the areas. Effects include incremental expansions to the perceived geographic extents of WTAs' fields-of-views, greater magnitudes of character-changing turbines and substations, and increased daytime and nighttime vessel traffic. Documentation and simulation of the scheduled timeframes of developments are presented in Attachment H-2, with turbine and substation quantities categorized by dated scenario. Simulations show that WTA proximities to character areas increase and decrease the character-changing interactions of key features and key elements. Those simulations showing beach views toward lease areas with visible WTGs' yellow bases and platforms, mid-tower lights, substations, hubs, nacelles, aviation lights, and rotors change seascape character more than views with more distant and fewer visible WTG elements.

The effects on viewer experience of other WTAs are described in Table H-29.

The effects on open ocean character, seascape character, and landscape character of other WTAs in combination with the Proposed Action are described in Table H-30.

The effects on viewer experience of other WTAs in combination with the Proposed Action are described in Table H-31.

Table H-28. Cumulative WTAs' incremental magnitude of change by year constructed, WTA distances, horizontal FOVs, and impact

KOP[1]	Incremental and Cumulative Visibility [4]	Distance in Miles (Kilometers), FOV degrees (% of 124°), and Impact															
		ASOWS[2] (OCS-A 0499) 2025–2028	OW1[2] (OCS-A 0498) 2026–2030	EW1[2] (OCS-A 0512) 2024–2026	EW2[2] (OCS-A 0512) 2024–2027	SW[2] (OCS-A 0519) 2024	US[2] (OCS-A 0490) 2024	GSOE[2] (OCS-A 0482) 2025–2030	ASOWN[2] (OCS-A 0549) 2026–2028	OW2[2] (OCS-A 0532) 2026–2030	VM[2] (OCS-A 0544) 2026–2030	BW[2] (OCS-A 0537) 2026–2030	AE[2] (OCS-A 0538) 2026–2030	COW[2] (OCS-A 0539) 2026–2030	ASOWB[2] (OCS-A 0541) 2026–2030	IE[2] (OCS-A 0542) 2026–2030	Total Cumulative Visibility
AC04 Additive Changes	Nearest WTG Horizontal FOV Visible WTG, OSS[2] Impact	15.0 (24.1) 52.3° (42%) 200 **Major**	13.8 (22.2) 34.7° (28%) 111 **Major**	Not visible	Not visible	Not visible	Not visible	45.3 (72.9) 16.5° (13%) 66 **Negligible**	16.2 (26.1) 53° (43%) 164 **Major**	16.2 (26.1) 62° (50%) 111 **Major**	Not visible	Not visible	Not visible	50.3 (80.9) 15° (12%) 11 **Negligible**	41.4 (66.3) 26° (21%) 95 **Minor**	43.9 (70.6) 19° (15%) 70 **Minor**	
	Visible WTGS[2] Horizontal FOV		311 59.4° (48%)					377 75.9° (61%)	541 140° (112%)	652 160° (129%)				663 160° (129%)	758 160° (129%)	828 160° (129%)	828 160° (129%) **Major**
AC04 Night Additive Changes	Nearest WTG Horizontal FOV Visible WTG, OSS[2] Impact	15.0 (24.1) 52.3° (42%) 200 **Major**	13.8 (22.2) 34.7° (28%) 111 **Major**	Not visible	Not visible	Not visible	Not visible	45.3 (72.9) 66 **Negligible**	16.2 (26.1) 53° (43%) 164 **Major**	16.2 (26.1) 62° (50%) 111 **Major**	Not visible	Not visible	Not visible	50.3 (80.9) 15° (12%) 11 **Negligible**	41.4 (66.3) 26° (21%) 95 **Minor**	43.9 (70.6) 19° (15%) 70 **Minor**	
	Visible WTGS[2] Horizontal FOV		311 59.4° (48%)					377 75.9° (61%)	541 140° (112%)	652 160° (129%)				663 160° (129%)	758 160° (129%)	828 160° (129%)	828 160° (129%) **Major**
BC02 Additive Changes	Nearest WTG Horizontal FOV Visible WTG, OSS[2] Impact	9.0 (14.5) 54.2° (44%) 200 **Major**	20.7 (33.3) 29.8° (24%) 111 **Moderate**	Not visible	Not visible	Not visible	Not visible	Not visible	11.3 (18.2) 57.8° (46%) 164 **Major**	20.7 (33.3) 42.2° (34%) 111 **Moderate**	Not visible	Not visible	Not visible	Not visible	37.5 (60.3) 25.8° (20%) 71 **Minor**	41.6 (66.9) 4° (3%) 4 **Negligible**	
	Visible WTGS[2] Horizontal FOV		311 84° (68%)						541 135° (108%)	652 154° (124%)					723 154° (124%)	727 154° (124%)	727 154° (124%) **Major**
BHB03 Additive Changes	Nearest WTG Horizontal FOV Visible WTG, OSS[2] Impact	13.0 (20.9) 45.4° (37%) 200 **Major**	23.1 (37.2) 26.3° (21%) 111 **Moderate**	Not visible	Not visible	Not visible	Not visible	Not visible	9.6 (15.5) 56.8° (46%) 164 **Major**	29.9 (48.1) 24.7° (20%) 111 **Minor**	Not visible	Not visible	Not visible	40.3 (64.8) 16° (13%) 32 **Minor**	33.2 (53.4) 28.4° (23%) 95 **Moderate**	41.3 (66.5) 23° (18%) 51 **Minor**	
	Visible WTGS[2] Horizontal FOV		311 58° (47%)						475 133° (107%)	586 143° (115%)				618 143° (115%)	713 143° (115%)	764 143° (115%)	764 143° (115%) **Major**

KOP[1]	Incremental and Cumulative Visibility [4]	Distance in Miles (Kilometers), FOV degrees (% of 124°), and Impact															
		ASOWS[2] (OCS-A 0499) 2025–2028	OW1[2] (OCS-A 0498) 2026–2030	EW1[2] (OCS-A 0512) 2024–2026	EW2[2] (OCS-A 0512) 2024–2027	SW[2] (OCS-A 0519) 2024	US[2] (OCS-A 0490) 2024	GSOE[2] (OCS-A 0482) 2025–2030	ASOWN[2] (OCS-A 0549) 2026–2028	OW2[2] (OCS-A 0532) 2026–2030	VM[2] (OCS-A 0544) 2026–2030	BW[2] (OCS-A 0537) 2026–2030	AE[2] (OCS-A 0538) 2026–2030	COW[2] (OCS-A 0539) 2026–2030	ASOWB[2] (OCS-A 0541) 2026–2030	IE[2] (OCS-A 0542) 2026–2030	Total Cumulative Visibility
LEHT02 Additive Changes	Nearest WTG Horizontal FOV Visible WTG, OSS[2] Impact	11.9 (19.2) 46.4° (37%) 200 **Major**	20.6 (333.1) 28° (22.5%) 93 **Moderate**	Not visible	Not visible	Not visible	Not visible	Not visible	11.1 (17.9) 56° (45%) 131 **Major**	16.4 (26.4) 32° (26%) 41 **Moderate**	Not visible	Not visible	Not visible	Not visible	36.7 (59.1) 28.4° (23%) 5 **Negligible**	Not visible	
	Visible WTGS[2] Horizontal FOV		293 63° (50%)						424 126° (101%)	465 140° (112%)					470 140° (112%)		470 140° (112%) **Major**
LT02 Additive Changes	Nearest WTG Horizontal FOV Visible WTG, OSS[2] Impact	45.0 (72.4) 18° (14%) 140 **Minor**	33.9 (54.6) 18.5° (15%) 105 **Moderate**	Not visible	Not visible	25.7 (41.4) 16° (13%) 33 **Moderate**	32.6 (52.5) 16° (13%) 98 **Minor**	15.9 (25.6) 34.8° (28%) 80 **Major**	55.5 (89.3) 13.4° (10%) 13 **Negligible**	26.0 (41.8) 34.8° (31%) 111 **Moderate**	Not visible	Not visible	Not visible	Not visible	Not visible	Not visible	
	Visible WTGS[2] Horizontal FOV		245 27° (22%)			278 43° (35%)	376 77.8° (63%)	456 62° (50%)	469 81.3° (65%)	580 98.3° (79%)							580 98.3° (79%) **Major**
OC04 Additive Changes	Nearest WTG Horizontal FOV Visible WTG, OSS[2] Impact	17.2 (27.7) 50° (40%) 199 **Moderate**	15.6 (25.1) 38° (31%) 111 **Major**	Not visible	Not visible	Not visible	Not visible	37.6 (60.5) 19° (15%) 32 **Minor**	26.1 (42.0) 35.6° (29%) 118 **Moderate**	12.8 (20.6) 55.6° (45%) 111 **Major**	Not visible	Not visible	Not visible	Not visible	Not visible	Not visible	
	Visible WTGS[2] Horizontal FOV		311 67° (54%)					343 86° (69%)	461 108° (87%)	572 137° (110%)							572 137° (110%) **Major**
SIC02 Additive Changes	Nearest WTG Horizontal FOV Visible WTG, OSS[2] Impact	27.3 (43.9) 43.6° (35%) 195 **Moderate**	18.5 (29.8) 29.2° (23%) 111 **Moderate**	Not visible	Not visible	35.3 (56.8) 14° (11%) 33 **Minor**	45.2 (72.7) 9.3° (7%) 19 **Negligible**	26.6 (42.8) 25.7° (21%) 62 **Moderate**	37.6 (60.5) 26.4° (21%) 134 **Minor**	12.1 (19.5) 52.7° (42%) 111 **Major**	Not visible	Not visible	Not visible	Not visible	Not visible	Not visible	
	Visible WTGS[2] Horizontal FOV		306 48° (39%)			339 62° (50%)	355 62° (50%)	417 62° (50%)	554 72° (58%)	665 101° (81%)							665 101° (81%) **Major**

KOP[1]	Incremental and Cumulative Visibility [4]	Distance in Miles (Kilometers), FOV degrees (% of 124°), and Impact															
		ASOWS[2] (OCS-A 0499) 2025–2028	OW1[2] (OCS-A 0498) 2026–2030	EW1[2] (OCS-A 0512) 2024–2026	EW2[2] (OCS-A 0512) 2024–2027	SW[2] (OCS-A 0519) 2024	US[2] (OCS-A 0490) 2024	GSOE[2] (OCS-A 0482) 2025–2030	ASOWN[2] (OCS-A 0549) 2026–2028	OW2[2] (OCS-A 0532) 2026–2030	VM[2] (OCS-A 0544) 2026–2030	BW[2] (OCS-A 0537) 2026–2030	AE[2] (OCS-A 0538) 2026–2030	COW[2] (OCS-A 0539) 2026–2030	ASOWB[2] (OCS-A 0541) 2026–2030	IE[2] (OCS-A 0542) 2026–2030	Total Cumulative Visibility
SPB01	Nearest WTG Horizontal FOV	39.0 (62.8) 23.1° (19%) 43	Not visible	39.8 (64.1) 19.4° (16%) 52	44.6 (71.8) 4° (3%) 6	Not visible	Not visible	Not visible	19.3 (31.1) 24° (19%) 157	Not visible	Not visible	Not visible	42.4 (68.2) 11.3° (9%) 7	41.8 (67.3) 13.7° (11%) 13	39.5 (63.6) 7.3° (6%) 17	Not visible	
	Visible WTG, OSS[2] Impact	**Minor**		**Minor**	**Negligible**				**Moderate**				**Minor**	**Minor**	**Minor**		
Additive Changes	Visible WTGS[2] Horizontal FOV			95 42.5° (34%)	101 46.5° (37%)				258 57.4° (46%)				265 68.7° (55%)	278 82.4° (66%)	295 89.7° (72%)		295 89.7° (72%) **Moderate**

[1] KOP-OC04S = Ocean Casino Resort-Sky Garden; KOP-BC02 = North Brigantine Natural Area; KOP-BHB03 = Beach Haven, Holyoke Avenue; KOP-LEHT02 = Great Bay Boulevard WMA/Rutgers Field Station; KOP-LT02 = Cape May Point State Park Lighthouse; KOP-OC04 = Gillian's Wonderland Amusement Park; KOP-SIC02 = Townsend Inlet Bridge; and KOP-SPB01 = Seaside Park Beach.

[2] AE = Attentive Energy (previously [COP VIA] Hudson South B) OCS-A 0538; ASOWB = Atlantic Shores Offshore Wind Bight (previously [COP VIA] Hudson South E) OCS-A 0541; ASOWN = Atlantic Shores Offshore Wind North OCS-A 0549; ASOWS = Atlantic Shores Offshore Wind South OCS-A 0499; BW = Bluepoint Wind (previously [COP VIA] Central Bight) OCS-A 0537; COW = Community Offshore Wind (previously [COP VIA] Hudson South C) OCS-A 0539; EW1 = Empire Wind 1 OCS-A 0512; EW2 = Empire Wind 2 OCS-A 0512; GSOE = Garden State Offshore Energy I OCS-A 0482; IE = Invenergy Wind Offshore (previously [COP VIA] Hudson South F) OCS-A 0542; OW1 = Ocean Wind 1 OCS-A-0498; OW2 = Ocean Wind 2 OCS-A532; SW = Skipjack OCS-A 0519; US = US Wind/Maryland Offshore Wind OCS-A 0490; VM = Vineyard Mid-Atlantic (previously [COP VIA] Hudson North) OCS-A 0544

[3] Theoretically visible based on clear sky and EC (see cumulative simulations in Appendix H, Attachment H-1).

[4] The visibility numbers are based on the other offshore wind developments planned WTG height and location at the time of writing. The number of other offshore wind developments visible WTGs may change based on final project approvals and development.

Table H-29. Other WTAs' open ocean, seascape, and landscape areas cumulative WTA distances, FOVs, noticeable elements, visual contrasts, scale of change, and prominence

WTAs[1] and Incremental Date	Distance in Miles (Kilometers)[2] and Impacts			FOV Degrees (% of 124°)			Noticeable Elements[3] and Impact Level	Visual Contrast, Scale of Change, and Prominence						Alternatives D1, D2, D3	Alternatives C1, C2, C3, E and F
	Seascape[5]	Open Ocean	Landscape[5]	Open Ocean	Seascape	Landscape		Form	Line	Color	Texture	Scale	Prominence[4]		
AE 2030	42.4 (68.2) **Minor**	0 (0)–38.7 (62.3) **Major**	42.6 (68.5) **Minor**	82° to 360° (66 to 290%)	136° (110%)	136° (110%)	R, AL, N, H, O, M, Y Major	Strong	Strong	Strong	Strong	Large	6	Same as Proposed Action	Same as Proposed Action
ASOWB 2030	34.3 (55.2) **Moderate**	0 (0)–38.7 (62.3) **Major**	34.5 (55.5) **Moderate**											Same as Proposed Action	Same as Proposed Action
ASOWN 2030	9.0 (14.5) **Major**	0 (0)–42.5 (68.4) **Major**	9.2 (14.8) **Major**											Same as Proposed Action	Same as Proposed Action
COW 2030	44.7 (71.9) **Minor**	0 (0)–38.7 (62.3) **Major**	44.9 (72.2) **Minor**											Same as Proposed Action	Same as Proposed Action
EW1 2030	34.7 (55.8) **Minor**	0 (0)–40.7 (65.5) **Major**	34.9 (56.1) **Minor**											Same as Proposed Action	Same as Proposed Action
EW2 2030	40.8 (65.7) **Negligible**	0 (0)–40.7 (65.5) **Major**	41.0 66.0) **Negligible**											Same as Proposed Action	Same as Proposed Action
GS 2030	14.5 (23.3) **Major**	0 (0)–38.7 (62.3) **Major**	14.7 23.6) **Major**											Same as Proposed Action	Same as Proposed Action
IE 2030	42.8 (68.9) **Minor**	0 (0)–38.7 (62.3) **Major**	43.0 (69.2) **Minor**											Same as Proposed Action	Same as Proposed Action
VM 2030	46.1 (74.2) **Minor**	0 (0)–38.7 (62.3) **Major**	46.3 (74.5) **Minor**											Same as Proposed Action	Same as Proposed Action
OW 2025	15.3 (24.6) **Major**	0 (0)–39.6 (63.7) **Major**	15.5 24.9) **Major**											Same as Proposed Action	Same as Proposed Action
OWII 2030	11.5 (18.5) **Major**	0 (0)–39.6 (63.7) **Major**	11.7 (18.8) **Major**											Same as Proposed Action	Same as Proposed Action
BW 2030	61.9 (99.6) **Negligible**	0 (0)–38.7 (62.3) **Major**	62.1 (99.9) **Negligible**											Same as Proposed Action	Same as Proposed Action
SW 2030	22.2 (35.7) **Moderate**	0 (0)–38.7 (62.3) **Major**	22.4 (36.0) **Moderate**											Same as Proposed Action	Same as Proposed Action
US 2024	31.9 (51.3) **Minor**	0 (0)–38.7 (62.3) **Major**	32.1 (51.6) **Minor**											Same as Proposed Action	Same as Proposed Action

[1] AE = Attentive Energy (previously [COP VIA] Hudson South B) OCS-A 0538, ASOWB = Atlantic Shores Offshore Wind Bight (previously [COP VIA] Hudson South E) OCS-A 0541, ASOWN = Atlantic Shores Offshore Wind North OCS-A 0549, BW = Bluepoint Wind (previously [COP VIA] Central Bight) OCS-A 0537; COW = Community Offshore Wind (previously [COP VIA] Hudson South C) OCS-A 0539, EW 1 = Empire Wind 2 OCS-A 0512, EW2 = Empire Wind 2 OCS-A 0512, GS = Garden State OCS-A 0482, IE = Invenergy Wind Offshore (previously [COP VIA] Hudson South F) OCS-A 0542,; OW1 = Ocean Wind 1 OCS-A-0498; OW2 = Ocean Wind 2 OCS-A532; SW = Skipjack OCS-A 0519; US = US Wind/Maryland Offshore Wind OCS-A 0490; VM = Vineyard Mid-Atlantic (previously [COP VIA] Hudson North) OCS-A 0544

[2] 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).

[3] Noticeable elements: R = rotor, AL = aviation light, N = nacelle, H = hub, O = OSP, M = mid-tower light, Y = yellow tower base color.

[4] WTGs and OSP Prominence (visibility): 0 = Not visible. 1 = Visible only after extended study; otherwise not visible. 2 = Visible when viewing in general direction of the WTA; otherwise, likely to be missed by casual observer. 3 = Visible after brief glance in general direction of the WTA; 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 WTA, 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 (Sullivan et al. 2013).

[5] The seaward edge between landscape and seascape varies. The most conservative case is 0.2-mile (0.3-kilometer) landward distance from seaward beach edge.

Table H-30. Other WTAs' cumulative viewer experience WTA distances, FOVs, noticeable elements, visual contrasts, scale of change, and prominence

View[1]	Distance in Miles (Kilometers) and Impact														FOV Degrees (% of 124°)	Noticeable Elements [3] and Impact Level[4]	Visual Contrast, Scale of Change, and Prominence							
	AE[2]	ASOWB[2]	ASOWN[2]	COW[2]	EW1[2]	EW2[2]	GS[2]	IE[2]	VM	OW[2]	OWII[2]	BW[2]	SW[2]	US[2]			Form	Line	Color	Texture	Scale	Prominence[5]	Alternatives D1, D2, D3	Alternatives C1, C2, C3, E and F
AC04	64.1 (24.0) **Negligible**	41.4 (66.3 **Minor**	16.2 (26.1) **Major**	50.3 (80.9) **Negligible**	82.4 (132.6) **Negligible**	84.8 (136.5) **Negligible**	45.3 (72.9) **Negligible**	43.9 (70.6) **Minor**	85.9 (138.2) **Minor**	13.8 (22.2) **Major**	16.2 (26.1) **Major**	91.5 (147.3) **Negligible**	51.3 (82.6) **Negligible**	65.2 (104.3) **Negligible**	131° (105%)	R, AL, N, H, O, and M Major	Strong	Strong	Strong	Strong	Large	6	Same as Proposed Action	Same as Proposed Action
AC04 Night	64.1 (103.2) **Negligible**	41.4 (66.3) **Minor**	16.2 (26.1) **Major**	50.3 (80.9) **Negligible**	82.4 (132.6) **Negligible**	84.8 (136.5) **Negligible**	45.3 (72.9) **Negligible**	43.9 (70.6) **Minor**	85.9 138.2) **Negligible**	13.8 (22.2) **Major**	16.2 (26.1) **Major**	91.5 (147.3) **Major**	51.3 (82.6) **Major**	65.2 (104.3) **Negligible**	131° (105%)	R, AL, N, H, O, and M Major	Strong	Strong	Strong	Strong	Large	6	Same as Proposed Action	Same as Proposed Action
BC02	41.6 (66.9) **Minor**	37.5 (60.3) **Minor**	11.3 (18.2) **Major**	45.7 (73.5) **Minor**	76.3 (122.9) **Negligible**	78.5 (126.3) **Negligible**	50.9 (81.9) **Negligible**	41.6 (66.9) **Minor**	80.5 (129.5) **Negligible**	20.7 (33.3) **Moderate**	20.7 (33.3) **Moderate**	85.8 (138.1) **Negligible**	56.7 (91.3) **Negligible**	70.8 (113.9) **Negligible**	136° (110%)	R, AL, N, H, O, M, and Y Major	Strong	Strong	Strong	Strong	Large	6	Same as Proposed Action	Same as Proposed Action
BHB03	51.3 (82.5) **Negligible**	33.2 (53.4) **Moderate**	9.6 (15.5) **Major**	40.3 (64.8) **Minor**	66.4 (66.4) **Negligible**	69.1 (111.2) **Negligible**	60.6 (97.5) **Negligible**	41.3 (66.5) **Minor**	70.5 (113.5) **Negligible**	23.1 (37.2) **Moderate**	29.9 (48l.1) **Minor**	77.6 (124.9) **Negligible**	66.3 (106.7) **Negligible**	80.6 (129.7) **Negligible**	128° 103%)	R, AL, N, H, O, M, and Y Major	Strong	Strong	Strong	Strong	Large	6	Same as Proposed Action	Same as Proposed Action
LEHT02	43.4 (69.8) **Minor**	36.7 (59.1) **Minor**	11.1 (17.9) **Major**	44.6 (64.8) **Minor**	71.2 (114.6) **Negligible**	73.3 (117.9) **Negligible**	55.8 (89.8) **Negligible**	46.1 (74.2) **Minor**	75.7 (121.8) **Negligible**	20.6 (333.1) **Moderate**	16.4 (26.4) **Major**	82.4 (132.6) **Negligible**	63.1 (101.6) **Negligible**	76.2 (122.6) **Negligible**	130° (105%)	R, AL, N, H, O, M, and Y Major	Strong	Strong	Strong	Strong	Large	6	Same as Proposed Action	Same as Proposed Action
LT02	72.8 (117.2) **Negligible**	73.5 (118.3) **Negligible**	55.5 (89.3) **Negligible**	87.7 (141.1) **Negligible**	123.4 (198.6) **Negligible**	125.9 (202.6) **Negligible**	15.9 (25.6) **Major**	126.1 (202.9) **Negligible**	127.6 (205.3) **Negligible**	33.9 (54.6) **Moderate**	26.0 (41.8) **Moderate**	131.6 (211.8) **Negligible**	25.7 (41.4) **Moderate**	32.6 (52.5) **Minor**	121° (97%)	R, AL, N, H, O, and M Major	Strong	Strong	Strong	Strong	Large	6	Same as Proposed Action	Same as Proposed Action
OC04S	74.1 (119.3) **Negligible**	49.7 (799) **Negligible**	26.1 (42.0) **Moderate**	59.6 (95.9) **Negligible**	92.1 (148.2) **Negligible**	94.7 (152.4) **Negligible**	37.6 (60.5) **Minor**	51.1 (82.2) **Negligible**	96.1 (154.6) **Negligible**	15.6 (25.1) **Major**	12.8 (20.6) **Major**	101.4 (163.2) **Negligible**	44.2 (71.1) **Negligible**	56.9 (91.6) **Negligible**	134° (109%)	R, AL, N, H, O, and M Major	Strong	Strong	Strong	Strong	Large	6	Same as Proposed Action	Same as Proposed Action
SIC02	85.9 (138.2) **Negligible**	57.5 (92.5) **Negligible**	37.6 (60.5) **Minor**	70.4 (113.3) **Negligible**	105.4 (169.6) **Negligible**	107.9 (173.6) **Negligible**	26.6 (42.8) **Moderate**	60.6 (97.5) **Negligible**	109.1 (175.6) **Negligible**	18.5 (29.8) **Moderate**	12.1 (19.5) **Major**	113.6 (182.8) **Negligible**	35.3 (56.8) **Minor**	45.2 (72.7) **Negligible**	128° (103%)	R, AL, N, H, O, and M Major	Strong	Strong	Strong	Strong	Large	6	Same as Proposed Action	Same as Proposed Action
SPB01	42.4 (268.2) **Minor**	39.5 (63.6) **Minor**	19.3 (31.1) **Moderate**	41.8 (67.3) **Minor**	39.8 (64.1) **Minor**	44.6 (71.8) **Negligible**	87.8 (141.3) **Negligible**	49.1 (79.2) **Negligible**	49.1 (79.0) **Negligible**	57.8 (93.0) **Negligible**	57.8 (93.0) **Negligible**	62.9 (101.2) **Negligible**	93.3 (150.2) **Negligible**	108.3 (174.3) **Negligible**	133° (107%)	R, AL, N, H, O, and M Major	Strong	Strong	Strong	Moderate	Large	6	Same as Proposed Action	Same as Proposed Action

[1] KOP-OC04S-Ocean Casino Resort-Sky Garden, KOP-BC02 North Brigantine Natural Area, KOP-BHB03 Beach Haven, Holyoke Avenue, KOP-LEHT02 Great Bay Boulevard WMA/Rutgers Field Station, KOP-LT02 Cape May Point State Park Lighthouse, KOP-OC04 Gillian's Wonderland Amusement Park, KOP-SIC02 Townsend Inlet Bridge, and KOP-SPB01 Seaside Park Beach.

[2] AE = Attentive Energy (previously [COP VIA] Hudson South B) OCS-A 0538; ASOWB = Atlantic Shores Offshore Wind Bight (previously [COP VIA] Hudson South E) OCS-A 0541; ASOWN = Atlantic Shores Offshore Wind North OCS-A 0549; BW = Bluepoint Wind (previously [COP VIA] Central Bight) OCS-A 0537; COW = Community Offshore Wind (previously [COP VIA] Hudson South C) OCS-A 0539; EW1 = Empire Wind 1 OCS-A 0512; EW2 = Empire Wind 2 OCS-A 0512; GS = Garden State OCS-A 0482; IE = Invenergy Wind Offshore (previously [COP VIA] Hudson South F) OCS-A 0542; OW = Ocean Wind 1 OCS-A-0498, OWII = Ocean Wind II OCS-A532, SW = Skipjack OCS-A 0519; US = US Wind OCS-A 0490; VM = Vineyard Mid-Atlantic (previously [COP VIA] Hudson North) OCS-A 0544

[3] Noticeable elements: R = rotor, AL = aviation light, N = nacelle, H = hub, O = OSP, M = mid-tower light, Y = yellow tower base color.

[4] Due to EC and known WTG heights, those WTGs beyond 42.5 miles (68.4 kilometers) would not be visible from ground level plus 5.9 feet (1.8 meters).

[5] WTGs and OSP (onshore) visibility: 0 = Not visible. 1 = Visible only after extended study; otherwise not visible. 2 = Visible when viewing in general direction of the WTA; otherwise likely to be missed by casual observer. 3 = Visible after brief glance in general direction of the WTA; 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 WTA; 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 (Sullivan et al. 2013).

Table H-31. Atlantic Shores Offshore Wind South and other WTAs' open ocean, seascape, and landscape areas cumulative WTA distances, FOVs, noticeable elements, visual contrasts, scale of change, and prominence

WTAs [1] and Incremental Date	Distance in Miles (Kilometers)[2]			FOV Degrees (% of 124°)			Noticeable Elements[3] and Impact Level	Visual Contrast, Scale of Change, and Prominence						Alternatives D1, D2, D3	Alternatives C1, C2, C3, E and F
	Open Ocean Distance and Impact	Seascape[5] Distance and Impact	Landscape[5] Distance and Impact	Open Ocean	Seascape	Landscape		Form	Line	Color	Texture	Scale	Prominence[4]		
AE 2030	0 (0)–38.7 (62.3) **Major**	42.4 (68.2) **Minor**	42.6 (68.5) **Minor**	82° to 360° (66 to 290%)	136° (110%)	136° (110%)	R, AL, N, H, O, M, Y Major	Strong	Strong	Strong	Strong	Large	6	Same as Proposed Action	Same as Proposed Action
ASOWB 2030	0 (0)–38.7 (62.3) **Major**	34.3 (55.2) **Moderate**	34.5 (55.5) **Moderate**											Same as Proposed Action	Same as Proposed Action
ASOWN 2030	0 (0)–42.5 (68.4) **Major**	9.0 (14.5) **Major**	9.2 (14.8) **Major**											Same as Proposed Action	Same as Proposed Action
ASOWS 2027	0 (0)–42.5 (68.4) **Major**	8.7 (14.0) **Major**	9.0 (14.5) **Major**											Same as Proposed Action	Same as Proposed Action
COW 2030	0 (0)–38.7 (62.3) **Major**	44.7 (71.9) **Minor**	44.9 (72.2) **Minor**											Same as Proposed Action	Same as Proposed Action
EW1 2030	0 (0)–40.7 (65.5) **Major**	34.7 (55.8) **Minor**	34.9 (56.1) **Minor**											Same as Proposed Action	Same as Proposed Action
EW2 2030	0 (0)–40.7 (65.5) **Major**	40.8 (65.7) **Negligible**	41.0 (66.0) **Negligible**											Same as Proposed Action	Same as Proposed Action
GS 2030	0 (0)–38.7 (62.3) **Major**	14.5 (23.3) **Major**	14.7 (23.6) **Major**											Same as Proposed Action	Same as Proposed Action
IE 2030	0 (0)–38.7 (62.3) **Major**	42.8 (68.9) **Minor**	43.0 (69.2) **Minor**											Same as Proposed Action	Same as Proposed Action
VM 2030	0 (0)–38.7 (62.3) **Major**	46.1 (74.2) **Minor**	46.3 (74.5) **Minor**											Same as Proposed Action	Same as Proposed Action
OW1 2025	0 (0)–39.6 (63.7) **Major**	15.3 (24.6) **Major**	15.5 24.9) **Major**											Same as Proposed Action	Same as Proposed Action
OW2 2030	0 (0)–39.6 (63.7) **Major**	11.5 (18.5) **Major**	11.7 (18.8) **Major**											Same as Proposed Action	Same as Proposed Action
BW 2030	0 (0)–38.7 (62.3) **Major**	61.9 (99.6) **Negligible**	62.1 (99.9) **Negligible**											Same as Proposed Action	Same as Proposed Action
SW 2030	0 (0)–38.7 (62.3) **Major**	22.2 (35.7) **Moderate**	22.4 (36.0) **Moderate**											Same as Proposed Action	Same as Proposed Action
US 2024	0 (0)–38.7 (62.3) **Major**	31.9 (51.3) **Minor**	32.1 (51.6) **Minor**											Same as Proposed Action	Same as Proposed Action

[1] AE = Attentive Energy (previously [COP VIA] Hudson South B) OCS-A 0538; ASOWB = Atlantic Shores Offshore Wind Bight (previously [COP VIA] Hudson South E) OCS-A 0541; ASOWN = Atlantic Shores Offshore Wind North OCS-A 0549; ASOWS = Atlantic Shores Offshore Wind South OCS-A 0499' BW = Bluepoint Wind (previously [COP VIA] Central Bight) OCS-A 0537COW = Community Offshore Wind (previously [COP VIA] Hudson South C) OCS-A 0539; EW1 = Empire Wind 1 OCS-A 0512; EW2 = Empire Wind 2 OCS-A 0512; GS = Garden State OCS-A 0482; IE = Invenergy Wind Offshore (previously [COP VIA] Hudson South F) OCS-A 0542; OW = Ocean Wind OCS-A-0498; OW2 = Ocean Wind 2 OCS-A532;; SW = Skipjack OCS-A 0519, US = US Wind OCS-A 0490; VM = Vineyard Mid-Atlantic (previously [COP VIA] Hudson North) OCS-A 0544,

[2] 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).

[3] Noticeable elements: R = rotor, AL = aviation light, N = nacelle, H = hub, O = OSP, M = mid-tower light, Y = yellow tower base color.

[4] WTGs and OSP Prominence (visibility): 0 = Not visible. 1 = Visible only after extended study; otherwise not visible. 2 = Visible when viewing in general direction of the WTA; otherwise likely to be missed by casual observer. 3 = Visible after brief glance in general direction of the WTA; 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 WTA; 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 (Sullivan et al. 2013).

[5] The seaward edge between landscape and seascape varies. The most conservative case is 0.2-mile (0.3-kilometer) landward distance from seaward beach edge.

Table H-32. Atlantic Shores Offshore Wind South and other WTAs' cumulative viewer experience WTA distances, FOVs, noticeable elements, visual contrasts, scale of change, and prominence

View[1]	Distance in Miles (Kilometers) and Impact															FOV Degrees (% of 124°)	Noticeable Elements[3] and Impact Level[4]	Visual Contrast, Scale of Change, and Prominence							
	AE[2]	ASOWB[2]	ASOWN[2]	ASOWS[2]	COW[2]	EW1[2]	EW2[2]	GS[2]	IE[2]	MVM[2]	OW1[2]	OW2[2]	BW[2]	SW[2]	US[2]			Form	Line	Color	Texture	Scale	Prominence[5]	Alternatives D1, D2, D3	Alternatives C1, C2, C3, and F
AC04	64.1 (24.0) **Negligible**	41.4 (66.3) **Minor**	16.2 (26.1) **Major**	10.5 (16.9) **Major**	50.3 (80.9) **Negligible**	82.4 (132.6) **Negligible**	84.8 (136.5) **Negligible**	45.3 (72.9) **Negligible**	43.9 (70.6) **Minor**	85.9 (138.2) **Negligible**	13.8 (22.2) **Major**	16.2 (26.1) **Major**	91.5 (147.3) **Negligible**	51.3 (82.6) **Negligible**	65.2 (104.3) **Negligible**	160° (129%)	R, AL, N, H, O, and M Major	Strong	Strong	Strong	Strong	Large	6	Same as Proposed Action	Same as Proposed Action
AC04 Night	64.1 (103.2) **Negligible**	41.4 (66.3) **Minor**	16.2 (26.1) **Major**	10.5 (16.9) **Major**	50.3 (80.9) **Negligible**	82.4 (132.6) **Negligible**	84.8 (136.5) **Negligible**	45.3 (72.9) **Negligible**	43.9 (70.6) **Minor**	85.9 138.2) **Negligible**	13.8 (22.2) **Major**	16.2 (26.1) **Major**	91.5 (147.3) **Negligible**	51.3 (82.6) **Negligible**	65.2 (104.3) **Negligible**	160° (129%)	R, AL, N, H, O, and M Major	Strong	Strong	Strong	Strong	Large	6	Same as Proposed Action	Same as Proposed Action
BC02	41.6 (66.9) **Negligible**	37.5 (60.3) **Minor**	11.3 (18.2) **Major**	9.0 (14.5) **Major**	45.7 (73.5) **Negligible**	76.3 (122.9) **Negligible**	78.5 (126.3) **Negligible**	50.9 (81.9) **Negligible**	41.6 (66.9) **Minor**	80.5 (129.5) **Negligible**	20.7 (33.3) **Moderate**	20.7 (33.3) **Moderate**	85.8 (138.1) **Negligible**	56.7 (91.3) **Negligible**	70.8 (113.9) **Negligible**	154° (124%)	R, AL, N, H, O, and M Major	Strong	Strong	Strong	Strong	Large	6	Same as Proposed Action	Same as Proposed Action
BHB03	51.3 (82.5) **Negligible**	33.2 (53.4) **Moderate**	9.6 (15.5) **Major**	13.0 (20.9) **Major**	40.3 (64.8) **Minor**	66.4 (66.4) **Negligible**	69.1 (111.2) **Negligible**	60.6 (97.5) **Negligible**	41.3 (66.5) **Minor**	70.5 (113.5) **Negligible**	23.1 (37.2) **Moderate**	29.9 (48l.1) **Minor**	77.6 (124.9) **Negligible**	66.3 (106.7) **Negligible**	80.6 (129.7) **Negligible**	143° (115%)	R, AL, N, H, O, and M Major	Strong	Strong	Strong	Strong	Large	6	Same as Proposed Action	Same as Proposed Action
LEHT02	43.4 (69.8) **Negligible**	36.7 (59.1) **Negligible**	11.1 (17.9) **Major**	11.9 19.2) **Major**	44.6 (64.8) **Negligible**	71.2 (114.6) **Negligible**	73.3 (117.9) **Negligible**	55.8 (89.8) **Negligible**	46.1 (74.2) **Minor**	75.7 (121.8) **Negligible**	20.6 (333.1) **Moderate**	16.4 (26.4) **Moderate**	82.4 (132.6) **Negligible**	63.1 (101.6) **Negligible**	76.2 (122.6) **Negligible**	140° (112%)	R, AL, N, H, O, and M Major	Strong	Strong	Strong	Strong	Large	6	Same as Proposed Action	Same as Proposed Action
LT02	72.8 (117.2) **Negligible**	73.5 (118.3) **Negligible**	55.5 (89.3) **Negligible**	45.0 (72.4) **Minor**	87.7 (141.1) **Negligible**	123.4 (198.6) **Negligible**	125.9 (202.6) **Negligible**	15.9 (25.6) **Major**	126.1 (202.9) **Negligible**	127.6 (205.3) **Negligible**	33.9 (54.6) **Moderate**	26.0 (41.8) **Moderate**	131.6 (211.8) **Negligible**	25.7 (41.4) **Moderate**	32.6 (52.5) **Minor**	98° (79%)	R, AL, N, H, O, and M Major	Strong	Strong	Strong	Strong	Large	6	Same as Proposed Action	Same as Proposed Action
OC04	74.1 (119.3) **Negligible**	49.7 (799) **Negligible**	26.1 (42.0) **Moderate**	17.2 (27.7) **Moderate**	59.6 (95.9) **Negligible**	92.1 (148.2) **Negligible**	94.7 (152.4) **Negligible**	37.6 (60.5) **Minor**	51.1 (82.2) **Negligible**	96.1 (154.6) **Negligible**	15.6 (25.1) **Major**	12.8 (20.6) **Major**	101.4 (163.2) **Negligible**	44.2 (71.1) **Negligible**	56.9 (91.6) **Negligible**	137° (110%)	R, AL, N, H, O, and M Major	Strong	Strong	Strong	Strong	Large	6	Same as Proposed Action	Same as Proposed Action
SIC02	85.9 (138.2) **Negligible**	57.5 (92.5) **Negligible**	37.6 (60.5) **Minor**	27.4 (44.1) **Moderate**	70.4 (113.3) **Negligible**	105.4 (169.6) **Negligible**	107.9 (173.6) **Negligible**	26.6 (42.8) **Moderate**	60.6 (97.5) **Negligible**	109.1 (175.6) **Negligible**	18.5 (29.8) **Moderate**	12.1 (19.5) **Major**	113.6 (182.8) **Negligible**	35.3 (56.8) **Minor**	45.2 (72.7) **Negligible**	101° (81%)	R, AL, N, H, O, and M Major	Strong	Strong	Strong	Strong	Large	6	Same as Proposed Action	Same as Proposed Action
SPB01	42.4 (268.2) **Minor**	39.5 (63.6) **Minor**	19.3 (31.1) **Moderate**	39.0 (62/8) **Minor**	41.8 (67.3) **Minor**	39.8 (64.1) **Minor**	44.6 (71.8) **Negligible**	87.8 (141.3) **Negligible**	49.1 (79.2) **Negligible**	49.1 (79.0) **Negligible**	57.8 (93.0) **Negligible**	57.8 (93.0) **Negligible**	62.9 (101.2) **Negligible**	93.3 (150.2) **Negligible**	108.3 (174.3) **Negligible**	133° (107%) 136	R, AL, N, H, O, and M Major	Strong	Strong	Strong	Moderate	Large	6	Same as Proposed Action	Same as Proposed Action

[1] KOP-OC04S-Ocean Casino Resort-Sky Garden, KOP-BC02 North Brigantine Natural Area, KOP-BHB03 Beach Haven, Holyoke Avenue, KOP-LEHT02 Great Bay Boulevard WMA/Rutgers Field Station, KOP-LT02 Cape May Point State Park Lighthouse, KOP-OC04 Gillian's Wonderland Amusement Park, KOP-SIC02 Townsend Inlet Bridge, and KOP-SPB01 Seaside Park Beach.

[2] AE = Attentive Energy (previously [COP VIA] Hudson South B) OCS-A 0538; ASOWB = Atlantic Shores Offshore Wind Bight (previously [COP VIA] Hudson South E) OCS-A 0541; ASOWN = Atlantic Shores Offshore Wind North OCS-A 0549; ASOWS = Atlantic Shores Offshore Wind South OCS-A 0499' BW = Bluepoint Wind (previously [COP VIA] Central Bight) OCS-A 0537COW = Community Offshore Wind (previously [COP VIA] Hudson South C) OCS-A 0539; EW1 = Empire Wind 1 OCS-A 0512; EW2 = Empire Wind 2 OCS-A 0512; GS = Garden State OCS-A 0482; IE = Invenergy Wind Offshore (previously [COP VIA] Hudson South F) OCS-A 0542; OW = Ocean Wind OCS-A-0498; OW2 = Ocean Wind 2 OCS-A532;; SW = Skipjack OCS-A 0519, US = US Wind OCS-A 0490; VM = Vineyard Mid-Atlantic (previously [COP VIA] Hudson North) OCS-A 0544,

[3] Noticeable elements: R = rotor, AL = aviation light, N = nacelle, H = hub, O = OSP, M = mid-tower light, Y = yellow tower base color.

[4] Due to earth's curvature and known WTG heights, those WTGs beyond 42.5 miles (68.4 kilometers) would not be visible from ground level plus 5.9 feet (1.8 meters).

[5] WTGs and OSP (onshore) visibility: 0 = Not visible. 1 = Visible only after extended study; otherwise not visible. 2 = Visible when viewing in general direction of the WTA; otherwise likely to be missed by casual observer. 3 = Visible after brief glance in general direction of the WTA; 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 WTA; 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 (Sullivan et al. 2013).

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H.3.2 Impacts of Alternatives D1, D2, and D3 on Scenic Resources and Viewer Experiences

Visual contrast assessments and form, line, color, and texture comparisons of characteristics of the open ocean, seascape, and landscape before and after implementation of Alternatives D1, D2, and D3—where select nearest to shore WTGs could be removed and WTG height is limited to 932 feet (284.1 meters) for the remaining WTGs in Project 1—are indicated in Table H-11. Heights of noticeable WTG elements and visible distances are provided in Table H-33. Heights of the met tower and OSSs would be unchanged. There would be a slight difference in contrasts between Alternatives D1, D2, and D3 and the Proposed Action due to the removal of WTG positions from the shoreward edge of the Lease Area. Tables H-34 and H-35 compare the Proposed Action with Alternatives D1, D2, and D3 WTG width-, height-, and distance-related occupation of views from the nearest shoreline area. Distance and FOV comparisons with the Proposed Action indicate similar effects, varying by 1.2–2.1 miles (1.9–3.4 kilometers), and the horizontal FOVs would vary by 5° to 15° in the 124° FOV. The vertical FOVs would vary by less than 1° (0.5– 0.7° variation) of the viewer's 55° FOV. Although the WTG height would be restricted in Project 1, the height would not be restricted in Project 2 and therefore changes to the vertical FOV are affected by distance from shore and not turbine height. The results indicate small reductions to the FOV results compared to the Proposed Action. At some KOPs the alternatives provide enough change to eliminate views of some WTG features.

- KOP-AC02, KOP-AC03, KOP-AC04, KOP-BC02: Alternatives D1 and D2 eliminate yellow base visibility.
- KOP-OCO4: Alternatives D1 and D2 eliminate mid-tower light visibility.
- KOP-LAT01: Alternatives D1 and D2 eliminate hub and nacelle visibility.

The changes presented in Alternatives D1, D2, and D3 soften overall visibility but do not reach the threshold to shift impacts from major to moderate. Nonetheless, these alternatives present small but potentially meaningful changes to local communities to soften visibility. The alternatives are analyzed based on clear-sky conditions.

Table H-33. Heights of noticeable[1] WTG elements and visible distances for Reduced Height WTGs[2]

Noticeable Element	Height in Feet (Meters)	Visible Distance[2] in Miles (Kilometers)
Rotor Blade Tip	932 (284.1) AMSL	0–40.4 (65)
Aviation Light	543 (165.5) AMSL	0–31.5 (50.7)
Met Tower	590.6 (180) AMSL	0-32.5 (52.3)
Nacelle	533 (162.5) AMSL	0–31.4 (50.5)
Hub	522 (159) AMSL	0–31 (49.8)
Mid-tower Light	261 (79.5) AMSL	0–22.8 (36.7)
OSS	175.8-207.6 (53.5-63.3) MLLW	0–23.8 (38.3)
Yellow Tower Base/USCG Navigation Lights	50 (15.2) AMSL	0–11.4 (18.3)

[1] Perception of Project elements, from 5.9 feet (1.8 meters) 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.
[2] Based on intervening EC and clear-day conditions.
AMSL = above mean sea level, MLLW = mean lower low water

Table H-34. Comparison of Horizontal FOV occupied by the Proposed Action and Alternatives D1, D2, and D3

Alternative	Noticeable Element	Width[1] Miles (Kilometers)	Distance[2] Miles (Kilometers)	Horizontal FOV	Human FOV	Percent of FOV
Proposed Action	WTGs	15.0 (24.1)	8.7 (14.0)	59.7°	124°	48%
Alternative D1	WTGs	13.8 (22.2)	14.1 (22.7)	44.4°	124°	36%
Alternative D2	WTGs	13.8 (22.2)	12.8 (20.6)	47.1°	124°	38%
Alternative D3	WTGs	15.0 (24.1)	10.9 (17.5)	54.0°	124°	42%

[1] Maximum extent of the WTA array.
[2] Nearest onshore distance to the WTA array.

Table H-35. Comparison of Vertical FOV occupied by the Proposed Action and Alternatives D1, D2, and D3

Alternative	Noticeable Element	Height Feet (Meters) AMSL	Distance Miles (Kilometers)	Visible Height[1] Feet (Meters)	Vertical FOV	Human FOV	Percent of FOV
Proposed Action	Rotor Blade Tip	1,046.6 (391)	8.7 (14.0)	1,022.1 (311.5)	1.4°	55°	2.5%
Alternative D1	Rotor Blade Tip	1,046.6 (391)	14.1 (22.7)	962 (293.1)	0.7°	55°	1%
Alternative D2	Rotor Blade Tip	1,046.6 (391)	12.8 (20.6)	981 (299)	0.8°	55°	1%
Alternative D3	Rotor Blade Tip	1,046.6 (391)	10.9 (17.5)	1,004 (306)	1.0°	55°	2%

[1] Based on intervening EC, clear-day, and clear-night conditions.
AMSL = above mean sea level

H.3.2.1 Conclusion

The effects of Alternatives D1, D2, and D3 on open ocean character, seascape character, landscape character, and viewer experience would be less than, but similar to, the effects of the Proposed Action. Alternatives D1, D2, and D3 soften overall visibility but do not reach the threshold to reduce the impact rating. Due to distance, extensive FOVs, high view prominence, strong contrasts, and heretofore undeveloped ocean views, Alternatives D1, D2, and D3 would have **major** effects on the open ocean unit character and viewer boating and cruise ship experiences. Due to view distances, moderate FOVs, moderate and weak visual contrasts, clear-day conditions, and nighttime ADLS activation, effects of Alternatives D1, D2, and D3 on high- and moderate-sensitivity landscape character units would be **moderate** to **major**. The daytime presence of offshore WTGs and OSSs and nighttime moonlit conditions would change perception of ocean scenes from natural and undeveloped to a developed wind energy environment characterized by WTGs and OSSs. In clear weather, the WTGs and OSSs would be an unavoidable presence in views from the coastline, with **moderate** to **major** effects on seascape and landscape character.

Considering all the IPFs together, BOEM anticipates that the contribution of Alternatives D1, D2, and D3 to the impacts associated with ongoing and planned activities in combination with other future offshore wind development would be **major**. The main drivers for this impact rating are the major visual impacts associated with the presence of offshore structures and vessel traffic.

H.3.3 Impacts of Alternatives C1, C2, C3, E, and F on Scenic and Visual Resources

The effects of Alternatives C1, C2, C3, E, and F on open ocean character, seascape character, landscape character, and viewer experience would be similar to the effects of the Proposed Action. Distance, horizontal FOV, and vertical FOV comparisons would be the same as those of the Proposed Action.

Impacts of Alternatives C1, C2, C3, E, and F related to the primary IPFs (presence of structures, lighting, vessel traffic, land disturbance, and accidental releases) would be similar to the impacts described for the Proposed Action. The open ocean character unit, seascape character units, landscape character units, and viewer experience would be affected by construction and installation, O&M, and decommissioning of Alternatives C1, C2, C3, E, and F due to the noticeable elements, distance effects, FOV extents, view framing and intervening foregrounds, prominence, and contrast rating.

Horizontal and vertical FOV extents (Table H-36 and H-37) of the Alternatives C1, C2, C3, and E WTA would be the same as for the Proposed Action (Tables H-8 and H-9).

Table H-36. Horizontal FOV occupied by the Proposed Action

Noticeable Element	Width[1] Miles (Kilometers)	Distance[2] Miles (Kilometers)	Horizontal FOV	Human FOV	Percent of FOV
WTA	15.0 (24.1)	8.7 (14.0)	59.7°	124°	48%

[1] Maximum extent of the WTA array.
[2] Nearest onshore distance to the WTA array.

Table H-37. Vertical FOV occupied by the Proposed Action

Noticeable Element	Height Feet (Meters)	Distance Miles (Kilometers)	Height Above Horizon[1] Feet (Meters)	Vertical FOV	Human FOV	Percent of FOV
Rotor Blade Tip	1,046.6 (391) AMSL	8.7 (14.0)	1,022.1 (311.5)	1.4°	55°	2.5%

[1] Based on intervening EC, clear-day, and clear-night conditions.
AMSL = above mean sea level

H.3.3.1 Conclusions

The effects of Alternatives C1, C2, C3, E, and F on open ocean character, seascape character, landscape character, and viewer experience would be similar to the effects of the Proposed Action. Due to distance, extensive FOVs, high view prominence, strong contrasts, and heretofore undeveloped ocean views, Alternative E would have **major** effects on the open ocean unit character and viewer boating and cruise ship experiences. Due to view distances, moderate FOVs, moderate and weak visual contrasts, clear-day conditions, and nighttime ADLS activation, effects of Alternatives C1, C2, C3, E, and F on high- and moderate-sensitivity landscape character units would be **moderate** to **major**. The daytime presence of offshore WTGs and OSSs, as well as their nighttime lighting, would change perception of ocean scenes from natural and undeveloped to a developed wind energy environment characterized by WTGs and OSSs. In clear weather, the WTGs and OSSs would be an unavoidable presence in views from the coastline, with **moderate** to **major** effects on seascape and landward landscape character.

Considering all the IPFs together, BOEM anticipates that the contribution of Alternatives C1, C2, C3, E, and F to the impacts associated with ongoing and planned activities in combination with other future offshore wind development would be **major**. The main drivers for this impact rating are the major visual impacts associated with the presence of offshore structures, lighting, and vessel traffic.

H.4 References

Atlantic Shores Offshore Wind, LLC (Atlantic Shores). 2024. *Atlantic Shores Offshore Wind: Construction and Operations Plan*. Lease Area OCS-A 0499: Atlantic Shores South. May. Available: https://www.boem.gov/renewable-energy/state-activities/atlantic-shores-south.

Bislins, W. 2022. Advanced Earth Curvature Calculator. Available: http://walter.bislins.ch/bloge/index.asp?page=Advanced+Earth+Curvature+Calculator.

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.

Sullivan, R. G., L. B. Kirchler, C. Jackson, and S. L. Winters.2013. Offshore Wind Turbine Visibility and Visual Impact Thresholds. *Environmental Practice* March: 1–17. Available: https://blmwyomingvisual.anl.gov/docs/EnvPractice_Offshore%20Wind%20Turbine%20Visibility%20and%20Visual%20Impact%20Threshold%20Distances.pdf.

Attachment H-1: Cumulative Visual Simulations

AC04: Ocean Casino Resort - Sky Garden, Atlantic City, Atlantic County, New Jersey

Environmental Data

Date Taken: 08/25/2022
Time: 10:43 AM
Temperature: 88°F
Humidity: 34%
Visibility*: 10+ miles
Wind Direction: Northwest
Wind Speed: 13 mph
Conditions Observed: Fair

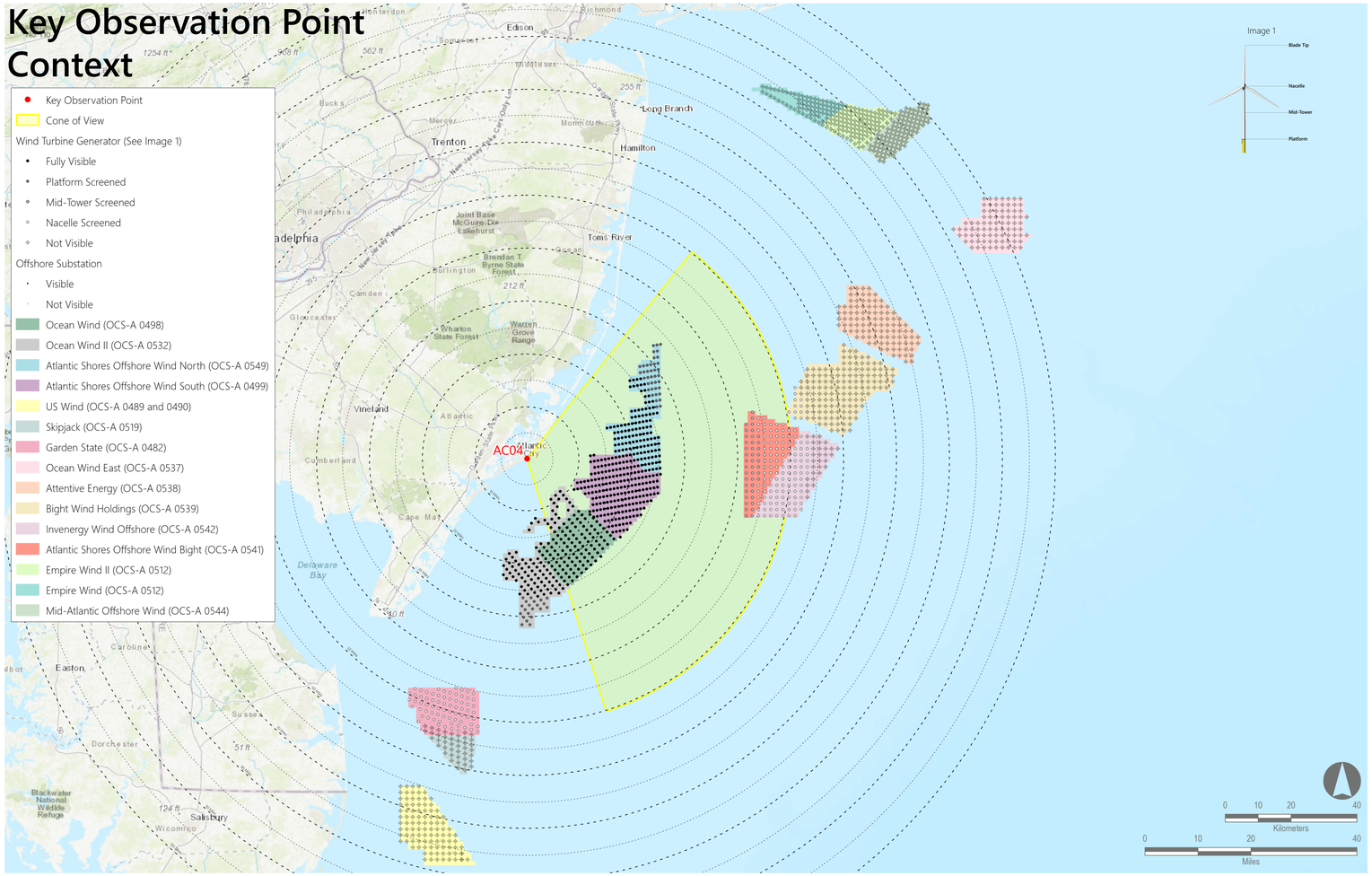
Camera Information
Camera: Canon EOS 5D Mark IV
Resolution: 30.4 Megapixels
Lens Focal Length: 50 mm
Camera Height: 117.26 feet AMSL

Key Observation Point Information

County: Atlantic
Town: Atlantic City
State: New Jersey
Location: Ocean Casino Resort - Sky Deck
Latitude, Longitude: 39.36225°N, 74.41353°W
Direction of View (Center): East (100.9°)
Field of View: 124° x 55°

Visual Resources
Character Area: Atlantic City, Seascape (SCA)
User Group: Local Resident/Tourist
Visually Sensitive Resource: Atlantic City Beach

Key Observation Point Context



Reasonably Foreseeable Projects Represented in Photosimulation

		Project	Year of Development	Max Blade Tip Height (feet)	Potential Number of WTGs & OSSs Visible from KOP**	Total Number of WTGs & OSSs in Project	Theoretical Distance to Nearest Visible WTG (miles)	Theoretical Distance to Furthest Visible WTG (miles)
Scenario 5	Scenario 2	Atlantic Shores Offshore Wind South (OCS-A 0499)	2025-2027	1,047	205	205	10.5	25.6
Scenario 4	Scenario 1	Ocean Wind (OCS-A 0498)	2023-2025	906	111	111	13.9	24.6
		Empire Wind (OCS-A 0512)	2024-2025	951	0	72	Not Visible	Not Visible
		Empire Wind II (OCS-A 0512)	2023-2027	951	0	104	Not Visible	Not Visible
	Scenario 3	Skipjack (OCS-A 0519)	2024-2030	853	0	33	Not Visible	Not Visible
		Garden State (OCS-A 0482)	2023-2030	853	66	80	45.3	53.7
		US Wind (OCS-A 0489 and 0490)	2024	938	0	101	Not Visible	Not Visible
		Atlantic Shores Offshore Wind North (OCS-A 0549)	2025-2030	1,047	164	164	16.2	33.2
		Ocean Wind II (OCS-A 0532)	2026-2030	906	111	111	8.8	31.3
		Mid-Atlantic Offshore Wind (OCS-A 0544)	by 2030	853	0	104	Not Visible	Not Visible
		Ocean Wind East (OCS-A 0537)	by 2030	853	0	82	Not Visible	Not Visible
		Attentive Energy (OCS-A 0538)	by 2030	853	0	101	Not Visible	Not Visible
		Bight Wind Holdings (OCS-A 0539)	by 2030	853	11	148	50.3	53.0
		Atlantic Shores Offshore Wind Bight (OCS-A 0541)	by 2030	853	95	95	41.4	50.9
		Invenergy Wind Offshore (OCS-A 0542)	by 2030	853	70	99	43.9	53.0

Notes:
- Offshore Substation location and dimensions are based on preliminary publicly available project data. Projects for which this data is not currently available, WTGs are used for all foundation positions. OSS positions and dimensions considered in this photosimulation are subject to potential modification.
- *Historical meteorological data predicts visibility within a limit of 10 statute miles. However, visibility may extend beyond this distance. The photosimulations assume visibility extends to the limit of physical visibility (including a standard refraction index).
- WTG positions in the photosimulations are based on a refraction value of 7/6 or an approximate 0.14 coefficient derived from observations of the constructed Block Island Wind Farm. This refraction coefficient may yield more conservative visibility results (i.e. greater turbine visibility) that the viewshed analysis results which use a refraction coefficient of 0.13.
- **The number of WTGs visible from the KOP was determined by human verified computer generated counts performed in the 3D camera views considering screening resulting from vegetation, structures, curvature of the earth and refraction. This count may vary from the actual number of WTGs visible in the respective views due to masking completed during post processing which may include people, waves, boats, or other minor obstructions that appear in the photograph. Additionally, the WTG counts assumed the WTG blades are in the upright position whereas the photosimulations assume a random rotation pattern. Considering the largest WTG in the cumulative array, this could account for up to 236 ft. (72 m) in lost maximum height depending on the rotation position.
- The cone of view indicated on the Key Observation Point Context map indicates the horizontal extent of view only and does not indicate the extent of WTG visibility.
- The Key Observation Point Context map considers screening by curvature of the earth, viewer height, and turbine height. Landscape screening features are not considered. Therefore, in this view, the number of visible turbines depicted on the map may not match the table due to the presence of landscape screening features.

ATLANTIC SHORES offshore wind

MATCH LINE AC04 PANO #2



ATLANTIC SHORES offshore wind

Appendix A: Atlantic Shores Offshore Wind Cumulative Photosimulations

AC04: Ocean Casino Resort - Sky Garden, Atlantic City, Atlantic County, New Jersey

Existing Conditions (Panorama 1)

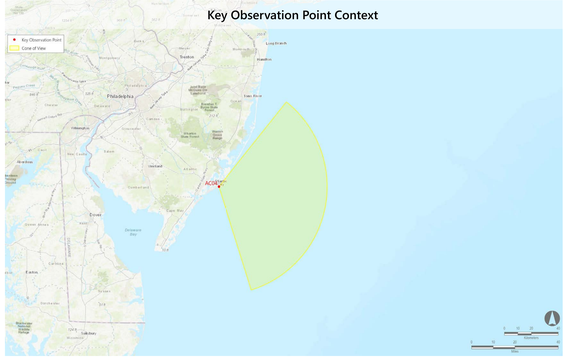
Notes:

- Photosimulation Size: 66" in width by 29.3" in height. Images should be viewed from 18 inches in order to obtain the proper perspective. For on-screen viewing, user should zoom in until the 1-inch scale equals exactly one inch when measured on the screen.

Simulation Size: 66" in width by 29.3" in height. Images should be viewed from a distance of 18 inches in order to obtain the proper perspective.

This box should be exactly 1" long on the printed panorama

Key Observation Point Context



Key Observation Point Location



MATCH LINE AC04 PANO #2

ATLANTIC SHORES offshore wind

Appendix A: Atlantic Shores Offshore Wind Cumulative Photosimulations

AC04: Ocean Casino Resort - Sky Garden, Atlantic City, Atlantic County, New Jersey

Photosimulation (Panorama 1): Scenario 1: 2023-2025 Project Construction (Ocean Wind, Empire Wind, Empire Wind II)

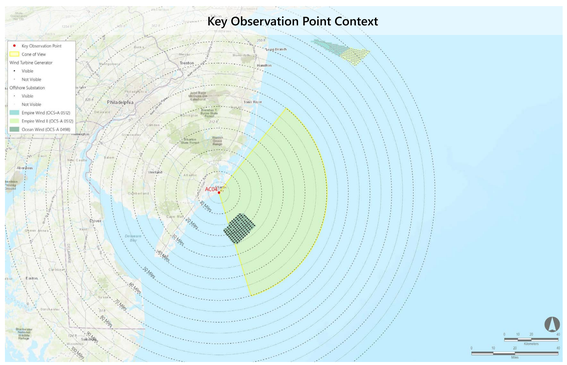
Simulation Size: 66" in width by 29.3" in height. Images should be viewed from a distance of 18 inches in order to obtain the proper perspective.

This box should be exactly 1' long on the printed panorama

Notes:

- Photosimulation Size: 66" in width by 29.3" in height. Images should be viewed from 18 inches in order to obtain the proper perspective. For on-screen viewing, user should zoom in until the 1-inch scale equals exactly one inch when measured on the screen.
- Offshore Substation location and dimensions are based on preliminary publicly available project data. Projects for which this data is not currently available, WTGs are used for all foundation positions. OSS positions and dimensions considered in this photosimulation are subject to potential modification.
- WTG positions in the photosimulations are based on a refraction value of 7/6 or an approximate 0.14 coefficient derived from observations of the constructed Block Island Wind Farm. This refraction coefficient may yield more conservative visibility results (i.e. greater turbine visibility) that the viewshed analysis results which use a refraction coefficient of 0.13.
- WTG tower, blades, and nacelle use the BOEM and FAA required color RAL 9010. The base and platform use RAL 7023 in accordance with USCG regulations.
- *The number of WTGs visible from the KOP was determined by human verified computer generated counts performed in the 3D camera views considering screening resulting from vegetation, structures, curvature of the earth and refraction. This count may vary from the actual number of WTGs visible in the respective views due to masking completed during post processing which may include people, waves, boats, or other minor obstructions that appear in the photograph. Additionally, the WTG counts assumed the WTG blades are in the upright position whereas the photosimulations assume a random rotation pattern. Considering the largest WTG in the cumulative array, this could account for up to 236 ft. (72 m) in lost maximum height depending on the rotation position.
- The cone of view indicated on the Key Observation Point Context map indicates the horizontal extent of view only and does not indicate the extent of WTG visibility.
- The resolution of the cumulative photosimulations balances the size and usability of the documents with the need for high resolution to see distant project components. Similarly to human vision, very distant turbines may appear blurry or difficult to decipher due to resolution limitations.
- The Key Observation Point Context map considers screening by curvature of the earth, viewer height, and turbine height. Landscape screening features are not considered. Therefore, in this view, the number of visible turbines depicted on the map may not match the table due to the presence of landscape screening features.

Project	Year of Development	Max Blade Tip Height (feet)	Potential Number of WTGs & OSSs Visible from KOP*	Total Number of WTGs & OSSs in Project	Theoretical Distance to Nearest Visible WTG (miles)	Theoretical Distance to Furthest Visible WTG (miles)
Ocean Wind (OCS-A 0498)	2024-2025	906	111	111	13.9	24.6
Empire Wind (OCS-A 0512)	2023-2027	951	0	72	Not Visible	Not Visible
Empire Wind II (OCS-A 0512)	2025-2027	951	0	104	Not Visible	Not Visible


Key Observation Point Context
Key Observation Point
Cone of View
Wind Turbine Generator
Visible
Not Visible
Offshore Substation
Visible
Not Visible
Empire Wind (OCS-A 0512)
Empire Wind II (OCS-A 0512)
Ocean Wind (OCS-A 0498)
AC04*
Philadelphia
Atlantic City
Ocean City
Wildwood
Cape May
Lewes
Rehoboth Beach
Dover
Milford
Seaford
Salisbury
Easton
Cambridge
Vineland
Millville
Bridgeton
Glassboro
Woodbury
Camden
Trenton
Levittown
Bristol
Chester
Wilmington
Newark
Elkton
Aberdeen
Havre de Grace
Bel Air
Towson
Dundalk
Glen Burnie
Annapolis
Laurel
Columbia
Ellicott City
Frederick
Hagerstown
Chambersburg
Gettysburg
Lancaster
Reading
Pottstown
Norristown
King of Prussia
Media
Lansdowne
Upper Darby
Drexel Hill
Haddonfield
Cherry Hill
Pennsauken
Burlington
Mount Holly
Lakewood
Toms River
Brick
Point Pleasant Beach
Asbury Park
Long Branch
Hamilton
East Windsor
Princeton
New Brunswick
Edison
Perth Amboy
Elizabeth
Newark
Jersey City
Hoboken
Paterson
Clifton
Passaic
Wayne
Morristown
Dover
Parsippany-Troy Hills
Randolph
Madison
Chatham
Summit
Plainfield
Somerville
Hackettstown
Phillipsburg
Easton
Allentown
Bethlehem
Quakertown
Doylestown
Warminster
Willow Grove
Abington
Jenkintown
Cheltenham
Glenside
Bryn Mawr
Ardmore
Haverford
Upper Merion
West Chester
Kennett Square
Coatesville
Downingtown
Exton
Malvern
Paoli
Berwyn
Wayne
Radnor
Villanova
Conshohocken
Plymouth Meeting
Fort Washington
Horsham
Warrington
Newtown
Yardley

MATCH LINE AC04 PANO #2



ATLANTIC SHORES offshore wind

Appendix A: Atlantic Shores Offshore Wind Cumulative Photosimulations

AC04: Ocean Casino Resort - Sky Garden, Atlantic City, Atlantic County, New Jersey

Photosimulation (Panorama 1): Scenario 2: Atlantic Shores Construction (2025-2027) added to Scenario 1 (Ocean Wind, Empire Wind, Empire Wind II, Atlantic Shores South)

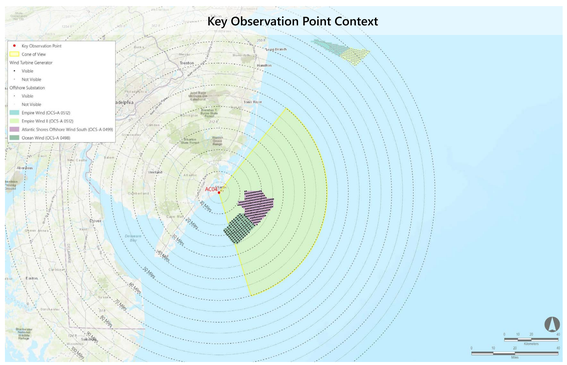
Simulation Size: 66" in width by 29.3" in height. Images should be viewed from a distance of 18 inches in order to obtain the proper perspective.

This box should be exactly 1" long on the printed panorama

Notes:

- Photosimulation Size: 66" in width by 29.3" in height. Images should be viewed from 18 inches in order to obtain the proper perspective. For on-screen viewing, user should zoom in until the 1-inch scale equals exactly one inch when measured on the screen.
- Offshore Substation location and dimensions are based on preliminary publicly available project data. Projects for which this data is not currently available, WTGs are used for all foundation positions. OSS positions and dimensions considered in this photosimulation are subject to potential modification.
- WTG positions in the photosimulations are based on a refraction value of 7/6 or an approximate 0.14 coefficient derived from observations of the constructed Block Island Wind Farm. This refraction coefficient may yield more conservative visibility results (i.e. greater turbine visibility) that the viewshed analysis results which use a refraction coefficient of 0.13.
- WTG tower, blades, and nacelle use the BOEM and FAA required color RAL 9010. The base and platform use RAL 1023 in accordance with USCG regulations.
- *The number of WTGs visible from the KOP was determined by human verified computer generated counts performed in the 3D camera views considering screening resulting from vegetation, structures, curvature of the earth and refraction. This count may vary from the actual number of WTGs visible in the respective views due to masking completed during post processing which may include people, waves, boats, or other minor obstructions that appear in the photograph. Additionally, the WTG counts assumed the WTG blades are in the upright position whereas the photosimulations assume a random rotation pattern. Considering the largest WTG in the cumulative array, this could account for up to 236 ft. (72 m) in lost maximum height depending on the rotation position.
- The cone of view indicated on the Key Observation Point Context map indicates the horizontal extent of view only and does not indicate the extent of WTG visibility.
- The resolution of the cumulative photosimulations balances the size and usability of the documents with the need for high resolution to see distant project components. Similarly to human vision, very distant turbines may appear blurry or difficult to decipher due to resolution limitations.
- The Key Observation Point Context map considers screening by curvature of the earth, viewer height, and turbine height. Landscape screening features are not considered. Therefore, in this view, the number of visible turbines depicted on the map may not match the table due to the presence of landscape screening features.

Project	Year of Development	Max Blade Tip Height (feet)	Potential Number of WTGs & OSSs Visible from KOP*	Total Number of WTGs & OSSs in Project	Theoretical Distance to Nearest Visible WTG (miles)	Theoretical Distance to Furthest Visible WTG (miles)
Atlantic Shores Offshore Wind South (OCS-A 0499)	2023-2025	1,047	205	205	10.5	25.6
Ocean Wind (OCS-A 0498)	2024-2025	906	111	111	13.9	24.6
Empire Wind (OCS-A 0512)	2023-2027	951	0	72	Not Visible	Not Visible
Empire Wind II (OCS-A 0512)	2025-2027	951	0	104	Not Visible	Not Visible





MATCH LINE AC04 PANO #2



ATLANTIC SHORES offshore wind

Appendix A: Atlantic Shores Offshore Wind Cumulative Photosimulations

AC04: Ocean Casino Resort - Sky Garden, Atlantic City, Atlantic County, New Jersey

Photosimulation (Panorama 1): Scenario 3: 2024-2030 Project construction added after the construction of Atlantic Shores South (Full Lease Build-out Including Atlantic Shores South)

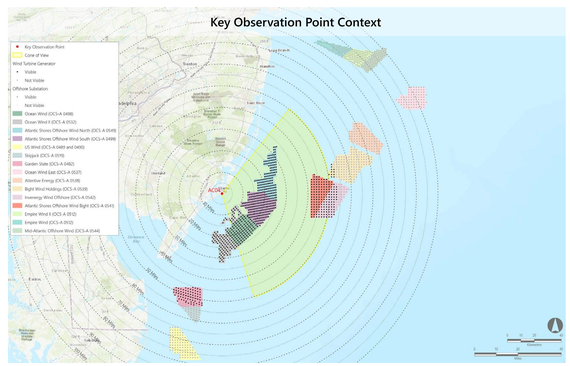
Simulation Size: 66" in width by 29.3" in height. Images should be viewed from a distance of 18 inches in order to obtain the proper perspective.

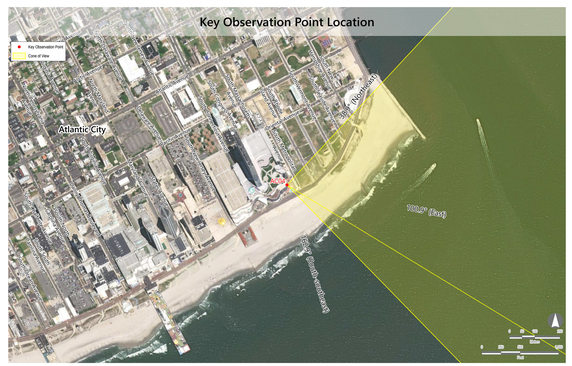
This box should be exactly 1' long on the printed panorama

Notes:

- Photosimulation Size: 66" in width by 29.3" in height. Images should be viewed from 18 inches in order to obtain the proper perspective. For on-screen viewing, user should zoom in until the 1-inch scale equals exactly one inch when measured on the screen.
- Offshore Substation location and dimensions are based on preliminary publicly available project data. Projects for which this data is not currently available, WTGs are used for all foundation positions. OSS positions and dimensions considered in this photosimulation are subject to potential modification.
- WTG positions in the photosimulations are based on a refraction value of 7/6 or an approximate 0.14 coefficient derived from observations of the constructed Block Island Wind Farm. This refraction coefficient may yield more conservative visibility results (i.e. greater turbine visibility) that the viewshed analysis results which use a refraction coefficient of 0.13.
- WTG tower, blades, and nacelle use the BOEM and FAA required color RAL 9010. The base and platform use RAL 7023 in accordance with USCG regulations.
- *The number of WTGs visible from the KOP was determined by human verified computer generated counts performed in the 3D camera views considering screening resulting from vegetation, structures, curvature of the earth and refraction. This count may vary from the actual number of WTGs visible in the respective views due to masking completed during post processing which may include people, waves, boats, or other minor obstructions that appear in the photograph. Additionally, the WTG counts assumed the WTG blades are in the upright position whereas the photosimulations assume a random rotation pattern. Considering the largest WTG in the cumulative array, this could account for up to 236 ft. (72 m) in lost maximum height depending on the rotation position.
- The cone of view indicated on the Key Observation Point Context map indicates the horizontal extent of view only and does not indicate the extent of WTG visibility.
- The resolution of the cumulative photosimulations balances the size and usability of the documents with the need for high resolution to see distant project components. Similarly to human vision, very distant turbines may appear blurry or difficult to decipher due to resolution limitations.
- The Key Observation Point Context map considers screening by curvature of the earth, viewer height, and turbine height. Landscape screening features are not considered. Therefore, in this view, the number of visible turbines depicted on the map may not match the table due to the presence of landscape screening features.

Project	Year of Development	Max Blade Tip Height (feet)	Potential Number of WTGs & OSSs Visible from KOP*	Total Number of WTGs & OSSs in Project	Theoretical Distance to Nearest Visible WTG (miles)	Theoretical Distance to Furthest Visible WTG (miles)
Atlantic Shores Offshore Wind South (OCS-A 0499)	2023-2025	1,047	205	205	10.5	25.6
Ocean Wind (OCS-A 0498)	2024-2025	906	111	111	13.9	24.6
Empire Wind (OCS-A 0512)	2023-2027	951	0	72	Not Visible	Not Visible
Empire Wind II (OCS-A 0512)	2025-2027	951	0	104	Not Visible	Not Visible
Skipjack (OCS-A 0519)	2024-2030	853	0	33	Not Visible	Not Visible
Garden State (OCS-A 0482)	2023-2030	853	66	80	45.3	53.7
US Wind (OCS-A 0489 and 0490)	2024	938	0	101	Not Visible	Not Visible
Atlantic Shores Offshore Wind North (OCS-A 0549)	2025-2030	1,047	164	164	16.2	33.2
Ocean Wind II (OCS-A 0532)	2026-2030	906	111	111	8.8	31.3
Mid-Atlantic Offshore Wind (OCS-A 0544)	by 2030	853	0	104	Not Visible	Not Visible
Ocean Wind East (OCS-A 0537)	by 2030	853	0	82	Not Visible	Not Visible
Attentive Energy (OCS-A 0538)	by 2030	853	0	101	Not Visible	Not Visible
Bight Wind Holdings (OCS-A 0539)	by 2030	853	11	148	50.3	53.0
Atlantic Shores Offshore Wind Bight (OCS-A 0541)	by 2030	853	95	95	41.4	50.9
Invenergy Wind Offshore (OCS-A 0542)	by 2030	853	70	99	43.9	53.0





MATCH LINE AC04 PANO #2



ATLANTIC SHORES offshore wind

Appendix A: Atlantic Shores Offshore Wind Cumulative Photosimulations

AC04: Ocean Casino Resort - Sky Garden, Atlantic City, Atlantic County, New Jersey

Photosimulation (Panorama 1): Scenario 4: Full buildout of all lease areas without Atlantic Shores South

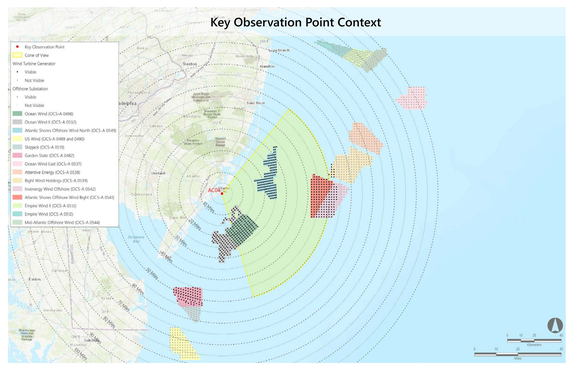
Simulation Size: 66" in width by 29.3" in height. Images should be viewed from a distance of 18 inches in order to obtain the proper perspective.

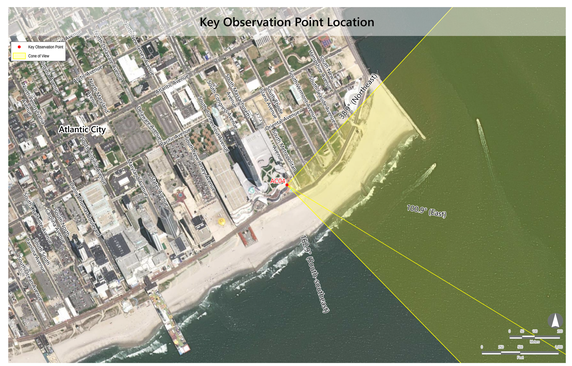
This box should be exactly 1' long on the printed panorama

Notes:

- Photosimulation Size: 66" in width by 29.3" in height. Images should be viewed from 18 inches in order to obtain the proper perspective. For on-screen viewing, user should zoom in until the 1-inch scale equals exactly one inch when measured on the screen.
- Offshore Substation location and dimensions are based on preliminary publicly available project data. Projects for which this data is not currently available, WTGs are used for all foundation positions. OSS positions and dimensions considered in this photosimulation are subject to potential modification.
- WTG positions in the photosimulations are based on a refraction value of 7/6 or an approximate 0.14 coefficient derived from observations of the constructed Block Island Wind Farm. This refraction coefficient may yield more conservative visibility results (i.e. greater turbine visibility) that the viewshed analysis results which use a refraction coefficient of 0.13.
- WTG tower, blades, and nacelle use the BOEM and FAA required color RAL 9010. The base and platform use RAL 7023 in accordance with USCG regulations.
- *The number of WTGs visible from the KOP was determined by human verified computer generated counts performed in the 3D camera views considering screening resulting from vegetation, structures, curvature of the earth and refraction. This count may vary from the actual number of WTGs visible in the respective views due to masking completed during post processing which may include people, waves, boats, or other minor obstructions that appear in the photograph. Additionally, the WTG counts assumed the WTG blades are in the upright position whereas the photosimulations assume a random rotation pattern. Considering the largest WTG in the cumulative array, this could account for up to 236 ft. (72 m) in lost maximum height depending on the rotation position.
- The cone of view indicated on the Key Observation Point Context map indicates the horizontal extent of view only and does not indicate the extent of WTG visibility.
- The resolution of the cumulative photosimulations balances the size and usability of the documents with the need for high resolution to see distant project components. Similarly to human vision, very distant turbines may appear blurry or difficult to decipher due to resolution limitations.
- The Key Observation Point Context map considers screening by curvature of the earth, viewer height, and turbine height. Landscape screening features are not considered. Therefore, in this view, the number of visible turbines depicted on the map may not match the table due to the presence of landscape screening features.

Project	Year of Development	Max Blade Tip Height (feet)	Potential Number of WTGs & OSSs Visible from KOP*	Total Number of WTGs & OSSs in Project	Theoretical Distance to Nearest Visible WTG (miles)	Theoretical Distance to Furthest Visible WTG (miles)
Ocean Wind (OCS-A 0498)	2024-2025	906	111	111	13.9	24.6
Empire Wind (OCS-A 0512)	2023-2027	951	0	72	Not Visible	Not Visible
Empire Wind II (OCS-A 0512)	2025-2027	951	0	104	Not Visible	Not Visible
Skipjack (OCS-A 0519)	2024-2030	853	0	33	Not Visible	Not Visible
Garden State (OCS-A 0482)	2023-2030	853	66	80	45.3	53.7
US Wind (OCS-A 0489 and 0490)	2024	938	0	101	Not Visible	Not Visible
Atlantic Shores Offshore Wind North (OCS-A 0549)	2025-2030	1,047	164	164	16.2	33.2
Ocean Wind II (OCS-A 0532)	2026-2030	906	111	111	8.8	31.3
Mid-Atlantic Offshore Wind (OCS-A 0544)	by 2030	853	0	104	Not Visible	Not Visible
Ocean Wind East (OCS-A 0537)	by 2030	853	0	82	Not Visible	Not Visible
Attentive Energy (OCS-A 0538)	by 2030	853	0	101	Not Visible	Not Visible
Bight Wind Holdings (OCS-A 0539)	by 2030	853	11	148	50.3	53.0
Atlantic Shores Offshore Wind Bight (OCS-A 0541)	by 2030	853	95	95	41.4	50.9
Invenergy Wind Offshore (OCS-A 0542)	by 2030	853	70	99	43.9	53.0





MATCH LINE AC04 PANO #2



ATLANTIC SHORES offshore wind

Appendix A: Atlantic Shores Offshore Wind Cumulative Photosimulations

AC04: Ocean Casino Resort - Sky Garden, Atlantic City, Atlantic County, New Jersey

Photosimulation (Panorama 1): Scenario 5: Atlantic Shores South without the construction of other foreseeable planned activities

Simulation Size: 66° in width by 29.3° in height. Images should be viewed from a distance of 18 inches in order to obtain the proper perspective.

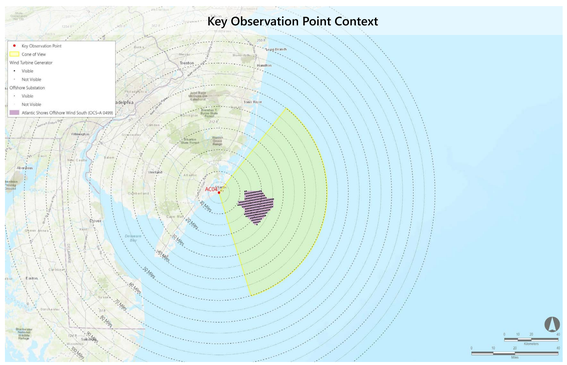
This box should be exactly 1" long on the printed panorama

Notes:

- Photosimulation Size: 66° in width by 29.3° in height. Images should be viewed from 18 inches in order to obtain the proper perspective. For on-screen viewing, user should zoom in until the 1-inch scale equals exactly one inch when measured on the screen.
- Offshore Substation location and dimensions are based on preliminary publicly available project data. Projects for which this data is not currently available, WTGs are used for all foundation positions. OSS positions and dimensions considered in this photosimulation are subject to potential modification.
- WTG positions in the photosimulations are based on a refraction value of 7/6 or an approximate 0.14 coefficient derived from observations of the constructed Block Island Wind Farm. This refraction coefficient may yield more conservative visibility results (i.e. greater turbine visibility) that the viewshed analysis results which use a refraction coefficient of 0.13.
- WTG tower, blades, and nacelle use the BOEM and FAA required color RAL 9010. The base and platform use RAL 1023 in accordance with USCG regulations.
- *The number of WTGs visible from the KOP was determined by human verified computer generated counts performed in the 3D camera views considering screening resulting from vegetation, structures, curvature of the earth and refraction. This count may vary from the actual number of WTGs visible in the respective views due to masking completed during post processing which may include people, waves, boats, or other minor obstructions that appear in the photograph. Additionally, the WTG counts assumed the WTG blades are in the upright position whereas the photosimulations assume a random rotation pattern. Considering the largest WTG in the cumulative array, this could account for up to 236 ft. (72 m) in lost maximum height depending on the rotation position.
- The cone of view indicated on the Key Observation Point Context map indicates the horizontal extent of view only and does not indicate the extent of WTG visibility.
- The resolution of the cumulative photosimulations balances the size and usability of the documents with the need for high resolution to see distant project components. Similarly to human vision, very distant turbines may appear blurry or difficult to decipher due to resolution limitations.
- The Key Observation Point Context map considers screening by curvature of the earth, viewer height, and turbine height. Landscape screening features are not considered. Therefore, in this view, the number of visible turbines depicted on the map may not match the table due to the presence of landscape screening features.

Project	Year of Development	Max Blade Tip Height (feet)	Potential Number of WTGs & OSSs Visible from KOP*	Total Number of WTGs & OSSs in Project	Theoretical Distance to Nearest Visible WTG (miles)	Theoretical Distance to Furthest Visible WTG (miles)
Atlantic Shores Offshore Wind South (OCS-A 0499)	2023-2025	1,047	205	205	10.5	25.6

Key Observation Point Context


Key Observation Point
Cone of View
Wind Turbine Generator
Visible
Not Visible
Offshore Substation
Visible
Not Visible
Atlantic Shores Offshore Wind South (OCS-A 0499)
AC04
Atlantic City
Ventnor City
Margate City
Longport
Somers Point
Egg Harbor Township
Absecon
Pleasantville
Brigantine
Galloway
Hamilton
Mullica
Port Republic
Estell Manor
Weymouth
Egg Harbor City
Folsom
Buena
Hammonton
Mays Landing
Atlantic County Airport
Smithville
Pomona
Oaklyn
Northfield
Linwood
Somers Point
Ocean City
Upper Township
Tuckahoe
Marmora
Woodbine
Dennis
Cape May Court House
Cape May
Lower Township
Wildwood
North Wildwood
Wildwood Crest
Rio Grande
Cape May Airport
Middle Township
Cape May Point
Lower Cape May Regional
Avalon
Stone Harbor
Sea Isle City
Strathmere
Corbin City
Woodbine
Dennis
Middle
Lower
Upper
Cape May
Cape May Point
Wildwood
North Wildwood
Wildwood Crest
Rio Grande

AC04: Ocean Casino Resort - Sky Garden, Atlantic City, Atlantic County, New Jersey

Environmental Data

Date Taken: 08/25/2022
Time: 10:43 AM
Temperature: 88°F
Humidity: 34%
Visibility*: 10+ miles
Wind Direction: Northwest
Wind Speed: 13 mph
Conditions Observed: Fair

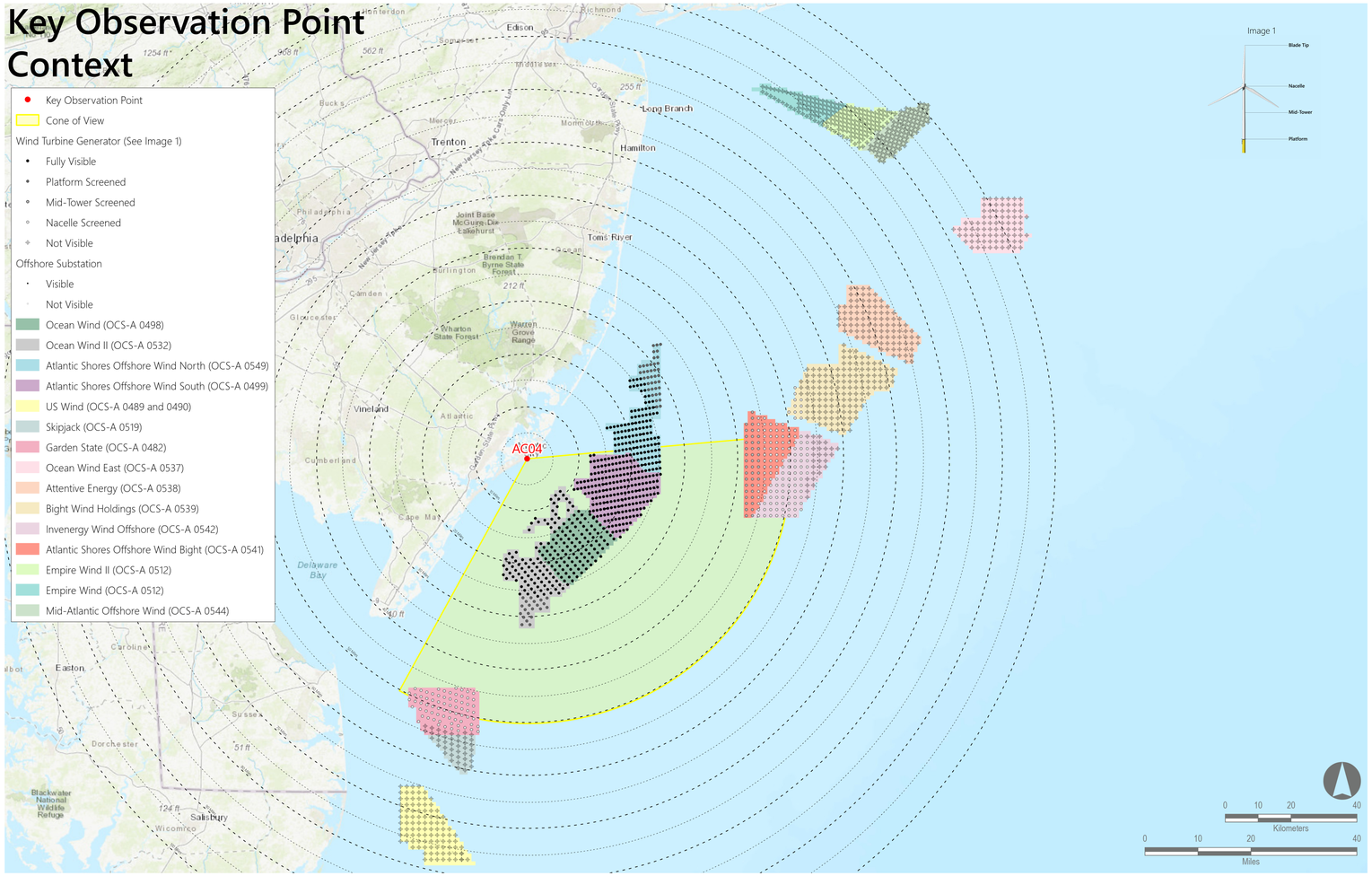
Camera Information
Camera: Canon EOS 5D Mark IV
Resolution: 30.4 Megapixels
Lens Focal Length: 50 mm
Camera Height: 117.26 feet AMSL

Key Observation Point Information

County: Atlantic
Town: Atlantic City
State: New Jersey
Location: Ocean Casino Resort - Sky Deck
Latitude, Longitude: 39.36225°N, 74.41353°W
Direction of View (Center): East (100.9°)
Field of View: 124° x 55°

Visual Resources
Character Area: Atlantic City, Seascape (SCA)
User Group: Local Resident/Tourist
Visually Sensitive Resource: Atlantic City Beach

Key Observation Point Context



Reasonably Foreseeable Projects Represented in Photosimulation

		Project	Year of Development	Max Blade Tip Height (feet)	Potential Number of WTGs & OSSs Visible from KOP**	Total Number of WTGs & OSSs in Project	Theoretical Distance to Nearest Visible WTG (miles)	Theoretical Distance to Furthest Visible WTG (miles)
Scenario 5	Scenario 2	Atlantic Shores Offshore Wind South (OCS-A 0499)	2025-2027	1,047	205	205	10.5	25.6
Scenario 4	Scenario 1	Ocean Wind (OCS-A 0498)	2023-2025	906	111	111	13.9	24.6
		Empire Wind (OCS-A 0512)	2024-2025	951	0	72	Not Visible	Not Visible
		Empire Wind II (OCS-A 0512)	2023-2027	951	0	104	Not Visible	Not Visible
	Scenario 3	Skipjack (OCS-A 0519)	2024-2030	853	0	33	Not Visible	Not Visible
		Garden State (OCS-A 0482)	2023-2030	853	66	80	45.3	53.7
		US Wind (OCS-A 0489 and 0490)	2024	938	0	101	Not Visible	Not Visible
		Atlantic Shores Offshore Wind North (OCS-A 0549)	2025-2030	1,047	164	164	16.2	33.2
		Ocean Wind II (OCS-A 0532)	2026-2030	906	111	111	8.8	31.3
		Mid-Atlantic Offshore Wind (OCS-A 0544)	by 2030	853	0	104	Not Visible	Not Visible
		Ocean Wind East (OCS-A 0537)	by 2030	853	0	82	Not Visible	Not Visible
		Attentive Energy (OCS-A 0538)	by 2030	853	0	101	Not Visible	Not Visible
		Bight Wind Holdings (OCS-A 0539)	by 2030	853	11	148	50.3	53.0
		Atlantic Shores Offshore Wind Bight (OCS-A 0541)	by 2030	853	95	95	41.4	50.9
		Invenergy Wind Offshore (OCS-A 0542)	by 2030	853	70	99	43.9	53.0

Notes:
- Offshore Substation location and dimensions are based on preliminary publicly available project data. Projects for which this data is not currently available, WTGs are used for all foundation positions. OSS positions and dimensions considered in this photosimulation are subject to potential modification.
- *Historical meteorological data predicts visibility within a limit of 10 statute miles. However, visibility may extend beyond this distance. The photosimulations assume visibility extends to the limit of physical visibility (including a standard refraction index).
- WTG positions in the photosimulations are based on a refraction value of 7/6 or an approximate 0.14 coefficient derived from observations of the constructed Block Island Wind Farm. This refraction coefficient may yield more conservative visibility results (i.e. greater turbine visibility) that the viewshed analysis results which use a refraction coefficient of 0.13.
- **The number of WTGs visible from the KOP was determined by human verified computer generated counts performed in the 3D camera views considering screening resulting from vegetation, structures, curvature of the earth and refraction. This count may vary from the actual number of WTGs visible in the respective views due to masking completed during post processing which may include people, waves, boats, or other minor obstructions that appear in the photograph. Additionally, the WTG counts assumed the WTG blades are in the upright position whereas the photosimulations assume a random rotation pattern. Considering the largest WTG in the cumulative array, this could account for up to 236 ft. (72 m) in lost maximum height depending on the rotation position.
- The cone of view indicated on the Key Observation Point Context map indicates the horizontal extent of view only and does not indicate the extent of WTG visibility.
- The Key Observation Point Context map considers screening by curvature of the earth, viewer height, and turbine height. Landscape screening features are not considered. Therefore, in this view, the number of visible turbines depicted on the map may not match the table due to the presence of landscape screening features.

ATLANTIC SHORES offshore wind

MATCH LINE AC04 PANO #1



MATCH LINE AC04 PANO #1

ATLANTIC SHORES offshore wind

Appendix A: Atlantic Shores Offshore Wind Cumulative Photosimulations

AC04: Ocean Casino Resort - Sky Garden, Atlantic City, Atlantic County, New Jersey

Existing Conditions (Panorama 2)

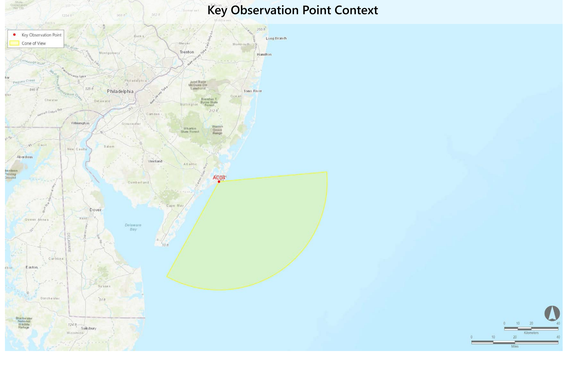
Notes:

- Photosimulation Size: 66" in width by 29.3" in height. Images should be viewed from 18 inches in order to obtain the proper perspective. For on-screen viewing, user should zoom in until the 1-inch scale equals exactly one inch when measured on the screen.

Simulation Size: 66" in width by 29.3" in height. Images should be viewed from a distance of 18 inches in order to obtain the proper perspective.

This box should be exactly 1" long on the printed panorama

Key Observation Point Context



Key Observation Point Location



MATCH LINE AC04 PANO #1



MATCH LINE AC04 PANO #1

ATLANTIC SHORES offshore wind

Appendix A: Atlantic Shores Offshore Wind Cumulative Photosimulations

AC04: Ocean Casino Resort - Sky Garden, Atlantic City, Atlantic County, New Jersey

Photosimulation (Panorama 2): Scenario 1: 2023-2025 Project Construction (Ocean Wind, Empire Wind, Empire Wind II)

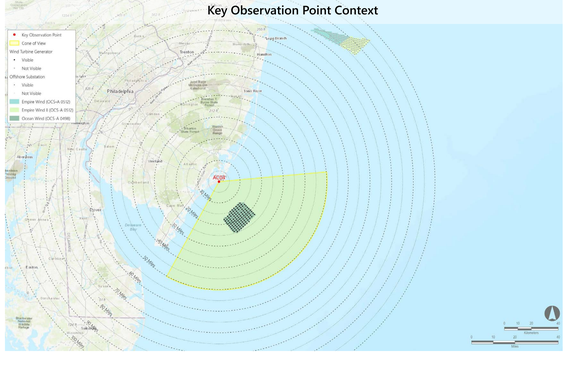
Simulation Size: 66" in width by 29.3" in height. Images should be viewed from a distance of 18 inches in order to obtain the proper perspective.

This box should be exactly 1" long on the printed panorama

Notes:

- Photosimulation Size: 66" in width by 29.3" in height. Images should be viewed from 18 inches in order to obtain the proper perspective. For on-screen viewing, user should zoom in until the 1-inch scale equals exactly one inch when measured on the screen.
- Offshore Substation location and dimensions are based on preliminary publicly available project data. Projects for which this data is not currently available, WTGs are used for all foundation positions. OSS positions and dimensions considered in this photosimulation are subject to potential modification.
- WTG positions in the photosimulations are based on a refraction value of 7/6 or an approximate 0.14 coefficient derived from observations of the constructed Block Island Wind Farm. This refraction coefficient may yield more conservative visibility results (i.e. greater turbine visibility) that the viewshed analysis results which use a refraction coefficient of 0.13.
- WTG tower, blades, and nacelle use the BOEM and FAA required color RAL 9010. The base and platform use RAL 1023 in accordance with USCG regulations.
- *The number of WTGs visible from the KOP was determined by human verified computer generated counts performed in the 3D camera views considering screening resulting from vegetation, structures, curvature of the earth and refraction. This count may vary from the actual number of WTGs visible in the respective views due to masking completed during post processing which may include people, waves, boats, or other minor obstructions that appear in the photograph. Additionally, the WTG counts assumed the WTG blades are in the upright position whereas the photosimulations assume a random rotation pattern. Considering the largest WTG in the cumulative array, this could account for up to 236 ft. (72 m) in lost maximum height depending on the rotation position.
- The cone of view indicated on the Key Observation Point Context map indicates the horizontal extent of view only and does not indicate the extent of WTG visibility.
- The resolution of the cumulative photosimulations balances the size and usability of the documents with the need for high resolution to see distant project components. Similarly to human vision, very distant turbines may appear blurry or difficult to decipher due to resolution limitations.
- The Key Observation Point Context map considers screening by curvature of the earth, viewer height, and turbine height. Landscape screening features are not considered. Therefore, in this view, the number of visible turbines depicted on the map may not match the table due to the presence of landscape screening features.

Project	Year of Development	Max Blade Tip Height (feet)	Potential Number of WTGs & OSSs Visible from KOP*	Total Number of WTGs & OSSs in Project	Theoretical Distance to Nearest Visible WTG (miles)	Theoretical Distance to Furthest Visible WTG (miles)
Ocean Wind (OCS-A 0498)	2024-2025	906	111	111	13.9	24.6
Empire Wind (OCS-A 0512)	2023-2027	951	0	72	Not Visible	Not Visible
Empire Wind II (OCS-A 0512)	2025-2027	951	0	104	Not Visible	Not Visible


Key Observation Point Context
Key Observation Point
Cone of View
Wind Turbine Generator
Visible
Not Visible
Offshore Substation
Visible
Not Visible
Empire Wind (OCS-A 0512)
Empire Wind II (OCS-A 0512)
Ocean Wind (OCS-A 0498)
KOP
Philadelphia
Camden
Atlantic City
Ocean City
Wildwood
Cape May
Lewes
Rehoboth Beach
Dover
Salisbury
Ocean City
Easton
Annapolis
Baltimore
Wilmington
Newark
Dover
Trenton
Princeton
Lakewood
Toms River
Long Branch
Freehold
Asbury Park
Hamilton
Cherry Hill
Vineland
Millville
Bridgeton
Glassboro
Woodbury
Pleasantville
Absecon
Egg Harbor City
Hammonton
Folsom
Galloway
Somers Point
Ventnor City
Margate City
Longport
Brigantine
Linwood
Northfield
Pomona
Mullica Hill
Swedesboro
Penns Grove
Salem
Pennsville
Woodstown
Pilesgrove
Elmer
Vineland
Millville
Bridgeton
Cedarville
Fairfield
Bridgeton
Port Norris
Dorchester
Hebron
Cambridge
Denton
Federalsburg
Seaford
Laurel
Delmar
Milton
Lewes
Rehoboth Beach
Bethany Beach
Fenwick Island
Ocean City
Berlin
Snow Hill
Pocomoke City
Crisfield
Princess Anne
Salisbury
Fruitland
Hebron
Easton
Oxford
St Michaels
Tilghman
Chestertown
Rock Hall
Chestertown
Centreville
Queenstown
Kent Island
Stevensville
Grasonville
Chester
Wye Mills

MATCH LINE AC04 PANO #1



ATLANTIC SHORES offshore wind

Appendix A: Atlantic Shores Offshore Wind Cumulative Photosimulations

AC04: Ocean Casino Resort - Sky Garden, Atlantic City, Atlantic County, New Jersey

Photosimulation (Panorama 2): Scenario 2: Atlantic Shores Construction (2025-2027) added to Scenario 1 (Ocean Wind, Empire Wind, Empire Wind II, Atlantic Shores South)

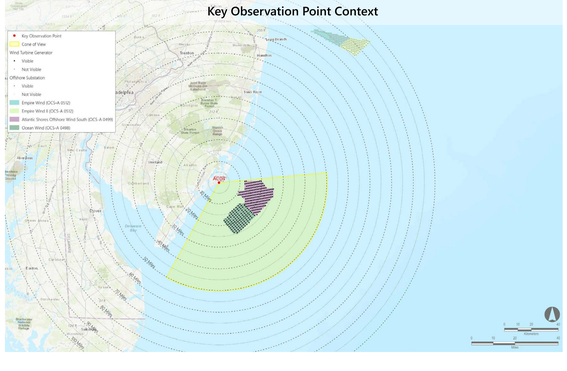
Simulation Size: 66" in width by 29.3" in height. Images should be viewed from a distance of 18 inches in order to obtain the proper perspective.

This box should be exactly 1" long on the printed panorama

Notes:

- Photosimulation Size: 66" in width by 29.3" in height. Images should be viewed from 18 inches in order to obtain the proper perspective. For on-screen viewing, user should zoom in until the 1-inch scale equals exactly one inch when measured on the screen.
- Offshore Substation location and dimensions are based on preliminary publicly available project data. Projects for which this data is not currently available, WTGs are used for all foundation positions. OSS positions and dimensions considered in this photosimulation are subject to potential modification.
- WTG positions in the photosimulations are based on a refraction value of 7/6 or an approximate 0.14 coefficient derived from observations of the constructed Block Island Wind Farm. This refraction coefficient may yield more conservative visibility results (i.e. greater turbine visibility) that the viewshed analysis results which use a refraction coefficient of 0.13.
- WTG tower, blades, and nacelle use the BOEM and FAA required color RAL 9010. The base and platform use RAL 1023 in accordance with USCG regulations.
- *The number of WTGs visible from the KOP was determined by human verified computer generated counts performed in the 3D camera views considering screening resulting from vegetation, structures, curvature of the earth and refraction. This count may vary from the actual number of WTGs visible in the respective views due to masking completed during post processing which may include people, waves, boats, or other minor obstructions that appear in the photograph. Additionally, the WTG counts assumed the WTG blades are in the upright position whereas the photosimulations assume a random rotation pattern. Considering the largest WTG in the cumulative array, this could account for up to 236 ft. (72 m) in lost maximum height depending on the rotation position.
- The cone of view indicated on the Key Observation Point Context map indicates the horizontal extent of view only and does not indicate the extent of WTG visibility.
- The resolution of the cumulative photosimulations balances the size and usability of the documents with the need for high resolution to see distant project components. Similarly to human vision, very distant turbines may appear blurry or difficult to decipher due to resolution limitations.
- The Key Observation Point Context map considers screening by curvature of the earth, viewer height, and turbine height. Landscape screening features are not considered. Therefore, in this view, the number of visible turbines depicted on the map may not match the table due to the presence of landscape screening features.

Project	Year of Development	Max Blade Tip Height (feet)	Potential Number of WTGs & OSSs Visible from KOP*	Total Number of WTGs & OSSs in Project	Theoretical Distance to Nearest Visible WTG (miles)	Theoretical Distance to Furthest Visible WTG (miles)
Atlantic Shores Offshore Wind South (OCS-A 0499)	2023-2025	1,047	205	205	10.5	25.6
Ocean Wind (OCS-A 0498)	2024-2025	906	111	111	13.9	24.6
Empire Wind (OCS-A 0512)	2023-2027	951	0	72	Not Visible	Not Visible
Empire Wind II (OCS-A 0512)	2025-2027	951	0	104	Not Visible	Not Visible





MATCH LINE AC04 PANO #1



ATLANTIC SHORES offshore wind

Appendix A: Atlantic Shores Offshore Wind Cumulative Photosimulations

AC04: Ocean Casino Resort - Sky Garden, Atlantic City, Atlantic County, New Jersey

Photosimulation (Panorama 2): Scenario 3: 2024-2030 Project construction added after the construction of Atlantic Shores South (Full Lease Build-out Including Atlantic Shores South)

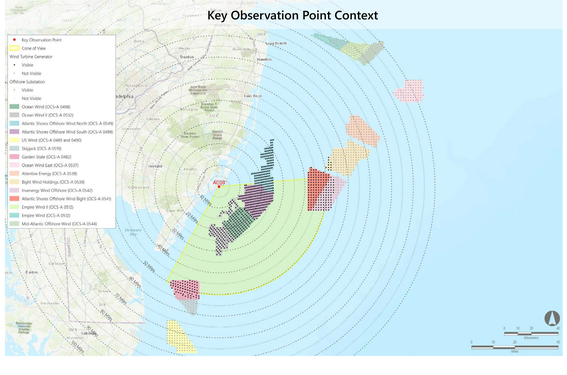
Simulation Size: 66" in width by 29.3" in height. Images should be viewed from a distance of 18 inches in order to obtain the proper perspective.

This box should be exactly 7" long on the printed panorama

Notes:

- Photosimulation Size: 66" in width by 29.3" in height. Images should be viewed from 18 inches in order to obtain the proper perspective. For on-screen viewing, user should zoom in until the 1-inch scale equals exactly one inch when measured on the screen.
- Offshore Substation location and dimensions are based on preliminary publicly available project data. Projects for which this data is not currently available, WTGs are used for all foundation positions. OSS positions and dimensions considered in this photosimulation are subject to potential modification.
- WTG positions in the photosimulations are based on a refraction value of 7/6 or an approximate 0.14 coefficient derived from observations of the constructed Block Island Wind Farm. This refraction coefficient may yield more conservative visibility results (i.e. greater turbine visibility) that the viewshed analysis results which use a refraction coefficient of 0.13.
- WTG tower, blades, and nacelle use the BOEM and FAA required color RAL 9010. The base and platform use RAL 1023 in accordance with USCG regulations.
- *The number of WTGs visible from the KOP was determined by human verified computer generated counts performed in the 3D camera views considering screening resulting from vegetation, structures, curvature of the earth and refraction. This count may vary from the actual number of WTGs visible in the respective views due to masking completed during post processing which may include people, waves, boats, or other minor obstructions that appear in the photograph. Additionally, the WTG counts assumed the WTG blades are in the upright position whereas the photosimulations assume a random rotation pattern. Considering the largest WTG in the cumulative array, this could account for up to 236 ft. (72 m) in lost maximum height depending on the rotation position.
- The cone of view indicated on the Key Observation Point Context map indicates the horizontal extent of view only and does not indicate the extent of WTG visibility.
- The resolution of the cumulative photosimulations balances the size and usability of the documents with the need for high resolution to see distant project components. Similarly to human vision, very distant turbines may appear blurry or difficult to decipher due to resolution limitations.
- The Key Observation Point Context map considers screening by curvature of the earth, viewer height, and turbine height. Landscape screening features are not considered. Therefore, in this view, the number of visible turbines depicted on the map may not match the table due to the presence of landscape screening features.

Project	Year of Development	Max Blade Tip Height (feet)	Potential Number of WTGs & OSSs Visible from KOP*	Total Number of WTGs & OSSs in Project	Theoretical Distance to Nearest Visible WTG (miles)	Theoretical Distance to Furthest Visible WTG (miles)
Atlantic Shores Offshore Wind South (OCS-A 0499)	2023-2025	1,047	205	205	10.5	25.6
Ocean Wind (OCS-A 0498)	2024-2025	906	111	111	13.9	24.6
Empire Wind (OCS-A 0512)	2023-2027	951	0	72	Not Visible	Not Visible
Empire Wind II (OCS-A 0512)	2025-2027	951	0	104	Not Visible	Not Visible
Skipjack (OCS-A 0519)	2024-2030	853	0	33	Not Visible	Not Visible
Garden State (OCS-A 0482)	2023-2030	853	66	80	45.3	53.7
US Wind (OCS-A 0489 and 0490)	2024	938	0	101	Not Visible	Not Visible
Atlantic Shores Offshore Wind North (OCS-A 0549)	2025-2030	1,047	164	164	16.2	33.2
Ocean Wind II (OCS-A 0532)	2026-2030	906	111	111	8.8	31.3
Mid-Atlantic Offshore Wind (OCS-A 0544)	by 2030	853	0	104	Not Visible	Not Visible
Ocean Wind East (OCS-A 0537)	by 2030	853	0	82	Not Visible	Not Visible
Attentive Energy (OCS-A 0538)	by 2030	853	0	101	Not Visible	Not Visible
Bight Wind Holdings (OCS-A 0539)	by 2030	853	11	148	50.3	53.0
Atlantic Shores Offshore Wind Bight (OCS-A 0541)	by 2030	853	95	95	41.4	50.9
Invenergy Wind Offshore (OCS-A 0542)	by 2030	853	70	99	43.9	53.0





MATCH LINE AC04 PANO #1



ATLANTIC SHORES offshore wind

Appendix A: Atlantic Shores Offshore Wind Cumulative Photosimulations

AC04: Ocean Casino Resort - Sky Garden, Atlantic City, Atlantic County, New Jersey

Photosimulation (Panorama 2): Scenario 4: Full buildout of all lease areas without Atlantic Shores South

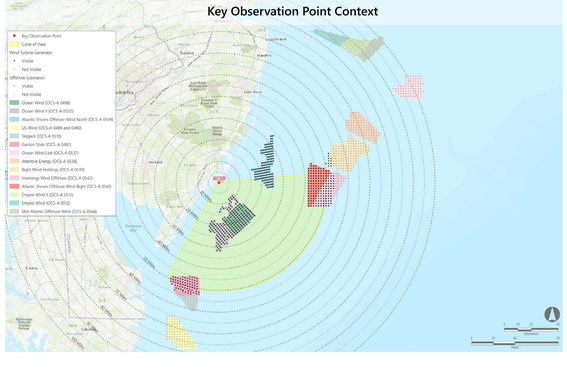
Simulation Size: 66" in width by 29.3" in height. Images should be viewed from a distance of 18 inches in order to obtain the proper perspective.

This box should be exactly 7" long on the printed panorama

Notes:

- Photosimulation Size: 66" in width by 29.3" in height. Images should be viewed from 18 inches in order to obtain the proper perspective. For on-screen viewing, user should zoom in until the 1-inch scale equals exactly one inch when measured on the screen.
- Offshore Substation location and dimensions are based on preliminary publicly available project data. Projects for which this data is not currently available, WTGs are used for all foundation positions. OSS positions and dimensions considered in this photosimulation are subject to potential modification.
- WTG positions in the photosimulations are based on a refraction value of 7/6 or an approximate 0.14 coefficient derived from observations of the constructed Block Island Wind Farm. This refraction coefficient may yield more conservative visibility results (i.e. greater turbine visibility) that the viewshed analysis results which use a refraction coefficient of 0.13.
- WTG tower, blades, and nacelle use the BOEM and FAA required color RAL 9010. The base and platform use RAL 1023 in accordance with USCG regulations.
- *The number of WTGs visible from the KOP was determined by human verified computer generated counts performed in the 3D camera views considering screening resulting from vegetation, structures, curvature of the earth and refraction. This count may vary from the actual number of WTGs visible in the respective views due to masking completed during post processing which may include people, waves, boats, or other minor obstructions that appear in the photograph. Additionally, the WTG counts assumed the WTG blades are in the upright position whereas the photosimulations assume a random rotation pattern. Considering the largest WTG in the cumulative array, this could account for up to 236 ft. (72 m) in lost maximum height depending on the rotation position.
- The cone of view indicated on the Key Observation Point Context map indicates the horizontal extent of view only and does not indicate the extent of WTG visibility.
- The resolution of the cumulative photosimulations balances the size and usability of the documents with the need for high resolution to see distant project components. Similarly to human vision, very distant turbines may appear blurry or difficult to decipher due to resolution limitations.
- The Key Observation Point Context map considers screening by curvature of the earth, viewer height, and turbine height. Landscape screening features are not considered. Therefore, in this view, the number of visible turbines depicted on the map may not match the table due to the presence of landscape screening features.

Project	Year of Development	Max Blade Tip Height (feet)	Potential Number of WTGs & OSSs Visible from KOP*	Total Number of WTGs & OSSs in Project	Theoretical Distance to Nearest Visible WTG (miles)	Theoretical Distance to Furthest Visible WTG (miles)
Ocean Wind (OCS-A 0498)	2024-2025	906	111	111	13.9	24.6
Empire Wind (OCS-A 0512)	2023-2027	951	0	72	Not Visible	Not Visible
Empire Wind II (OCS-A 0512)	2025-2027	951	0	104	Not Visible	Not Visible
Skipjack (OCS-A 0519)	2024-2030	853	0	33	Not Visible	Not Visible
Garden State (OCS-A 0482)	2023-2030	853	66	80	45.3	53.7
US Wind (OCS-A 0489 and 0490)	2024	938	0	101	Not Visible	Not Visible
Atlantic Shores Offshore Wind North (OCS-A 0549)	2025-2030	1,047	164	164	16.2	33.2
Ocean Wind II (OCS-A 0532)	2026-2030	906	111	111	8.8	31.3
Mid-Atlantic Offshore Wind (OCS-A 0544)	by 2030	853	0	104	Not Visible	Not Visible
Ocean Wind East (OCS-A 0537)	by 2030	853	0	82	Not Visible	Not Visible
Attentive Energy (OCS-A 0538)	by 2030	853	0	101	Not Visible	Not Visible
Bight Wind Holdings (OCS-A 0539)	by 2030	853	11	148	50.3	53.0
Atlantic Shores Offshore Wind Bight (OCS-A 0541)	by 2030	853	95	95	41.4	50.9
Invenergy Wind Offshore (OCS-A 0542)	by 2030	853	70	99	43.9	53.0


Key Observation Point Context
Key Observation Point
Cone of View
Wind Turbine Generator
Visible
Not Visible
Offshore Substation
Visible
Not Visible
Ocean Wind (OCS-A 0498)
Ocean Wind II (OCS-A 0532)
Atlantic Shores Offshore Wind North (OCS-A 0549)
US Wind (OCS-A 0489 and 0490)
Skipjack (OCS-A 0519)
Garden State (OCS-A 0482)
Ocean Wind East (OCS-A 0537)
Attentive Energy (OCS-A 0538)
Bight Wind Holdings (OCS-A 0539)
Invenergy Wind Offshore (OCS-A 0542)
Atlantic Shores Offshore Wind Bight (OCS-A 0541)
Empire Wind II (OCS-A 0512)
Empire Wind (OCS-A 0512)
Mid-Atlantic Offshore Wind (OCS-A 0544)
KOP
Atlantic City
Ocean City
Cape May
Wildwood
Vineland
Millville
Bridgeton
Salem
Glassboro
Woodbury
Camden
Trenton
Toms River
Lakewood
Brick
Long Branch
Freehold
Asbury Park
Lake Hiawatha
Dover
Morristown
Parsippany-Troy Hills
Hoboken
Jersey City
Newark
Elizabeth
Paterson
Wayne
Bayonne
Staten Island
Brooklyn
Queens
Manhattan
Bronx
Yonkers
New Rochelle
Mount Vernon
Long Island
Nassau
Suffolk
Riverhead
Southampton
Montauk
Bridgeport
Stamford
Norwalk
Danbury
Waterbury
New Haven
Hartford
Meriden
Middletown
Norwich
New London
Groton
Providence
Warwick
Cranston
Pawtucket
Woonsocket
Newport
Fall River
New Bedford
Cape Cod
Martha's Vineyard
Nantucket
Boston
Worcester
Springfield
Pittsfield
Lowell
Lawrence
Salem
Gloucester
Lynn
Quincy
Cambridge
Framingham
Brockton
Taunton
Plymouth
Barnstable
Hyannis
Provincetown
Portland
Augusta
Bangor
Lewiston
Auburn
Concord
Manchester
Nashua
Portsmouth
Dover
Rochester
Keene
Burlington
Montpelier
Rutland
Bennington
Brattleboro
Albany
Schenectady
Troy
Saratoga Springs
Utica
Rome
Syracuse
Binghamton
Elmira
Ithaca
Rochester
Buffalo
Niagara Falls
Jamestown
Erie
Scranton
Wilkes-Barre
Allentown
Bethlehem
Easton
Reading
Lancaster
York
Harrisburg
Carlisle
Gettysburg
Hanover
Chambersburg
Hagerstown
Frederick
Rockville
Silver Spring
Bethesda
Chevy Chase
Arlington
Alexandria
Fairfax
Falls Church
Reston
Herndon
Leesburg
Manassas
Fredericksburg
Richmond
Petersburg
Hopewell
Colonial Heights
Chesterfield
Henrico
Virginia Beach
Norfolk
Chesapeake
Portsmouth
Suffolk
Hampton
Newport News
Williamsburg
Yorktown
Gloucester
Mathews
Middlesex
Essex
King William
King and Queen
Caroline
Spotsylvania
Stafford
Prince William
Loudoun
Fauquier
Culpeper
Orange
Madison
Greene
Albemarle
Fluvanna
Goochland
Powhatan
Amelia
Nottoway
Dinwiddie
Prince George
Surry
Isle of Wight
Southampton
Sussex
Greensville
Emporia
Brunswick
Lunenburg
Mecklenburg
Halifax
Pittsylvania
Danville
Martinsville
Henry
Patrick
Franklin
Roanoke
Salem
Lynchburg
Bedford
Campbell
Appomattox
Buckingham
Cumberland
Prince Edward
Charlotte
Lunenburg
Nottoway
Amelia
Powhatan
Chesterfield
Colonial Heights
Hopewell
Petersburg
Dinwiddie
Prince George
Surry
Isle of Wight
Suffolk
Chesapeake
Virginia Beach
Norfolk
Portsmouth
Hampton
Newport News
Williamsburg
James City
York
Poquoson
Mathews
Gloucester
Middlesex
Essex
King William
King and Queen
King George
Westmoreland
Northumberland
Lancaster
Richmond
Caroline
Spotsylvania
Stafford
Prince William
Loudoun
Fauquier
Culpeper
Orange
Madison
Greene
Albemarle
Fluvanna
Goochland
Louisa
Hanover
Henrico
Charles City
New Kent
Gloucester
Mathews
Middlesex
Essex
King William
King and Queen
King George
Westmoreland
Northumberland
Lancaster
Richmond
Caroline
Spotsylvania
Stafford
Prince William
Loudoun
Fauquier
Culpeper
Orange
Madison
Greene
Albemarle
Fluvanna
Goochland
Louisa
Hanover
Henrico
Charles City
New Kent
James City
York
Poquoson
Mathews
Gloucester

MATCH LINE AC04 PANO #1



ATLANTIC SHORES offshore wind

Appendix A: Atlantic Shores Offshore Wind Cumulative Photosimulations

AC04: Ocean Casino Resort - Sky Garden, Atlantic City, Atlantic County, New Jersey

Photosimulation (Panorama 2): Scenario 5: Atlantic Shores South without the construction of other foreseeable planned activities

Simulation Size: 66" in width by 29.3" in height. Images should be viewed from a distance of 18 inches in order to obtain the proper perspective.

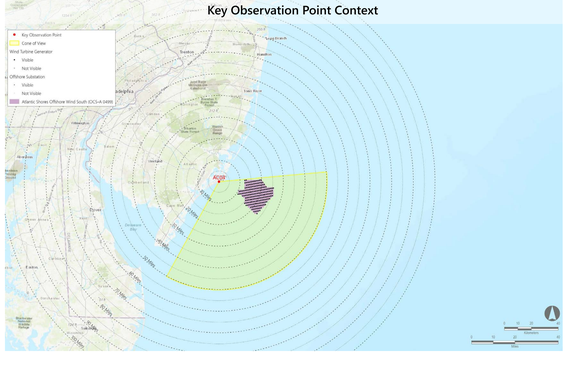
This box should be exactly 7" long on the printed panorama

Notes:

- Photosimulation Size: 66" in width by 29.3" in height. Images should be viewed from 18 inches in order to obtain the proper perspective. For on-screen viewing, user should zoom in until the 1-inch scale equals exactly one inch when measured on the screen.
- Offshore Substation location and dimensions are based on preliminary publicly available project data. Projects for which this data is not currently available, WTGs are used for all foundation positions. OSS positions and dimensions considered in this photosimulation are subject to potential modification.
- WTG positions in the photosimulations are based on a refraction value of 7/6 or an approximate 0.14 coefficient derived from observations of the constructed Block Island Wind Farm. This refraction coefficient may yield more conservative visibility results (i.e. greater turbine visibility) that the viewshed analysis results which use a refraction coefficient of 0.13.
- WTG tower, blades, and nacelle use the BOEM and FAA required color RAL 9010. The base and platform use RAL 1023 in accordance with USCG regulations.
- *The number of WTGs visible from the KOP was determined by human verified computer generated counts performed in the 3D camera views considering screening resulting from vegetation, structures, curvature of the earth and refraction. This count may vary from the actual number of WTGs visible in the respective views due to masking completed during post processing which may include people, waves, boats, or other minor obstructions that appear in the photograph. Additionally, the WTG counts assumed the WTG blades are in the upright position whereas the photosimulations assume a random rotation pattern. Considering the largest WTG in the cumulative array, this could account for up to 236 ft. (72 m) in lost maximum height depending on the rotation position.
- The cone of view indicated on the Key Observation Point Context map indicates the horizontal extent of view only and does not indicate the extent of WTG visibility.
- The resolution of the cumulative photosimulations balances the size and usability of the documents with the need for high resolution to see distant project components. Similarly to human vision, very distant turbines may appear blurry or difficult to decipher due to resolution limitations.
- The Key Observation Point Context map considers screening by curvature of the earth, viewer height, and turbine height. Landscape screening features are not considered. Therefore, in this view, the number of visible turbines depicted on the map may not match the table due to the presence of landscape screening features.

Project	Year of Development	Max Blade Tip Height (feet)	Potential Number of WTGs & OSSs Visible from KOP*	Total Number of WTGs & OSSs in Project	Theoretical Distance to Nearest Visible WTG (miles)	Theoretical Distance to Furthest Visible WTG (miles)
Atlantic Shores Offshore Wind South (OCS-A 0499)	2023-2025	1,047	205	205	10.5	25.6

Key Observation Point Context


Key Observation Point
Cone of View
Wind Turbine Generator
Visible
Not Visible
Offshore Substation
Visible
Not Visible
Atlantic Shores Offshore Wind South (OCS-A 0499)
KOP
Atlantic City
Ventnor City
Margate City
Longport
Somers Point
Egg Harbor City
Hammonton
Absecon
Pleasantville
Brigantine
Linwood
Northfield
Galloway
Hamilton
Mullica Hill
Glassboro
Woodbury
Haddonfield
Collingswood
Camden
Cherry Hill
Marlton
Medford
Mount Holly
Burlington
Bordentown
Trenton
Hamilton
Ewing
Lawrence
Pennington
Hopewell
Robbinsville
Allentown
Millstone
Jackson
Toms River
Lakewood
Brick
Manchester
Barnegat
Long Branch
Freehold
Asbury Park
Neptune
Lake Como
Wall
Belmar
Spring Lake
Point Pleasant
Point Pleasant Beach
Bay Head
Mantoloking
Lavallette
Seaside Park
Seaside Heights
Berkeley
Island Heights
Toms River
Forked River
Waretown
Barnegat Light
Beach Haven
Ship Bottom
Surf City
Long Beach Township
Tuckerton
Little Egg Harbor
Stafford
Manahawkin
Ocean Gate
Beachwood
Pine Beach
Bayville
Lanoka Harbor
Oyster Creek

AC04 Night: Ocean Casino Resort - Sky Garden, Atlantic City, Atlantic County, New Jersey

Environmental Data

Date Taken: 08/25/2022
Time: 10:43 AM
Temperature: 88°F
Humidity: 34%
Visibility*: 10+ miles
Wind Direction: Northwest
Wind Speed: 13 mph
Conditions Observed: Fair

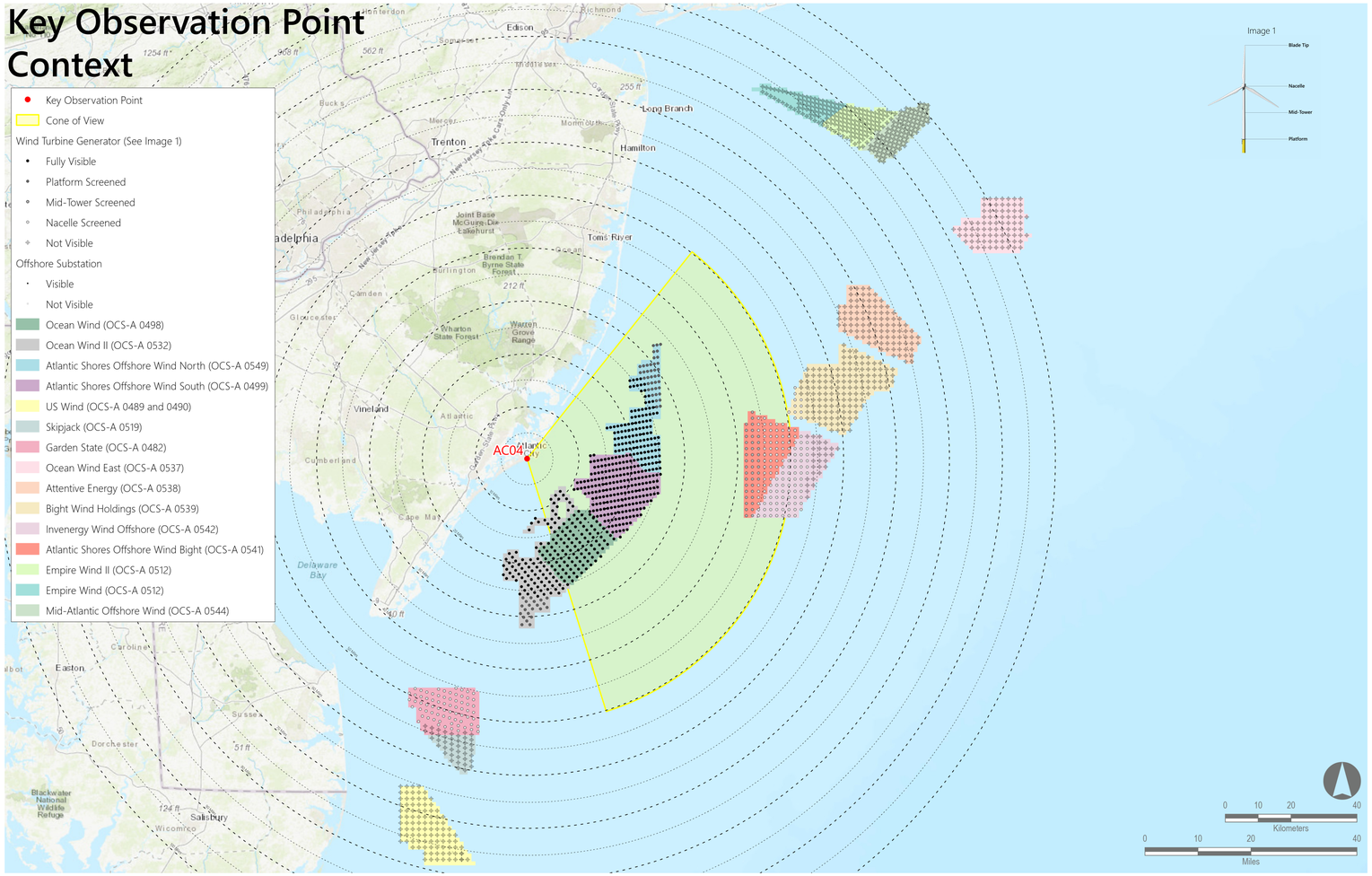
Camera Information
Camera: Canon EOS 5D Mark IV
Resolution: 30.4 Megapixels
Lens Focal Length: 50 mm
Camera Height: 117.26 feet AMSL

Key Observation Point Information

County: Atlantic
Town: Atlantic City
State: New Jersey
Location: Ocean Casino Resort - Sky Deck
Latitude, Longitude: 39.36225°N, 74.41353°W
Direction of View (Center): East (100.9°)
Field of View: 124° x 55°

Visual Resources
Character Area: Atlantic City, Seascape (SCA)
User Group: Local Resident/Tourist
Visually Sensitive Resource: Atlantic City Beach

Key Observation Point Context



Reasonably Foreseeable Projects Represented in Photosimulation

		Project	Year of Development	Max Blade Tip Height (feet)	Potential Number of WTGs & OSSs Visible from KOP**	Total Number of WTGs & OSSs in Project	Theoretical Distance to Nearest Visible WTG (miles)	Theoretical Distance to Furthest Visible WTG (miles)
Scenario 5	Scenario 2	Atlantic Shores Offshore Wind South (OCS-A 0499)	2025-2027	1,047	205	205	10.5	25.6
Scenario 4	Scenario 1	Ocean Wind (OCS-A 0498)	2023-2025	906	111	111	13.9	24.6
		Empire Wind (OCS-A 0512)	2024-2025	951	0	72	Not Visible	Not Visible
		Empire Wind II (OCS-A 0512)	2023-2027	951	0	104	Not Visible	Not Visible
	Scenario 3	Skipjack (OCS-A 0519)	2024-2030	853	0	33	Not Visible	Not Visible
		Garden State (OCS-A 0482)	2023-2030	853	0	80	Not Visible	Not Visible
		US Wind (OCS-A 0489 and 0490)	2024	938	0	101	Not Visible	Not Visible
		Atlantic Shores Offshore Wind North (OCS-A 0549)	2025-2030	1,047	164	164	16.2	33.2
		Ocean Wind II (OCS-A 0532)	2026-2030	906	111	111	8.8	31.3
		Mid-Atlantic Offshore Wind (OCS-A 0544)	by 2030	853	0	104	Not Visible	Not Visible
		Ocean Wind East (OCS-A 0537)	by 2030	853	0	82	Not Visible	Not Visible
		Attentive Energy (OCS-A 0538)	by 2030	853	0	101	Not Visible	Not Visible
		Bight Wind Holdings (OCS-A 0539)	by 2030	853	0	148	Not Visible	Not Visible
		Atlantic Shores Offshore Wind Bight (OCS-A 0541)	by 2030	853	56	95	41.4	50.9
		Invenergy Wind Offshore (OCS-A 0542)	by 2030	853	1	99	43.9	53.0

Notes:
- Offshore Substation location and dimensions are based on preliminary publicly available project data. Projects for which this data is not currently available, WTGs are used for all foundation positions. OSS positions and dimensions considered in this photosimulation are subject to potential modification.
- *Historical meteorological data predicts visibility within a limit of 10 statute miles. However, visibility may extend beyond this distance. The photosimulations assume visibility extends to the limit of physical visibility (including a standard refraction index).
- WTG positions in the photosimulations are based on a refraction value of 7/6 or an approximate 0.14 coefficient derived from observations of the constructed Block Island Wind Farm. This refraction coefficient may yield more conservative visibility results (i.e. greater turbine visibility) that the viewshed analysis results which use a refraction coefficient of 0.13.
- **The number of WTGs visible from the KOP was determined by human verified computer generated counts performed in the 3D camera views considering screening resulting from vegetation, structures, curvature of the earth and refraction. This count may vary from the actual number of WTGs visible in the respective views due to masking completed during post processing which may include people, waves, boats, or other minor obstructions that appear in the photograph. Additionally, the WTG counts assumed the WTG blades are in the upright position whereas the photosimulations assume a random rotation pattern. Considering the largest WTG in the cumulative array, this could account for up to 236 ft. (72 m) in lost maximum height depending on the rotation position.
- The cone of view indicated on the Key Observation Point Context map indicates the horizontal extent of view only and does not indicate the extent of WTG visibility.
- The Key Observation Point Context map considers screening by curvature of the earth, viewer height, and turbine height. Landscape screening features are not considered. Therefore, in this view, the number of visible turbines depicted on the map may not match the table due to the presence of landscape screening features.
- Nighttime photosimulations are digitally adjusted from daytime photographs. Nighttime photographs captured at each represented KOP inform the presence or lack of existing light sources.

ATLANTIC SHORES offshore wind

MATCH LINE AC04 PANO #2



ATLANTIC SHORES offshore wind

Appendix A: Atlantic Shores Offshore Wind Cumulative Photosimulations

AC04 Night: Ocean Casino Resort - Sky Garden, Atlantic City, Atlantic County, New Jersey

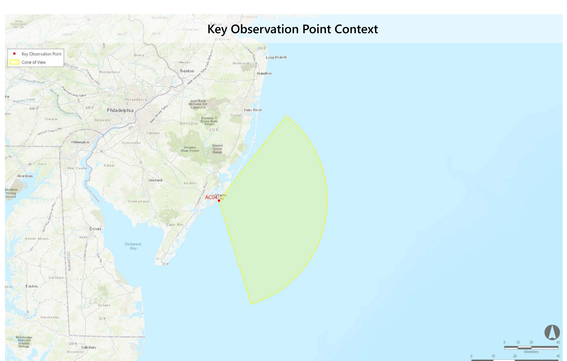
Existing Conditions (Panorama 1)

Notes:

- Photosimulation Size: 66" in width by 29.3" in height. Images should be viewed from 18 inches in order to obtain the proper perspective. For on-screen viewing, user should zoom in until the 1-inch scale equals exactly one inch when measured on the screen.
- Nighttime photosimulations are digitally adjusted from daytime photographs. Nighttime photographs captured at each represented KOP inform the presence or lack of existing light sources.

Simulation Size: 66" in width by 29.3" in height. Images should be viewed from a distance of 18 inches in order to obtain the proper perspective.

This box should measure 1" long on the printed panorama







ATLANTIC SHORES offshore wind

Appendix A: Atlantic Shores Offshore Wind Cumulative Photosimulations

AC04 Night: Ocean Casino Resort - Sky Garden, Atlantic City, Atlantic County, New Jersey

Photosimulation (Panorama 1): Scenario 1: 2023-2025 Project Construction (Ocean Wind, Empire Wind, Empire Wind II)

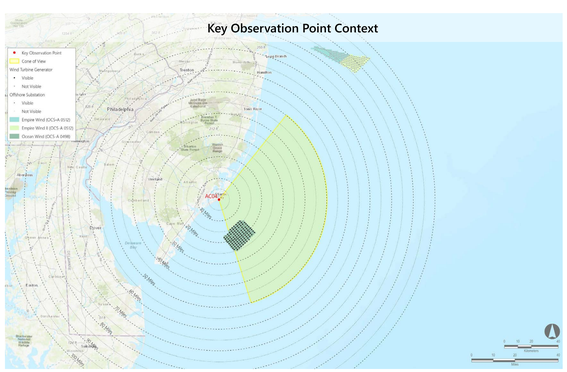
Simulation Size: 66" in width by 29.3" in height. Images should be viewed from a distance of 18 inches in order to obtain the proper perspective.

This box should measure 2" tall on the printed panorama

Notes:

- Photosimulation Size: 66" in width by 29.3" in height. Images should be viewed from 18 inches in order to obtain the proper perspective. For on-screen viewing, user should zoom in until the 1-inch scale equals exactly one inch when measured on the screen.
- Offshore Substation location and dimensions are based on preliminary publicly available project data. Projects for which this data is not currently available, WTGs are used for all foundation positions. OSS positions and dimensions considered in this photosimulation are subject to potential modification.
- WTG positions in the photosimulations are based on a refraction value of 7/6 or an approximate 0.14 coefficient derived from observations of the constructed Block Island Wind Farm. This refraction coefficient may yield more conservative visibility results (i.e. greater turbine visibility) that the viewshed analysis results which use a refraction coefficient of 0.13.
- WTG tower, blades, and nacelle use the BOEM and FAA required color RAL 9010. The base and platform use RAL 1023 in accordance with USCG regulations.
- *The number of WTGs visible from the KOP was determined by human verified computer generated counts performed in the 3D camera views considering screening resulting from vegetation, structures, curvature of the earth and refraction. This count may vary from the actual number of WTGs visible in the respective views due to masking completed during post processing which may include people, waves, boats, or other minor obstructions that appear in the photograph. Additionally, the WTG counts assumed the WTG blades are in the upright position whereas the photosimulations assume a random rotation pattern. Considering the largest WTG in the cumulative array, this could account for up to 236 ft. (72 m) in lost maximum height depending on the rotation position.
- The cone of view indicated on the Key Observation Point Context map indicates the horizontal extent of view only and does not indicate the extent of WTG visibility.
- The resolution of the cumulative photosimulations balances the size and usability of the documents with the need for high resolution to see distant project components. Similarly to human vision, very distant turbines may appear blurry or difficult to decipher due to resolution limitations.
- The Key Observation Point Context map considers screening by curvature of the earth, viewer height, and turbine height. Landscape screening features are not considered. Therefore, in this view, the number of visible turbines depicted on the map may not match the table due to the presence of landscape screening features.
- Nighttime photosimulations are digitally adjusted from daytime photographs. Nighttime photographs captured at each represented KOP inform the presence or lack of existing light sources.

Project	Year of Development	Max Blade Tip Height (feet)	Potential Number of WTGs & OSSs Visible from KOP*	Total Number of WTGs & OSSs in Project	Theoretical Distance to Nearest Visible WTG (miles)	Theoretical Distance to Furthest Visible WTG (miles)
Ocean Wind (OCS-A 0498)	2024-2025	906	111	111	13.9	24.6
Empire Wind (OCS-A 0512)	2023-2027	951	0	72	Not Visible	Not Visible
Empire Wind II (OCS-A 0512)	2025-2027	951	0	104	Not Visible	Not Visible







ATLANTIC SHORES offshore wind

Appendix A: Atlantic Shores Offshore Wind Cumulative Photosimulations

AC04 Night: Ocean Casino Resort - Sky Garden, Atlantic City, Atlantic County, New Jersey

Photosimulation (Panorama 1): Scenario 2: Atlantic Shores Construction (2025-2027) added to Scenario 1 (Ocean Wind, Empire Wind, Empire Wind II, Atlantic Shores South)

Simulation Size: 66" in width by 29.3" in height. Images should be viewed from a distance of 18 inches in order to obtain the proper perspective.

This box should measure 1.5" sq on the printed panorama

Notes:

- Photosimulation Size: 66" in width by 29.3" in height. Images should be viewed from 18 inches in order to obtain the proper perspective. For on-screen viewing, user should zoom in until the 1-inch scale equals exactly one inch when measured on the screen.
- Offshore Substation location and dimensions are based on preliminary publicly available project data. Projects for which this data is not currently available, WTGs are used for all foundation positions. OSS positions and dimensions considered in this photosimulation are subject to potential modification.
- WTG positions in the photosimulations are based on a refraction value of 7/6 or an approximate 0.14 coefficient derived from observations of the constructed Block Island Wind Farm. This refraction coefficient may yield more conservative visibility results (i.e. greater turbine visibility) that the viewshed analysis results which use a refraction coefficient of 0.13.
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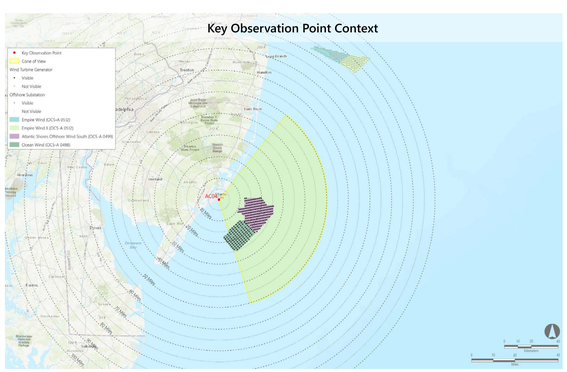
- The cone of view indicated on the Key Observation Point Context map indicates the horizontal extent of view only and does not indicate the extent of WTG visibility.
- The resolution of the cumulative photosimulations balances the size and usability of the documents with the need for high resolution to see distant project components. Similarly to human vision, very distant turbines may appear blurry or difficult to decipher due to resolution limitations.
- The Key Observation Point Context map considers screening by curvature of the earth, viewer height, and turbine height. Landscape screening features are not considered. Therefore, in this view, the number of visible turbines depicted on the map may not match the table due to the presence of landscape screening features.
- Nighttime photosimulations are digitally adjusted from daytime photographs. Nighttime photographs captured at each represented KOP inform the presence or lack of existing light sources.

Project	Year of Development	Max Blade Tip Height (feet)	Potential Number of WTGs & OSSs Visible from KOP*	Total Number of WTGs & OSSs in Project	Theoretical Distance to Nearest Visible WTG (miles)	Theoretical Distance to Furthest Visible WTG (miles)
Atlantic Shores Offshore Wind South (OCS-A 0499)	2023-2025	1,047	205	205	10.5	25.6
Ocean Wind (OCS-A 0498)	2024-2025	906	111	111	13.9	24.6
Empire Wind (OCS-A 0512)	2023-2027	951	0	72	Not Visible	Not Visible
Empire Wind II (OCS-A 0512)	2025-2027	951	0	104	Not Visible	Not Visible

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Ocean View
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Cape May
Cape May Point
Lower Township
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Cape May Harbor
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Great Egg Harbor River
Tuckahoe River
Tuckahoe Wildlife Management Area
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Corson Inlet State Park
Stone Harbor Point
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Strathmere
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MATCH LINE AC04 PANO #2



ATLANTIC SHORES offshore wind

Appendix A: Atlantic Shores Offshore Wind Cumulative Photosimulations

AC04 Night: Ocean Casino Resort - Sky Garden, Atlantic City, Atlantic County, New Jersey

Photosimulation (Panorama 1): Scenario 3: 2024-2030 Project construction added after the construction of Atlantic Shores South (Full Lease Build-out Including Atlantic Shores South)

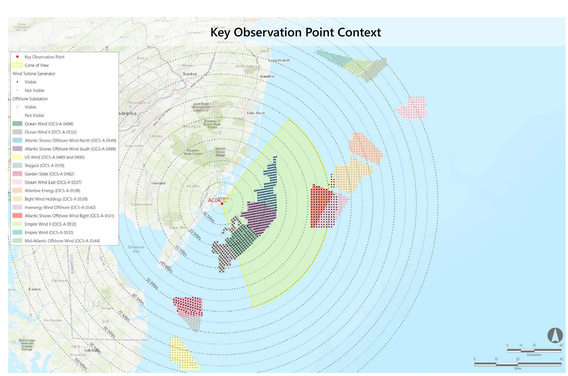
Simulation Size: 66" in width by 29.3" in height. Images should be viewed from a distance of 18 inches in order to obtain the proper perspective.

This box should measure 1.5" sq on the printed panorama

Notes:

- Photosimulation Size: 66" in width by 29.3" in height. Images should be viewed from 18 inches in order to obtain the proper perspective. For on-screen viewing, user should zoom in until the 1-inch scale equals exactly one inch when measured on the screen.
- Offshore Substation location and dimensions are based on preliminary publicly available project data. Projects for which this data is not currently available, WTGs are used for all foundation positions. OSS positions and dimensions considered in this photosimulation are subject to potential modification.
- WTG positions in the photosimulations are based on a refraction value of 7/6 or an approximate 0.14 coefficient derived from observations of the constructed Block Island Wind Farm. This refraction coefficient may yield more conservative visibility results (i.e. greater turbine visibility) that the viewshed analysis results which use a refraction coefficient of 0.13.
- WTG tower, blades, and nacelle use the BOEM and FAA required color RAL 9010. The base and platform use RAL 1023 in accordance with USCG regulations.
- *The number of WTGs visible from the KOP was determined by human verified computer generated counts performed in the 3D camera views considering screening resulting from vegetation, structures, curvature of the earth and refraction. This count may vary from the actual number of WTGs visible in the respective views due to masking completed during post processing which may include people, waves, boats, or other minor obstructions that appear in the photograph. Additionally, the WTG counts assumed the WTG blades are in the upright position whereas the photosimulations assume a random rotation pattern. Considering the largest WTG in the cumulative array, this could account for up to 236 ft. (72 m) in lost maximum height depending on the rotation position.
- The cone of view indicated on the Key Observation Point Context map indicates the horizontal extent of view only and does not indicate the extent of WTG visibility.
- The resolution of the cumulative photosimulations balances the size and usability of the documents with the need for high resolution to see distant project components. Similarly to human vision, very distant turbines may appear blurry or difficult to decipher due to resolution limitations.
- The Key Observation Point Context map considers screening by curvature of the earth, viewer height, and turbine height. Landscape screening features are not considered. Therefore, in this view, the number of visible turbines depicted on the map may not match the table due to the presence of landscape screening features.
- Nighttime photosimulations are digitally adjusted from daytime photographs. Nighttime photographs captured at each represented KOP inform the presence or lack of existing light sources.

Project	Year of Development	Max Blade Tip Height (feet)	Potential Number of WTGs & OSSs Visible from KOP*	Total Number of WTGs & OSSs in Project	Theoretical Distance to Nearest Visible WTG (miles)	Theoretical Distance to Furthest Visible WTG (miles)
Atlantic Shores Offshore Wind South (OCS-A 0499)	2023-2025	1,047	205	205	10.5	25.6
Ocean Wind (OCS-A 0498)	2024-2025	906	111	111	13.9	24.6
Empire Wind (OCS-A 0512)	2023-2027	951	0	72	Not Visible	Not Visible
Empire Wind II (OCS-A 0512)	2025-2027	951	0	104	Not Visible	Not Visible
Skipjack (OCS-A 0519)	2024-2030	853	0	33	Not Visible	Not Visible
Garden State (OCS-A 0482)	2023-2030	853	0	80	Not Visible	Not Visible
US Wind (OCS-A 0489 and 0490)	2024	938	0	101	Not Visible	Not Visible
Atlantic Shores Offshore Wind North (OCS-A 0549)	2025-2030	1,047	164	164	16.2	33.2
Ocean Wind II (OCS-A 0532)	2026-2030	906	111	111	8.8	31.3
Mid-Atlantic Offshore Wind (OCS-A 0544)	by 2030	853	0	104	Not Visible	Not Visible
Ocean Wind East (OCS-A 0537)	by 2030	853	0	82	Not Visible	Not Visible
Attentive Energy (OCS-A 0538)	by 2030	853	0	101	Not Visible	Not Visible
Bight Wind Holdings (OCS-A 0539)	by 2030	853	0	148	Not Visible	Not Visible
Atlantic Shores Offshore Wind Bight (OCS-A 0541)	by 2030	853	56	95	41.4	50.9
Invenergy Wind Offshore (OCS-A 0542)	by 2030	853	1	99	43.9	53.0





MATCH LINE AC04 PANO #2



ATLANTIC SHORES offshore wind

Appendix A: Atlantic Shores Offshore Wind Cumulative Photosimulations

AC04 Night: Ocean Casino Resort - Sky Garden, Atlantic City, Atlantic County, New Jersey

Photosimulation (Panorama 1): Scenario 4: Full buildout of all lease areas without Atlantic Shores South

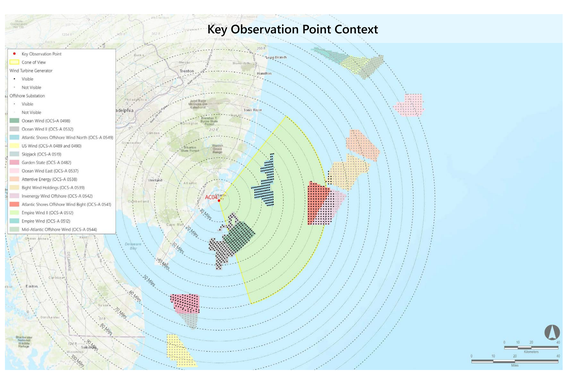
Simulation Size: 66" in width by 29.3" in height. Images should be viewed from a distance of 18 inches in order to obtain the proper perspective.

This box should measure 1" long on the printed panorama

Notes:

- Photosimulation Size: 66" in width by 29.3" in height. Images should be viewed from 18 inches in order to obtain the proper perspective. For on-screen viewing, user should zoom in until the 1-inch scale equals exactly one inch when measured on the screen.
- Offshore Substation location and dimensions are based on preliminary publicly available project data. Projects for which this data is not currently available, WTGs are used for all foundation positions. OSS positions and dimensions considered in this photosimulation are subject to potential modification.
- WTG positions in the photosimulations are based on a refraction value of 7/6 or an approximate 0.14 coefficient derived from observations of the constructed Block Island Wind Farm. This refraction coefficient may yield more conservative visibility results (i.e. greater turbine visibility) that the viewshed analysis results which use a refraction coefficient of 0.13.
- WTG tower, blades, and nacelle use the BOEM and FAA required color RAL 9010. The base and platform use RAL 1023 in accordance with USCG regulations.
- *The number of WTGs visible from the KOP was determined by human verified computer generated counts performed in the 3D camera views considering screening resulting from vegetation, structures, curvature of the earth and refraction. This count may vary from the actual number of WTGs visible in the respective views due to masking completed during post processing which may include people, waves, boats, or other minor obstructions that appear in the photograph. Additionally, the WTG counts assumed the WTG blades are in the upright position whereas the photosimulations assume a random rotation pattern. Considering the largest WTG in the cumulative array, this could account for up to 236 ft. (72 m) in lost maximum height depending on the rotation position.
- The cone of view indicated on the Key Observation Point Context map indicates the horizontal extent of view only and does not indicate the extent of WTG visibility.
- The resolution of the cumulative photosimulations balances the size and usability of the documents with the need for high resolution to see distant project components. Similarly to human vision, very distant turbines may appear blurry or difficult to decipher due to resolution limitations.
- The Key Observation Point Context map considers screening by curvature of the earth, viewer height, and turbine height. Landscape screening features are not considered. Therefore, in this view, the number of visible turbines depicted on the map may not match the table due to the presence of landscape screening features.
- Nighttime photosimulations are digitally adjusted from daytime photographs. Nighttime photographs captured at each represented KOP inform the presence or lack of existing light sources.

Project	Year of Development	Max Blade Tip Height (feet)	Potential Number of WTGs & OSSs Visible from KOP*	Total Number of WTGs & OSSs in Project	Theoretical Distance to Nearest Visible WTG (miles)	Theoretical Distance to Furthest Visible WTG (miles)
Ocean Wind (OCS-A 0498)	2024-2025	906	111	111	13.9	24.6
Empire Wind (OCS-A 0512)	2023-2027	951	0	72	Not Visible	Not Visible
Empire Wind II (OCS-A 0512)	2025-2027	951	0	104	Not Visible	Not Visible
Skipjack (OCS-A 0519)	2024-2030	853	0	33	Not Visible	Not Visible
Garden State (OCS-A 0482)	2023-2030	853	0	80	Not Visible	Not Visible
US Wind (OCS-A 0489 and 0490)	2024	938	0	101	Not Visible	Not Visible
Atlantic Shores Offshore Wind North (OCS-A 0549)	2025-2030	1,047	164	164	16.2	33.2
Ocean Wind II (OCS-A 0532)	2026-2030	906	111	111	8.8	31.3
Mid-Atlantic Offshore Wind (OCS-A 0544)	by 2030	853	0	104	Not Visible	Not Visible
Ocean Wind East (OCS-A 0537)	by 2030	853	0	82	Not Visible	Not Visible
Attentive Energy (OCS-A 0538)	by 2030	853	0	101	Not Visible	Not Visible
Bight Wind Holdings (OCS-A 0539)	by 2030	853	0	148	Not Visible	Not Visible
Atlantic Shores Offshore Wind Bight (OCS-A 0541)	by 2030	853	56	95	41.4	50.9
Invenergy Wind Offshore (OCS-A 0542)	by 2030	853	1	99	43.9	53.0





MATCH LINE AC04 PANO #2



ATLANTIC SHORES offshore wind

Appendix A: Atlantic Shores Offshore Wind Cumulative Photosimulations

AC04 Night: Ocean Casino Resort - Sky Garden, Atlantic City, Atlantic County, New Jersey

Photosimulation (Panorama 1): Scenario 5: Atlantic Shores South without the construction of other foreseeable planned activities

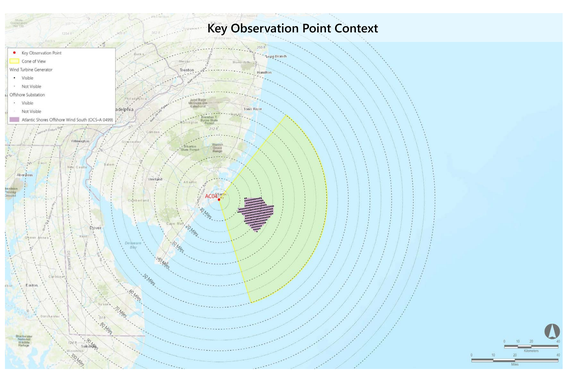
Simulation Size: 66" in width by 29.3" in height. Images should be viewed from a distance of 18 inches in order to obtain the proper perspective.

This box should measure 2" long on the printed panorama

Notes:

- Photosimulation Size: 66" in width by 29.3" in height. Images should be viewed from 18 inches in order to obtain the proper perspective. For on-screen viewing, user should zoom in until the 1-inch scale equals exactly one inch when measured on the screen.
- Offshore Substation location and dimensions are based on preliminary publicly available project data. Projects for which this data is not currently available, WTGs are used for all foundation positions. OSS positions and dimensions considered in this photosimulation are subject to potential modification.
- WTG positions in the photosimulations are based on a refraction value of 7/6 or an approximate 0.14 coefficient derived from observations of the constructed Block Island Wind Farm. This refraction coefficient may yield more conservative visibility results (i.e. greater turbine visibility) that the viewshed analysis results which use a refraction coefficient of 0.13.
- WTG tower, blades, and nacelle use the BOEM and FAA required color RAL 9010. The base and platform use RAL 1023 in accordance with USCG regulations.
- *The number of WTGs visible from the KOP was determined by human verified computer generated counts performed in the 3D camera views considering screening resulting from vegetation, structures, curvature of the earth and refraction. This count may vary from the actual number of WTGs visible in the respective views due to masking completed during post processing which may include people, waves, boats, or other minor obstructions that appear in the photograph. Additionally, the WTG counts assumed the WTG blades are in the upright position whereas the photosimulations assume a random rotation pattern. Considering the largest WTG in the cumulative array, this could account for up to 236 ft. (72 m) in lost maximum height depending on the rotation position.
- The cone of view indicated on the Key Observation Point Context map indicates the horizontal extent of view only and does not indicate the extent of WTG visibility.
- The resolution of the cumulative photosimulations balances the size and usability of the documents with the need for high resolution to see distant project components. Similarly to human vision, very distant turbines may appear blurry or difficult to decipher due to resolution limitations.
- The Key Observation Point Context map considers screening by curvature of the earth, viewer height, and turbine height. Landscape screening features are not considered. Therefore, in this view, the number of visible turbines depicted on the map may not match the table due to the presence of landscape screening features.
- Nighttime photosimulations are digitally adjusted from daytime photographs. Nighttime photographs captured at each represented KOP inform the presence or lack of existing light sources.

Project	Year of Development	Max Blade Tip Height (feet)	Potential Number of WTGs & OSSs Visible from KOP*	Total Number of WTGs & OSSs in Project	Theoretical Distance to Nearest Visible WTG (miles)	Theoretical Distance to Furthest Visible WTG (miles)
Atlantic Shores Offshore Wind South (OCS-A 0499)	2023-2025	1,047	205	205	10.5	25.6




Key Observation Point Location
Key Observation Point
Cone of View
Atlantic City
Inlet
Absecon Inlet
Brigantine
Absecon
Pleasantville
Northfield
Somers Point
Ocean City
Longport
Margate City
Ventnor City
Longport Bridge
Ocean City Municipal Airport
Atlantic City International Airport
Egg Harbor Township
Hamilton
Mullica Hill
Glassboro
Woodbury
Haddonfield
Cherry Hill
Camden
Philadelphia
Wilmington
Dover
Smyrna
Middletown
Newark
Elkton
Aberdeen
Bel Air
Havre de Grace
Perryville
Chesapeake City
Rehoboth Beach
Lewes
Milton
Seaford
Laurel
Salisbury
Ocean View
Millville
Vineland
Bridgeton
Cape May
Cape May Court House
Wildwood
North Wildwood
Wildwood Crest
Avalon
Stone Harbor
Sea Isle City
Ocean City
Marmora
Tuckahoe
Woodbine
Dennisville
Rio Grande
Cape May Point
Lower Township
Middle Township
Upper Township
Dennis Township
Estell Manor
Mays Landing
Hammonton
Folsom
Buena
Egg Harbor City
Port Republic
Galloway Township
Pomona
Absecon Island
Brigantine Island
Great Egg Harbor Bay
Great Bay
Little Egg Harbor
Delaware Bay
Atlantic Ocean
Barnegat Bay
Tuckerton
Manahawkin
Long Beach Island
Beach Haven
Ship Bottom
Surf City
Barnegat Light
Harvey Cedars
Loveladies
Tuckerton Seaport
Barnegat Light Museum
Long Beach Island Museum
Historical Museum
Lucy the Margate Elephant
Ocean City Boardwalk
Ocean City Music Pier
Ocean City Inlet
Ocean City Fishing Pier
Ocean City Skate Park
Ocean City Golf Course
Ocean City Tennis Center
Ocean City Municipal Airport
Ocean City Welcome Center
Ocean City Visitor Center
Ocean City Beach Patrol
Ocean City Lifeguard Stand
Ocean City Boardwalk
Ocean City

AC04 Night: Ocean Casino Resort - Sky Garden, Atlantic City, Atlantic County, New Jersey

Environmental Data

Date Taken: 08/25/2022
Time: 10:43 AM
Temperature: 88°F
Humidity: 34%
Visibility*: 10+ miles
Wind Direction: Northwest
Wind Speed: 13 mph
Conditions Observed: Fair

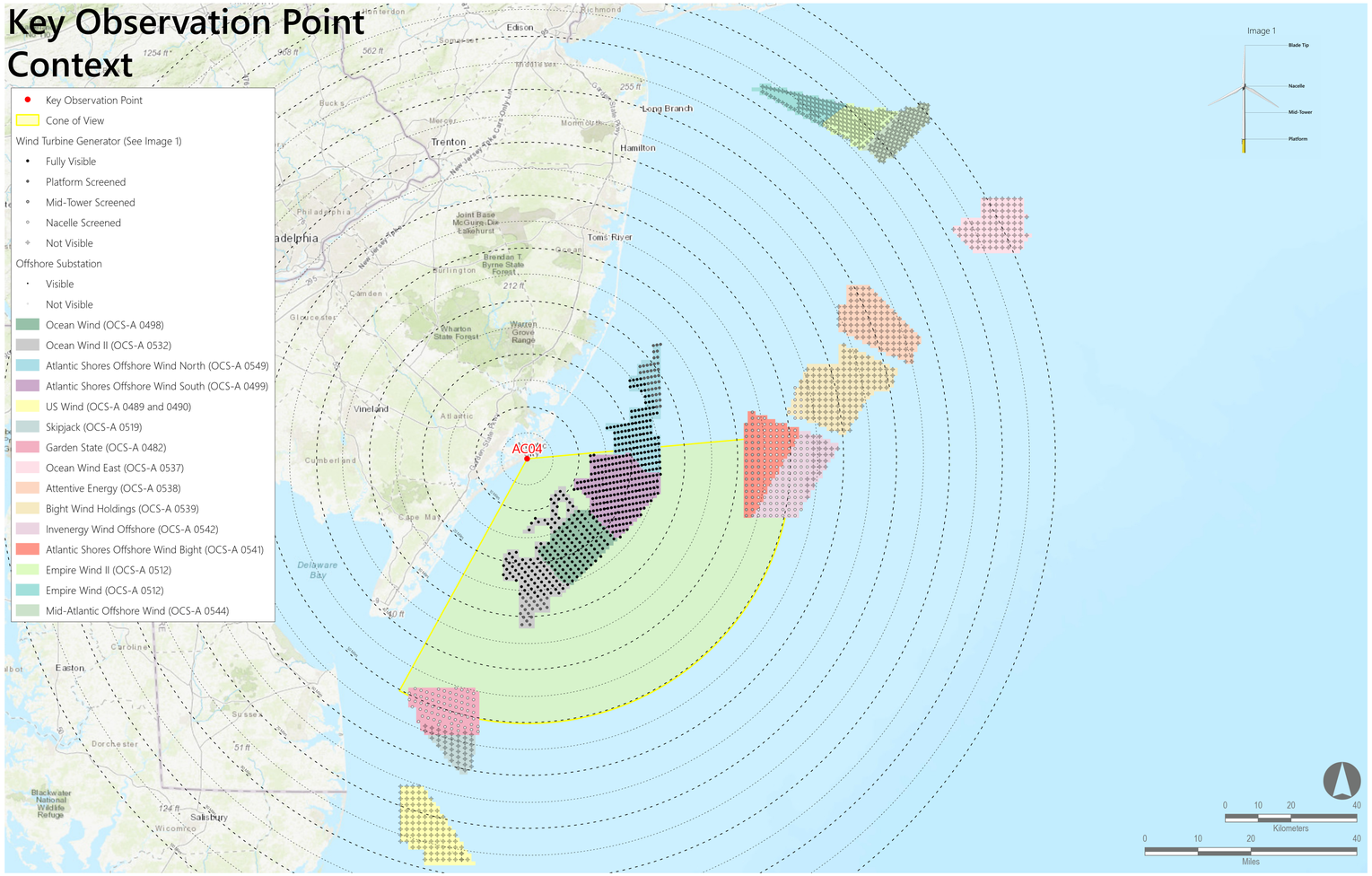
Camera Information
Camera: Canon EOS 5D Mark IV
Resolution: 30.4 Megapixels
Lens Focal Length: 50 mm
Camera Height: 117.26 feet AMSL

Key Observation Point Information

County: Atlantic
Town: Atlantic City
State: New Jersey
Location: Ocean Casino Resort - Sky Deck
Latitude, Longitude: 39.36225°N, 74.41353°W
Direction of View (Center): East (100.9°)
Field of View: 124° x 55°

Visual Resources
Character Area: Atlantic City, Seascape (SCA)
User Group: Local Resident/Tourist
Visually Sensitive Resource: Atlantic City Beach

Key Observation Point Context



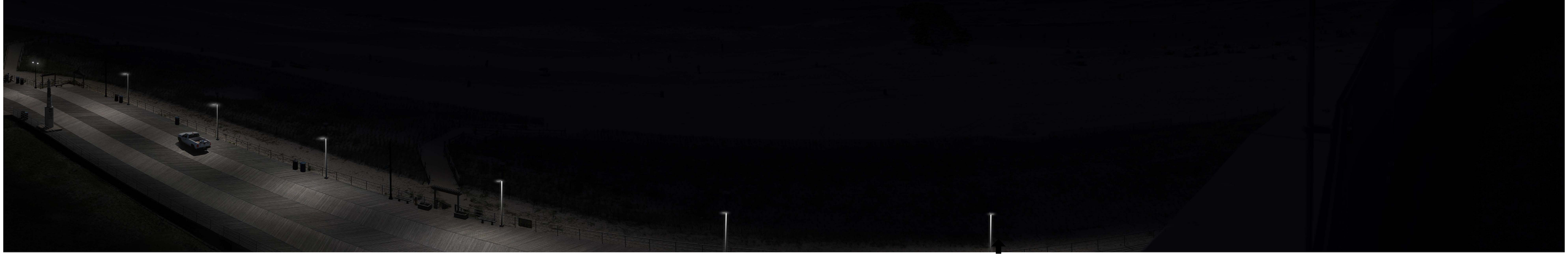
Reasonably Foreseeable Projects Represented in Photosimulation

		Project	Year of Development	Max Blade Tip Height (feet)	Potential Number of WTGs & OSSs Visible from KOP**	Total Number of WTGs & OSSs in Project	Theoretical Distance to Nearest Visible WTG (miles)	Theoretical Distance to Furthest Visible WTG (miles)
Scenario 5	Scenario 2	Atlantic Shores Offshore Wind South (OCS-A 0499)	2025-2027	1,047	205	205	10.5	25.6
Scenario 4	Scenario 1	Ocean Wind (OCS-A 0498)	2023-2025	906	111	111	13.9	24.6
		Empire Wind (OCS-A 0512)	2024-2025	951	0	72	Not Visible	Not Visible
		Empire Wind II (OCS-A 0512)	2023-2027	951	0	104	Not Visible	Not Visible
	Scenario 3	Skipjack (OCS-A 0519)	2024-2030	853	0	33	Not Visible	Not Visible
		Garden State (OCS-A 0482)	2023-2030	853	0	80	Not Visible	Not Visible
		US Wind (OCS-A 0489 and 0490)	2024	938	0	101	Not Visible	Not Visible
		Atlantic Shores Offshore Wind North (OCS-A 0549)	2025-2030	1,047	164	164	16.2	33.2
		Ocean Wind II (OCS-A 0532)	2026-2030	906	111	111	8.8	31.3
		Mid-Atlantic Offshore Wind (OCS-A 0544)	by 2030	853	0	104	Not Visible	Not Visible
		Ocean Wind East (OCS-A 0537)	by 2030	853	0	82	Not Visible	Not Visible
		Attentive Energy (OCS-A 0538)	by 2030	853	0	101	Not Visible	Not Visible
		Bight Wind Holdings (OCS-A 0539)	by 2030	853	0	148	Not Visible	Not Visible
		Atlantic Shores Offshore Wind Bight (OCS-A 0541)	by 2030	853	56	95	41.4	50.9
		Invenergy Wind Offshore (OCS-A 0542)	by 2030	853	1	99	43.9	53.0

Notes:
- Offshore Substation location and dimensions are based on preliminary publicly available project data. Projects for which this data is not currently available, WTGs are used for all foundation positions. OSS positions and dimensions considered in this photosimulation are subject to potential modification.
- *Historical meteorological data predicts visibility within a limit of 10 statute miles. However, visibility may extend beyond this distance. The photosimulations assume visibility extends to the limit of physical visibility (including a standard refraction index).
- WTG positions in the photosimulations are based on a refraction value of 7/6 or an approximate 0.14 coefficient derived from observations of the constructed Block Island Wind Farm. This refraction coefficient may yield more conservative visibility results (i.e. greater turbine visibility) that the viewshed analysis results which use a refraction coefficient of 0.13.
- **The number of WTGs visible from the KOP was determined by human verified computer generated counts performed in the 3D camera views considering screening resulting from vegetation, structures, curvature of the earth and refraction. This count may vary from the actual number of WTGs visible in the respective views due to masking completed during post processing which may include people, waves, boats, or other minor obstructions that appear in the photograph. Additionally, the WTG counts assumed the WTG blades are in the upright position whereas the photosimulations assume a random rotation pattern. Considering the largest WTG in the cumulative array, this could account for up to 236 ft. (72 m) in lost maximum height depending on the rotation position.
- The cone of view indicated on the Key Observation Point Context map indicates the horizontal extent of view only and does not indicate the extent of WTG visibility.
- The Key Observation Point Context map considers screening by curvature of the earth, viewer height, and turbine height. Landscape screening features are not considered. Therefore, in this view, the number of visible turbines depicted on the map may not match the table due to the presence of landscape screening features.
- Nighttime photosimulations are digitally adjusted from daytime photographs. Nighttime photographs captured at each represented KOP inform the presence or lack of existing light sources.

ATLANTIC SHORES offshore wind

MATCH LINE AC04 PANO #1



ATLANTIC SHORES offshore wind

Appendix A: Atlantic Shores Offshore Wind Cumulative Photosimulations

AC04 Night: Ocean Casino Resort - Sky Garden, Atlantic City, Atlantic County, New Jersey

Existing Conditions (Panorama 2)

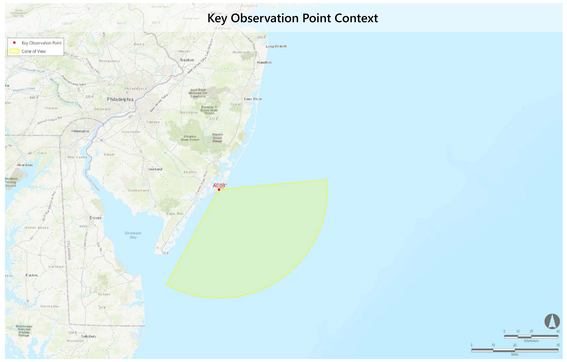
Notes:

- Photosimulation Size: 66" in width by 29.3" in height. Images should be viewed from 18 inches in order to obtain the proper perspective. For on-screen viewing, user should zoom in until the 1-inch scale equals exactly one inch when measured on the screen.
- Nighttime photosimulations are digitally adjusted from daytime photographs. Nighttime photographs captured at each represented KOP inform the presence or lack of existing light sources.

Simulation Size: 66" in width by 29.3" in height. Images should be viewed from a distance of 18 inches in order to obtain the proper perspective.

This box should be exactly 1" long on the printed panorama

Key Observation Point Context



Key Observation Point Location



MATCH LINE AC04 PANO #1



ATLANTIC SHORES offshore wind

Appendix A: Atlantic Shores Offshore Wind Cumulative Photosimulations

AC04 Night: Ocean Casino Resort - Sky Garden, Atlantic City, Atlantic County, New Jersey

Photosimulation (Panorama 2): Scenario 1: 2023-2025 Project Construction (Ocean Wind, Empire Wind, Empire Wind II)

Simulation Size: 66" in width by 29.3" in height. Images should be viewed from a distance of 18 inches in order to obtain the proper perspective.

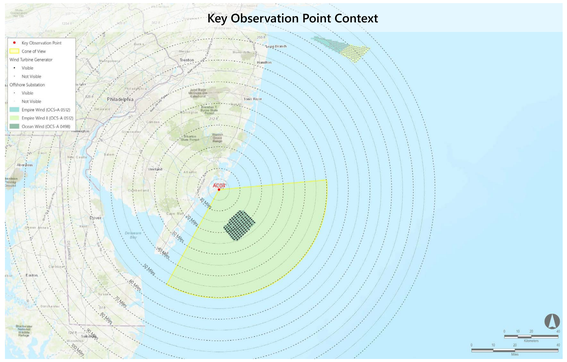
This box should be exactly 1" long on the printed panorama

Notes:

- Photosimulation Size: 66" in width by 29.3" in height. Images should be viewed from 18 inches in order to obtain the proper perspective. For on-screen viewing, user should zoom in until the 1-inch scale equals exactly one inch when measured on the screen.
- Offshore Substation location and dimensions are based on preliminary publicly available project data. Projects for which this data is not currently available, WTGs are used for all foundation positions. OSS positions and dimensions considered in this photosimulation are subject to potential modification.
- WTG positions in the photosimulations are based on a refraction value of 7/6 or an approximate 0.14 coefficient derived from observations of the constructed Block Island Wind Farm. This refraction coefficient may yield more conservative visibility results (i.e. greater turbine visibility) that the viewshed analysis results which use a refraction coefficient of 0.13.
- WTG tower, blades, and nacelle use the BOEM and FAA required color RAL 9010. The base and platform use RAL 1023 in accordance with USCG regulations.
- *The number of WTGs visible from the KOP was determined by human verified computer generated counts performed in the 3D camera views considering screening resulting from vegetation, structures, curvature of the earth and refraction. This count may vary from the actual number of WTGs visible in the respective views due to masking completed during post processing which may include people, waves, boats, or other minor obstructions that appear in the photograph. Additionally, the WTG counts assumed the WTG blades are in the upright position whereas the photosimulations assume a random rotation pattern. Considering the largest WTG in the cumulative array, this could account for up to 236 ft. (72 m) in lost maximum height depending on the rotation position.
- The cone of view indicated on the Key Observation Point Context map indicates the horizontal extent of view only and does not indicate the extent of WTG visibility.
- The resolution of the cumulative photosimulations balances the size and usability of the documents with the need for high resolution to see distant project components. Similarly to human vision, very distant turbines may appear blurry or difficult to decipher due to resolution limitations.
- The Key Observation Point Context map considers screening by curvature of the earth, viewer height, and turbine height. Landscape screening features are not considered. Therefore, in this view, the number of visible turbines depicted on the map may not match the table due to the presence of landscape screening features.
- Nighttime photosimulations are digitally adjusted from daytime photographs. Nighttime photographs captured at each represented KOP inform the presence or lack of existing light sources.

Project	Year of Development	Max Blade Tip Height (feet)	Potential Number of WTGs & OSSs Visible from KOP*	Total Number of WTGs & OSSs in Project	Theoretical Distance to Nearest Visible WTG (miles)	Theoretical Distance to Furthest Visible WTG (miles)
Ocean Wind (OCS-A 0498)	2024-2025	906	111	111	13.9	24.6
Empire Wind (OCS-A 0512)	2023-2027	951	0	72	Not Visible	Not Visible
Empire Wind II (OCS-A 0512)	2025-2027	951	0	104	Not Visible	Not Visible

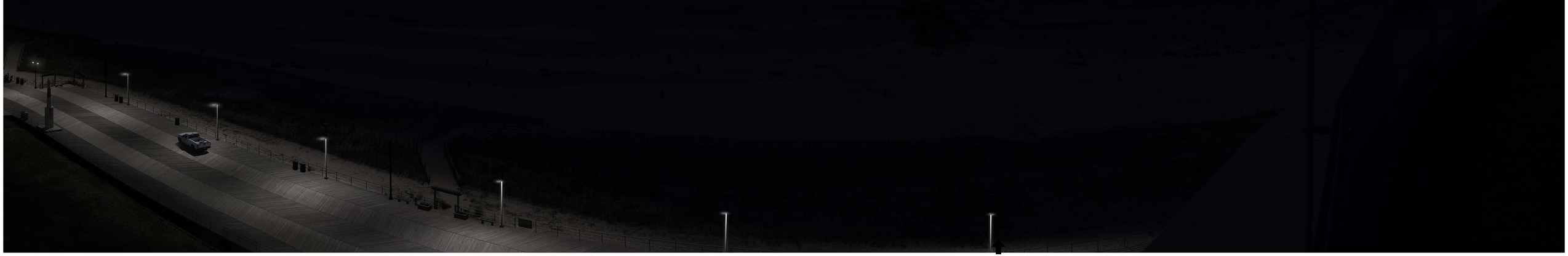
Key Observation Point Context



Key Observation Point Location



MATCH LINE AC04 PANO #1



ATLANTIC SHORES offshore wind

Appendix A: Atlantic Shores Offshore Wind Cumulative Photosimulations

AC04 Night: Ocean Casino Resort - Sky Garden, Atlantic City, Atlantic County, New Jersey

Photosimulation (Panorama 2): Scenario 2: Atlantic Shores Construction (2025-2027) added to Scenario 1 (Ocean Wind, Empire Wind, Empire Wind II, Atlantic Shores South)

Simulation Size: 66" in width by 29.3" in height. Images should be viewed from a distance of 18 inches in order to obtain the proper perspective.

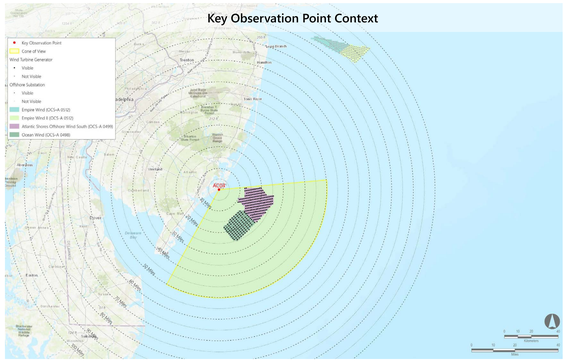
This box should be exactly 1" long on the printed panorama

Notes:

- Photosimulation Size: 66" in width by 29.3" in height. Images should be viewed from 18 inches in order to obtain the proper perspective. For on-screen viewing, user should zoom in until the 1-inch scale equals exactly one inch when measured on the screen.
- Offshore Substation location and dimensions are based on preliminary publicly available project data. Projects for which this data is not currently available, WTGs are used for all foundation positions. OSS positions and dimensions considered in this photosimulation are subject to potential modification.
- WTG positions in the photosimulations are based on a refraction value of 7/6 or an approximate 0.14 coefficient derived from observations of the constructed Block Island Wind Farm. This refraction coefficient may yield more conservative visibility results (i.e. greater turbine visibility) that the viewshed analysis results which use a refraction coefficient of 0.13.
- WTG tower, blades, and nacelle use the BOEM and FAA required color RAL 9010. The base and platform use RAL 1023 in accordance with USCG regulations.
- *The number of WTGs visible from the KOP was determined by human verified computer generated counts performed in the 3D camera views considering screening resulting from vegetation, structures, curvature of the earth and refraction. This count may vary from the actual number of WTGs visible in the respective views due to masking completed during post processing which may include people, waves, boats, or other minor obstructions that appear in the photograph. Additionally, the WTG counts assumed the WTG blades are in the upright position whereas the photosimulations assume a random rotation pattern. Considering the largest WTG in the cumulative array, this could account for up to 236 ft. (72 m) in lost maximum height depending on the rotation position.
- The cone of view indicated on the Key Observation Point Context map indicates the horizontal extent of view only and does not indicate the extent of WTG visibility.
- The resolution of the cumulative photosimulations balances the size and usability of the documents with the need for high resolution to see distant project components. Similarly to human vision, very distant turbines may appear blurry or difficult to decipher due to resolution limitations.
- The Key Observation Point Context map considers screening by curvature of the earth, viewer height, and turbine height. Landscape screening features are not considered. Therefore, in this view, the number of visible turbines depicted on the map may not match the table due to the presence of landscape screening features.
- Nighttime photosimulations are digitally adjusted from daytime photographs. Nighttime photographs captured at each represented KOP inform the presence or lack of existing light sources.

Project	Year of Development	Max Blade Tip Height (feet)	Potential Number of WTGs & OSSs Visible from KOP*	Total Number of WTGs & OSSs in Project	Theoretical Distance to Nearest Visible WTG (miles)	Theoretical Distance to Furthest Visible WTG (miles)
Atlantic Shores Offshore Wind South (OCS-A 0499)	2023-2025	1,047	205	205	10.5	25.6
Ocean Wind (OCS-A 0498)	2024-2025	906	111	111	13.9	24.6
Empire Wind (OCS-A 0512)	2023-2027	951	0	72	Not Visible	Not Visible
Empire Wind II (OCS-A 0512)	2025-2027	951	0	104	Not Visible	Not Visible

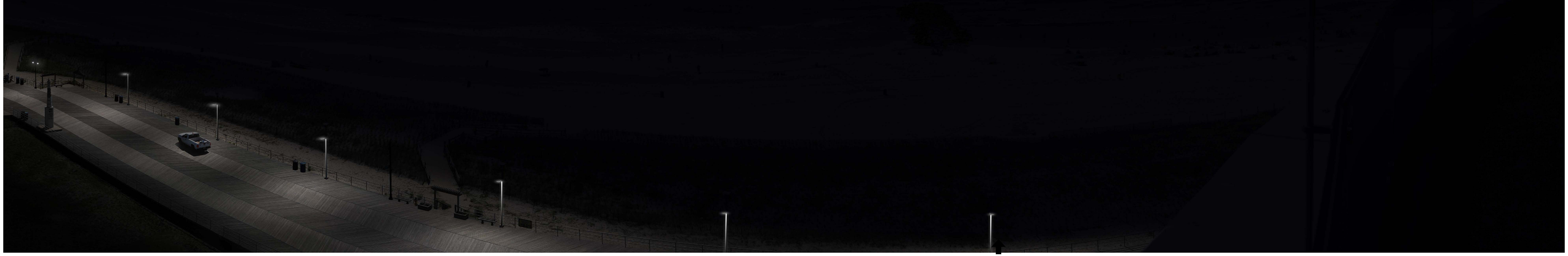
Key Observation Point Context



Key Observation Point Location



MATCH LINE AC04 PANO #1



ATLANTIC SHORES offshore wind

Appendix A: Atlantic Shores Offshore Wind Cumulative Photosimulations

AC04 Night: Ocean Casino Resort - Sky Garden, Atlantic City, Atlantic County, New Jersey

Photosimulation (Panorama 2): Scenario 3: 2024-2030 Project construction added after the construction of Atlantic Shores South (Full Lease Build-out Including Atlantic Shores South)

Simulation Size: 66" in width by 29.3" in height. Images should be viewed from a distance of 18 inches in order to obtain the proper perspective.

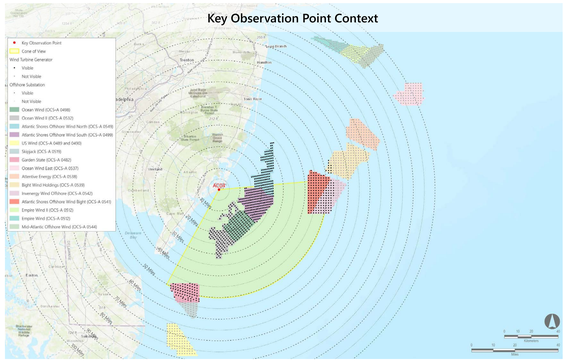
This box should measure 1" long on the printed panorama

Notes:

- Photosimulation Size: 66" in width by 29.3" in height. Images should be viewed from 18 inches in order to obtain the proper perspective. For on-screen viewing, user should zoom in until the 1-inch scale equals exactly one inch when measured on the screen.
- Offshore Substation location and dimensions are based on preliminary publicly available project data. Projects for which this data is not currently available, WTGs are used for all foundation positions. OSS positions and dimensions considered in this photosimulation are subject to potential modification.
- WTG positions in the photosimulations are based on a refraction value of 7/6 or an approximate 0.14 coefficient derived from observations of the constructed Block Island Wind Farm. This refraction coefficient may yield more conservative visibility results (i.e. greater turbine visibility) that the viewshed analysis results which use a refraction coefficient of 0.13.
- WTG tower, blades, and nacelle use the BOEM and FAA required color RAL 9010. The base and platform use RAL 1023 in accordance with USCG regulations.
- *The number of WTGs visible from the KOP was determined by human verified computer generated counts performed in the 3D camera views considering screening resulting from vegetation, structures, curvature of the earth and refraction. This count may vary from the actual number of WTGs visible in the respective views due to masking completed during post processing which may include people, waves, boats, or other minor obstructions that appear in the photograph. Additionally, the WTG counts assumed the WTG blades are in the upright position whereas the photosimulations assume a random rotation pattern. Considering the largest WTG in the cumulative array, this could account for up to 236 ft. (72 m) in lost maximum height depending on the rotation position.
- The cone of view indicated on the Key Observation Point Context map indicates the horizontal extent of view only and does not indicate the extent of WTG visibility.
- The resolution of the cumulative photosimulations balances the size and usability of the documents with the need for high resolution to see distant project components. Similarly to human vision, very distant turbines may appear blurry or difficult to decipher due to resolution limitations.
- The Key Observation Point Context map considers screening by curvature of the earth, viewer height, and turbine height. Landscape screening features are not considered. Therefore, in this view, the number of visible turbines depicted on the map may not match the table due to the presence of landscape screening features.
- Nighttime photosimulations are digitally adjusted from daytime photographs. Nighttime photographs captured at each represented KOP inform the presence or lack of existing light sources.

Project	Year of Development	Max Blade Tip Height (feet)	Potential Number of WTGs & OSSs Visible from KOP*	Total Number of WTGs & OSSs in Project	Theoretical Distance to Nearest Visible WTG (miles)	Theoretical Distance to Furthest Visible WTG (miles)
Atlantic Shores Offshore Wind South (OCS-A 0499)	2023-2025	1,047	205	205	10.5	25.6
Ocean Wind (OCS-A 0498)	2024-2025	906	111	111	13.9	24.6
Empire Wind (OCS-A 0512)	2023-2027	951	0	72	Not Visible	Not Visible
Empire Wind II (OCS-A 0512)	2025-2027	951	0	104	Not Visible	Not Visible
Skipjack (OCS-A 0519)	2024-2030	853	0	33	Not Visible	Not Visible
Garden State (OCS-A 0482)	2023-2030	853	0	80	Not Visible	Not Visible
US Wind (OCS-A 0489 and 0490)	2024	938	0	101	Not Visible	Not Visible
Atlantic Shores Offshore Wind North (OCS-A 0549)	2025-2030	1,047	164	164	16.2	33.2
Ocean Wind II (OCS-A 0532)	2026-2030	906	111	111	8.8	31.3
Mid-Atlantic Offshore Wind (OCS-A 0544)	by 2030	853	0	104	Not Visible	Not Visible
Ocean Wind East (OCS-A 0537)	by 2030	853	0	82	Not Visible	Not Visible
Attentive Energy (OCS-A 0538)	by 2030	853	0	101	Not Visible	Not Visible
Bight Wind Holdings (OCS-A 0539)	by 2030	853	0	148	Not Visible	Not Visible
Atlantic Shores Offshore Wind Bight (OCS-A 0541)	by 2030	853	56	95	41.4	50.9
Invenergy Wind Offshore (OCS-A 0542)	by 2030	853	1	99	43.9	53.0

Key Observation Point Context



Key Observation Point Location



MATCH LINE AC04 PANO #1



ATLANTIC SHORES offshore wind

Appendix A: Atlantic Shores Offshore Wind Cumulative Photosimulations

AC04 Night: Ocean Casino Resort - Sky Garden, Atlantic City, Atlantic County, New Jersey

Photosimulation (Panorama 2): Scenario 4: Full buildout of all lease areas without Atlantic Shores South

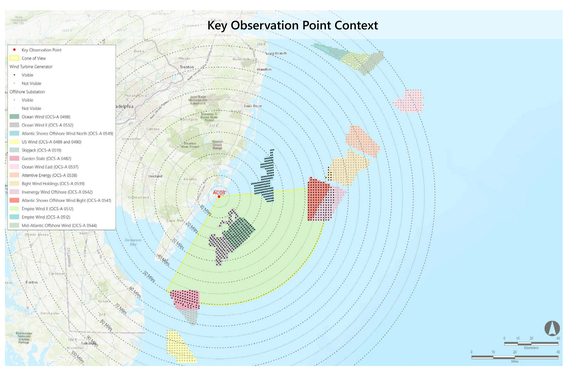
Simulation Size: 66" in width by 29.3" in height. Images should be viewed from a distance of 18 inches in order to obtain the proper perspective.

This box should measure 1" long on the printed panorama

Notes:

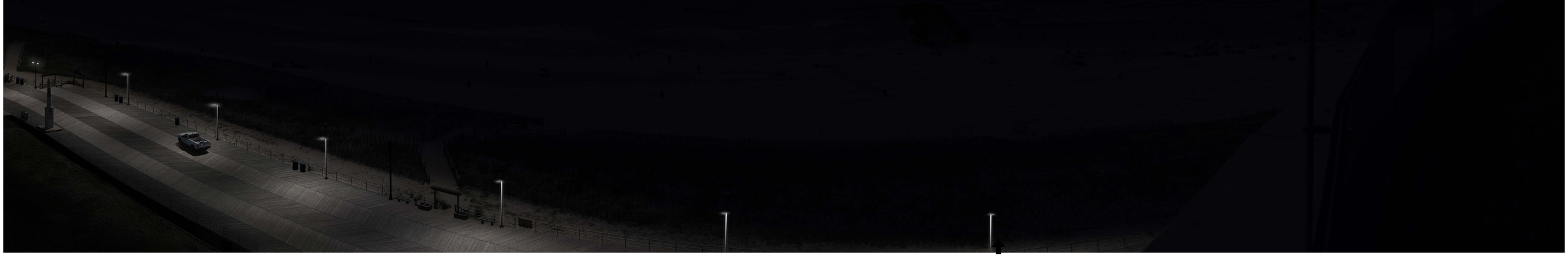
- Photosimulation Size: 66" in width by 29.3" in height. Images should be viewed from 18 inches in order to obtain the proper perspective. For on-screen viewing, user should zoom in until the 1-inch scale equals exactly one inch when measured on the screen.
- Offshore Substation location and dimensions are based on preliminary publicly available project data. Projects for which this data is not currently available, WTGs are used for all foundation positions. OSS positions and dimensions considered in this photosimulation are subject to potential modification.
- WTG positions in the photosimulations are based on a refraction value of 7/6 or an approximate 0.14 coefficient derived from observations of the constructed Block Island Wind Farm. This refraction coefficient may yield more conservative visibility results (i.e. greater turbine visibility) that the viewshed analysis results which use a refraction coefficient of 0.13.
- WTG tower, blades, and nacelle use the BOEM and FAA required color RAL 9010. The base and platform use RAL 1023 in accordance with USCG regulations.
- *The number of WTGs visible from the KOP was determined by human verified computer generated counts performed in the 3D camera views considering screening resulting from vegetation, structures, curvature of the earth and refraction. This count may vary from the actual number of WTGs visible in the respective views due to masking completed during post processing which may include people, waves, boats, or other minor obstructions that appear in the photograph. Additionally, the WTG counts assumed the WTG blades are in the upright position whereas the photosimulations assume a random rotation pattern. Considering the largest WTG in the cumulative array, this could account for up to 236 ft. (72 m) in lost maximum height depending on the rotation position.
- The cone of view indicated on the Key Observation Point Context map indicates the horizontal extent of view only and does not indicate the extent of WTG visibility.
- The resolution of the cumulative photosimulations balances the size and usability of the documents with the need for high resolution to see distant project components. Similarly to human vision, very distant turbines may appear blurry or difficult to decipher due to resolution limitations.
- The Key Observation Point Context map considers screening by curvature of the earth, viewer height, and turbine height. Landscape screening features are not considered. Therefore, in this view, the number of visible turbines depicted on the map may not match the table due to the presence of landscape screening features.
- Nighttime photosimulations are digitally adjusted from daytime photographs. Nighttime photographs captured at each represented KOP inform the presence or lack of existing light sources.

Project	Year of Development	Max Blade Tip Height (feet)	Potential Number of WTGs & OSSs Visible from KOP*	Total Number of WTGs & OSSs in Project	Theoretical Distance to Nearest Visible WTG (miles)	Theoretical Distance to Furthest Visible WTG (miles)
Ocean Wind (OCS-A 0498)	2024-2025	906	111	111	13.9	24.6
Empire Wind (OCS-A 0512)	2023-2027	951	0	72	Not Visible	Not Visible
Empire Wind II (OCS-A 0512)	2025-2027	951	0	104	Not Visible	Not Visible
Skipjack (OCS-A 0519)	2024-2030	853	0	33	Not Visible	Not Visible
Garden State (OCS-A 0482)	2023-2030	853	0	80	Not Visible	Not Visible
US Wind (OCS-A 0489 and 0490)	2024	938	0	101	Not Visible	Not Visible
Atlantic Shores Offshore Wind North (OCS-A 0549)	2025-2030	1,047	164	164	16.2	33.2
Ocean Wind II (OCS-A 0532)	2026-2030	906	111	111	8.8	31.3
Mid-Atlantic Offshore Wind (OCS-A 0544)	by 2030	853	0	104	Not Visible	Not Visible
Ocean Wind East (OCS-A 0537)	by 2030	853	0	82	Not Visible	Not Visible
Attentive Energy (OCS-A 0538)	by 2030	853	0	101	Not Visible	Not Visible
Bight Wind Holdings (OCS-A 0539)	by 2030	853	0	148	Not Visible	Not Visible
Atlantic Shores Offshore Wind Bight (OCS-A 0541)	by 2030	853	56	95	41.4	50.9
Invenergy Wind Offshore (OCS-A 0542)	by 2030	853	1	99	43.9	53.0





MATCH LINE AC04 PANO #1



ATLANTIC SHORES offshore wind

Appendix A: Atlantic Shores Offshore Wind Cumulative Photosimulations

AC04 Night: Ocean Casino Resort - Sky Garden, Atlantic City, Atlantic County, New Jersey

Photosimulation (Panorama 2): Scenario 5: Atlantic Shores South without the construction of other foreseeable planned activities

Simulation Size: 66" in width by 29.3" in height. Images should be viewed from a distance of 18 inches in order to obtain the proper perspective.

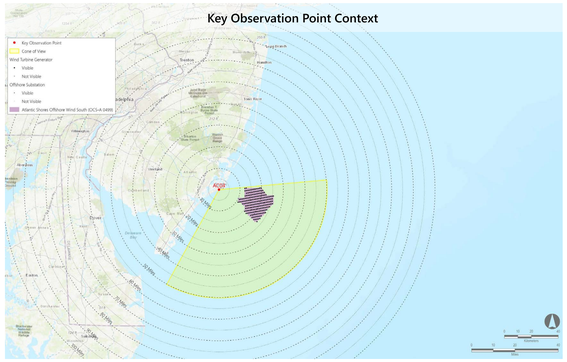
This box should measure 1" long on the printed panorama

Notes:

- Photosimulation Size: 66" in width by 29.3" in height. Images should be viewed from 18 inches in order to obtain the proper perspective. For on-screen viewing, user should zoom in until the 1-inch scale equals exactly one inch when measured on the screen.
- Offshore Substation location and dimensions are based on preliminary publicly available project data. Projects for which this data is not currently available, WTGs are used for all foundation positions. OSS positions and dimensions considered in this photosimulation are subject to potential modification.
- WTG positions in the photosimulations are based on a refraction value of 7/6 or an approximate 0.14 coefficient derived from observations of the constructed Block Island Wind Farm. This refraction coefficient may yield more conservative visibility results (i.e. greater turbine visibility) that the viewshed analysis results which use a refraction coefficient of 0.13.
- WTG tower, blades, and nacelle use the BOEM and FAA required color RAL 9010. The base and platform use RAL 1023 in accordance with USCG regulations.
- *The number of WTGs visible from the KOP was determined by human verified computer generated counts performed in the 3D camera views considering screening resulting from vegetation, structures, curvature of the earth and refraction. This count may vary from the actual number of WTGs visible in the respective views due to masking completed during post processing which may include people, waves, boats, or other minor obstructions that appear in the photograph. Additionally, the WTG counts assumed the WTG blades are in the upright position whereas the photosimulations assume a random rotation pattern. Considering the largest WTG in the cumulative array, this could account for up to 236 ft. (72 m) in lost maximum height depending on the rotation position.
- The cone of view indicated on the Key Observation Point Context map indicates the horizontal extent of view only and does not indicate the extent of WTG visibility.
- The resolution of the cumulative photosimulations balances the size and usability of the documents with the need for high resolution to see distant project components. Similarly to human vision, very distant turbines may appear blurry or difficult to decipher due to resolution limitations.
- The Key Observation Point Context map considers screening by curvature of the earth, viewer height, and turbine height. Landscape screening features are not considered. Therefore, in this view, the number of visible turbines depicted on the map may not match the table due to the presence of landscape screening features.
- Nighttime photosimulations are digitally adjusted from daytime photographs. Nighttime photographs captured at each represented KOP inform the presence or lack of existing light sources.

Project	Year of Development	Max Blade Tip Height (feet)	Potential Number of WTGs & OSSs Visible from KOP*	Total Number of WTGs & OSSs in Project	Theoretical Distance to Nearest Visible WTG (miles)	Theoretical Distance to Furthest Visible WTG (miles)
Atlantic Shores Offshore Wind South (OCS-A 0499)	2023-2025	1,047	205	205	10.5	25.6

Key Observation Point Context



Key Observation Point Location



BC02: North Brigantine Natural Area, Brigantine City, Atlantic County, New Jersey

Environmental Data

Date Taken: 08/18/2020
Time: 12:00 PM
Temperature: 84°F
Humidity: 53%
Visibility*: 10+ miles
Wind Direction: West-southwest
Wind Speed: 3 mph
Conditions Observed: Fair

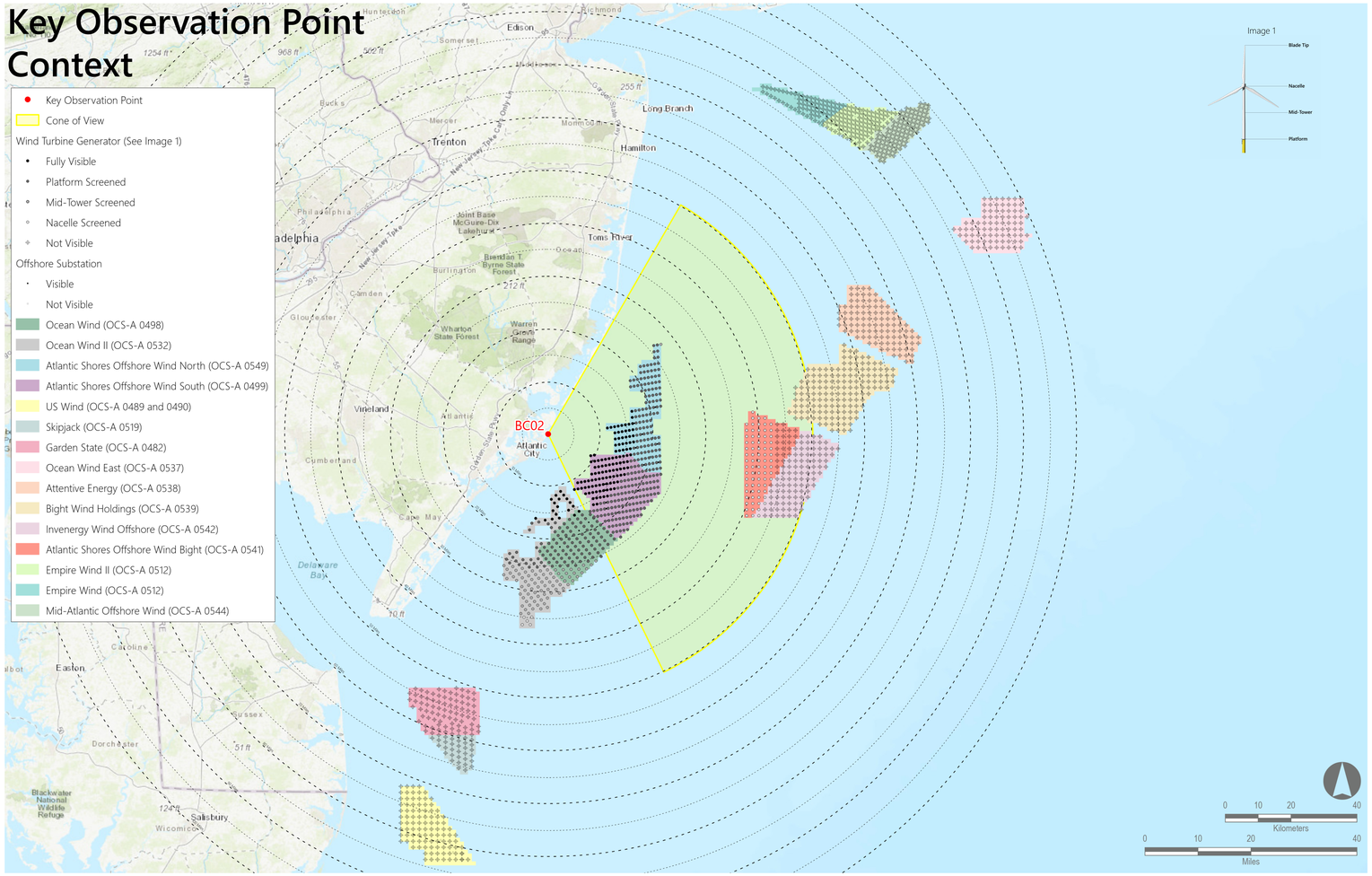
Camera Information
Camera: Canon EOS 5D Mark IV
Resolution: 30.4 Megapixels
Lens Focal Length: 50 mm
Camera Height: 11.06 feet AMSL

Key Observation Point Information

County: Atlantic
Town: Brigantine City
State: New Jersey
Location: North Brigantine Natural Area
Latitude, Longitude: 39.42954°N, 74.33968°W
Direction of View (Center): East (92.5°)
Field of View: 124° x 55°

Visual Resources
Character Area: Undeveloped Beach, Seascape (SCA)
User Group: Residents/Tourists, Fishermen
Visually Sensitive Resource: North Brigantine State Natural Area

Key Observation Point Context



Reasonably Foreseeable Projects Represented in Photosimulation

		Project	Year of Development	Max Blade Tip Height (feet)	Potential Number of WTGs & OSSs Visible from KOP**	Total Number of WTGs & OSSs in Project	Theoretical Distance to Nearest Visible WTG (miles)	Theoretical Distance to Furthest Visible WTG (miles)
Scenario 5	Scenario 2	Atlantic Shores Offshore Wind South (OCS-A 0499)	2025-2027	1,047	205	205	9.0	23.8
Scenario 4	Scenario 1	Ocean Wind (OCS-A 0498)	2023-2025	906	111	111	15.7	28.1
		Empire Wind (OCS-A 0512)	2024-2025	951	0	72	Not Visible	Not Visible
		Empire Wind II (OCS-A 0512)	2023-2027	951	0	104	Not Visible	Not Visible
	Scenario 3	Skipjack (OCS-A 0519)	2024-2030	853	0	33	Not Visible	Not Visible
		Garden State (OCS-A 0482)	2023-2030	853	0	80	Not Visible	Not Visible
		US Wind (OCS-A 0489 and 0490)	2024	938	0	101	Not Visible	Not Visible
		Atlantic Shores Offshore Wind North (OCS-A 0549)	2025-2030	1,047	164	164	11.3	27.2
		Ocean Wind II (OCS-A 0532)	2026-2030	906	111	111	11.1	36.3
		Mid-Atlantic Offshore Wind (OCS-A 0544)	by 2030	853	0	104	Not Visible	Not Visible
		Ocean Wind East (OCS-A 0537)	by 2030	853	0	82	Not Visible	Not Visible
		Attentive Energy (OCS-A 0538)	by 2030	853	0	101	Not Visible	Not Visible
		Bight Wind Holdings (OCS-A 0539)	by 2030	853	0	148	Not Visible	Not Visible
		Atlantic Shores Offshore Wind Bight (OCS-A 0541)	by 2030	853	71	95	37.5	43.0
		Invenergy Wind Offshore (OCS-A 0542)	by 2030	853	4	99	41.6	43.0

Notes:

- Offshore Substation location and dimensions are based on preliminary publicly available project data. Projects for which this data is not currently available, WTGs are used for all foundation positions. OSS positions and dimensions considered in this photosimulation are subject to potential modification.
- *Historical meteorological data predicts visibility within a limit of 10 statute miles. However, visibility may extend beyond this distance. The photosimulations assume visibility extends to the limit of physical visibility (including a standard refraction index).
- WTG positions in the photosimulations are based on a refraction value of 7/6 or an approximate 0.14 coefficient derived from observations of the constructed Block Island Wind Farm. This refraction coefficient may yield more conservative visibility results (i.e. greater turbine visibility) that the viewshed analysis results which use a refraction coefficient of 0.13.
- **The number of WTGs visible from the KOP was determined by human verified computer generated counts performed in the 3D camera views considering screening resulting from vegetation, structures, curvature of the earth and refraction. This count may vary from the actual number of WTGs visible in the respective views due to masking completed during post processing which may include people, waves, boats, or other minor obstructions that appear in the photograph. Additionally, the WTG counts assumed the WTG blades are in the upright position whereas the photosimulations assume a random rotation pattern. Considering the largest WTG in the cumulative array, this could account for up to 236 ft. (72 m) in lost maximum height depending on the rotation position.
- The cone of view indicated on the Key Observation Point Context map indicates the horizontal extent of view only and does not indicate the extent of WTG visibility.
- The Key Observation Point Context map considers screening by curvature of the earth, viewer height, and turbine height. Landscape screening features are not considered. Therefore, in this view, the number of visible turbines depicted on the map may not match the table due to the presence of landscape screening features.

ATLANTIC SHORES offshore wind

Appendix A: Atlantic Shores Offshore Wind Cumulative Photosimulations

MATCH LINE BC02 PANO #2



MATCH LINE BC02 PANO #2

ATLANTIC SHORES offshore wind

Notes:

- Photosimulation Size: 66" in width by 29.3" in height. Images should be viewed from 18 inches in order to obtain the proper perspective. For on-screen viewing, user should zoom in until the 1-inch scale equals exactly one inch when measured on the screen.

Appendix A: Atlantic Shores Offshore Wind Cumulative Photosimulations

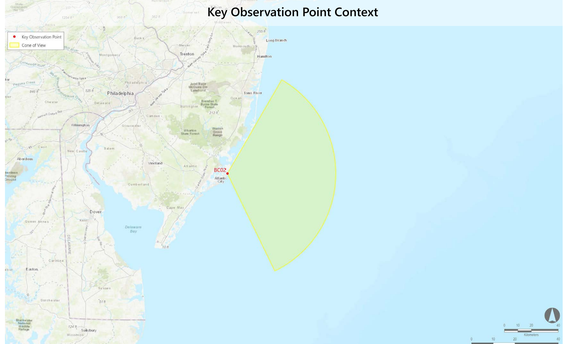
BC02: North Brigantine Natural Area, Brigantine City, Atlantic County, New Jersey

Existing Conditions (Panorama 1)

Simulation Size: 66" in width by 29.3" in height. Images should be viewed from a distance of 18 inches in order to obtain the proper perspective.

This box should be exactly 1" long on the printed panorama

Key Observation Point Context



Key Observation Point Location



MATCH LINE BC02 PANO #2



MATCH LINE BC02 PANO #2

ATLANTIC SHORES offshore wind

Appendix A: Atlantic Shores Offshore Wind Cumulative Photosimulations

BC02: North Brigantine Natural Area, Brigantine City, Atlantic County, New Jersey

Photosimulation (Panorama 1): Scenario 1: 2023-2025 Project Construction (Ocean Wind, Empire Wind, Empire Wind II)

Simulation Size: 66" in width by 29.3" in height. Images should be viewed from a distance of 18 inches in order to obtain the proper perspective.

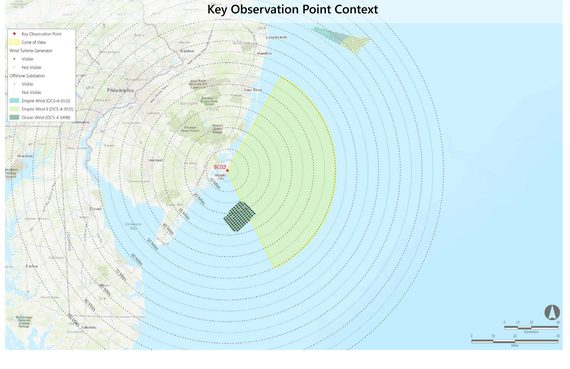
This box should be exactly 1" long on the printed panorama

Notes:

- Photosimulation Size: 66" in width by 29.3" in height. Images should be viewed from 18 inches in order to obtain the proper perspective. For on-screen viewing, user should zoom in until the 1-inch scale equals exactly one inch when measured on the screen.
- Offshore Substation location and dimensions are based on preliminary publicly available project data. Projects for which this data is not currently available, WTGs are used for all foundation positions. OSS positions and dimensions considered in this photosimulation are subject to potential modification.
- WTG positions in the photosimulations are based on a refraction value of 7/6 or an approximate 0.14 coefficient derived from observations of the constructed Block Island Wind Farm. This refraction coefficient may yield more conservative visibility results (i.e. greater turbine visibility) that the viewshed analysis results which use a refraction coefficient of 0.13.
- WTG tower, blades, and nacelle use the BOEM and FAA required color RAL 9010. The base and platform use RAL 1023 in accordance with USCG regulations.
- *The number of WTGs visible from the KOP was determined by human verified computer generated counts performed in the 3D camera views considering screening resulting from vegetation, structures, curvature of the earth and refraction. This count may vary from the actual number of WTGs visible in the respective views due to masking completed during post processing which may include people, waves, boats, or other minor obstructions that appear in the photograph. Additionally, the WTG counts assumed the WTG blades are in the upright position whereas the photosimulations assume a random rotation pattern. Considering the largest WTG in the cumulative array, this could account for up to 236 ft. (72 m) in lost maximum height depending on the rotation position.
- The cone of view indicated on the Key Observation Point Context map indicates the horizontal extent of view only and does not indicate the extent of WTG visibility.
- The resolution of the cumulative photosimulations balances the size and usability of the documents with the need for high resolution to see distant project components. Similarly to human vision, very distant turbines may appear blurry or difficult to decipher due to resolution limitations.
- The Key Observation Point Context map considers screening by curvature of the earth, viewer height, and turbine height. Landscape screening features are not considered. Therefore, in this view, the number of visible turbines depicted on the map may not match the table due to the presence of landscape screening features.

Project	Year of Development	Max Blade Tip Height (feet)	Potential Number of WTGs & OSSs Visible from KOP*	Total Number of WTGs & OSSs in Project	Theoretical Distance to Nearest Visible WTG (miles)	Theoretical Distance to Furthest Visible WTG (miles)
Ocean Wind (OCS-A 0498)	2024-2025	906	111	111	15.7	28.1
Empire Wind (OCS-A 0512)	2023-2027	951	0	72	Not Visible	Not Visible
Empire Wind II (OCS-A 0512)	2025-2027	951	0	104	Not Visible	Not Visible

Key Observation Point Context



Key Observation Point Location



MATCH LINE BC02 PANO #2



ATLANTIC SHORES offshore wind

Appendix A: Atlantic Shores Offshore Wind Cumulative Photosimulations

BC02: North Brigantine Natural Area, Brigantine City, Atlantic County, New Jersey

Photosimulation (Panorama 1): Scenario 2: Atlantic Shores Construction (2025-2027) added to Scenario 1 (Ocean Wind, Empire Wind, Empire Wind II, Atlantic Shores South)

Simulation Size: 66" in width by 29.3" in height. Images should be viewed from a distance of 18 inches in order to obtain the proper perspective.

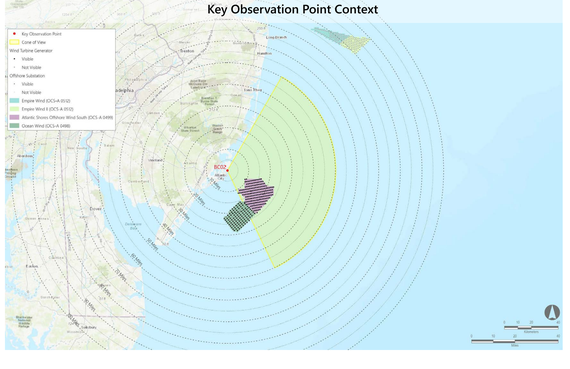
This box should be exactly 1" long on the printed panorama

Notes:

- Photosimulation Size: 66" in width by 29.3" in height. Images should be viewed from 18 inches in order to obtain the proper perspective. For on-screen viewing, user should zoom in until the 1-inch scale equals exactly one inch when measured on the screen.
- Offshore Substation location and dimensions are based on preliminary publicly available project data. Projects for which this data is not currently available, WTGs are used for all foundation positions. OSS positions and dimensions considered in this photosimulation are subject to potential modification.
- WTG positions in the photosimulations are based on a refraction value of 7/6 or an approximate 0.14 coefficient derived from observations of the constructed Block Island Wind Farm. This refraction coefficient may yield more conservative visibility results (i.e. greater turbine visibility) that the viewshed analysis results which use a refraction coefficient of 0.13.
- WTG tower, blades, and nacelle use the BOEM and FAA required color RAL 9010. The base and platform use RAL 1023 in accordance with USCG regulations.
- *The number of WTGs visible from the KOP was determined by human verified computer generated counts performed in the 3D camera views considering screening resulting from vegetation, structures, curvature of the earth and refraction. This count may vary from the actual number of WTGs visible in the respective views due to masking completed during post processing which may include people, waves, boats, or other minor obstructions that appear in the photograph. Additionally, the WTG counts assumed the WTG blades are in the upright position whereas the photosimulations assume a random rotation pattern. Considering the largest WTG in the cumulative array, this could account for up to 236 ft. (72 m) in lost maximum height depending on the rotation position.
- The cone of view indicated on the Key Observation Point Context map indicates the horizontal extent of view only and does not indicate the extent of WTG visibility.
- The resolution of the cumulative photosimulations balances the size and usability of the documents with the need for high resolution to see distant project components. Similarly to human vision, very distant turbines may appear blurry or difficult to decipher due to resolution limitations.
- The Key Observation Point Context map considers screening by curvature of the earth, viewer height, and turbine height. Landscape screening features are not considered. Therefore, in this view, the number of visible turbines depicted on the map may not match the table due to the presence of landscape screening features.

Project	Year of Development	Max Blade Tip Height (feet)	Potential Number of WTGs & OSSs Visible from KOP*	Total Number of WTGs & OSSs in Project	Theoretical Distance to Nearest Visible WTG (miles)	Theoretical Distance to Furthest Visible WTG (miles)
Atlantic Shores Offshore Wind South (OCS-A 0499)	2023-2025	1,047	205	205	9.0	23.8
Ocean Wind (OCS-A 0498)	2024-2025	906	111	111	15.7	28.1
Empire Wind (OCS-A 0512)	2023-2027	951	0	72	Not Visible	Not Visible
Empire Wind II (OCS-A 0512)	2025-2027	951	0	104	Not Visible	Not Visible

Key Observation Point Context



Key Observation Point Location



MATCH LINE BC02 PANO #2



MATCH LINE BC02 PANO #2

ATLANTIC SHORES offshore wind

Appendix A: Atlantic Shores Offshore Wind Cumulative Photosimulations

BC02: North Brigantine Natural Area, Brigantine City, Atlantic County, New Jersey

Photosimulation (Panorama 1): Scenario 3: 2024-2030 Project construction added after the construction of Atlantic Shores South (Full Lease Build-out Including Atlantic Shores South)

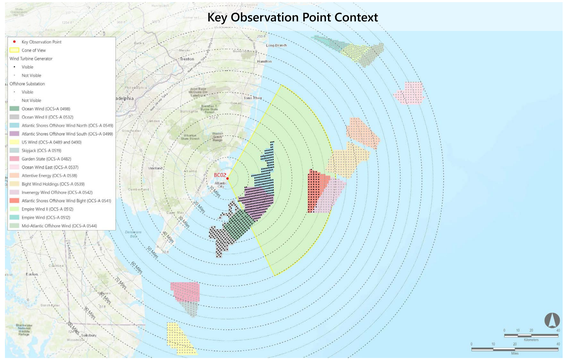
Simulation Size: 66" in width by 29.3" in height. Images should be viewed from a distance of 18 inches in order to obtain the proper perspective.

This box should be exactly 1" long on the printed panorama

Notes:

- Photosimulation Size: 66" in width by 29.3" in height. Images should be viewed from 18 inches in order to obtain the proper perspective. For on-screen viewing, user should zoom in until the 1-inch scale equals exactly one inch when measured on the screen.
- Offshore Substation location and dimensions are based on preliminary publicly available project data. Projects for which this data is not currently available, WTGs are used for all foundation positions. OSS positions and dimensions considered in this photosimulation are subject to potential modification.
- WTG positions in the photosimulations are based on a refraction value of 7/6 or an approximate 0.14 coefficient derived from observations of the constructed Block Island Wind Farm. This refraction coefficient may yield more conservative visibility results (i.e. greater turbine visibility) that the viewshed analysis results which use a refraction coefficient of 0.13.
- WTG tower, blades, and nacelle use the BOEM and FAA required color RAL 9010. The base and platform use RAL 1023 in accordance with USCG regulations.
- *The number of WTGs visible from the KOP was determined by human verified computer generated counts performed in the 3D camera views considering screening resulting from vegetation, structures, curvature of the earth and refraction. This count may vary from the actual number of WTGs visible in the respective views due to masking completed during post processing which may include people, waves, boats, or other minor obstructions that appear in the photograph. Additionally, the WTG counts assumed the WTG blades are in the upright position whereas the photosimulations assume a random rotation pattern. Considering the largest WTG in the cumulative array, this could account for up to 236 ft. (72 m) in lost maximum height depending on the rotation position.
- The cone of view indicated on the Key Observation Point Context map indicates the horizontal extent of view only and does not indicate the extent of WTG visibility.
- The resolution of the cumulative photosimulations balances the size and usability of the documents with the need for high resolution to see distant project components. Similarly to human vision, very distant turbines may appear blurry or difficult to decipher due to resolution limitations.
- The Key Observation Point Context map considers screening by curvature of the earth, viewer height, and turbine height. Landscape screening features are not considered. Therefore, in this view, the number of visible turbines depicted on the map may not match the table due to the presence of landscape screening features.

Project	Year of Development	Max Blade Tip Height (feet)	Potential Number of WTGs & OSSs Visible from KOP*	Total Number of WTGs & OSSs in Project	Theoretical Distance to Nearest Visible WTG (miles)	Theoretical Distance to Furthest Visible WTG (miles)
Atlantic Shores Offshore Wind South (OCS-A 0499)	2023-2025	1,047	205	205	9.0	23.8
Ocean Wind (OCS-A 0498)	2024-2025	906	111	111	15.7	28.1
Empire Wind (OCS-A 0512)	2023-2027	951	0	72	Not Visible	Not Visible
Empire Wind II (OCS-A 0512)	2025-2027	951	0	104	Not Visible	Not Visible
Skipjack (OCS-A 0519)	2024-2030	853	0	33	Not Visible	Not Visible
Garden State (OCS-A 0482)	2023-2030	853	0	80	Not Visible	Not Visible
US Wind (OCS-A 0489 and 0490)	2024	938	0	101	Not Visible	Not Visible
Atlantic Shores Offshore Wind North (OCS-A 0549)	2025-2030	1,047	164	164	11.3	27.2
Ocean Wind II (OCS-A 0532)	2026-2030	906	111	111	11.1	36.3
Mid-Atlantic Offshore Wind (OCS-A 0544)	by 2030	853	0	104	Not Visible	Not Visible
Ocean Wind East (OCS-A 0537)	by 2030	853	0	82	Not Visible	Not Visible
Attentive Energy (OCS-A 0538)	by 2030	853	0	101	Not Visible	Not Visible
Bight Wind Holdings (OCS-A 0539)	by 2030	853	0	148	Not Visible	Not Visible
Atlantic Shores Offshore Wind Bight (OCS-A 0541)	by 2030	853	71	95	37.5	43.0
Invenergy Wind Offshore (OCS-A 0542)	by 2030	853	4	99	41.6	43.0





MATCH LINE BC02 PANO #2



ATLANTIC SHORES offshore wind

Appendix A: Atlantic Shores Offshore Wind Cumulative Photosimulations

BC02: North Brigantine Natural Area, Brigantine City, Atlantic County, New Jersey

Photosimulation (Panorama 1): Scenario 4: Full buildout of all lease areas without Atlantic Shores South

Simulation Size: 66" in width by 29.3" in height. Images should be viewed from a distance of 18 inches in order to obtain the proper perspective.

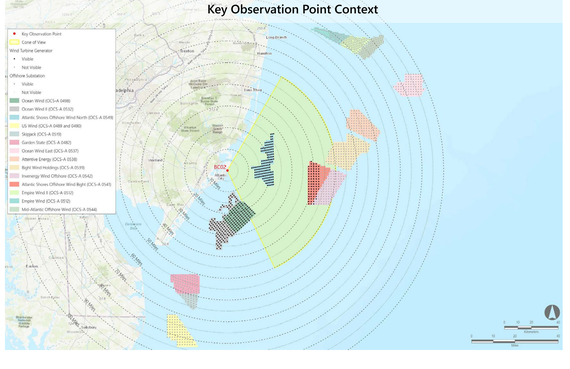
This box should be exactly 1" long on the printed panorama

Notes:

- Photosimulation Size: 66" in width by 29.3" in height. Images should be viewed from 18 inches in order to obtain the proper perspective. For on-screen viewing, user should zoom in until the 1-inch scale equals exactly one inch when measured on the screen.
- Offshore Substation location and dimensions are based on preliminary publicly available project data. Projects for which this data is not currently available, WTGs are used for all foundation positions. OSS positions and dimensions considered in this photosimulation are subject to potential modification.
- WTG positions in the photosimulations are based on a refraction value of 7/6 or an approximate 0.14 coefficient derived from observations of the constructed Block Island Wind Farm. This refraction coefficient may yield more conservative visibility results (i.e. greater turbine visibility) that the viewshed analysis results which use a refraction coefficient of 0.13.
- WTG tower, blades, and nacelle use the BOEM and FAA required color RAL 9010. The base and platform use RAL 1023 in accordance with USCG regulations.
- *The number of WTGs visible from the KOP was determined by human verified computer generated counts performed in the 3D camera views considering screening resulting from vegetation, structures, curvature of the earth and refraction. This count may vary from the actual number of WTGs visible in the respective views due to masking completed during post processing which may include people, waves, boats, or other minor obstructions that appear in the photograph. Additionally, the WTG counts assumed the WTG blades are in the upright position whereas the photosimulations assume a random rotation pattern. Considering the largest WTG in the cumulative array, this could account for up to 236 ft. (72 m) in lost maximum height depending on the rotation position.
- The cone of view indicated on the Key Observation Point Context map indicates the horizontal extent of view only and does not indicate the extent of WTG visibility.
- The resolution of the cumulative photosimulations balances the size and usability of the documents with the need for high resolution to see distant project components. Similarly to human vision, very distant turbines may appear blurry or difficult to decipher due to resolution limitations.
- The Key Observation Point Context map considers screening by curvature of the earth, viewer height, and turbine height. Landscape screening features are not considered. Therefore, in this view, the number of visible turbines depicted on the map may not match the table due to the presence of landscape screening features.

Project	Year of Development	Max Blade Tip Height (feet)	Potential Number of WTGs & OSSs Visible from KOP*	Total Number of WTGs & OSSs in Project	Theoretical Distance to Nearest Visible WTG (miles)	Theoretical Distance to Furthest Visible WTG (miles)
Ocean Wind (OCS-A 0498)	2024-2025	906	111	111	15.7	28.1
Empire Wind (OCS-A 0512)	2023-2027	951	0	72	Not Visible	Not Visible
Empire Wind II (OCS-A 0512)	2025-2027	951	0	104	Not Visible	Not Visible
Skipjack (OCS-A 0519)	2024-2030	853	0	33	Not Visible	Not Visible
Garden State (OCS-A 0482)	2023-2030	853	0	80	Not Visible	Not Visible
US Wind (OCS-A 0489 and 0490)	2024	938	0	101	Not Visible	Not Visible
Atlantic Shores Offshore Wind North (OCS-A 0549)	2025-2030	1,047	164	164	11.3	27.2
Ocean Wind II (OCS-A 0532)	2026-2030	906	111	111	11.1	36.3
Mid-Atlantic Offshore Wind (OCS-A 0544)	by 2030	853	0	104	Not Visible	Not Visible
Ocean Wind East (OCS-A 0537)	by 2030	853	0	82	Not Visible	Not Visible
Attentive Energy (OCS-A 0538)	by 2030	853	0	101	Not Visible	Not Visible
Bight Wind Holdings (OCS-A 0539)	by 2030	853	0	148	Not Visible	Not Visible
Atlantic Shores Offshore Wind Bight (OCS-A 0541)	by 2030	853	71	95	37.5	43.0
Invenergy Wind Offshore (OCS-A 0542)	by 2030	853	4	99	41.6	43.0

Key Observation Point Context



Key Observation Point Location



MATCH LINE BC02 PANO #2



ATLANTIC SHORES offshore wind

Appendix A: Atlantic Shores Offshore Wind Cumulative Photosimulations

BC02: North Brigantine Natural Area, Brigantine City, Atlantic County, New Jersey

Photosimulation (Panorama 1): Scenario 5: Atlantic Shores South without the construction of other foreseeable planned activities

Simulation Size: 66" in width by 29.3" in height. Images should be viewed from a distance of 18 inches in order to obtain the proper perspective.

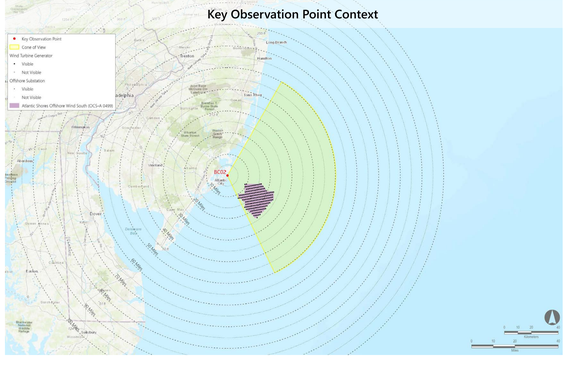
This box should be exactly 1" long on the printed panorama

Notes:

- Photosimulation Size: 66" in width by 29.3" in height. Images should be viewed from 18 inches in order to obtain the proper perspective. For on-screen viewing, user should zoom in until the 1-inch scale equals exactly one inch when measured on the screen.
- Offshore Substation location and dimensions are based on preliminary publicly available project data. Projects for which this data is not currently available, WTGs are used for all foundation positions. OSS positions and dimensions considered in this photosimulation are subject to potential modification.
- WTG positions in the photosimulations are based on a refraction value of 7/6 or an approximate 0.14 coefficient derived from observations of the constructed Block Island Wind Farm. This refraction coefficient may yield more conservative visibility results (i.e. greater turbine visibility) that the viewshed analysis results which use a refraction coefficient of 0.13.
- WTG tower, blades, and nacelle use the BOEM and FAA required color RAL 9010. The base and platform use RAL 1023 in accordance with USCG regulations.
- *The number of WTGs visible from the KOP was determined by human verified computer generated counts performed in the 3D camera views considering screening resulting from vegetation, structures, curvature of the earth and refraction. This count may vary from the actual number of WTGs visible in the respective views due to masking completed during post processing which may include people, waves, boats, or other minor obstructions that appear in the photograph. Additionally, the WTG counts assumed the WTG blades are in the upright position whereas the photosimulations assume a random rotation pattern. Considering the largest WTG in the cumulative array, this could account for up to 236 ft. (72 m) in lost maximum height depending on the rotation position.
- The cone of view indicated on the Key Observation Point Context map indicates the horizontal extent of view only and does not indicate the extent of WTG visibility.
- The resolution of the cumulative photosimulations balances the size and usability of the documents with the need for high resolution to see distant project components. Similarly to human vision, very distant turbines may appear blurry or difficult to decipher due to resolution limitations.
- The Key Observation Point Context map considers screening by curvature of the earth, viewer height, and turbine height. Landscape screening features are not considered. Therefore, in this view, the number of visible turbines depicted on the map may not match the table due to the presence of landscape screening features.

Project	Year of Development	Max Blade Tip Height (feet)	Potential Number of WTGs & OSSs Visible from KOP*	Total Number of WTGs & OSSs in Project	Theoretical Distance to Nearest Visible WTG (miles)	Theoretical Distance to Furthest Visible WTG (miles)
Atlantic Shores Offshore Wind South (OCS-A 0499)	2023-2025	1,047	205	205	9.0	23.8

Key Observation Point Context



Key Observation Point Location



BC02: North Brigantine Natural Area, Brigantine City, Atlantic County, New Jersey

Environmental Data

Date Taken: 08/18/2020
Time: 12:00 PM
Temperature: 84°F
Humidity: 53%
Visibility*: 10+ miles
Wind Direction: West-southwest
Wind Speed: 3 mph
Conditions Observed: Fair

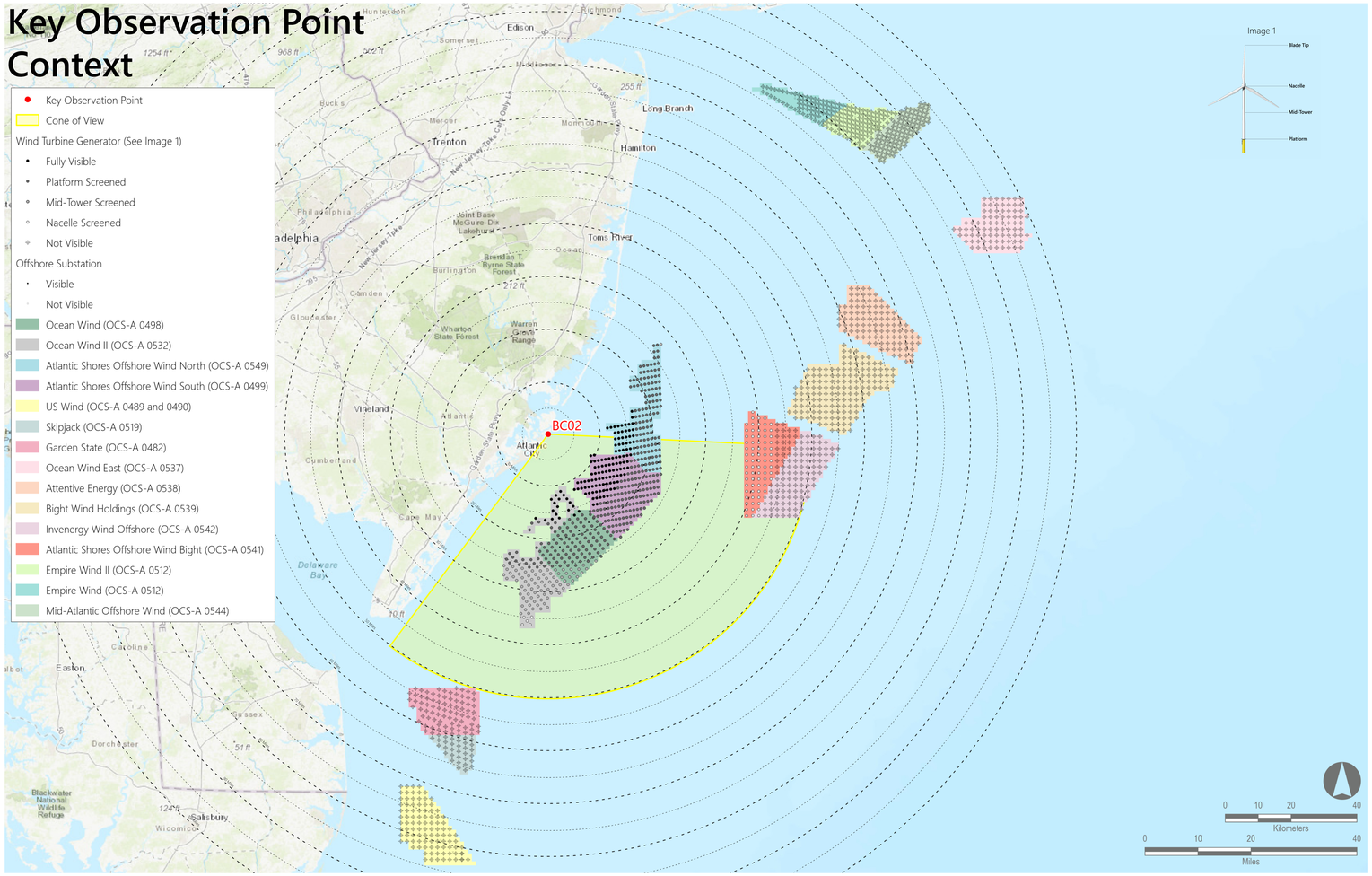
Camera Information
Camera: Canon EOS 5D Mark IV
Resolution: 30.4 Megapixels
Lens Focal Length: 50 mm
Camera Height: 11.06 feet AMSL

Key Observation Point Information

County: Atlantic
Town: Brigantine City
State: New Jersey
Location: North Brigantine Natural Area
Latitude, Longitude: 39.42954°N, 74.33968°W
Direction of View (Center): South-southeast (155.2°)
Field of View: 124° x 55°

Visual Resources
Character Area: Undeveloped Beach, Seascape (SCA)
User Group: Residents/Tourists, Fishermen
Visually Sensitive Resource: North Brigantine State Natural Area

Key Observation Point Context



Reasonably Foreseeable Projects Represented in Photosimulation

		Project	Year of Development	Max Blade Tip Height (feet)	Potential Number of WTGs & OSSs Visible from KOP**	Total Number of WTGs & OSSs in Project	Theoretical Distance to Nearest Visible WTG (miles)	Theoretical Distance to Furthest Visible WTG (miles)
Scenario 5	Scenario 2	Atlantic Shores Offshore Wind South (OCS-A 0499)	2025-2027	1,047	205	205	9.0	23.8
Scenario 4	Scenario 1	Ocean Wind (OCS-A 0498)	2023-2025	906	111	111	15.7	28.1
		Empire Wind (OCS-A 0512)	2024-2025	951	0	72	Not Visible	Not Visible
		Empire Wind II (OCS-A 0512)	2023-2027	951	0	104	Not Visible	Not Visible
	Scenario 3	Skipjack (OCS-A 0519)	2024-2030	853	0	33	Not Visible	Not Visible
		Garden State (OCS-A 0482)	2023-2030	853	0	80	Not Visible	Not Visible
		US Wind (OCS-A 0489 and 0490)	2024	938	0	101	Not Visible	Not Visible
		Atlantic Shores Offshore Wind North (OCS-A 0549)	2025-2030	1,047	164	164	11.3	27.2
		Ocean Wind II (OCS-A 0532)	2026-2030	906	111	111	11.1	36.3
		Mid-Atlantic Offshore Wind (OCS-A 0544)	by 2030	853	0	104	Not Visible	Not Visible
		Ocean Wind East (OCS-A 0537)	by 2030	853	0	82	Not Visible	Not Visible
		Attentive Energy (OCS-A 0538)	by 2030	853	0	101	Not Visible	Not Visible
		Bight Wind Holdings (OCS-A 0539)	by 2030	853	0	148	Not Visible	Not Visible
		Atlantic Shores Offshore Wind Bight (OCS-A 0541)	by 2030	853	71	95	37.5	43.0
		Invenergy Wind Offshore (OCS-A 0542)	by 2030	853	4	99	41.6	43.0

Notes:

- Offshore Substation location and dimensions are based on preliminary publicly available project data. Projects for which this data is not currently available, WTGs are used for all foundation positions. OSS positions and dimensions considered in this photosimulation are subject to potential modification.
- *Historical meteorological data predicts visibility within a limit of 10 statute miles. However, visibility may extend beyond this distance. The photosimulations assume visibility extends to the limit of physical visibility (including a standard refraction index).
- WTG positions in the photosimulations are based on a refraction value of 7/6 or an approximate 0.14 coefficient derived from observations of the constructed Block Island Wind Farm. This refraction coefficient may yield more conservative visibility results (i.e. greater turbine visibility) that the viewshed analysis results which use a refraction coefficient of 0.13.
- **The number of WTGs visible from the KOP was determined by human verified computer generated counts performed in the 3D camera views considering screening resulting from vegetation, structures, curvature of the earth and refraction. This count may vary from the actual number of WTGs visible in the respective views due to masking completed during post processing which may include people, waves, boats, or other minor obstructions that appear in the photograph. Additionally, the WTG counts assumed the WTG blades are in the upright position whereas the photosimulations assume a random rotation pattern. Considering the largest WTG in the cumulative array, this could account for up to 236 ft. (72 m) in lost maximum height depending on the rotation position.
- The cone of view indicated on the Key Observation Point Context map indicates the horizontal extent of view only and does not indicate the extent of WTG visibility.
- The Key Observation Point Context map considers screening by curvature of the earth, viewer height, and turbine height. Landscape screening features are not considered. Therefore, in this view, the number of visible turbines depicted on the map may not match the table due to the presence of landscape screening features.

ATLANTIC SHORES offshore wind

MATCH LINE BC02 PANO #1



MATCH LINE BC02 PANO #1

ATLANTIC SHORES offshore wind

Appendix A: Atlantic Shores Offshore Wind Cumulative Photosimulations

BC02: North Brigantine Natural Area, Brigantine City, Atlantic County, New Jersey

Existing Conditions (Panorama 2)

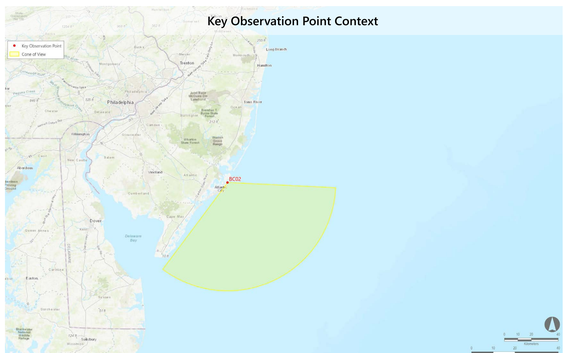
Notes:

- Photosimulation Size: 66" in width by 29.3" in height. Images should be viewed from 18 inches in order to obtain the proper perspective. For on-screen viewing, user should zoom in until the 1-inch scale equals exactly one inch when measured on the screen.

Simulation Size: 66" in width by 29.3" in height. Images should be viewed from a distance of 18 inches in order to obtain the proper perspective.

This box should be exactly 1" long on the printed panorama

Key Observation Point Context



Key Observation Point Location



MATCH LINE BC02 PANO #1



MATCH LINE BC02 PANO #1

ATLANTIC SHORES offshore wind

Appendix A: Atlantic Shores Offshore Wind Cumulative Photosimulations

BC02: North Brigantine Natural Area, Brigantine City, Atlantic County, New Jersey

Photosimulation (Panorama 2): Scenario 1: 2023-2025 Project Construction (Ocean Wind, Empire Wind, Empire Wind II)

Simulation Size: 66" in width by 29.3" in height. Images should be viewed from a distance of 18 inches in order to obtain the proper perspective.

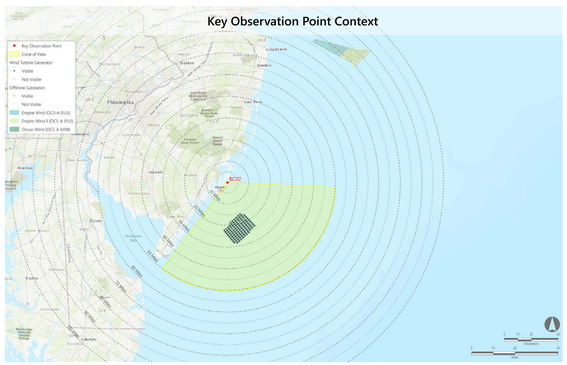
This box should be exactly 1" long on the printed panorama

Notes:

- Photosimulation Size: 66" in width by 29.3" in height. Images should be viewed from 18 inches in order to obtain the proper perspective. For on-screen viewing, user should zoom in until the 1-inch scale equals exactly one inch when measured on the screen.
- Offshore Substation location and dimensions are based on preliminary publicly available project data. Projects for which this data is not currently available, WTGs are used for all foundation positions. OSS positions and dimensions considered in this photosimulation are subject to potential modification.
- WTG positions in the photosimulations are based on a refraction value of 7/6 or an approximate 0.14 coefficient derived from observations of the constructed Block Island Wind Farm. This refraction coefficient may yield more conservative visibility results (i.e. greater turbine visibility) that the viewshed analysis results which use a refraction coefficient of 0.13.
- WTG tower, blades, and nacelle use the BOEM and FAA required color RAL 9010. The base and platform use RAL 1023 in accordance with USCG regulations.
- *The number of WTGs visible from the KOP was determined by human verified computer generated counts performed in the 3D camera views considering screening resulting from vegetation, structures, curvature of the earth and refraction. This count may vary from the actual number of WTGs visible in the respective views due to masking completed during post processing which may include people, waves, boats, or other minor obstructions that appear in the photograph. Additionally, the WTG counts assumed the WTG blades are in the upright position whereas the photosimulations assume a random rotation pattern. Considering the largest WTG in the cumulative array, this could account for up to 236 ft. (72 m) in lost maximum height depending on the rotation position.
- The cone of view indicated on the Key Observation Point Context map indicates the horizontal extent of view only and does not indicate the extent of WTG visibility.
- The resolution of the cumulative photosimulations balances the size and usability of the documents with the need for high resolution to see distant project components. Similarly to human vision, very distant turbines may appear blurry or difficult to decipher due to resolution limitations.
- The Key Observation Point Context map considers screening by curvature of the earth, viewer height, and turbine height. Landscape screening features are not considered. Therefore, in this view, the number of visible turbines depicted on the map may not match the table due to the presence of landscape screening features.

Project	Year of Development	Max Blade Tip Height (feet)	Potential Number of WTGs & OSSs Visible from KOP*	Total Number of WTGs & OSSs in Project	Theoretical Distance to Nearest Visible WTG (miles)	Theoretical Distance to Furthest Visible WTG (miles)
Ocean Wind (OCS-A 0498)	2024-2025	906	111	111	15.7	28.1
Empire Wind (OCS-A 0512)	2023-2027	951	0	72	Not Visible	Not Visible
Empire Wind II (OCS-A 0512)	2025-2027	951	0	104	Not Visible	Not Visible

Key Observation Point Context



Key Observation Point Location



MATCH LINE BC02 PANO #1



ATLANTIC SHORES offshore wind

Appendix A: Atlantic Shores Offshore Wind Cumulative Photosimulations

BC02: North Brigantine Natural Area, Brigantine City, Atlantic County, New Jersey

Photosimulation (Panorama 2): Scenario 2: Atlantic Shores Construction (2025-2027) added to Scenario 1 (Ocean Wind, Empire Wind, Empire Wind II, Atlantic Shores South)

Simulation Size: 66" in width by 29.3" in height. Images should be viewed from a distance of 18 inches in order to obtain the proper perspective.

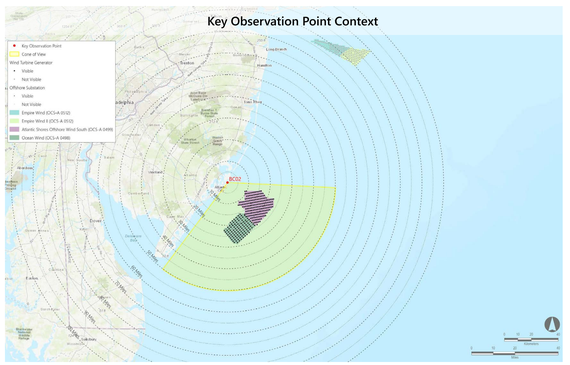
This box should be exactly 1" long on the printed panorama

Notes:

- Photosimulation Size: 66" in width by 29.3" in height. Images should be viewed from 18 inches in order to obtain the proper perspective. For on-screen viewing, user should zoom in until the 1-inch scale equals exactly one inch when measured on the screen.
- Offshore Substation location and dimensions are based on preliminary publicly available project data. Projects for which this data is not currently available, WTGs are used for all foundation positions. OSS positions and dimensions considered in this photosimulation are subject to potential modification.
- WTG positions in the photosimulations are based on a refraction value of 7/6 or an approximate 0.14 coefficient derived from observations of the constructed Block Island Wind Farm. This refraction coefficient may yield more conservative visibility results (i.e. greater turbine visibility) that the viewshed analysis results which use a refraction coefficient of 0.13.
- WTG tower, blades, and nacelle use the BOEM and FAA required color RAL 9010. The base and platform use RAL 1023 in accordance with USCG regulations.
- *The number of WTGs visible from the KOP was determined by human verified computer generated counts performed in the 3D camera views considering screening resulting from vegetation, structures, curvature of the earth and refraction. This count may vary from the actual number of WTGs visible in the respective views due to masking completed during post processing which may include people, waves, boats, or other minor obstructions that appear in the photograph. Additionally, the WTG counts assumed the WTG blades are in the upright position whereas the photosimulations assume a random rotation pattern. Considering the largest WTG in the cumulative array, this could account for up to 236 ft. (72 m) in lost maximum height depending on the rotation position.
- The cone of view indicated on the Key Observation Point Context map indicates the horizontal extent of view only and does not indicate the extent of WTG visibility.
- The resolution of the cumulative photosimulations balances the size and usability of the documents with the need for high resolution to see distant project components. Similarly to human vision, very distant turbines may appear blurry or difficult to decipher due to resolution limitations.
- The Key Observation Point Context map considers screening by curvature of the earth, viewer height, and turbine height. Landscape screening features are not considered. Therefore, in this view, the number of visible turbines depicted on the map may not match the table due to the presence of landscape screening features.

Project	Year of Development	Max Blade Tip Height (feet)	Potential Number of WTGs & OSSs Visible from KOP*	Total Number of WTGs & OSSs in Project	Theoretical Distance to Nearest Visible WTG (miles)	Theoretical Distance to Furthest Visible WTG (miles)
Atlantic Shores Offshore Wind South (OCS-A 0499)	2023-2025	1,047	205	205	9.0	23.8
Ocean Wind (OCS-A 0498)	2024-2025	906	111	111	15.7	28.1
Empire Wind (OCS-A 0512)	2023-2027	951	0	72	Not Visible	Not Visible
Empire Wind II (OCS-A 0512)	2025-2027	951	0	104	Not Visible	Not Visible

Key Observation Point Context



Key Observation Point Location



MATCH LINE BC02 PANO #1



MATCH LINE BC02 PANO #2

ATLANTIC SHORES offshore wind

Appendix A: Atlantic Shores Offshore Wind Cumulative Photosimulations

BC02: North Brigantine Natural Area, Brigantine City, Atlantic County, New Jersey

Photosimulation (Panorama 2): Scenario 3: 2024-2030 Project construction added after the construction of Atlantic Shores South (Full Lease Build-out Including Atlantic Shores South)

Simulation Size: 66" in width by 29.3" in height. Images should be viewed from a distance of 18 inches in order to obtain the proper perspective.

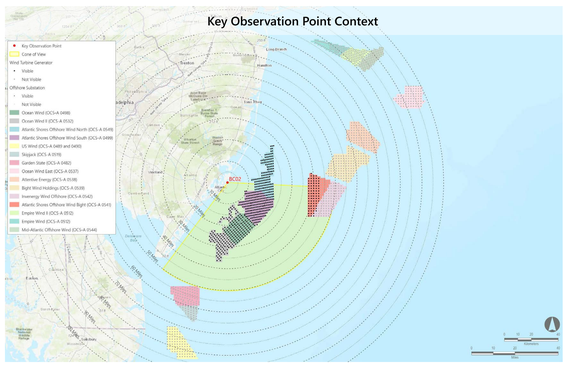
This box should be exactly 1" long on the printed panorama

Notes:

- Photosimulation Size: 66" in width by 29.3" in height. Images should be viewed from 18 inches in order to obtain the proper perspective. For on-screen viewing, user should zoom in until the 1-inch scale equals exactly one inch when measured on the screen.
- Offshore Substation location and dimensions are based on preliminary publicly available project data. Projects for which this data is not currently available, WTGs are used for all foundation positions. OSS positions and dimensions considered in this photosimulation are subject to potential modification.
- WTG positions in the photosimulations are based on a refraction value of 7/6 or an approximate 0.14 coefficient derived from observations of the constructed Block Island Wind Farm. This refraction coefficient may yield more conservative visibility results (i.e. greater turbine visibility) that the viewshed analysis results which use a refraction coefficient of 0.13.
- WTG tower, blades, and nacelle use the BOEM and FAA required color RAL 9010. The base and platform use RAL 1023 in accordance with USCG regulations.
- *The number of WTGs visible from the KOP was determined by human verified computer generated counts performed in the 3D camera views considering screening resulting from vegetation, structures, curvature of the earth and refraction. This count may vary from the actual number of WTGs visible in the respective views due to masking completed during post processing which may include people, waves, boats, or other minor obstructions that appear in the photograph. Additionally, the WTG counts assumed the WTG blades are in the upright position whereas the photosimulations assume a random rotation pattern. Considering the largest WTG in the cumulative array, this could account for up to 236 ft. (72 m) in lost maximum height depending on the rotation position.
- The cone of view indicated on the Key Observation Point Context map indicates the horizontal extent of view only and does not indicate the extent of WTG visibility.
- The resolution of the cumulative photosimulations balances the size and usability of the documents with the need for high resolution to see distant project components. Similarly to human vision, very distant turbines may appear blurry or difficult to decipher due to resolution limitations.
- The Key Observation Point Context map considers screening by curvature of the earth, viewer height, and turbine height. Landscape screening features are not considered. Therefore, in this view, the number of visible turbines depicted on the map may not match the table due to the presence of landscape screening features.

Project	Year of Development	Max Blade Tip Height (feet)	Potential Number of WTGs & OSSs Visible from KOP*	Total Number of WTGs & OSSs in Project	Theoretical Distance to Nearest Visible WTG (miles)	Theoretical Distance to Furthest Visible WTG (miles)
Atlantic Shores Offshore Wind South (OCS-A 0499)	2023-2025	1,047	205	205	9.0	23.8
Ocean Wind (OCS-A 0498)	2024-2025	906	111	111	15.7	28.1
Empire Wind (OCS-A 0512)	2023-2027	951	0	72	Not Visible	Not Visible
Empire Wind II (OCS-A 0512)	2025-2027	951	0	104	Not Visible	Not Visible
Skipjack (OCS-A 0519)	2024-2030	853	0	33	Not Visible	Not Visible
Garden State (OCS-A 0482)	2023-2030	853	0	80	Not Visible	Not Visible
US Wind (OCS-A 0489 and 0490)	2024	938	0	101	Not Visible	Not Visible
Atlantic Shores Offshore Wind North (OCS-A 0549)	2025-2030	1,047	164	164	11.3	27.2
Ocean Wind II (OCS-A 0532)	2026-2030	906	111	111	11.1	36.3
Mid-Atlantic Offshore Wind (OCS-A 0544)	by 2030	853	0	104	Not Visible	Not Visible
Ocean Wind East (OCS-A 0537)	by 2030	853	0	82	Not Visible	Not Visible
Attentive Energy (OCS-A 0538)	by 2030	853	0	101	Not Visible	Not Visible
Bight Wind Holdings (OCS-A 0539)	by 2030	853	0	148	Not Visible	Not Visible
Atlantic Shores Offshore Wind Bight (OCS-A 0541)	by 2030	853	71	95	37.5	43.0
Invenergy Wind Offshore (OCS-A 0542)	by 2030	853	4	99	41.6	43.0

Key Observation Point Context



Key Observation Point Location



MATCH LINE BC02 PANO #1



MATCH LINE BC02 PANO #2

ATLANTIC SHORES offshore wind

Appendix A: Atlantic Shores Offshore Wind Cumulative Photosimulations

BC02: North Brigantine Natural Area, Brigantine City, Atlantic County, New Jersey

Photosimulation (Panorama 2): Scenario 4: Full buildout of all lease areas without Atlantic Shores South

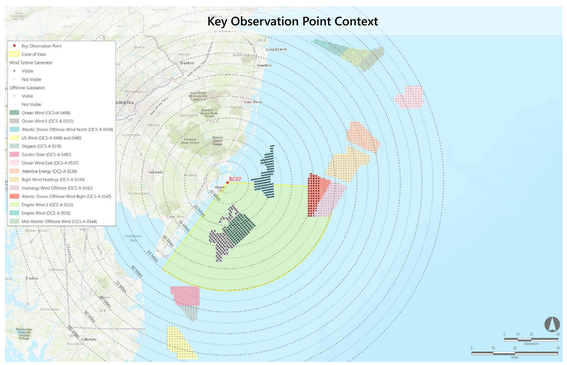
Simulation Size: 66" in width by 29.3" in height. Images should be viewed from a distance of 18 inches in order to obtain the proper perspective.

This box should be exactly 1" long on the printed panorama

Notes:

- Photosimulation Size: 66" in width by 29.3" in height. Images should be viewed from 18 inches in order to obtain the proper perspective. For on-screen viewing, user should zoom in until the 1-inch scale equals exactly one inch when measured on the screen.
- Offshore Substation location and dimensions are based on preliminary publicly available project data. Projects for which this data is not currently available, WTGs are used for all foundation positions. OSS positions and dimensions considered in this photosimulation are subject to potential modification.
- WTG positions in the photosimulations are based on a refraction value of 7/6 or an approximate 0.14 coefficient derived from observations of the constructed Block Island Wind Farm. This refraction coefficient may yield more conservative visibility results (i.e. greater turbine visibility) that the viewshed analysis results which use a refraction coefficient of 0.13.
- WTG tower, blades, and nacelle use the BOEM and FAA required color RAL 9010. The base and platform use RAL 1023 in accordance with USCG regulations.
- *The number of WTGs visible from the KOP was determined by human verified computer generated counts performed in the 3D camera views considering screening resulting from vegetation, structures, curvature of the earth and refraction. This count may vary from the actual number of WTGs visible in the respective views due to masking completed during post processing which may include people, waves, boats, or other minor obstructions that appear in the photograph. Additionally, the WTG counts assumed the WTG blades are in the upright position whereas the photosimulations assume a random rotation pattern. Considering the largest WTG in the cumulative array, this could account for up to 236 ft. (72 m) in lost maximum height depending on the rotation position.
- The cone of view indicated on the Key Observation Point Context map indicates the horizontal extent of view only and does not indicate the extent of WTG visibility.
- The resolution of the cumulative photosimulations balances the size and usability of the documents with the need for high resolution to see distant project components. Similarly to human vision, very distant turbines may appear blurry or difficult to decipher due to resolution limitations.
- The Key Observation Point Context map considers screening by curvature of the earth, viewer height, and turbine height. Landscape screening features are not considered. Therefore, in this view, the number of visible turbines depicted on the map may not match the table due to the presence of landscape screening features.

Project	Year of Development	Max Blade Tip Height (feet)	Potential Number of WTGs & OSSs Visible from KOP*	Total Number of WTGs & OSSs in Project	Theoretical Distance to Nearest Visible WTG (miles)	Theoretical Distance to Furthest Visible WTG (miles)
Ocean Wind (OCS-A 0498)	2024-2025	906	111	111	15.7	28.1
Empire Wind (OCS-A 0512)	2023-2027	951	0	72	Not Visible	Not Visible
Empire Wind II (OCS-A 0512)	2025-2027	951	0	104	Not Visible	Not Visible
Skipjack (OCS-A 0519)	2024-2030	853	0	33	Not Visible	Not Visible
Garden State (OCS-A 0482)	2023-2030	853	0	80	Not Visible	Not Visible
US Wind (OCS-A 0489 and 0490)	2024	938	0	101	Not Visible	Not Visible
Atlantic Shores Offshore Wind North (OCS-A 0549)	2025-2030	1,047	164	164	11.3	27.2
Ocean Wind II (OCS-A 0532)	2026-2030	906	111	111	11.1	36.3
Mid-Atlantic Offshore Wind (OCS-A 0544)	by 2030	853	0	104	Not Visible	Not Visible
Ocean Wind East (OCS-A 0537)	by 2030	853	0	82	Not Visible	Not Visible
Attentive Energy (OCS-A 0538)	by 2030	853	0	101	Not Visible	Not Visible
Bight Wind Holdings (OCS-A 0539)	by 2030	853	0	148	Not Visible	Not Visible
Atlantic Shores Offshore Wind Bight (OCS-A 0541)	by 2030	853	71	95	37.5	43.0
Invenergy Wind Offshore (OCS-A 0542)	by 2030	853	4	99	41.6	43.0





MATCH LINE BC02 PANO #1



MATCH LINE BC02 PANO #2

ATLANTIC SHORES offshore wind

Appendix A: Atlantic Shores Offshore Wind Cumulative Photosimulations

BC02: North Brigantine Natural Area, Brigantine City, Atlantic County, New Jersey

Photosimulation (Panorama 2): Scenario 5: Atlantic Shores South without the construction of other foreseeable planned activities

Simulation Size: 66" in width by 29.3" in height. Images should be viewed from a distance of 18 inches in order to obtain the proper perspective.

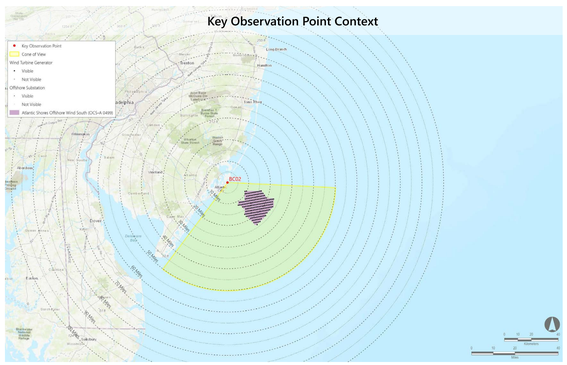
This box should be exactly 1" long on the printed panorama

Notes:

- Photosimulation Size: 66" in width by 29.3" in height. Images should be viewed from 18 inches in order to obtain the proper perspective. For on-screen viewing, user should zoom in until the 1-inch scale equals exactly one inch when measured on the screen.
- Offshore Substation location and dimensions are based on preliminary publicly available project data. Projects for which this data is not currently available, WTGs are used for all foundation positions. OSS positions and dimensions considered in this photosimulation are subject to potential modification.
- WTG positions in the photosimulations are based on a refraction value of 7/6 or an approximate 0.14 coefficient derived from observations of the constructed Block Island Wind Farm. This refraction coefficient may yield more conservative visibility results (i.e. greater turbine visibility) that the viewshed analysis results which use a refraction coefficient of 0.13.
- WTG tower, blades, and nacelle use the BOEM and FAA required color RAL 9010. The base and platform use RAL 1023 in accordance with USCG regulations.
- *The number of WTGs visible from the KOP was determined by human verified computer generated counts performed in the 3D camera views considering screening resulting from vegetation, structures, curvature of the earth and refraction. This count may vary from the actual number of WTGs visible in the respective views due to masking completed during post processing which may include people, waves, boats, or other minor obstructions that appear in the photograph. Additionally, the WTG counts assumed the WTG blades are in the upright position whereas the photosimulations assume a random rotation pattern. Considering the largest WTG in the cumulative array, this could account for up to 236 ft. (72 m) in lost maximum height depending on the rotation position.
- The cone of view indicated on the Key Observation Point Context map indicates the horizontal extent of view only and does not indicate the extent of WTG visibility.
- The resolution of the cumulative photosimulations balances the size and usability of the documents with the need for high resolution to see distant project components. Similarly to human vision, very distant turbines may appear blurry or difficult to decipher due to resolution limitations.
- The Key Observation Point Context map considers screening by curvature of the earth, viewer height, and turbine height. Landscape screening features are not considered. Therefore, in this view, the number of visible turbines depicted on the map may not match the table due to the presence of landscape screening features.

Project	Year of Development	Max Blade Tip Height (feet)	Potential Number of WTGs & OSSs Visible from KOP*	Total Number of WTGs & OSSs in Project	Theoretical Distance to Nearest Visible WTG (miles)	Theoretical Distance to Furthest Visible WTG (miles)
Atlantic Shores Offshore Wind South (OCS-A 0499)	2023-2025	1,047	205	205	9.0	23.8

Key Observation Point Context



Key Observation Point Location



BHB03: Holyoke Avenue, Beach Haven Borough, Ocean County, New Jersey

Environmental Data

Date Taken: 03/02/2022
Time: 7:35 AM
Temperature: 37°F
Humidity: 82%
Visibility*: 10+ miles
Wind Direction: Northwest
Wind Speed: 3 mph
Conditions Observed: Fair

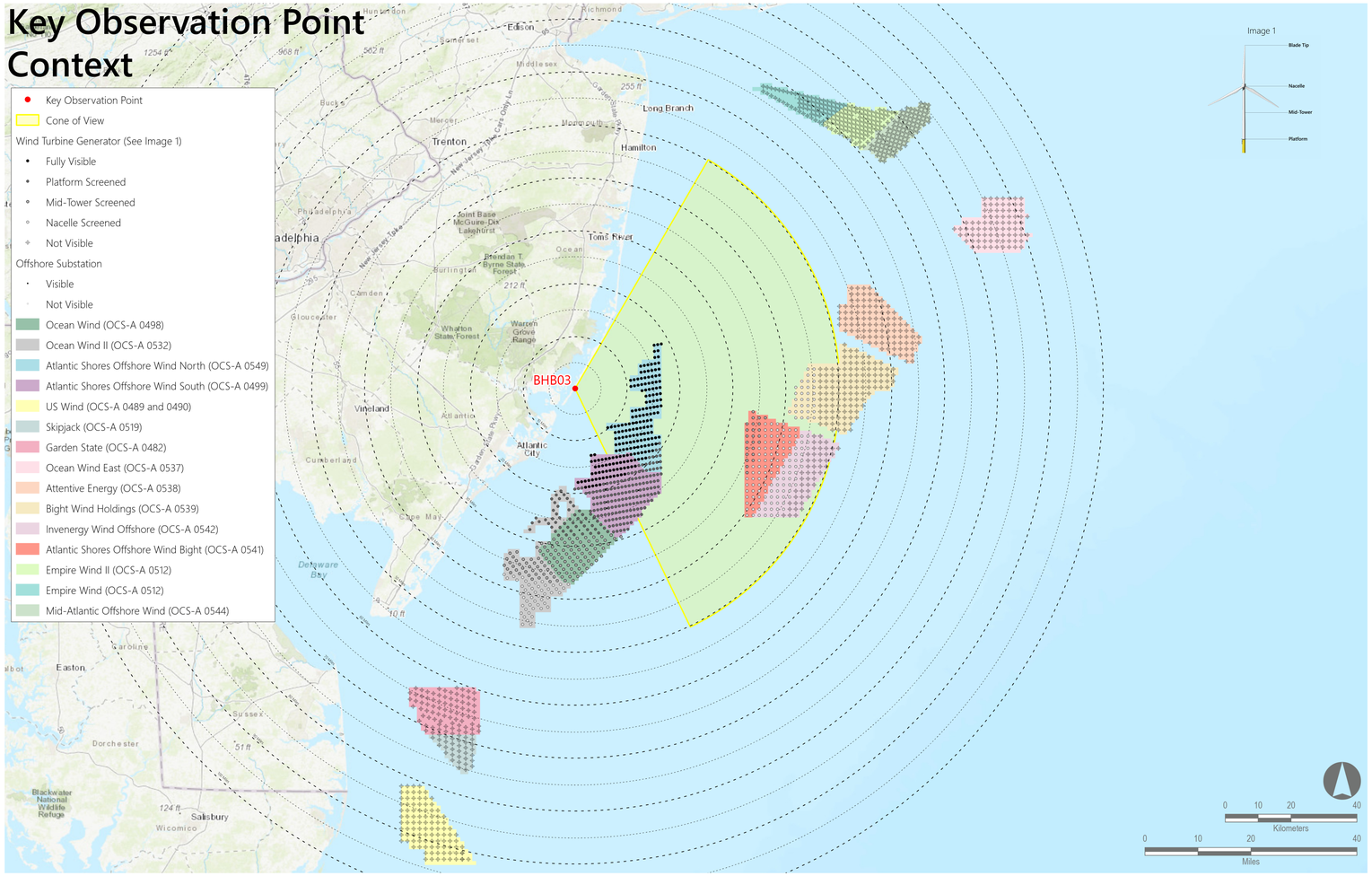
Camera Information
Camera: Canon EOS 5D Mark IV
Resolution: 30.4 Megapixels
Lens Focal Length: 50 mm
Camera Height: 26.85 feet AMSL

Key Observation Point Information

County: Ocean
Town: Beach Haven Borough
State: New Jersey
Location: Holyoke Avenue, Beach Haven
Latitude, Longitude: 39.55262°N, 74.24422°W
Direction of View (Center): East (92.7°)
Field of View: 124° x 55°

Visual Resources
Character Area: Oceanfront Residential, Seascape (SCA)
User Group: Residents/Tourists
Visually Sensitive Resource: Beach Haven Borough Public Beach

Key Observation Point Context



Reasonably Foreseeable Projects Represented in Photosimulation

		Project	Year of Development	Max Blade Tip Height (feet)	Potential Number of WTGs & OSSs Visible from KOP**	Total Number of WTGs & OSSs in Project	Theoretical Distance to Nearest Visible WTG (miles)	Theoretical Distance to Furthest Visible WTG (miles)
Scenario 5	Scenario 2	Atlantic Shores Offshore Wind South (OCS-A 0499)	2025-2027	1,047	205	205	13.0	29.3
Scenario 4	Scenario 1	Ocean Wind (OCS-A 0498)	2023-2025	906	111	111	23.1	36.3
		Empire Wind (OCS-A 0512)	2024-2025	951	0	72	Not Visible	Not Visible
		Empire Wind II (OCS-A 0512)	2023-2027	951	0	104	Not Visible	Not Visible
	Scenario 3	Skipjack (OCS-A 0519)	2024-2030	853	0	33	Not Visible	Not Visible
		Garden State (OCS-A 0482)	2023-2030	853	0	80	Not Visible	Not Visible
		US Wind (OCS-A 0489 and 0490)	2024	938	0	101	Not Visible	Not Visible
		Atlantic Shores Offshore Wind North (OCS-A 0549)	2025-2030	1,047	164	164	9.6	22.1
		Ocean Wind II (OCS-A 0532)	2026-2030	906	111	111	19.5	45.6
		Mid-Atlantic Offshore Wind (OCS-A 0544)	by 2030	853	0	104	Not Visible	Not Visible
		Ocean Wind East (OCS-A 0537)	by 2030	853	0	82	Not Visible	Not Visible
		Attentive Energy (OCS-A 0538)	by 2030	853	0	101	Not Visible	Not Visible
		Bight Wind Holdings (OCS-A 0539)	by 2030	853	32	148	40.8	45.5
		Atlantic Shores Offshore Wind Bight (OCS-A 0541)	by 2030	853	95	95	33.2	42.6
		Invenergy Wind Offshore (OCS-A 0542)	by 2030	853	51	99	41.3	45.5

Notes:

- Offshore Substation location and dimensions are based on preliminary publicly available project data. Projects for which this data is not currently available, WTGs are used for all foundation positions. OSS positions and dimensions considered in this photosimulation are subject to potential modification.
- *Historical meteorological data predicts visibility within a limit of 10 statute miles. However, visibility may extend beyond this distance. The photosimulations assume visibility extends to the limit of physical visibility (including a standard refraction index).
- WTG positions in the photosimulations are based on a refraction value of 7/6 or an approximate 0.14 coefficient derived from observations of the constructed Block Island Wind Farm. This refraction coefficient may yield more conservative visibility results (i.e. greater turbine visibility) that the viewshed analysis results which use a refraction coefficient of 0.13.
- **The number of WTGs visible from the KOP was determined by human verified computer generated counts performed in the 3D camera views considering screening resulting from vegetation, structures, curvature of the earth and refraction. This count may vary from the actual number of WTGs visible in the respective views due to masking completed during post processing which may include people, waves, boats, or other minor obstructions that appear in the photograph. Additionally, the WTG counts assumed the WTG blades are in the upright position whereas the photosimulations assume a random rotation pattern. Considering the largest WTG in the cumulative array, this could account for up to 236 ft. (72 m) in lost maximum height depending on the rotation position.
- The cone of view indicated on the Key Observation Point Context map indicates the horizontal extent of view only and does not indicate the extent of WTG visibility.
- The Key Observation Point Context map considers screening by curvature of the earth, viewer height, and turbine height. Landscape screening features are not considered. Therefore, in this view, the number of visible turbines depicted on the map may not match the table due to the presence of landscape screening features.

ATLANTIC SHORES offshore wind

MATCH LINE BHB03 PANO #2

ATLANTIC SHORES offshore wind

Appendix A: Atlantic Shores Offshore Wind Cumulative Photosimulations

BHB03: Holyoke Avenue, Beach Haven Borough, Ocean County, New Jersey

Existing Conditions (Panorama 1)

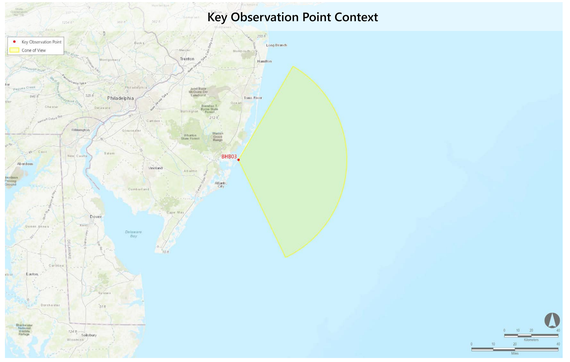
Simulation Size: 66" in width by 29.3" in height. Images should be viewed from a distance of 18 inches in order to obtain the proper perspective.

This box should measure 1" long on the printed panorama

Notes:

- Photosimulation Size: 66" in width by 29.3" in height. Images should be viewed from 18 inches in order to obtain the proper perspective. For on-screen viewing, user should zoom in until the 1-inch scale equals exactly one inch when measured on the screen.

Key Observation Point Context



Key Observation Point Location



MATCH LINE BHB03 PANO #2



ATLANTIC SHORES offshore wind

Appendix A: Atlantic Shores Offshore Wind Cumulative Photosimulations

BHB03: Holyoke Avenue, Beach Haven Borough, Ocean County, New Jersey

Photosimulation (Panorama 1): Scenario 1: 2023-2025 Project Construction (Ocean Wind, Empire Wind, Empire Wind II)

Simulation Size: 66" in width by 29.3" in height. Images should be viewed from a distance of 18 inches in order to obtain the proper perspective.

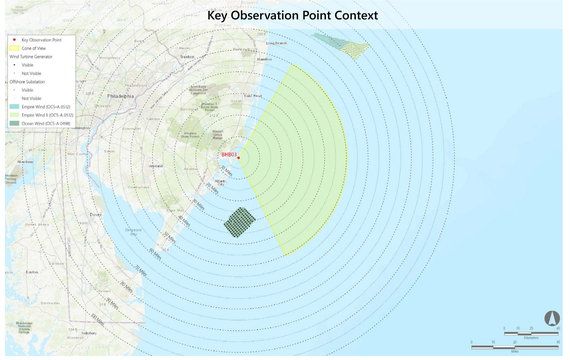
This box should measure 1" long on the printed panorama

Notes:

- Photosimulation Size: 66" in width by 29.3" in height. Images should be viewed from 18 inches in order to obtain the proper perspective. For on-screen viewing, user should zoom in until the 1-inch scale equals exactly one inch when measured on the screen.
- Offshore Substation location and dimensions are based on preliminary publicly available project data. Projects for which this data is not currently available, WTGs are used for all foundation positions. OSS positions and dimensions considered in this photosimulation are subject to potential modification.
- WTG positions in the photosimulations are based on a refraction value of 7/6 or an approximate 0.14 coefficient derived from observations of the constructed Block Island Wind Farm. This refraction coefficient may yield more conservative visibility results (i.e. greater turbine visibility) that the viewshed analysis results which use a refraction coefficient of 0.13.
- WTG tower, blades, and nacelle use the BOEM and FAA required color RAL 9010. The base and platform use RAL 1023 in accordance with USCG regulations.
- *The number of WTGs visible from the KOP was determined by human verified computer generated counts performed in the 3D camera views considering screening resulting from vegetation, structures, curvature of the earth and refraction. This count may vary from the actual number of WTGs visible in the respective views due to masking completed during post processing which may include people, waves, boats, or other minor obstructions that appear in the photograph. Additionally, the WTG counts assumed the WTG blades are in the upright position whereas the photosimulations assume a random rotation pattern. Considering the largest WTG in the cumulative array, this could account for up to 236 ft. (72 m) in lost maximum height depending on the rotation position.
- The cone of view indicated on the Key Observation Point Context map indicates the horizontal extent of view only and does not indicate the extent of WTG visibility.
- The resolution of the cumulative photosimulations balances the size and usability of the documents with the need for high resolution to see distant project components. Similarly to human vision, very distant turbines may appear blurry or difficult to decipher due to resolution limitations.
- The Key Observation Point Context map considers screening by curvature of the earth, viewer height, and turbine height. Landscape screening features are not considered. Therefore, in this view, the number of visible turbines depicted on the map may not match the table due to the presence of landscape screening features.

Project	Year of Development	Max Blade Tip Height (feet)	Potential Number of WTGs & OSSs Visible from KOP*	Total Number of WTGs & OSSs in Project	Theoretical Distance to Nearest Visible WTG (miles)	Theoretical Distance to Furthest Visible WTG (miles)
Ocean Wind (OCS-A 0498)	2024-2025	906	111	111	23.1	36.3
Empire Wind (OCS-A 0512)	2023-2027	951	0	72	Not Visible	Not Visible
Empire Wind II (OCS-A 0512)	2025-2027	951	0	104	Not Visible	Not Visible

Key Observation Point Context


Key Observation Point
Cone of View
Wind Turbine Generator
Visible
Not Visible
Offshore Substation
Visible
Not Visible
Empire Wind (OCS-A 0512)
Empire Wind II (OCS-A 0512)
Ocean Wind (OCS-A 0498)
BHB03
Philadelphia
Trenton
Atlantic City
Vineland
Millville
Bridgeton
Salisbury
Dover
Wilmington
Glassboro
Woodbury
Cherry Hill
Camden
Levittown
Long Branch
Asbury Park
Toms River
Lakewood
Hammonton
Egg Harbor City
Absecon
Ocean City
Cape May
Lewes
Rehoboth Beach
Milford
Seaford
Laurel
Georgetown
Millsboro
Selbyville
Berlin
Pocomoke City
Snow Hill
Crisfield
Princess Anne
Fruitland
Delmar
Federalsburg
Denton
Easton
Cambridge
Chestertown
Elkton
Newark
Middletown
Smyrna
Dover AFB
Milton
Lewes
Rehoboth Beach
Bridgeville
Seaford
Laurel
Delmar
Salisbury
Fruitland
Princess Anne
Crisfield
Pocomoke City
Snow Hill
Berlin
Ocean City
Selbyville
Millsboro
Georgetown
Milford
Dover
Dover AFB
Smyrna
Middletown
Newark
Elkton
Chestertown
Easton
Denton
Federalsburg
Cambridge
Absecon
Egg Harbor City
Hammonton
Millville
Bridgeton
Vineland
Glassboro
Woodbury
Cherry Hill
Camden
Levittown
Long Branch
Asbury Park
Toms River
Lakewood
Trenton
Atlantic City
Philadelphia
Wilmington
Salisbury
Ocean City
Cape May
Lewes
Rehoboth Beach
Seaford
Laurel
Delmar
Fruitland
Princess Anne
Crisfield
Pocomoke City
Snow Hill
Berlin

MATCH LINE BHB03 PANO #2



ATLANTIC SHORES offshore wind

Appendix A: Atlantic Shores Offshore Wind Cumulative Photosimulations

BHB03: Holyoke Avenue, Beach Haven Borough, Ocean County, New Jersey

Photosimulation (Panorama 1): Scenario 2: Atlantic Shores Construction (2025-2027) added to Scenario 1 (Ocean Wind, Empire Wind, Empire Wind II, Atlantic Shores South)

Simulation Size: 66° in width by 29.3° in height. Images should be viewed from a distance of 18 inches in order to obtain the proper perspective.

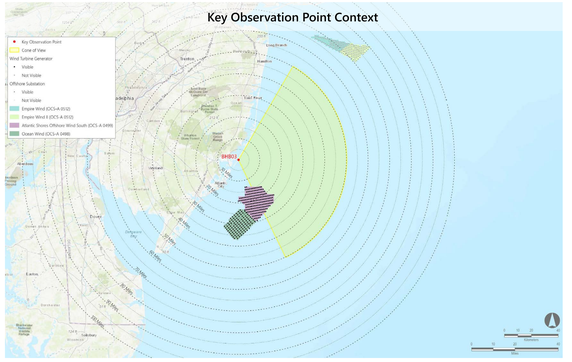
This box should measure 7" long on the printed panorama

Notes:

- Photosimulation Size: 66° in width by 29.3° in height. Images should be viewed from 18 inches in order to obtain the proper perspective. For on-screen viewing, user should zoom in until the 1-inch scale equals exactly one inch when measured on the screen.
- Offshore Substation location and dimensions are based on preliminary publicly available project data. Projects for which this data is not currently available, WTGs are used for all foundation positions. OSS positions and dimensions considered in this photosimulation are subject to potential modification.
- WTG positions in the photosimulations are based on a refraction value of 7/6 or an approximate 0.14 coefficient derived from observations of the constructed Block Island Wind Farm. This refraction coefficient may yield more conservative visibility results (i.e. greater turbine visibility) that the viewshed analysis results which use a refraction coefficient of 0.13.
- WTG tower, blades, and nacelle use the BOEM and FAA required color RAL 9010. The base and platform use RAL 1023 in accordance with USCG regulations.
- *The number of WTGs visible from the KOP was determined by human verified computer generated counts performed in the 3D camera views considering screening resulting from vegetation, structures, curvature of the earth and refraction. This count may vary from the actual number of WTGs visible in the respective views due to masking completed during post processing which may include people, waves, boats, or other minor obstructions that appear in the photograph. Additionally, the WTG counts assumed the WTG blades are in the upright position whereas the photosimulations assume a random rotation pattern. Considering the largest WTG in the cumulative array, this could account for up to 236 ft. (72 m) in lost maximum height depending on the rotation position.
- The cone of view indicated on the Key Observation Point Context map indicates the horizontal extent of view only and does not indicate the extent of WTG visibility.
- The resolution of the cumulative photosimulations balances the size and usability of the documents with the need for high resolution to see distant project components. Similarly to human vision, very distant turbines may appear blurry or difficult to decipher due to resolution limitations.
- The Key Observation Point Context map considers screening by curvature of the earth, viewer height, and turbine height. Landscape screening features are not considered. Therefore, in this view, the number of visible turbines depicted on the map may not match the table due to the presence of landscape screening features.

Project	Year of Development	Max Blade Tip Height (feet)	Potential Number of WTGs & OSSs Visible from KOP*	Total Number of WTGs & OSSs in Project	Theoretical Distance to Nearest Visible WTG (miles)	Theoretical Distance to Furthest Visible WTG (miles)
Atlantic Shores Offshore Wind South (OCS-A 0499)	2023-2025	1,047	205	205	13.0	29.3
Ocean Wind (OCS-A 0498)	2024-2025	906	111	111	23.1	36.3
Empire Wind (OCS-A 0512)	2023-2027	951	0	72	Not Visible	Not Visible
Empire Wind II (OCS-A 0512)	2025-2027	951	0	104	Not Visible	Not Visible

Key Observation Point Context



Key Observation Point Location



MATCH LINE BHB03 PANO #2



ATLANTIC SHORES offshore wind

Appendix A: Atlantic Shores Offshore Wind Cumulative Photosimulations

BHB03: Holyoke Avenue, Beach Haven Borough, Ocean County, New Jersey

Photosimulation (Panorama 1): Scenario 3: 2024-2030 Project construction added after the construction of Atlantic Shores South (Full Lease Build-out Including Atlantic Shores South)

Simulation Size: 66" in width by 29.3" in height. Images should be viewed from a distance of 18 inches in order to obtain the proper perspective.

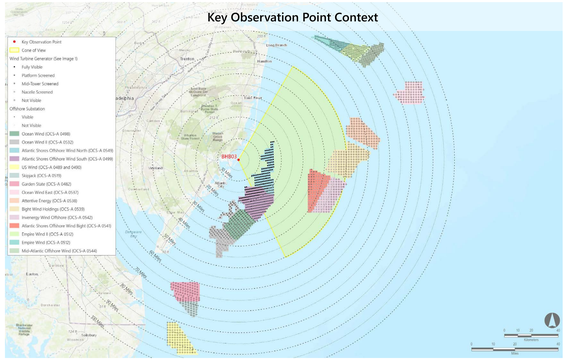
This box should measure 1" long on the printed panorama

Notes:

- Photosimulation Size: 66" in width by 29.3" in height. Images should be viewed from 18 inches in order to obtain the proper perspective. For on-screen viewing, user should zoom in until the 1-inch scale equals exactly one inch when measured on the screen.
- Offshore Substation location and dimensions are based on preliminary publicly available project data. Projects for which this data is not currently available, WTGs are used for all foundation positions. OSS positions and dimensions considered in this photosimulation are subject to potential modification.
- WTG positions in the photosimulations are based on a refraction value of 7/6 or an approximate 0.14 coefficient derived from observations of the constructed Block Island Wind Farm. This refraction coefficient may yield more conservative visibility results (i.e. greater turbine visibility) that the viewshed analysis results which use a refraction coefficient of 0.13.
- WTG tower, blades, and nacelle use the BOEM and FAA required color RAL 9010. The base and platform use RAL 1023 in accordance with USCG regulations.
- *The number of WTGs visible from the KOP was determined by human verified computer generated counts performed in the 3D camera views considering screening resulting from vegetation, structures, curvature of the earth and refraction. This count may vary from the actual number of WTGs visible in the respective views due to masking completed during post processing which may include people, waves, boats, or other minor obstructions that appear in the photograph. Additionally, the WTG counts assumed the WTG blades are in the upright position whereas the photosimulations assume a random rotation pattern. Considering the largest WTG in the cumulative array, this could account for up to 236 ft. (72 m) in lost maximum height depending on the rotation position.
- The cone of view indicated on the Key Observation Point Context map indicates the horizontal extent of view only and does not indicate the extent of WTG visibility.
- The resolution of the cumulative photosimulations balances the size and usability of the documents with the need for high resolution to see distant project components. Similarly to human vision, very distant turbines may appear blurry or difficult to decipher due to resolution limitations.
- The Key Observation Point Context map considers screening by curvature of the earth, viewer height, and turbine height. Landscape screening features are not considered. Therefore, in this view, the number of visible turbines depicted on the map may not match the table due to the presence of landscape screening features.

Project	Year of Development	Max Blade Tip Height (feet)	Potential Number of WTGs & OSSs Visible from KOP*	Total Number of WTGs & OSSs in Project	Theoretical Distance to Nearest Visible WTG (miles)	Theoretical Distance to Furthest Visible WTG (miles)
Atlantic Shores Offshore Wind South (OCS-A 0499)	2023-2025	1,047	205	205	13.0	29.3
Ocean Wind (OCS-A 0498)	2024-2025	906	111	111	23.1	36.3
Empire Wind (OCS-A 0512)	2023-2027	951	0	72	Not Visible	Not Visible
Empire Wind II (OCS-A 0512)	2025-2027	951	0	104	Not Visible	Not Visible
Skipjack (OCS-A 0519)	2024-2030	853	0	33	Not Visible	Not Visible
Garden State (OCS-A 0482)	2023-2030	853	0	80	Not Visible	Not Visible
US Wind (OCS-A 0489 and 0490)	2024	938	0	101	Not Visible	Not Visible
Atlantic Shores Offshore Wind North (OCS-A 0549)	2025-2030	1,047	164	164	9.6	22.1
Ocean Wind II (OCS-A 0532)	2026-2030	906	111	111	19.5	45.6
Mid-Atlantic Offshore Wind (OCS-A 0544)	by 2030	853	0	104	Not Visible	Not Visible
Ocean Wind East (OCS-A 0537)	by 2030	853	0	82	Not Visible	Not Visible
Attentive Energy (OCS-A 0538)	by 2030	853	0	101	Not Visible	Not Visible
Bight Wind Holdings (OCS-A 0539)	by 2030	853	32	148	40.8	45.5
Atlantic Shores Offshore Wind Bight (OCS-A 0541)	by 2030	853	95	95	33.2	42.6
Invenergy Wind Offshore (OCS-A 0542)	by 2030	853	51	99	41.3	45.5

Key Observation Point Context


Key Observation Point
Cone of View
Wind Turbine Generator (See Image 5)
Fully Visible
Platform Screened
Mid-Tower Screened
Nacelle Screened
Not Visible
Offshore Substation
Visible
Not Visible
Ocean Wind (OCS-A 0498)
Ocean Wind II (OCS-A 0532)
Atlantic Shores Offshore Wind North (OCS-A 0549)
Atlantic Shores Offshore Wind South (OCS-A 0499)
US Wind (OCS-A 0489 and 0490)
Skipjack (OCS-A 0519)
Garden State (OCS-A 0482)
Ocean Wind East (OCS-A 0537)
Attentive Energy (OCS-A 0538)
Bight Wind Holdings (OCS-A 0539)
Invenergy Wind Offshore (OCS-A 0542)
Atlantic Shores Offshore Wind Bight (OCS-A 0541)
Empire Wind II (OCS-A 0512)
Empire Wind (OCS-A 0512)
Mid-Atlantic Offshore Wind (OCS-A 0544)
BHB03
Long Beach
Tuckerton
Manahawkin
Barnegat
Ship Bottom
Beach Haven
Little Egg Harbor
Tuckerton
Mystic Island
Port Republic
Smithville
Absecon
Atlantic City
Egg Harbor City
Hammonton
Galloway
Pleasantville
Somers Point
Ventnor
Margate
Longport
Brigantine
Ocean City
Sea Isle City
Avalon
Stone Harbor
Wildwood
Cape May
Cape May Point
Lewes
Rehoboth Beach
Bethany Beach
Fenwick Island
Ocean View
Millville
Vineland
Bridgeton
Salem
Dover
Milford
Seaford
Laurel
Georgetown
Millsboro
Selbyville
Berlin
Snow Hill
Pocomoke City
Salisbury
Fruitland
Princess Anne
Crisfield
Ocean Pines
Chincoteague
Wallops Island
Accomack
Onancock
Onley
Parksley
Cape Charles
Eastville
Nassawadox
Exmore
Machipongo
Willis Wharf
Oyster
Cheriton
Bayside
Capeville
Belle Haven
Temperanceville
Wachapreague
Quinby
Hallwood
Modest Town
Melfa
Keller
Oak Hall
Greenbackville
Horntown
Atlantic
Tasley
Onley
Hacks Neck
Pungoteague
Locustville
Saxis
Tangier
Crisfield
Marion
Rhodesdale
Hurlock
Cambridge
Secretary
Vienna
Hebron
Fruitland
Salisbury
Delmar
Laurel
Seaford
Bridgeville
Greenwood
Federalsburg
Denton
Preston
Hillsboro
Ridgely
Greensboro
Henderson
Queen Anne
Chestertown
Rock Hall
Galena
Kennedyville
Millington
Betterton
Still Pond
Fairlee
Worton

MATCH LINE BHB03 PANO #2



ATLANTIC SHORES offshore wind

Appendix A: Atlantic Shores Offshore Wind Cumulative Photosimulations

BHB03: Holyoke Avenue, Beach Haven Borough, Ocean County, New Jersey

Photosimulation (Panorama 1): Scenario 4: Full buildout of all lease areas without Atlantic Shores South

Simulation Size: 66" in width by 29.3" in height. Images should be viewed from a distance of 18 inches in order to obtain the proper perspective.

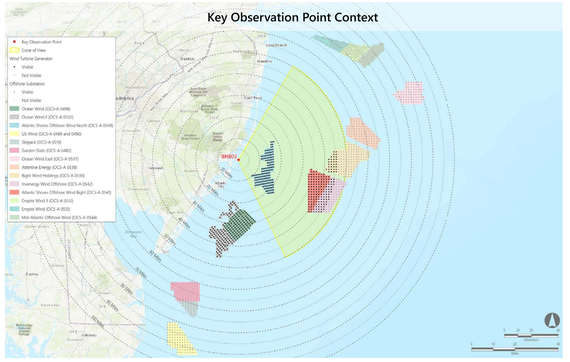
This box should measure 1" long on the printed panorama

Notes:

- Photosimulation Size: 66" in width by 29.3" in height. Images should be viewed from 18 inches in order to obtain the proper perspective. For on-screen viewing, user should zoom in until the 1-inch scale equals exactly one inch when measured on the screen.
- Offshore Substation location and dimensions are based on preliminary publicly available project data. Projects for which this data is not currently available, WTGs are used for all foundation positions. OSS positions and dimensions considered in this photosimulation are subject to potential modification.
- WTG positions in the photosimulations are based on a refraction value of 7/6 or an approximate 0.14 coefficient derived from observations of the constructed Block Island Wind Farm. This refraction coefficient may yield more conservative visibility results (i.e. greater turbine visibility) that the viewshed analysis results which use a refraction coefficient of 0.13.
- WTG tower, blades, and nacelle use the BOEM and FAA required color RAL 9010. The base and platform use RAL 1023 in accordance with USCG regulations.
- *The number of WTGs visible from the KOP was determined by human verified computer generated counts performed in the 3D camera views considering screening resulting from vegetation, structures, curvature of the earth and refraction. This count may vary from the actual number of WTGs visible in the respective views due to masking completed during post processing which may include people, waves, boats, or other minor obstructions that appear in the photograph. Additionally, the WTG counts assumed the WTG blades are in the upright position whereas the photosimulations assume a random rotation pattern. Considering the largest WTG in the cumulative array, this could account for up to 236 ft. (72 m) in lost maximum height depending on the rotation position.
- The cone of view indicated on the Key Observation Point Context map indicates the horizontal extent of view only and does not indicate the extent of WTG visibility.
- The resolution of the cumulative photosimulations balances the size and usability of the documents with the need for high resolution to see distant project components. Similarly to human vision, very distant turbines may appear blurry or difficult to decipher due to resolution limitations.
- The Key Observation Point Context map considers screening by curvature of the earth, viewer height, and turbine height. Landscape screening features are not considered. Therefore, in this view, the number of visible turbines depicted on the map may not match the table due to the presence of landscape screening features.

Project	Year of Development	Max Blade Tip Height (feet)	Potential Number of WTGs & OSSs Visible from KOP*	Total Number of WTGs & OSSs in Project	Theoretical Distance to Nearest Visible WTG (miles)	Theoretical Distance to Furthest Visible WTG (miles)
Ocean Wind (OCS-A 0498)	2024-2025	906	111	111	23.1	36.3
Empire Wind (OCS-A 0512)	2023-2027	951	0	72	Not Visible	Not Visible
Empire Wind II (OCS-A 0512)	2025-2027	951	0	104	Not Visible	Not Visible
Skipjack (OCS-A 0519)	2024-2030	853	0	33	Not Visible	Not Visible
Garden State (OCS-A 0482)	2023-2030	853	0	80	Not Visible	Not Visible
US Wind (OCS-A 0489 and 0490)	2024	938	0	101	Not Visible	Not Visible
Atlantic Shores Offshore Wind North (OCS-A 0549)	2025-2030	1,047	164	164	9.6	22.1
Ocean Wind II (OCS-A 0532)	2026-2030	906	111	111	19.5	45.6
Mid-Atlantic Offshore Wind (OCS-A 0544)	by 2030	853	0	104	Not Visible	Not Visible
Ocean Wind East (OCS-A 0537)	by 2030	853	0	82	Not Visible	Not Visible
Attentive Energy (OCS-A 0538)	by 2030	853	0	101	Not Visible	Not Visible
Bight Wind Holdings (OCS-A 0539)	by 2030	853	32	148	40.8	45.5
Atlantic Shores Offshore Wind Bight (OCS-A 0541)	by 2030	853	95	95	33.2	42.6
Invenergy Wind Offshore (OCS-A 0542)	by 2030	853	51	99	41.3	45.5

Key Observation Point Context



Key Observation Point Location



MATCH LINE BHB03 PANO #2



ATLANTIC SHORES offshore wind

Appendix A: Atlantic Shores Offshore Wind Cumulative Photosimulations

BHB03: Holyoke Avenue, Beach Haven Borough, Ocean County, New Jersey

Photosimulation (Panorama 1): Scenario 5: Atlantic Shores South without the construction of other foreseeable planned activities

Simulation Size: 66" in width by 29.3" in height. Images should be viewed from a distance of 18 inches in order to obtain the proper perspective.

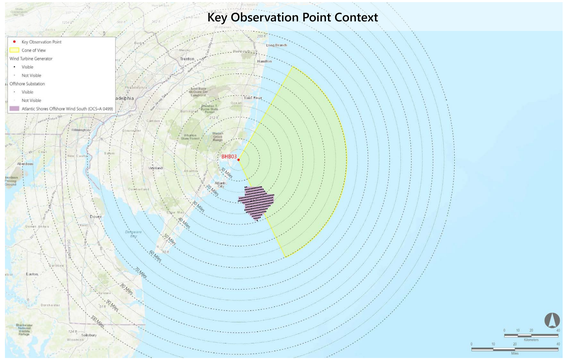
This box should measure 1" long on the printed panorama

Notes:

- Photosimulation Size: 66" in width by 29.3" in height. Images should be viewed from 18 inches in order to obtain the proper perspective. For on-screen viewing, user should zoom in until the 1-inch scale equals exactly one inch when measured on the screen.
- Offshore Substation location and dimensions are based on preliminary publicly available project data. Projects for which this data is not currently available, WTGs are used for all foundation positions. OSS positions and dimensions considered in this photosimulation are subject to potential modification.
- WTG positions in the photosimulations are based on a refraction value of 7/6 or an approximate 0.14 coefficient derived from observations of the constructed Block Island Wind Farm. This refraction coefficient may yield more conservative visibility results (i.e. greater turbine visibility) that the viewshed analysis results which use a refraction coefficient of 0.13.
- WTG tower, blades, and nacelle use the BOEM and FAA required color RAL 9010. The base and platform use RAL 1023 in accordance with USCG regulations.
- *The number of WTGs visible from the KOP was determined by human verified computer generated counts performed in the 3D camera views considering screening resulting from vegetation, structures, curvature of the earth and refraction. This count may vary from the actual number of WTGs visible in the respective views due to masking completed during post processing which may include people, waves, boats, or other minor obstructions that appear in the photograph. Additionally, the WTG counts assumed the WTG blades are in the upright position whereas the photosimulations assume a random rotation pattern. Considering the largest WTG in the cumulative array, this could account for up to 236 ft. (72 m) in lost maximum height depending on the rotation position.
- The cone of view indicated on the Key Observation Point Context map indicates the horizontal extent of view only and does not indicate the extent of WTG visibility.
- The resolution of the cumulative photosimulations balances the size and usability of the documents with the need for high resolution to see distant project components. Similarly to human vision, very distant turbines may appear blurry or difficult to decipher due to resolution limitations.
- The Key Observation Point Context map considers screening by curvature of the earth, viewer height, and turbine height. Landscape screening features are not considered. Therefore, in this view, the number of visible turbines depicted on the map may not match the table due to the presence of landscape screening features.

Project	Year of Development	Max Blade Tip Height (feet)	Potential Number of WTGs & OSSs Visible from KOP*	Total Number of WTGs & OSSs in Project	Theoretical Distance to Nearest Visible WTG (miles)	Theoretical Distance to Furthest Visible WTG (miles)
Atlantic Shores Offshore Wind South (OCS-A 0499)	2023-2025	1,047	205	205	13.0	29.3

Key Observation Point Context



Key Observation Point Location



BHB03: Holyoke Avenue, Beach Haven Borough, Ocean County, New Jersey

Environmental Data

Date Taken: 03/02/2022
Time: 7:35 AM
Temperature: 37°F
Humidity: 82%
Visibility*: 10+ miles
Wind Direction: Northwest
Wind Speed: 3 mph
Conditions Observed: Fair

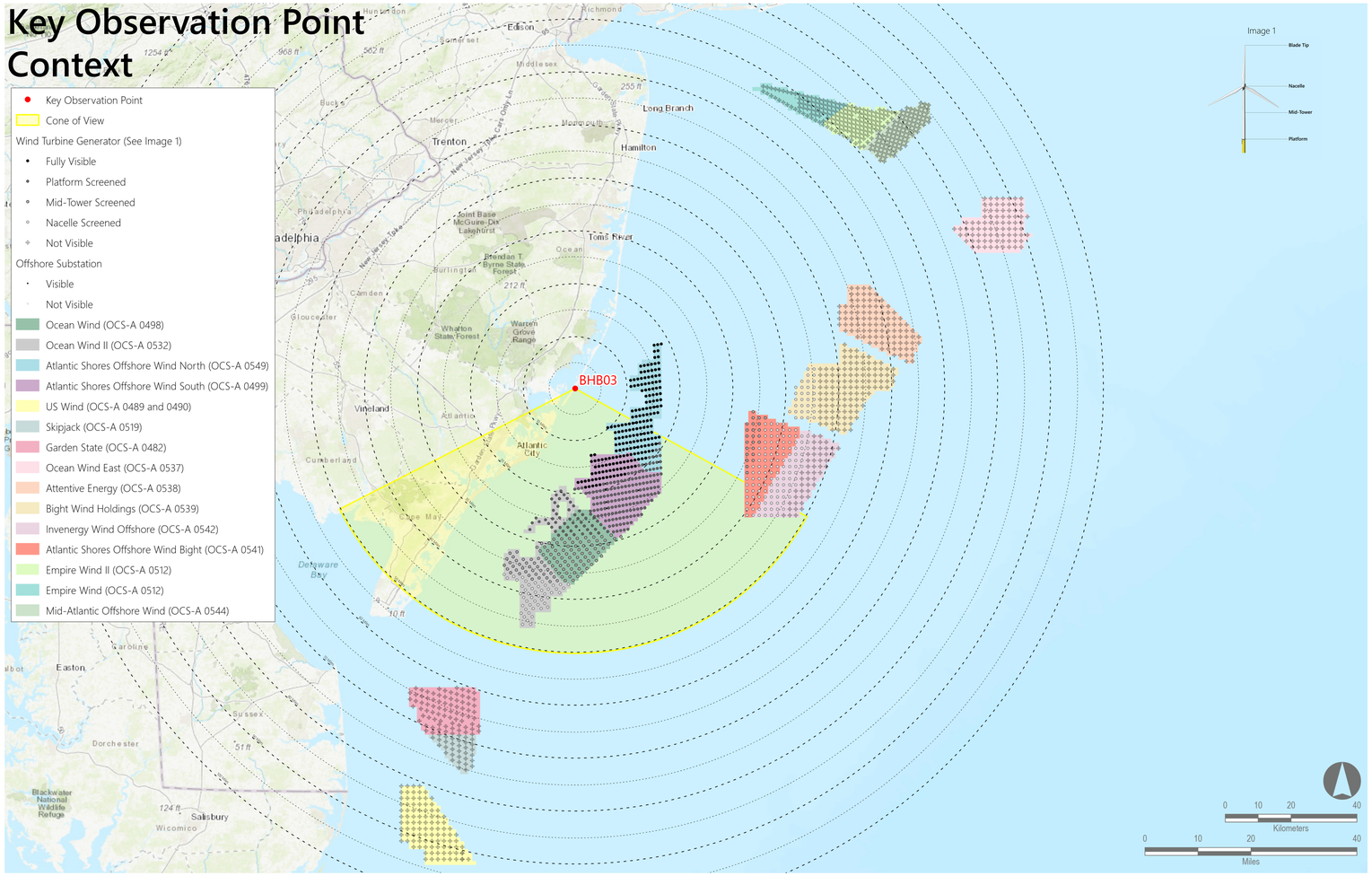
Camera Information
Camera: Canon EOS 5D Mark IV
Resolution: 30.4 Megapixels
Lens Focal Length: 50 mm
Camera Height: 26.85 feet AMSL

Key Observation Point Information

County: Ocean
Town: Beach Haven Borough
State: New Jersey
Location: Holyoke Avenue, Beach Haven
Latitude, Longitude: 39.55262°N, 74.24422°W
Direction of View (Center): South (181.4°)
Field of View: 124° x 55°

Visual Resources
Character Area: Oceanfront Residential, Seascape (SCA)
User Group: Residents/Tourists
Visually Sensitive Resource: Beach Haven Borough Public Beach

Key Observation Point Context



Reasonably Foreseeable Projects Represented in Photosimulation

		Project	Year of Development	Max Blade Tip Height (feet)	Potential Number of WTGs & OSSs Visible from KOP**	Total Number of WTGs & OSSs in Project	Theoretical Distance to Nearest Visible WTG (miles)	Theoretical Distance to Furthest Visible WTG (miles)
Scenario 5	Scenario 2	Atlantic Shores Offshore Wind South (OCS-A 0499)	2025-2027	1,047	205	205	13.0	29.3
Scenario 4	Scenario 1	Ocean Wind (OCS-A 0498)	2023-2025	906	111	111	23.1	36.3
		Empire Wind (OCS-A 0512)	2024-2025	951	0	72	Not Visible	Not Visible
		Empire Wind II (OCS-A 0512)	2023-2027	951	0	104	Not Visible	Not Visible
	Scenario 3	Skipjack (OCS-A 0519)	2024-2030	853	0	33	Not Visible	Not Visible
		Garden State (OCS-A 0482)	2023-2030	853	0	80	Not Visible	Not Visible
		US Wind (OCS-A 0489 and 0490)	2024	938	0	101	Not Visible	Not Visible
		Atlantic Shores Offshore Wind North (OCS-A 0549)	2025-2030	1,047	164	164	9.6	22.1
		Ocean Wind II (OCS-A 0532)	2026-2030	906	111	111	19.5	45.6
		Mid-Atlantic Offshore Wind (OCS-A 0544)	by 2030	853	0	104	Not Visible	Not Visible
		Ocean Wind East (OCS-A 0537)	by 2030	853	0	82	Not Visible	Not Visible
		Attentive Energy (OCS-A 0538)	by 2030	853	0	101	Not Visible	Not Visible
		Bight Wind Holdings (OCS-A 0539)	by 2030	853	32	148	40.8	45.5
		Atlantic Shores Offshore Wind Bight (OCS-A 0541)	by 2030	853	95	95	33.2	42.6
		Invenergy Wind Offshore (OCS-A 0542)	by 2030	853	51	99	41.3	45.5

Notes:

- Offshore Substation location and dimensions are based on preliminary publicly available project data. Projects for which this data is not currently available, WTGs are used for all foundation positions. OSS positions and dimensions considered in this photosimulation are subject to potential modification.
- *Historical meteorological data predicts visibility within a limit of 10 statute miles. However, visibility may extend beyond this distance. The photosimulations assume visibility extends to the limit of physical visibility (including a standard refraction index).
- WTG positions in the photosimulations are based on a refraction value of 7/6 or an approximate 0.14 coefficient derived from observations of the constructed Block Island Wind Farm. This refraction coefficient may yield more conservative visibility results (i.e. greater turbine visibility) that the viewshed analysis results which use a refraction coefficient of 0.13.
- **The number of WTGs visible from the KOP was determined by human verified computer generated counts performed in the 3D camera views considering screening resulting from vegetation, structures, curvature of the earth and refraction. This count may vary from the actual number of WTGs visible in the respective views due to masking completed during post processing which may include people, waves, boats, or other minor obstructions that appear in the photograph. Additionally, the WTG counts assumed the WTG blades are in the upright position whereas the photosimulations assume a random rotation pattern. Considering the largest WTG in the cumulative array, this could account for up to 236 ft. (72 m) in lost maximum height depending on the rotation position.
- The cone of view indicated on the Key Observation Point Context map indicates the horizontal extent of view only and does not indicate the extent of WTG visibility.
- The Key Observation Point Context map considers screening by curvature of the earth, viewer height, and turbine height. Landscape screening features are not considered. Therefore, in this view, the number of visible turbines depicted on the map may not match the table due to the presence of landscape screening features.

ATLANTIC SHORES offshore wind

MATCH LINE BHB03 PANO #1



MATCH LINE BHB03 PANO #2

ATLANTIC SHORES offshore wind

Appendix A: Atlantic Shores Offshore Wind Cumulative Photosimulations

BHB03: Holyoke Avenue, Beach Haven Borough, Ocean County, New Jersey

Existing Conditions (Panorama 2)

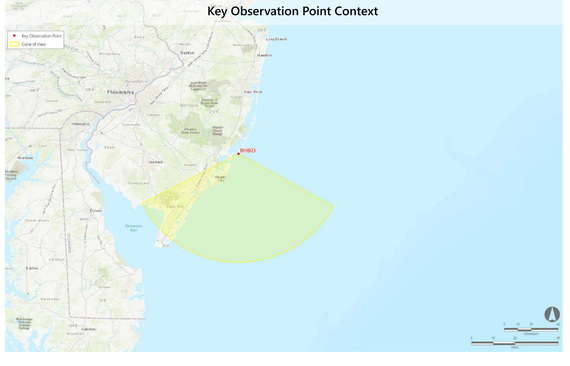
Notes:

- Photosimulation Size: 66" in width by 29.3" in height. Images should be viewed from 18 inches in order to obtain the proper perspective. For on-screen viewing, user should zoom in until the 1-inch scale equals exactly one inch when measured on the screen.

Simulation Size: 66" in width by 29.3" in height. Images should be viewed from a distance of 18 inches in order to obtain the proper perspective.

This box should be exactly 1" long on the printed panorama

Key Observation Point Context



Key Observation Point Location



MATCH LINE BHB03 PANO #1



MATCH LINE BHB03 PANO #2

ATLANTIC SHORES offshore wind

Appendix A: Atlantic Shores Offshore Wind Cumulative Photosimulations

BHB03: Holyoke Avenue, Beach Haven Borough, Ocean County, New Jersey

Photosimulation (Panorama 2): Scenario 1: 2023-2025 Project Construction (Ocean Wind, Empire Wind, Empire Wind II)

Simulation Size: 66° in width by 29.3° in height. Images should be viewed from a distance of 18 inches in order to obtain the proper perspective.

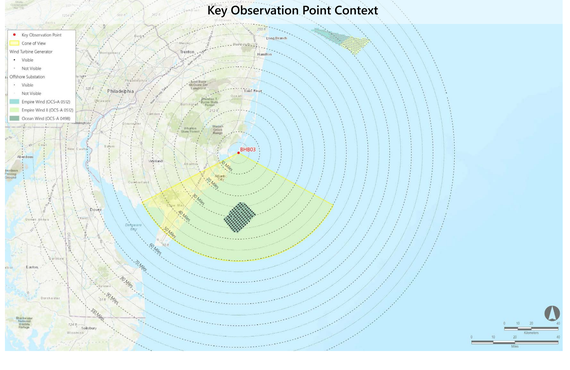
This box should be exactly 1" long on the printed panorama

Notes:

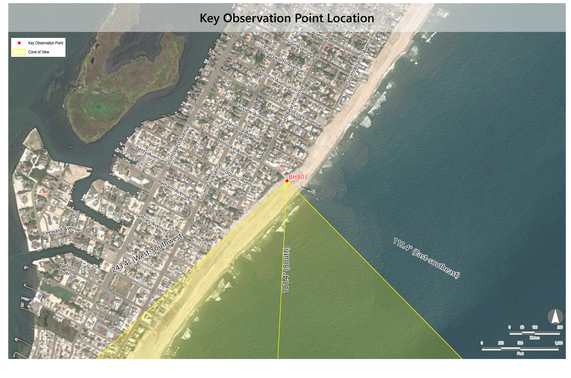
- Photosimulation Size: 66° in width by 29.3° in height. Images should be viewed from 18 inches in order to obtain the proper perspective. For on-screen viewing, user should zoom in until the 1-inch scale equals exactly one inch when measured on the screen.
- Offshore Substation location and dimensions are based on preliminary publicly available project data. Projects for which this data is not currently available, WTGs are used for all foundation positions. OSS positions and dimensions considered in this photosimulation are subject to potential modification.
- WTG positions in the photosimulations are based on a refraction value of 7/6 or an approximate 0.14 coefficient derived from observations of the constructed Block Island Wind Farm. This refraction coefficient may yield more conservative visibility results (i.e. greater turbine visibility) that the viewshed analysis results which use a refraction coefficient of 0.13.
- WTG tower, blades, and nacelle use the BOEM and FAA required color RAL 9010. The base and platform use RAL 1023 in accordance with USCG regulations.
- *The number of WTGs visible from the KOP was determined by human verified computer generated counts performed in the 3D camera views considering screening resulting from vegetation, structures, curvature of the earth and refraction. This count may vary from the actual number of WTGs visible in the respective views due to masking completed during post processing which may include people, waves, boats, or other minor obstructions that appear in the photograph. Additionally, the WTG counts assumed the WTG blades are in the upright position whereas the photosimulations assume a random rotation pattern. Considering the largest WTG in the cumulative array, this could account for up to 236 ft. (72 m) in lost maximum height depending on the rotation position.
- The cone of view indicated on the Key Observation Point Context map indicates the horizontal extent of view only and does not indicate the extent of WTG visibility.
- The resolution of the cumulative photosimulations balances the size and usability of the documents with the need for high resolution to see distant project components. Similarly to human vision, very distant turbines may appear blurry or difficult to decipher due to resolution limitations.
- The Key Observation Point Context map considers screening by curvature of the earth, viewer height, and turbine height. Landscape screening features are not considered. Therefore, in this view, the number of visible turbines depicted on the map may not match the table due to the presence of landscape screening features.

Project	Year of Development	Max Blade Tip Height (feet)	Potential Number of WTGs & OSSs Visible from KOP*	Total Number of WTGs & OSSs in Project	Theoretical Distance to Nearest Visible WTG (miles)	Theoretical Distance to Furthest Visible WTG (miles)
Ocean Wind (OCS-A 0498)	2024-2025	906	111	111	23.1	36.3
Empire Wind (OCS-A 0512)	2023-2027	951	0	72	Not Visible	Not Visible
Empire Wind II (OCS-A 0512)	2025-2027	951	0	104	Not Visible	Not Visible

Key Observation Point Context



Key Observation Point Location



MATCH LINE BHB03 PANO #1



MATCH LINE BHB03 PANO #2

ATLANTIC SHORES offshore wind

Appendix A: Atlantic Shores Offshore Wind Cumulative Photosimulations

BHB03: Holyoke Avenue, Beach Haven Borough, Ocean County, New Jersey

Photosimulation (Panorama 2): Scenario 2: Atlantic Shores Construction (2025-2027) added to Scenario 1 (Ocean Wind, Empire Wind, Empire Wind II, Atlantic Shores South)

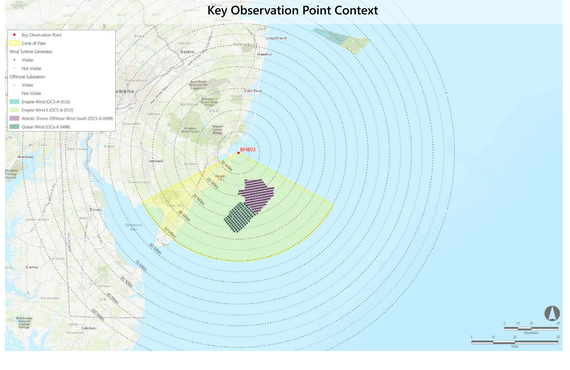
Simulation Size: 66" in width by 29.3" in height. Images should be viewed from a distance of 18 inches in order to obtain the proper perspective.

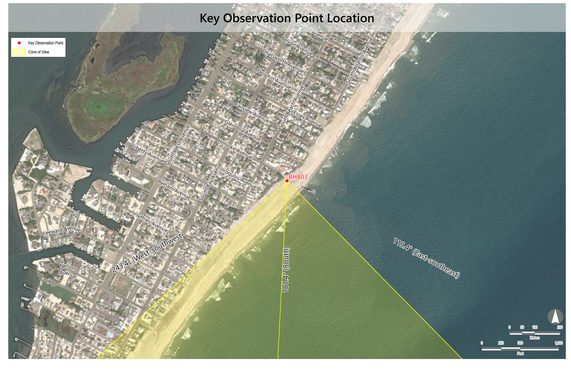
This box should be exactly 1" long on the printed panorama

Notes:

- Photosimulation Size: 66" in width by 29.3" in height. Images should be viewed from 18 inches in order to obtain the proper perspective. For on-screen viewing, user should zoom in until the 1-inch scale equals exactly one inch when measured on the screen.
- Offshore Substation location and dimensions are based on preliminary publicly available project data. Projects for which this data is not currently available, WTGs are used for all foundation positions. OSS positions and dimensions considered in this photosimulation are subject to potential modification.
- WTG positions in the photosimulations are based on a refraction value of 7/6 or an approximate 0.14 coefficient derived from observations of the constructed Block Island Wind Farm. This refraction coefficient may yield more conservative visibility results (i.e. greater turbine visibility) that the viewshed analysis results which use a refraction coefficient of 0.13.
- WTG tower, blades, and nacelle use the BOEM and FAA required color RAL 9010. The base and platform use RAL 1023 in accordance with USCG regulations.
- *The number of WTGs visible from the KOP was determined by human verified computer generated counts performed in the 3D camera views considering screening resulting from vegetation, structures, curvature of the earth and refraction. This count may vary from the actual number of WTGs visible in the respective views due to masking completed during post processing which may include people, waves, boats, or other minor obstructions that appear in the photograph. Additionally, the WTG counts assumed the WTG blades are in the upright position whereas the photosimulations assume a random rotation pattern. Considering the largest WTG in the cumulative array, this could account for up to 236 ft. (72 m) in lost maximum height depending on the rotation position.
- The cone of view indicated on the Key Observation Point Context map indicates the horizontal extent of view only and does not indicate the extent of WTG visibility.
- The resolution of the cumulative photosimulations balances the size and usability of the documents with the need for high resolution to see distant project components. Similarly to human vision, very distant turbines may appear blurry or difficult to decipher due to resolution limitations.
- The Key Observation Point Context map considers screening by curvature of the earth, viewer height, and turbine height. Landscape screening features are not considered. Therefore, in this view, the number of visible turbines depicted on the map may not match the table due to the presence of landscape screening features.

Project	Year of Development	Max Blade Tip Height (feet)	Potential Number of WTGs & OSSs Visible from KOP*	Total Number of WTGs & OSSs in Project	Theoretical Distance to Nearest Visible WTG (miles)	Theoretical Distance to Furthest Visible WTG (miles)
Atlantic Shores Offshore Wind South (OCS-A 0499)	2023-2025	1,047	205	205	13.0	29.3
Ocean Wind (OCS-A 0498)	2024-2025	906	111	111	23.1	36.3
Empire Wind (OCS-A 0512)	2023-2027	951	0	72	Not Visible	Not Visible
Empire Wind II (OCS-A 0512)	2025-2027	951	0	104	Not Visible	Not Visible





MATCH LINE BHB03 PANO #1



ATLANTIC SHORES offshore wind

Appendix A: Atlantic Shores Offshore Wind Cumulative Photosimulations

BHB03: Holyoke Avenue, Beach Haven Borough, Ocean County, New Jersey

Photosimulation (Panorama 2): Scenario 3: 2024-2030 Project construction added after the construction of Atlantic Shores South (Full Lease Build-out Including Atlantic Shores South)

Simulation Size: 66" in width by 29.3" in height. Images should be viewed from a distance of 18 inches in order to obtain the proper perspective.

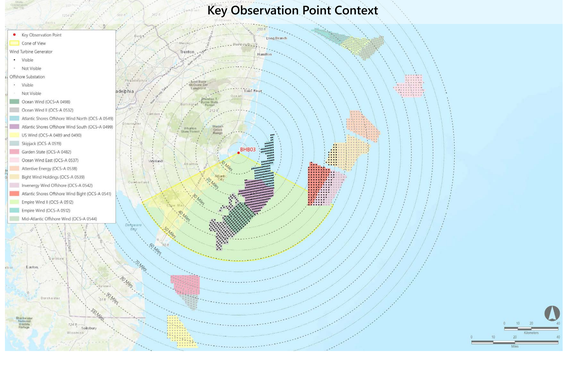
This box should be exactly 1" long on the printed panorama

Notes:

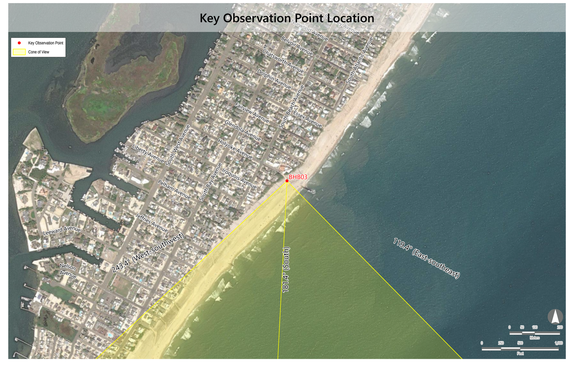
- Photosimulation Size: 66" in width by 29.3" in height. Images should be viewed from 18 inches in order to obtain the proper perspective. For on-screen viewing, user should zoom in until the 1-inch scale equals exactly one inch when measured on the screen.
- Offshore Substation location and dimensions are based on preliminary publicly available project data. Projects for which this data is not currently available, WTGs are used for all foundation positions. OSS positions and dimensions considered in this photosimulation are subject to potential modification.
- WTG positions in the photosimulations are based on a refraction value of 7/6 or an approximate 0.14 coefficient derived from observations of the constructed Block Island Wind Farm. This refraction coefficient may yield more conservative visibility results (i.e. greater turbine visibility) that the viewshed analysis results which use a refraction coefficient of 0.13.
- WTG tower, blades, and nacelle use the BOEM and FAA required color RAL 9010. The base and platform use RAL 1023 in accordance with USCG regulations.
- *The number of WTGs visible from the KOP was determined by human verified computer generated counts performed in the 3D camera views considering screening resulting from vegetation, structures, curvature of the earth and refraction. This count may vary from the actual number of WTGs visible in the respective views due to masking completed during post processing which may include people, waves, boats, or other minor obstructions that appear in the photograph. Additionally, the WTG counts assumed the WTG blades are in the upright position whereas the photosimulations assume a random rotation pattern. Considering the largest WTG in the cumulative array, this could account for up to 236 ft. (72 m) in lost maximum height depending on the rotation position.
- The cone of view indicated on the Key Observation Point Context map indicates the horizontal extent of view only and does not indicate the extent of WTG visibility.
- The resolution of the cumulative photosimulations balances the size and usability of the documents with the need for high resolution to see distant project components. Similarly to human vision, very distant turbines may appear blurry or difficult to decipher due to resolution limitations.
- The Key Observation Point Context map considers screening by curvature of the earth, viewer height, and turbine height. Landscape screening features are not considered. Therefore, in this view, the number of visible turbines depicted on the map may not match the table due to the presence of landscape screening features.

Project	Year of Development	Max Blade Tip Height (feet)	Potential Number of WTGs & OSSs Visible from KOP*	Total Number of WTGs & OSSs in Project	Theoretical Distance to Nearest Visible WTG (miles)	Theoretical Distance to Furthest Visible WTG (miles)
Atlantic Shores Offshore Wind South (OCS-A 0499)	2023-2025	1,047	205	205	13.0	29.3
Ocean Wind (OCS-A 0498)	2024-2025	906	111	111	23.1	36.3
Empire Wind (OCS-A 0512)	2023-2027	951	0	72	Not Visible	Not Visible
Empire Wind II (OCS-A 0512)	2025-2027	951	0	104	Not Visible	Not Visible
Skipjack (OCS-A 0519)	2024-2030	853	0	33	Not Visible	Not Visible
Garden State (OCS-A 0482)	2023-2030	853	0	80	Not Visible	Not Visible
US Wind (OCS-A 0489 and 0490)	2024	938	0	101	Not Visible	Not Visible
Atlantic Shores Offshore Wind North (OCS-A 0549)	2025-2030	1,047	164	164	9.6	22.1
Ocean Wind II (OCS-A 0532)	2026-2030	906	111	111	19.5	45.6
Mid-Atlantic Offshore Wind (OCS-A 0544)	by 2030	853	0	104	Not Visible	Not Visible
Ocean Wind East (OCS-A 0537)	by 2030	853	0	82	Not Visible	Not Visible
Attentive Energy (OCS-A 0538)	by 2030	853	0	101	Not Visible	Not Visible
Bight Wind Holdings (OCS-A 0539)	by 2030	853	32	148	40.8	45.5
Atlantic Shores Offshore Wind Bight (OCS-A 0541)	by 2030	853	95	95	33.2	42.6
Invenergy Wind Offshore (OCS-A 0542)	by 2030	853	51	99	41.3	45.5

Key Observation Point Context



Key Observation Point Location



MATCH LINE BHB03 PANO #1



MATCH LINE BHB03 PANO #2

ATLANTIC SHORES offshore wind

Appendix A: Atlantic Shores Offshore Wind Cumulative Photosimulations

BHB03: Holyoke Avenue, Beach Haven Borough, Ocean County, New Jersey

Photosimulation (Panorama 2): Scenario 4: Full buildout of all lease areas without Atlantic Shores South

Simulation Size: 66" in width by 29.3" in height. Images should be viewed from a distance of 18 inches in order to obtain the proper perspective.

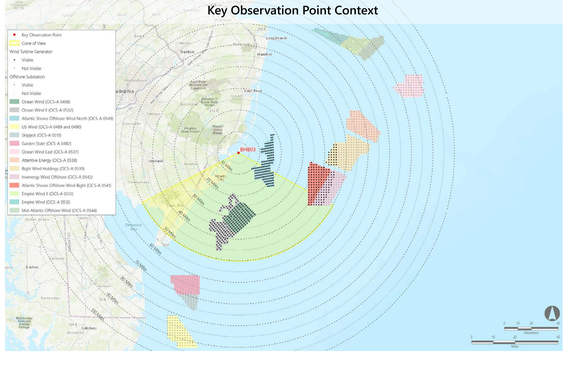
This box should be exactly 1" long on the printed panorama

Notes:

- Photosimulation Size: 66" in width by 29.3" in height. Images should be viewed from 18 inches in order to obtain the proper perspective. For on-screen viewing, user should zoom in until the 1-inch scale equals exactly one inch when measured on the screen.
- Offshore Substation location and dimensions are based on preliminary publicly available project data. Projects for which this data is not currently available, WTGs are used for all foundation positions. OSS positions and dimensions considered in this photosimulation are subject to potential modification.
- WTG positions in the photosimulations are based on a refraction value of 7/6 or an approximate 0.14 coefficient derived from observations of the constructed Block Island Wind Farm. This refraction coefficient may yield more conservative visibility results (i.e. greater turbine visibility) that the viewshed analysis results which use a refraction coefficient of 0.13.
- WTG tower, blades, and nacelle use the BOEM and FAA required color RAL 9010. The base and platform use RAL 1023 in accordance with USCG regulations.
- *The number of WTGs visible from the KOP was determined by human verified computer generated counts performed in the 3D camera views considering screening resulting from vegetation, structures, curvature of the earth and refraction. This count may vary from the actual number of WTGs visible in the respective views due to masking completed during post processing which may include people, waves, boats, or other minor obstructions that appear in the photograph. Additionally, the WTG counts assumed the WTG blades are in the upright position whereas the photosimulations assume a random rotation pattern. Considering the largest WTG in the cumulative array, this could account for up to 236 ft. (72 m) in lost maximum height depending on the rotation position.
- The cone of view indicated on the Key Observation Point Context map indicates the horizontal extent of view only and does not indicate the extent of WTG visibility.
- The resolution of the cumulative photosimulations balances the size and usability of the documents with the need for high resolution to see distant project components. Similarly to human vision, very distant turbines may appear blurry or difficult to decipher due to resolution limitations.
- The Key Observation Point Context map considers screening by curvature of the earth, viewer height, and turbine height. Landscape screening features are not considered. Therefore, in this view, the number of visible turbines depicted on the map may not match the table due to the presence of landscape screening features.

Project	Year of Development	Max Blade Tip Height (feet)	Potential Number of WTGs & OSSs Visible from KOP*	Total Number of WTGs & OSSs in Project	Theoretical Distance to Nearest Visible WTG (miles)	Theoretical Distance to Furthest Visible WTG (miles)
Ocean Wind (OCS-A 0498)	2024-2025	906	111	111	23.1	36.3
Empire Wind (OCS-A 0512)	2023-2027	951	0	72	Not Visible	Not Visible
Empire Wind II (OCS-A 0512)	2025-2027	951	0	104	Not Visible	Not Visible
Skipjack (OCS-A 0519)	2024-2030	853	0	33	Not Visible	Not Visible
Garden State (OCS-A 0482)	2023-2030	853	0	80	Not Visible	Not Visible
US Wind (OCS-A 0489 and 0490)	2024	938	0	101	Not Visible	Not Visible
Atlantic Shores Offshore Wind North (OCS-A 0549)	2025-2030	1,047	164	164	9.6	22.1
Ocean Wind II (OCS-A 0532)	2026-2030	906	111	111	19.5	45.6
Mid-Atlantic Offshore Wind (OCS-A 0544)	by 2030	853	0	104	Not Visible	Not Visible
Ocean Wind East (OCS-A 0537)	by 2030	853	0	82	Not Visible	Not Visible
Attentive Energy (OCS-A 0538)	by 2030	853	0	101	Not Visible	Not Visible
Bight Wind Holdings (OCS-A 0539)	by 2030	853	32	148	40.8	45.5
Atlantic Shores Offshore Wind Bight (OCS-A 0541)	by 2030	853	95	95	33.2	42.6
Invenergy Wind Offshore (OCS-A 0542)	by 2030	853	51	99	41.3	45.5

Key Observation Point Context


Key Observation Point
Cone of View
Wind Turbine Generator
Visible
Not Visible
Offshore Substation
Visible
Not Visible
Ocean Wind (OCS-A 0498)
Ocean Wind II (OCS-A 0532)
Atlantic Shores Offshore Wind North (OCS-A 0549)
US Wind (OCS-A 0489 and 0490)
Skipjack (OCS-A 0519)
Garden State (OCS-A 0482)
Ocean Wind East (OCS-A 0537)
Attentive Energy (OCS-A 0538)
Bight Wind Holdings (OCS-A 0539)
Invenergy Wind Offshore (OCS-A 0542)
Atlantic Shores Offshore Wind Bight (OCS-A 0541)
Empire Wind II (OCS-A 0512)
Empire Wind (OCS-A 0512)
Mid-Atlantic Offshore Wind (OCS-A 0544)
BHB03
Barnegat
Manahawkin
Long Beach
Ship Bottom
Beach Haven
Tuckerton
Little Egg Harbor
Absecon
Atlantic City
Egg Harbor City
Hammonton
Pleasantville
Ventnor City
Margate City
Longport
Somers Point
Linwood
Northfield
Galloway
Hamilton
Mullica
Estell Manor
Weymouth
Port Republic
Folsom
Buena
Egg Harbor
Absecon
Atlantic
Cape May
Lower
Upper
Middle
Woodbine
Dennis
Ocean City
Sea Isle City
Avalon
Stone Harbor
North Wildwood
Wildwood
Wildwood Crest
Cape May
Cape May Point
West Cape May
Lower Township
Middle Township
Upper Township

MATCH LINE BHB03 PANO #1



MATCH LINE BHB03 PANO #2

ATLANTIC SHORES offshore wind

Appendix A: Atlantic Shores Offshore Wind Cumulative Photosimulations

BHB03: Holyoke Avenue, Beach Haven Borough, Ocean County, New Jersey

Photosimulation (Panorama 2): Scenario 5: Atlantic Shores South without the construction of other foreseeable planned activities

Simulation Size: 66" in width by 29.3" in height. Images should be viewed from a distance of 18 inches in order to obtain the proper perspective.

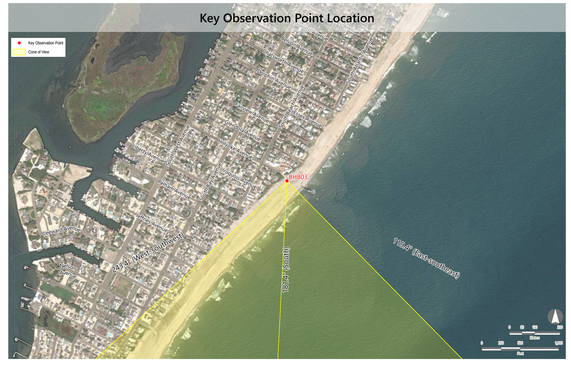
This box should be exactly 1" long on the printed panorama

Notes:

- Photosimulation Size: 66" in width by 29.3" in height. Images should be viewed from 18 inches in order to obtain the proper perspective. For on-screen viewing, user should zoom in until the 1-inch scale equals exactly one inch when measured on the screen.
- Offshore Substation location and dimensions are based on preliminary publicly available project data. Projects for which this data is not currently available, WTGs are used for all foundation positions. OSS positions and dimensions considered in this photosimulation are subject to potential modification.
- WTG positions in the photosimulations are based on a refraction value of 7/6 or an approximate 0.14 coefficient derived from observations of the constructed Block Island Wind Farm. This refraction coefficient may yield more conservative visibility results (i.e. greater turbine visibility) that the viewshed analysis results which use a refraction coefficient of 0.13.
- WTG tower, blades, and nacelle use the BOEM and FAA required color RAL 9010. The base and platform use RAL 1023 in accordance with USCG regulations.
- *The number of WTGs visible from the KOP was determined by human verified computer generated counts performed in the 3D camera views considering screening resulting from vegetation, structures, curvature of the earth and refraction. This count may vary from the actual number of WTGs visible in the respective views due to masking completed during post processing which may include people, waves, boats, or other minor obstructions that appear in the photograph. Additionally, the WTG counts assumed the WTG blades are in the upright position whereas the photosimulations assume a random rotation pattern. Considering the largest WTG in the cumulative array, this could account for up to 236 ft. (72 m) in lost maximum height depending on the rotation position.
- The cone of view indicated on the Key Observation Point Context map indicates the horizontal extent of view only and does not indicate the extent of WTG visibility.
- The resolution of the cumulative photosimulations balances the size and usability of the documents with the need for high resolution to see distant project components. Similarly to human vision, very distant turbines may appear blurry or difficult to decipher due to resolution limitations.
- The Key Observation Point Context map considers screening by curvature of the earth, viewer height, and turbine height. Landscape screening features are not considered. Therefore, in this view, the number of visible turbines depicted on the map may not match the table due to the presence of landscape screening features.

Project	Year of Development	Max Blade Tip Height (feet)	Potential Number of WTGs & OSSs Visible from KOP*	Total Number of WTGs & OSSs in Project	Theoretical Distance to Nearest Visible WTG (miles)	Theoretical Distance to Furthest Visible WTG (miles)
Atlantic Shores Offshore Wind South (OCS-A 0499)	2023-2025	1,047	205	205	13.0	29.3





LEHT02: Great Bay Boulevard WMA/ Rutgers Field Station, Little Egg Harbor Township, Ocean County, New Jersey

Environmental Data

Date Taken: 09/22/2020
Time: 8:32 AM
Temperature: 59°F
Humidity: 49%
Visibility*: 10+ miles
Wind Direction: North-northwest
Wind Speed: 12 mph
Conditions Observed: Fair

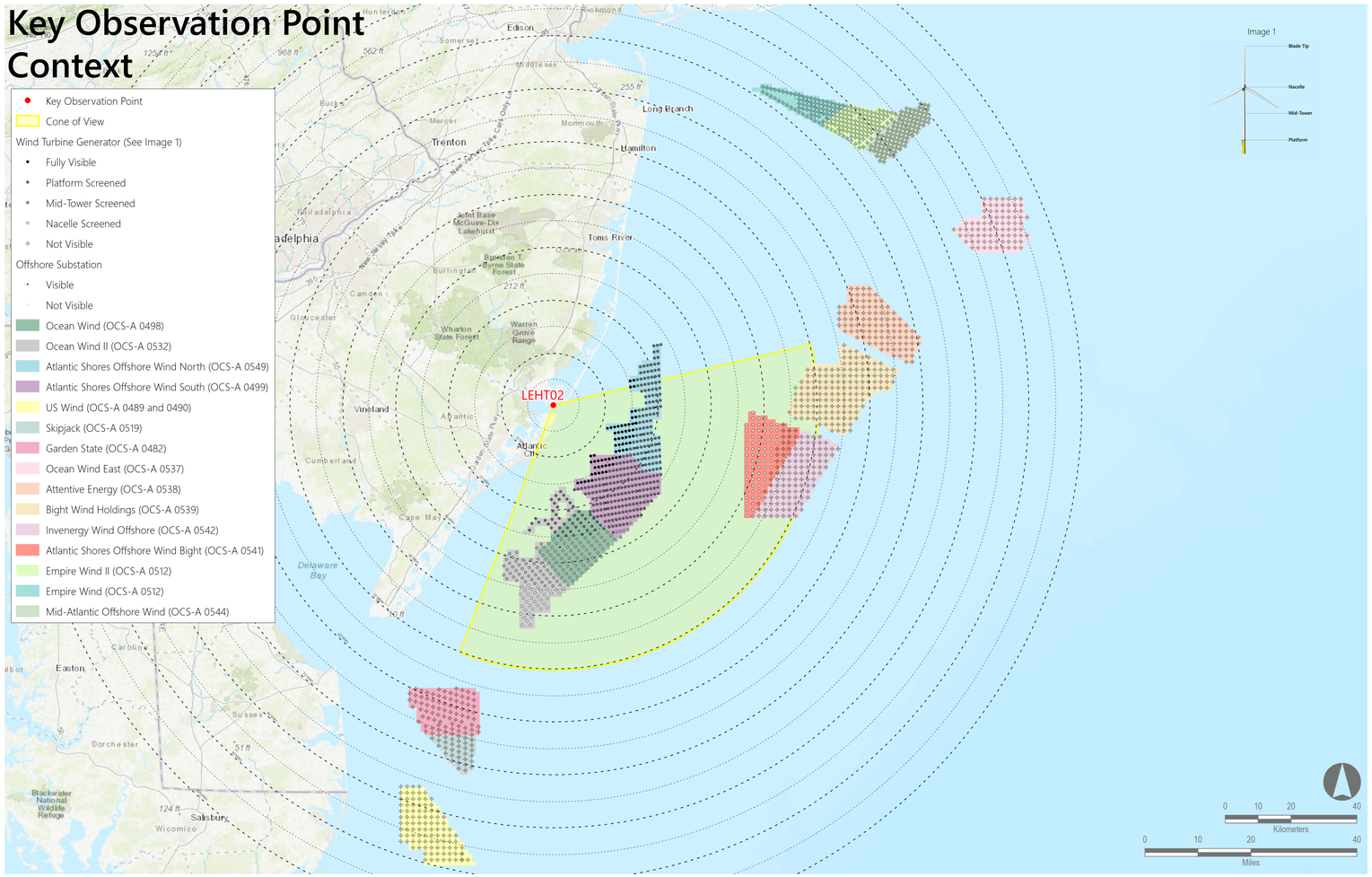
Camera Information
Camera: Canon EOS 5D Mark IV
Resolution: 30.4 Megapixels
Lens Focal Length: 50 mm
Camera Height: 10.00 feet AMSL

Key Observation Point Information

County: Ocean
Town: Little Egg Harbor
State: New Jersey
Location: North Brigantine Natural Area
Latitude, Longitude: 39.50913°N, 74.32038°W
Direction of View (Center): Southeast (139.1°)
Field of View: 124° x 55°

Visual Resources
Character Area: Salt Marsh (LCA)
User Group: Residents/Tourists, Fishermen
Visually Sensitive Resource: Great Bay Boulevard Wildlife Management Area, Little Egg Harbor US Life Saving Station #23

Key Observation Point Context



Reasonably Foreseeable Projects Represented in Photosimulation

		Project	Year of Development	Max Blade Tip Height (feet)	Potential Number of WTGs & OSSs Visible from KOP**	Total Number of WTGs & OSSs in Project	Theoretical Distance to Nearest Visible WTG (miles)	Theoretical Distance to Furthest Visible WTG (miles)
Scenario 5	Scenario 2	Atlantic Shores Offshore Wind South (OCS-A 0499)	2025-2027	1,047	205	205	11.9	28.0
Scenario 4	Scenario 1	Ocean Wind (OCS-A 0498)	2023-2025	906	93	111	20.7	33.4
		Empire Wind (OCS-A 0512)	2024-2025	951	0	72	Not Visible	Not Visible
		Empire Wind II (OCS-A 0512)	2023-2027	951	0	104	Not Visible	Not Visible
	Scenario 3	Skipjack (OCS-A 0519)	2024-2030	853	0	33	Not Visible	Not Visible
		Garden State (OCS-A 0482)	2023-2030	853	0	80	Not Visible	Not Visible
		US Wind (OCS-A 0489 and 0490)	2024	938	0	101	Not Visible	Not Visible
		Atlantic Shores Offshore Wind North (OCS-A 0549)	2025-2030	1,047	131	164	11.1	23.5
		Ocean Wind II (OCS-A 0532)	2026-2030	906	41	111	16.4	41.9
		Mid-Atlantic Offshore Wind (OCS-A 0544)	by 2030	853	0	104	Not Visible	Not Visible
		Ocean Wind East (OCS-A 0537)	by 2030	853	0	82	Not Visible	Not Visible
		Attentive Energy (OCS-A 0538)	by 2030	853	0	101	Not Visible	Not Visible
		Bight Wind Holdings (OCS-A 0539)	by 2030	853	0	148	Not Visible	Not Visible
		Atlantic Shores Offshore Wind Bight (OCS-A 0541)	by 2030	853	5	95	36.7	42.9
		Invenergy Wind Offshore (OCS-A 0542)	by 2030	853	0	99	Not Visible	Not Visible

Notes:

- Offshore Substation location and dimensions are based on preliminary publicly available project data. Projects for which this data is not currently available, WTGs are used for all foundation positions. OSS positions and dimensions considered in this photosimulation are subject to potential modification.
- *Historical meteorological data predicts visibility within a limit of 10 statute miles. However, visibility may extend beyond this distance. The photosimulations assume visibility extends to the limit of physical visibility (including a standard refraction index).
- WTG positions in the photosimulations are based on a refraction value of 7/6 or an approximate 0.14 coefficient derived from observations of the constructed Block Island Wind Farm. This refraction coefficient may yield more conservative visibility results (i.e. greater turbine visibility) that the viewshed analysis results which use a refraction coefficient of 0.13.
- **The number of WTGs visible from the KOP was determined by human verified computer generated counts performed in the 3D camera views considering screening resulting from vegetation, structures, curvature of the earth and refraction. This count may vary from the actual number of WTGs visible in the respective views due to masking completed during post processing which may include people, waves, boats, or other minor obstructions that appear in the photograph. Additionally, the WTG counts assumed the WTG blades are in the upright position whereas the photosimulations assume a random rotation pattern. Considering the largest WTG in the cumulative array, this could account for up to 236 ft. (72 m) in lost maximum height depending on the rotation position.
- The cone of view indicated on the Key Observation Point Context map indicates the horizontal extent of view only and does not indicate the extent of WTG visibility.
- The Key Observation Point Context map considers screening by curvature of the earth, viewer height, and turbine height. Landscape screening features are not considered. Therefore, in this view, the number of visible turbines depicted on the map may not match the table due to the presence of landscape screening features.

ATLANTIC SHORES offshore wind

Appendix A: Atlantic Shores Offshore Wind Cumulative Photosimulations

ATLANTIC SHORES offshore wind

Appendix A: Atlantic Shores Offshore Wind Cumulative Photosimulations

LEHT02: Great Bay Boulevard WMA/Rutgers Field Station, Little Egg Harbor Township, Ocean County, New Jersey

Existing Conditions (Panorama 1)

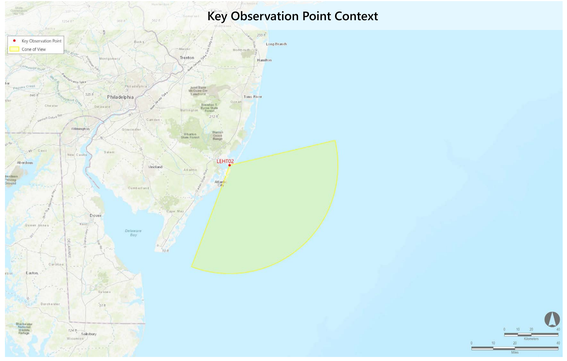
Simulation Size: 66" in width by 29.3" in height. Images should be viewed from a distance of 18 inches in order to obtain the proper perspective.

This box should be exactly 1" long on the printed panorama

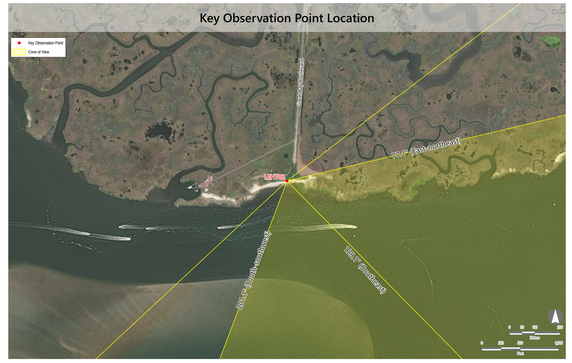
Notes:

- Photosimulation Size: 66" in width by 29.3" in height. Images should be viewed from 18 inches in order to obtain the proper perspective. For on-screen viewing, user should zoom in until the 1-inch scale equals exactly one inch when measured on the screen.

Key Observation Point Context



Key Observation Point Location



ATLANTIC SHORES offshore wind

Appendix A: Atlantic Shores Offshore Wind Cumulative Photosimulations

LEHT02: Great Bay Boulevard WMA/Rutgers Field Station, Little Egg Harbor Township, Ocean County, New Jersey

Photosimulation (Panorama 1): Scenario 1: 2023-2025 Project Construction (Ocean Wind, Empire Wind, Empire Wind II)

Simulation Size: 66" in width by 29.3" in height. Images should be viewed from a distance of 18 inches in order to obtain the proper perspective.

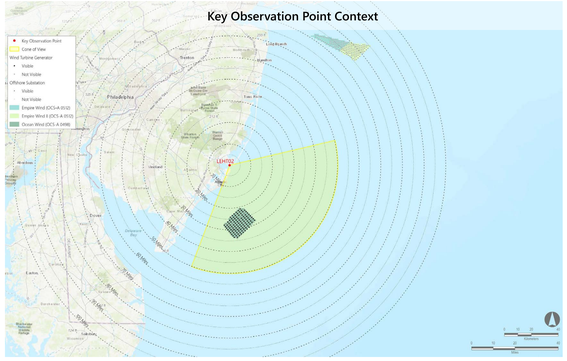
This box should be exactly 7" long on the printed panorama

Notes:

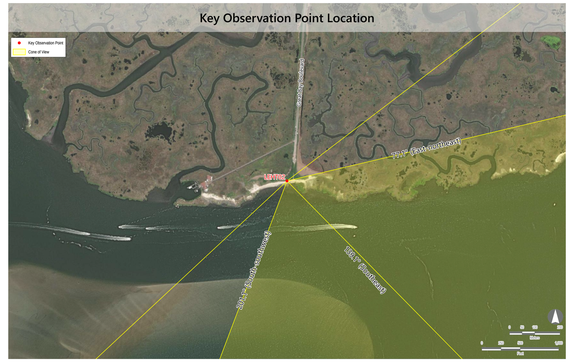
- Photosimulation Size: 66" in width by 29.3" in height. Images should be viewed from 18 inches in order to obtain the proper perspective. For on-screen viewing, user should zoom in until the 1-inch scale equals exactly one inch when measured on the screen.
- Offshore Substation location and dimensions are based on preliminary publicly available project data. Projects for which this data is not currently available, WTGs are used for all foundation positions. OSS positions and dimensions considered in this photosimulation are subject to potential modification.
- WTG positions in the photosimulations are based on a refraction value of 7/6 or an approximate 0.14 coefficient derived from observations of the constructed Block Island Wind Farm. This refraction coefficient may yield more conservative visibility results (i.e. greater turbine visibility) that the viewshed analysis results which use a refraction coefficient of 0.13.
- WTG tower, blades, and nacelle use the BOEM and FAA required color RAL 9010. The base and platform use RAL 1023 in accordance with USCG regulations.
- *The number of WTGs visible from the KOP was determined by human verified computer generated counts performed in the 3D camera views considering screening resulting from vegetation, structures, curvature of the earth and refraction. This count may vary from the actual number of WTGs visible in the respective views due to masking completed during post processing which may include people, waves, boats, or other minor obstructions that appear in the photograph. Additionally, the WTG counts assumed the WTG blades are in the upright position whereas the photosimulations assume a random rotation pattern. Considering the largest WTG in the cumulative array, this could account for up to 236 ft. (72 m) in lost maximum height depending on the rotation position.
- The cone of view indicated on the Key Observation Point Context map indicates the horizontal extent of view only and does not indicate the extent of WTG visibility.
- The resolution of the cumulative photosimulations balances the size and usability of the documents with the need for high resolution to see distant project components. Similarly to human vision, very distant turbines may appear blurry or difficult to decipher due to resolution limitations.
- The Key Observation Point Context map considers screening by curvature of the earth, viewer height, and turbine height. Landscape screening features are not considered. Therefore, in this view, the number of visible turbines depicted on the map may not match the table due to the presence of landscape screening features.

Project	Year of Development	Max Blade Tip Height (feet)	Potential Number of WTGs & OSSs Visible from KOP*	Total Number of WTGs & OSSs in Project	Theoretical Distance to Nearest Visible WTG (miles)	Theoretical Distance to Furthest Visible WTG (miles)
Ocean Wind (OCS-A 0498)	2024-2025	906	93	111	20.7	33.4
Empire Wind (OCS-A 0512)	2023-2027	951	0	72	Not Visible	Not Visible
Empire Wind II (OCS-A 0512)	2025-2027	951	0	104	Not Visible	Not Visible

Key Observation Point Context



Key Observation Point Location



ATLANTIC SHORES offshore wind

Appendix A: Atlantic Shores Offshore Wind Cumulative Photosimulations

LEHT02: Great Bay Boulevard WMA/Rutgers Field Station, Little Egg Harbor Township, Ocean County, New Jersey

Photosimulation (Panorama 1): Scenario 2: Atlantic Shores Construction (2025-2027) added to Scenario 1 (Ocean Wind, Empire Wind, Empire Wind II, Atlantic Shores South)

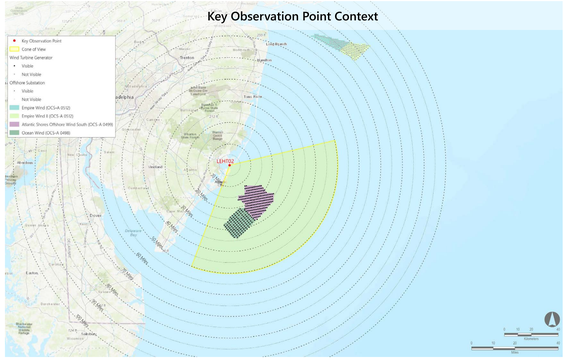
Simulation Size: 66" in width by 29.3" in height. Images should be viewed from a distance of 18 inches in order to obtain the proper perspective.

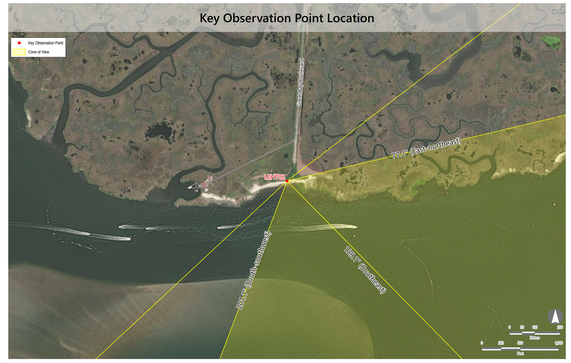
This box should be exactly 7" long on the printed panorama

Notes:

- Photosimulation Size: 66" in width by 29.3" in height. Images should be viewed from 18 inches in order to obtain the proper perspective. For on-screen viewing, user should zoom in until the 1-inch scale equals exactly one inch when measured on the screen.
- Offshore Substation location and dimensions are based on preliminary publicly available project data. Projects for which this data is not currently available, WTGs are used for all foundation positions. OSS positions and dimensions considered in this photosimulation are subject to potential modification.
- WTG positions in the photosimulations are based on a refraction value of 7/6 or an approximate 0.14 coefficient derived from observations of the constructed Block Island Wind Farm. This refraction coefficient may yield more conservative visibility results (i.e. greater turbine visibility) that the viewshed analysis results which use a refraction coefficient of 0.13.
- WTG tower, blades, and nacelle use the BOEM and FAA required color RAL 9010. The base and platform use RAL 1023 in accordance with USCG regulations.
- *The number of WTGs visible from the KOP was determined by human verified computer generated counts performed in the 3D camera views considering screening resulting from vegetation, structures, curvature of the earth and refraction. This count may vary from the actual number of WTGs visible in the respective views due to masking completed during post processing which may include people, waves, boats, or other minor obstructions that appear in the photograph. Additionally, the WTG counts assumed the WTG blades are in the upright position whereas the photosimulations assume a random rotation pattern. Considering the largest WTG in the cumulative array, this could account for up to 236 ft. (72 m) in lost maximum height depending on the rotation position.
- The cone of view indicated on the Key Observation Point Context map indicates the horizontal extent of view only and does not indicate the extent of WTG visibility.
- The resolution of the cumulative photosimulations balances the size and usability of the documents with the need for high resolution to see distant project components. Similarly to human vision, very distant turbines may appear blurry or difficult to decipher due to resolution limitations.
- The Key Observation Point Context map considers screening by curvature of the earth, viewer height, and turbine height. Landscape screening features are not considered. Therefore, in this view, the number of visible turbines depicted on the map may not match the table due to the presence of landscape screening features.

Project	Year of Development	Max Blade Tip Height (feet)	Potential Number of WTGs & OSSs Visible from KOP*	Total Number of WTGs & OSSs in Project	Theoretical Distance to Nearest Visible WTG (miles)	Theoretical Distance to Furthest Visible WTG (miles)
Atlantic Shores Offshore Wind South (OCS-A 0499)	2023-2025	1,047	205	205	11.9	28.0
Ocean Wind (OCS-A 0498)	2024-2025	906	93	111	20.7	33.4
Empire Wind (OCS-A 0512)	2023-2027	951	0	72	Not Visible	Not Visible
Empire Wind II (OCS-A 0512)	2025-2027	951	0	104	Not Visible	Not Visible





ATLANTIC SHORES offshore wind

Appendix A: Atlantic Shores Offshore Wind Cumulative Photosimulations

LEHT02: Great Bay Boulevard WMA/Rutgers Field Station, Little Egg Harbor Township, Ocean County, New Jersey

Photosimulation (Panorama 1): Scenario 3: 2024-2030 Project construction added after the construction of Atlantic Shores South (Full Lease Build-out Including Atlantic Shores South)

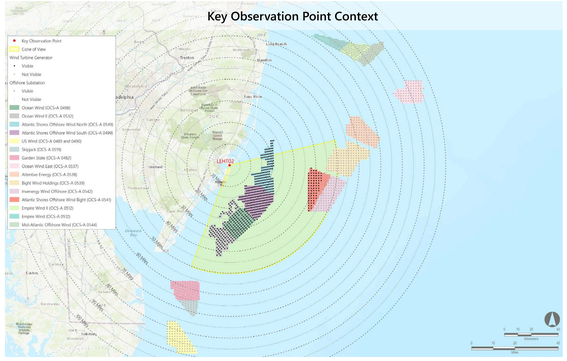
Simulation Size: 66" in width by 29.3" in height. Images should be viewed from a distance of 18 inches in order to obtain the proper perspective.

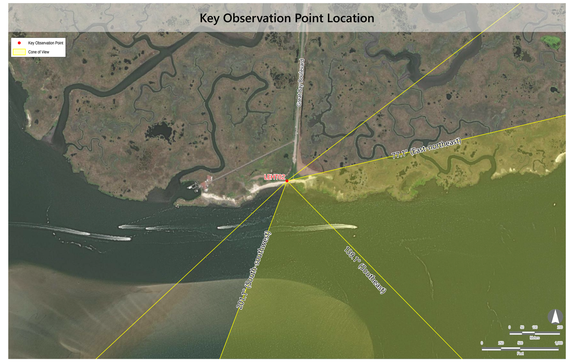
This line should be exactly 7" long on the printed panorama

Notes:

- Photosimulation Size: 66" in width by 29.3" in height. Images should be viewed from 18 inches in order to obtain the proper perspective. For on-screen viewing, user should zoom in until the 1-inch scale equals exactly one inch when measured on the screen.
- Offshore Substation location and dimensions are based on preliminary publicly available project data. Projects for which this data is not currently available, WTGs are used for all foundation positions. OSS positions and dimensions considered in this photosimulation are subject to potential modification.
- WTG positions in the photosimulations are based on a refraction value of 7/6 or an approximate 0.14 coefficient derived from observations of the constructed Block Island Wind Farm. This refraction coefficient may yield more conservative visibility results (i.e. greater turbine visibility) that the viewshed analysis results which use a refraction coefficient of 0.13.
- WTG tower, blades, and nacelle use the BOEM and FAA required color RAL 9010. The base and platform use RAL 1023 in accordance with USCG regulations.
- *The number of WTGs visible from the KOP was determined by human verified computer generated counts performed in the 3D camera views considering screening resulting from vegetation, structures, curvature of the earth and refraction. This count may vary from the actual number of WTGs visible in the respective views due to masking completed during post processing which may include people, waves, boats, or other minor obstructions that appear in the photograph. Additionally, the WTG counts assumed the WTG blades are in the upright position whereas the photosimulations assume a random rotation pattern. Considering the largest WTG in the cumulative array, this could account for up to 236 ft. (72 m) in lost maximum height depending on the rotation position.
- The cone of view indicated on the Key Observation Point Context map indicates the horizontal extent of view only and does not indicate the extent of WTG visibility.
- The resolution of the cumulative photosimulations balances the size and usability of the documents with the need for high resolution to see distant project components. Similarly to human vision, very distant turbines may appear blurry or difficult to decipher due to resolution limitations.
- The Key Observation Point Context map considers screening by curvature of the earth, viewer height, and turbine height. Landscape screening features are not considered. Therefore, in this view, the number of visible turbines depicted on the map may not match the table due to the presence of landscape screening features.

Project	Year of Development	Max Blade Tip Height (feet)	Potential Number of WTGs & OSSs Visible from KOP*	Total Number of WTGs & OSSs in Project	Theoretical Distance to Nearest Visible WTG (miles)	Theoretical Distance to Furthest Visible WTG (miles)
Atlantic Shores Offshore Wind South (OCS-A 0499)	2023-2025	1,047	205	205	11.9	28.0
Ocean Wind (OCS-A 0498)	2024-2025	906	93	111	20.7	33.4
Empire Wind (OCS-A 0512)	2023-2027	951	0	72	Not Visible	Not Visible
Empire Wind II (OCS-A 0512)	2025-2027	951	0	104	Not Visible	Not Visible
Skipjack (OCS-A 0519)	2024-2030	853	0	33	Not Visible	Not Visible
Garden State (OCS-A 0482)	2023-2030	853	0	80	Not Visible	Not Visible
US Wind (OCS-A 0489 and 0490)	2024	938	0	101	Not Visible	Not Visible
Atlantic Shores Offshore Wind North (OCS-A 0549)	2025-2030	1,047	131	164	11.1	23.5
Ocean Wind II (OCS-A 0532)	2026-2030	906	41	111	16.4	41.9
Mid-Atlantic Offshore Wind (OCS-A 0544)	by 2030	853	0	104	Not Visible	Not Visible
Ocean Wind East (OCS-A 0537)	by 2030	853	0	82	Not Visible	Not Visible
Attentive Energy (OCS-A 0538)	by 2030	853	0	101	Not Visible	Not Visible
Bight Wind Holdings (OCS-A 0539)	by 2030	853	0	148	Not Visible	Not Visible
Atlantic Shores Offshore Wind Bight (OCS-A 0541)	by 2030	853	5	95	36.7	42.9
Invenergy Wind Offshore (OCS-A 0542)	by 2030	853	0	99	Not Visible	Not Visible





ATLANTIC SHORES offshore wind

Appendix A: Atlantic Shores Offshore Wind Cumulative Photosimulations

LEHT02: Great Bay Boulevard WMA/Rutgers Field Station, Little Egg Harbor Township, Ocean County, New Jersey

Photosimulation (Panorama 1): Scenario 4: Full buildout of all lease areas without Atlantic Shores South

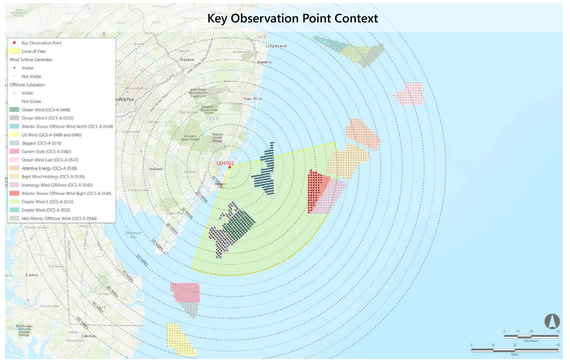
Simulation Size: 66" in width by 29.3" in height. Images should be viewed from a distance of 18 inches in order to obtain the proper perspective.

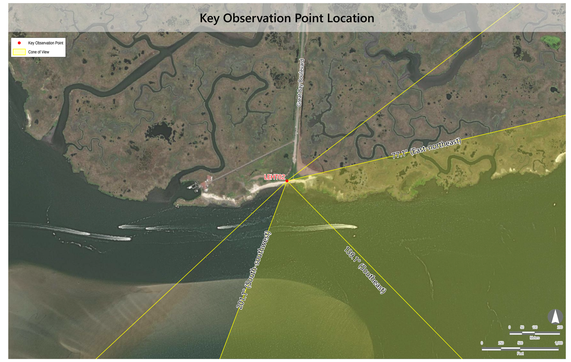
This box should be exactly 7" long on the printed panorama

Notes:

- Photosimulation Size: 66" in width by 29.3" in height. Images should be viewed from 18 inches in order to obtain the proper perspective. For on-screen viewing, user should zoom in until the 1-inch scale equals exactly one inch when measured on the screen.
- Offshore Substation location and dimensions are based on preliminary publicly available project data. Projects for which this data is not currently available, WTGs are used for all foundation positions. OSS positions and dimensions considered in this photosimulation are subject to potential modification.
- WTG positions in the photosimulations are based on a refraction value of 7/6 or an approximate 0.14 coefficient derived from observations of the constructed Block Island Wind Farm. This refraction coefficient may yield more conservative visibility results (i.e. greater turbine visibility) that the viewshed analysis results which use a refraction coefficient of 0.13.
- WTG tower, blades, and nacelle use the BOEM and FAA required color RAL 9010. The base and platform use RAL 1023 in accordance with USCG regulations.
- *The number of WTGs visible from the KOP was determined by human verified computer generated counts performed in the 3D camera views considering screening resulting from vegetation, structures, curvature of the earth and refraction. This count may vary from the actual number of WTGs visible in the respective views due to masking completed during post processing which may include people, waves, boats, or other minor obstructions that appear in the photograph. Additionally, the WTG counts assumed the WTG blades are in the upright position whereas the photosimulations assume a random rotation pattern. Considering the largest WTG in the cumulative array, this could account for up to 236 ft. (72 m) in lost maximum height depending on the rotation position.
- The cone of view indicated on the Key Observation Point Context map indicates the horizontal extent of view only and does not indicate the extent of WTG visibility.
- The resolution of the cumulative photosimulations balances the size and usability of the documents with the need for high resolution to see distant project components. Similarly to human vision, very distant turbines may appear blurry or difficult to decipher due to resolution limitations.
- The Key Observation Point Context map considers screening by curvature of the earth, viewer height, and turbine height. Landscape screening features are not considered. Therefore, in this view, the number of visible turbines depicted on the map may not match the table due to the presence of landscape screening features.

Project	Year of Development	Max Blade Tip Height (feet)	Potential Number of WTGs & OSSs Visible from KOP*	Total Number of WTGs & OSSs in Project	Theoretical Distance to Nearest Visible WTG (miles)	Theoretical Distance to Furthest Visible WTG (miles)
Ocean Wind (OCS-A 0498)	2024-2025	906	93	111	20.7	33.4
Empire Wind (OCS-A 0512)	2023-2027	951	0	72	Not Visible	Not Visible
Empire Wind II (OCS-A 0512)	2025-2027	951	0	104	Not Visible	Not Visible
Skipjack (OCS-A 0519)	2024-2030	853	0	33	Not Visible	Not Visible
Garden State (OCS-A 0482)	2023-2030	853	0	80	Not Visible	Not Visible
US Wind (OCS-A 0489 and 0490)	2024	938	0	101	Not Visible	Not Visible
Atlantic Shores Offshore Wind North (OCS-A 0549)	2025-2030	1,047	131	164	11.1	23.5
Ocean Wind II (OCS-A 0532)	2026-2030	906	41	111	16.4	41.9
Mid-Atlantic Offshore Wind (OCS-A 0544)	by 2030	853	0	104	Not Visible	Not Visible
Ocean Wind East (OCS-A 0537)	by 2030	853	0	82	Not Visible	Not Visible
Attentive Energy (OCS-A 0538)	by 2030	853	0	101	Not Visible	Not Visible
Bight Wind Holdings (OCS-A 0539)	by 2030	853	0	148	Not Visible	Not Visible
Atlantic Shores Offshore Wind Bight (OCS-A 0541)	by 2030	853	5	95	36.7	42.9
Invenergy Wind Offshore (OCS-A 0542)	by 2030	853	0	99	Not Visible	Not Visible





ATLANTIC SHORES offshore wind

Appendix A: Atlantic Shores Offshore Wind Cumulative Photosimulations

LEHT02: Great Bay Boulevard WMA/Rutgers Field Station, Little Egg Harbor Township, Ocean County, New Jersey

Photosimulation (Panorama 1): Scenario 5: Atlantic Shores South without the construction of other foreseeable planned activities

Simulation Size: 66" in width by 29.3" in height. Images should be viewed from a distance of 18 inches in order to obtain the proper perspective.

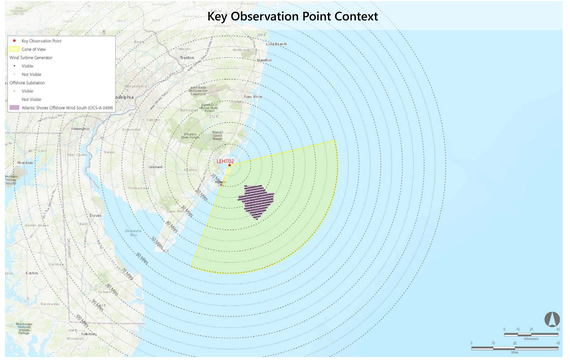
This box should be exactly 7" long on the printed panorama

Notes:

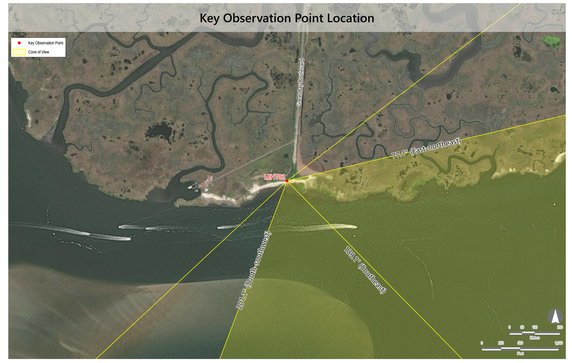
- Photosimulation Size: 66" in width by 29.3" in height. Images should be viewed from 18 inches in order to obtain the proper perspective. For on-screen viewing, user should zoom in until the 1-inch scale equals exactly one inch when measured on the screen.
- Offshore Substation location and dimensions are based on preliminary publicly available project data. Projects for which this data is not currently available, WTGs are used for all foundation positions. OSS positions and dimensions considered in this photosimulation are subject to potential modification.
- WTG positions in the photosimulations are based on a refraction value of 7/6 or an approximate 0.14 coefficient derived from observations of the constructed Block Island Wind Farm. This refraction coefficient may yield more conservative visibility results (i.e. greater turbine visibility) that the viewshed analysis results which use a refraction coefficient of 0.13.
- WTG tower, blades, and nacelle use the BOEM and FAA required color RAL 9010. The base and platform use RAL 1023 in accordance with USCG regulations.
- *The number of WTGs visible from the KOP was determined by human verified computer generated counts performed in the 3D camera views considering screening resulting from vegetation, structures, curvature of the earth and refraction. This count may vary from the actual number of WTGs visible in the respective views due to masking completed during post processing which may include people, waves, boats, or other minor obstructions that appear in the photograph. Additionally, the WTG counts assumed the WTG blades are in the upright position whereas the photosimulations assume a random rotation pattern. Considering the largest WTG in the cumulative array, this could account for up to 236 ft. (72 m) in lost maximum height depending on the rotation position.
- The cone of view indicated on the Key Observation Point Context map indicates the horizontal extent of view only and does not indicate the extent of WTG visibility.
- The resolution of the cumulative photosimulations balances the size and usability of the documents with the need for high resolution to see distant project components. Similarly to human vision, very distant turbines may appear blurry or difficult to decipher due to resolution limitations.
- The Key Observation Point Context map considers screening by curvature of the earth, viewer height, and turbine height. Landscape screening features are not considered. Therefore, in this view, the number of visible turbines depicted on the map may not match the table due to the presence of landscape screening features.

Project	Year of Development	Max Blade Tip Height (feet)	Potential Number of WTGs & OSSs Visible from KOP*	Total Number of WTGs & OSSs in Project	Theoretical Distance to Nearest Visible WTG (miles)	Theoretical Distance to Furthest Visible WTG (miles)
Atlantic Shores Offshore Wind South (OCS-A 0499)	2023-2025	1,047	205	205	11.9	28.0

Key Observation Point Context



Key Observation Point Location



LT02: Cape May Point State Park, Lower Township, Cape May County, New Jersey

Environmental Data

Date Taken: 08/20/2020
Time: 9:32 AM
Temperature: 76°F
Humidity: 67%
Visibility*: 10+ miles
Wind Direction: North-northeast
Wind Speed: 7 mph
Conditions Observed: Fair

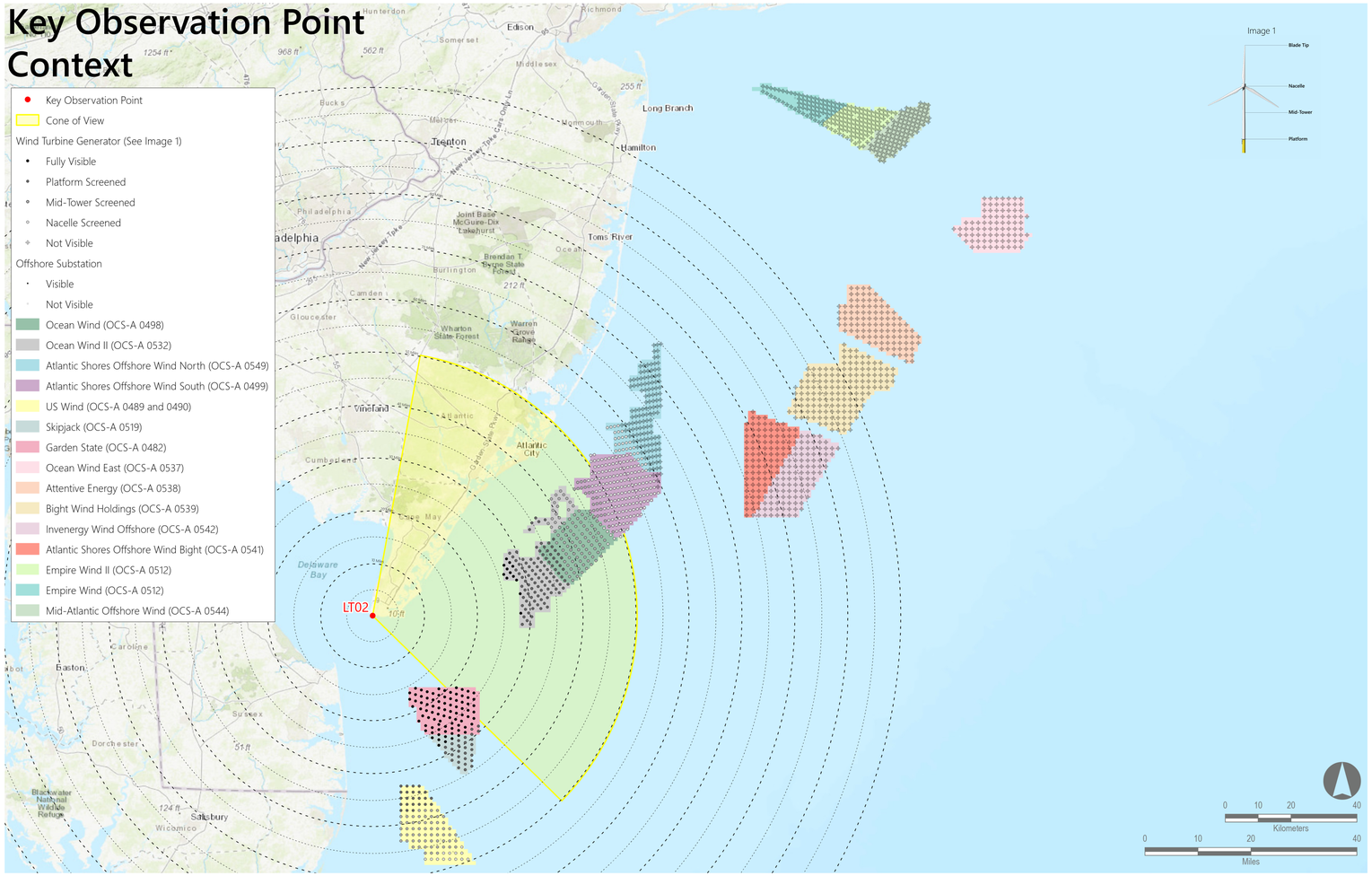
Camera Information
Camera: Canon EOS 5D Mark IV
Resolution: 30.4 Megapixels
Lens Focal Length: 50 mm
Camera Height: 150.10 feet AMSL

Key Observation Point Information

County: Cape May
Town: Lower
State: New Jersey
Location: Cape May Point State Park
Latitude, Longitude: 38.93299°N, 74.96036°W
Direction of View (Center): East-northeast (72.4°)
Field of View: 124° x 55°

Visual Resources
Character Area: Recreation, Seascape (SCA)
User Group: Residents/Tourists
Visually Sensitive Resource: Cape May Point State Park, Cape May Point State Park - Fishing Access, Cape May Point Borough Beach, Cape May Lighthouse, Bayshore Heritage Scenic Byway

Key Observation Point Context



Reasonably Foreseeable Projects Represented in Photosimulation

		Project	Year of Development	Max Blade Tip Height (feet)	Potential Number of WTGs & OSSs Visible from KOP**	Total Number of WTGs & OSSs in Project	Theoretical Distance to Nearest Visible WTG (miles)	Theoretical Distance to Furthest Visible WTG (miles)
Scenario 5	Scenario 2	Atlantic Shores Offshore Wind South (OCS-A 0499)	2025-2027	1,047	145	205	45.0	58.9
Scenario 4	Scenario 1	Ocean Wind (OCS-A 0498)	2023-2025	906	105	111	33.9	47.9
		Empire Wind (OCS-A 0512)	2024-2025	951	0	72	Not Visible	Not Visible
		Empire Wind II (OCS-A 0512)	2023-2027	951	0	104	Not Visible	Not Visible
	Scenario 3	Skipjack (OCS-A 0519)	2024-2030	853	33	33	25.7	34.1
		Garden State (OCS-A 0482)	2023-2030	853	80	80	15.9	29.6
		US Wind (OCS-A 0489 and 0490)	2024	938	98	101	32.6	49.4
		Atlantic Shores Offshore Wind North (OCS-A 0549)	2025-2030	1,047	13	164	55.5	59.0
		Ocean Wind II (OCS-A 0532)	2026-2030	906	111	111	26.0	43.2
		Mid-Atlantic Offshore Wind (OCS-A 0544)	by 2030	853	0	104	Not Visible	Not Visible
		Ocean Wind East (OCS-A 0537)	by 2030	853	0	82	Not Visible	Not Visible
		Attentive Energy (OCS-A 0538)	by 2030	853	0	101	Not Visible	Not Visible
		Bight Wind Holdings (OCS-A 0539)	by 2030	853	0	148	Not Visible	Not Visible
		Atlantic Shores Offshore Wind Bight (OCS-A 0541)	by 2030	853	0	95	Not Visible	Not Visible
		Invenergy Wind Offshore (OCS-A 0542)	by 2030	853	0	99	Not Visible	Not Visible

Notes:
- Offshore Substation location and dimensions are based on preliminary publicly available project data. Projects for which this data is not currently available, WTGs are used for all foundation positions. OSS positions and dimensions considered in this photosimulation are subject to potential modification.
- *Historical meteorological data predicts visibility within a limit of 10 statute miles. However, visibility may extend beyond this distance. The photosimulations assume visibility extends to the limit of physical visibility (including a standard refraction index).
- WTG positions in the photosimulations are based on a refraction value of 7/6 or an approximate 0.14 coefficient derived from observations of the constructed Block Island Wind Farm. This refraction coefficient may yield more conservative visibility results (i.e. greater turbine visibility) that the viewshed analysis results which use a refraction coefficient of 0.13.
- **The number of WTGs visible from the KOP was determined by human verified computer generated counts performed in the 3D camera views considering screening resulting from vegetation, structures, curvature of the earth and refraction. This count may vary from the actual number of WTGs visible in the respective views due to masking completed during post processing which may include people, waves, boats, or other minor obstructions that appear in the photograph. Additionally, the WTG counts assumed the WTG blades are in the upright position whereas the photosimulations assume a random rotation pattern. Considering the largest WTG in the cumulative array, this could account for up to 236 ft. (72 m) in lost maximum height depending on the rotation position.
- The cone of view indicated on the Key Observation Point Context map indicates the horizontal extent of view only and does not indicate the extent of WTG visibility.
- The Key Observation Point Context map considers screening by curvature of the earth, viewer height, and turbine height. Landscape screening features are not considered. Therefore, in this view, the number of visible turbines depicted on the map may not match the table due to the presence of landscape screening features.

ATLANTIC SHORES offshore wind

MATCH LINE** LT02 PANO #2



MATCH LINE** LT02 PANO #2

ATLANTIC SHORES offshore wind

Appendix A: Atlantic Shores Offshore Wind Cumulative Photosimulations

LT02: Cape May Point State Park, Lower Township, Cape May County, New Jersey

Existing Conditions (Panorama 1)

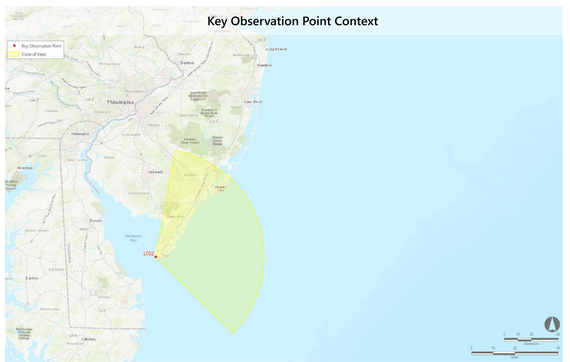
Notes:

- Photosimulation Size: 66" in width by 29.3" in height. Images should be viewed from 18 inches in order to obtain the proper perspective. For on-screen viewing, user should zoom in until the 1-inch scale equals exactly one inch when measured on the screen.

Simulation Size: 66" in width by 29.3" in height. Images should be viewed from a distance of 18 inches in order to obtain the proper perspective.

This box should be exactly 1" long on the printed panorama

Key Observation Point Context



Key Observation Point Location



MATCH LINE** LT02 PANO #2



MATCH LINE** LT02 PANO #2

ATLANTIC SHORES offshore wind

Appendix A: Atlantic Shores Offshore Wind Cumulative Photosimulations

LT02: Cape May Point State Park, Lower Township, Cape May County, New Jersey

Photosimulation (Panorama 1): Scenario 1: 2023-2025 Project Construction (Ocean Wind, Empire Wind, Empire Wind II)

Simulation Size: 66" in width by 29.3" in height. Images should be viewed from a distance of 18 inches in order to obtain the proper perspective.

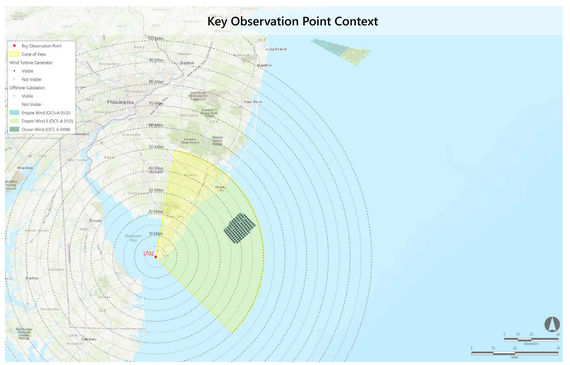
This box should be exactly 1" long on the printed panorama

Notes:

- Photosimulation Size: 66" in width by 29.3" in height. Images should be viewed from 18 inches in order to obtain the proper perspective. For on-screen viewing, user should zoom in until the 1-inch scale equals exactly one inch when measured on the screen.
- Offshore Substation location and dimensions are based on preliminary publicly available project data. Projects for which this data is not currently available, WTGs are used for all foundation positions. OSS positions and dimensions considered in this photosimulation are subject to potential modification.
- WTG positions in the photosimulations are based on a refraction value of 7/6 or an approximate 0.14 coefficient derived from observations of the constructed Block Island Wind Farm. This refraction coefficient may yield more conservative visibility results (i.e. greater turbine visibility) that the viewshed analysis results which use a refraction coefficient of 0.13.
- WTG tower, blades, and nacelle use the BOEM and FAA required color RAL 9010. The base and platform use RAL 1023 in accordance with USCG regulations.
- *The number of WTGs visible from the KOP was determined by human verified computer generated counts performed in the 3D camera views considering screening resulting from vegetation, structures, curvature of the earth and refraction. This count may vary from the actual number of WTGs visible in the respective views due to masking completed during post processing which may include people, waves, boats, or other minor obstructions that appear in the photograph. Additionally, the WTG counts assumed the WTG blades are in the upright position whereas the photosimulations assume a random rotation pattern. Considering the largest WTG in the cumulative array, this could account for up to 236 ft. (72 m) in lost maximum height depending on the rotation position.
- The cone of view indicated on the Key Observation Point Context map indicates the horizontal extent of view only and does not indicate the extent of WTG visibility.
- The resolution of the cumulative photosimulations balances the size and usability of the documents with the need for high resolution to see distant project components. Similarly to human vision, very distant turbines may appear blurry or difficult to decipher due to resolution limitations.
- The Key Observation Point Context map considers screening by curvature of the earth, viewer height, and turbine height. Landscape screening features are not considered. Therefore, in this view, the number of visible turbines depicted on the map may not match the table due to the presence of landscape screening features.

Project	Year of Development	Max Blade Tip Height (feet)	Potential Number of WTGs & OSSs Visible from KOP*	Total Number of WTGs & OSSs in Project	Theoretical Distance to Nearest Visible WTG (miles)	Theoretical Distance to Furthest Visible WTG (miles)
Ocean Wind (OCS-A 0498)	2024-2025	906	105	111	33.9	47.9
Empire Wind (OCS-A 0512)	2023-2027	951	0	72	Not Visible	Not Visible
Empire Wind II (OCS-A 0512)	2025-2027	951	0	104	Not Visible	Not Visible

Key Observation Point Context



Key Observation Point Location



MATCH LINE** LT02 PANO #2



ATLANTIC SHORES offshore wind

Appendix A: Atlantic Shores Offshore Wind Cumulative Photosimulations

LT02: Cape May Point State Park, Lower Township, Cape May County, New Jersey

Photosimulation (Panorama 1): Scenario 2: Atlantic Shores Construction (2025-2027) added to Scenario 1 (Ocean Wind, Empire Wind, Empire Wind II, Atlantic Shores South)

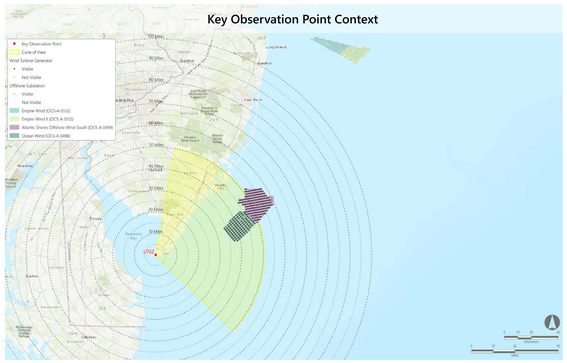
Simulation Size: 66" in width by 29.3" in height. Images should be viewed from a distance of 18 inches in order to obtain the proper perspective.

This box should be exactly 1" long on the printed panorama

Notes:

- Photosimulation Size: 66" in width by 29.3" in height. Images should be viewed from 18 inches in order to obtain the proper perspective. For on-screen viewing, user should zoom in until the 1-inch scale equals exactly one inch when measured on the screen.
- Offshore Substation location and dimensions are based on preliminary publicly available project data. Projects for which this data is not currently available, WTGs are used for all foundation positions. OSS positions and dimensions considered in this photosimulation are subject to potential modification.
- WTG positions in the photosimulations are based on a refraction value of 7/6 or an approximate 0.14 coefficient derived from observations of the constructed Block Island Wind Farm. This refraction coefficient may yield more conservative visibility results (i.e. greater turbine visibility) that the viewshed analysis results which use a refraction coefficient of 0.13.
- WTG tower, blades, and nacelle use the BOEM and FAA required color RAL 9010. The base and platform use RAL 1023 in accordance with USCG regulations.
- *The number of WTGs visible from the KOP was determined by human verified computer generated counts performed in the 3D camera views considering screening resulting from vegetation, structures, curvature of the earth and refraction. This count may vary from the actual number of WTGs visible in the respective views due to masking completed during post processing which may include people, waves, boats, or other minor obstructions that appear in the photograph. Additionally, the WTG counts assumed the WTG blades are in the upright position whereas the photosimulations assume a random rotation pattern. Considering the largest WTG in the cumulative array, this could account for up to 236 ft. (72 m) in lost maximum height depending on the rotation position.
- The cone of view indicated on the Key Observation Point Context map indicates the horizontal extent of view only and does not indicate the extent of WTG visibility.
- The resolution of the cumulative photosimulations balances the size and usability of the documents with the need for high resolution to see distant project components. Similarly to human vision, very distant turbines may appear blurry or difficult to decipher due to resolution limitations.
- The Key Observation Point Context map considers screening by curvature of the earth, viewer height, and turbine height. Landscape screening features are not considered. Therefore, in this view, the number of visible turbines depicted on the map may not match the table due to the presence of landscape screening features.

Project	Year of Development	Max Blade Tip Height (feet)	Potential Number of WTGs & OSSs Visible from KOP*	Total Number of WTGs & OSSs in Project	Theoretical Distance to Nearest Visible WTG (miles)	Theoretical Distance to Furthest Visible WTG (miles)
Atlantic Shores Offshore Wind South (OCS-A 0499)	2023-2025	1,047	145	205	45.0	58.9
Ocean Wind (OCS-A 0498)	2024-2025	906	105	111	33.9	47.9
Empire Wind (OCS-A 0512)	2023-2027	951	0	72	Not Visible	Not Visible
Empire Wind II (OCS-A 0512)	2025-2027	951	0	104	Not Visible	Not Visible





MATCH LINE** LT02 PANO #2



ATLANTIC SHORES offshore wind

Appendix A: Atlantic Shores Offshore Wind Cumulative Photosimulations

LT02: Cape May Point State Park, Lower Township, Cape May County, New Jersey

Photosimulation (Panorama 1): Scenario 3: 2024-2030 Project construction added after the construction of Atlantic Shores South (Full Lease Build-out Including Atlantic Shores South)

Simulation Size: 66" in width by 29.3" in height. Images should be viewed from a distance of 18 inches in order to obtain the proper perspective.

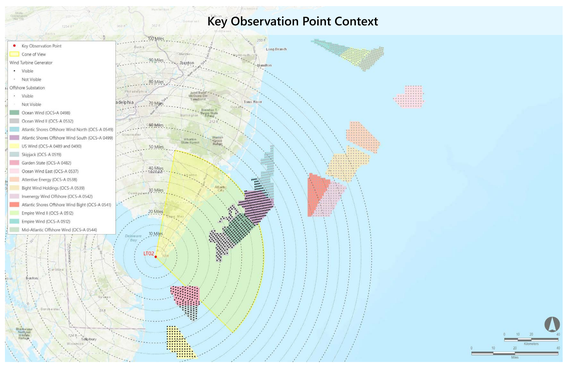
This box should be exactly 1" long on the printed panorama

Notes:

- Photosimulation Size: 66" in width by 29.3" in height. Images should be viewed from 18 inches in order to obtain the proper perspective. For on-screen viewing, user should zoom in until the 1-inch scale equals exactly one inch when measured on the screen.
- Offshore Substation location and dimensions are based on preliminary publicly available project data. Projects for which this data is not currently available, WTGs are used for all foundation positions. OSS positions and dimensions considered in this photosimulation are subject to potential modification.
- WTG positions in the photosimulations are based on a refraction value of 7/6 or an approximate 0.14 coefficient derived from observations of the constructed Block Island Wind Farm. This refraction coefficient may yield more conservative visibility results (i.e. greater turbine visibility) that the viewshed analysis results which use a refraction coefficient of 0.13.
- WTG tower, blades, and nacelle use the BOEM and FAA required color RAL 9010. The base and platform use RAL 1023 in accordance with USCG regulations.
- *The number of WTGs visible from the KOP was determined by human verified computer generated counts performed in the 3D camera views considering screening resulting from vegetation, structures, curvature of the earth and refraction. This count may vary from the actual number of WTGs visible in the respective views due to masking completed during post processing which may include people, waves, boats, or other minor obstructions that appear in the photograph. Additionally, the WTG counts assumed the WTG blades are in the upright position whereas the photosimulations assume a random rotation pattern. Considering the largest WTG in the cumulative array, this could account for up to 236 ft. (72 m) in lost maximum height depending on the rotation position.
- The cone of view indicated on the Key Observation Point Context map indicates the horizontal extent of view only and does not indicate the extent of WTG visibility.
- The resolution of the cumulative photosimulations balances the size and usability of the documents with the need for high resolution to see distant project components. Similarly to human vision, very distant turbines may appear blurry or difficult to decipher due to resolution limitations.
- The Key Observation Point Context map considers screening by curvature of the earth, viewer height, and turbine height. Landscape screening features are not considered. Therefore, in this view, the number of visible turbines depicted on the map may not match the table due to the presence of landscape screening features.

Project	Year of Development	Max Blade Tip Height (feet)	Potential Number of WTGs & OSSs Visible from KOP*	Total Number of WTGs & OSSs in Project	Theoretical Distance to Nearest Visible WTG (miles)	Theoretical Distance to Furthest Visible WTG (miles)
Atlantic Shores Offshore Wind South (OCS-A 0499)	2023-2025	1,047	145	205	45.0	58.9
Ocean Wind (OCS-A 0498)	2024-2025	906	105	111	33.9	47.9
Empire Wind (OCS-A 0512)	2023-2027	951	0	72	Not Visible	Not Visible
Empire Wind II (OCS-A 0512)	2025-2027	951	0	104	Not Visible	Not Visible
Skipjack (OCS-A 0519)	2024-2030	853	33	33	25.7	34.1
Garden State (OCS-A 0482)	2023-2030	853	80	80	15.9	29.6
US Wind (OCS-A 0489 and 0490)	2024	938	98	101	32.6	49.4
Atlantic Shores Offshore Wind North (OCS-A 0549)	2025-2030	1,047	13	164	55.5	59.0
Ocean Wind II (OCS-A 0532)	2026-2030	906	111	111	26.0	43.2
Mid-Atlantic Offshore Wind (OCS-A 0544)	by 2030	853	0	104	Not Visible	Not Visible
Ocean Wind East (OCS-A 0537)	by 2030	853	0	82	Not Visible	Not Visible
Attentive Energy (OCS-A 0538)	by 2030	853	0	101	Not Visible	Not Visible
Bight Wind Holdings (OCS-A 0539)	by 2030	853	0	148	Not Visible	Not Visible
Atlantic Shores Offshore Wind Bight (OCS-A 0541)	by 2030	853	0	95	Not Visible	Not Visible
Invenergy Wind Offshore (OCS-A 0542)	by 2030	853	0	99	Not Visible	Not Visible

Key Observation Point Context



Key Observation Point Location



MATCH LINE** LT02 PANO #2



ATLANTIC SHORES offshore wind

Appendix A: Atlantic Shores Offshore Wind Cumulative Photosimulations

LT02: Cape May Point State Park, Lower Township, Cape May County, New Jersey

Photosimulation (Panorama 1): Scenario 4: Full buildout of all lease areas without Atlantic Shores South

Simulation Size: 66" in width by 29.3" in height. Images should be viewed from a distance of 18 inches in order to obtain the proper perspective.

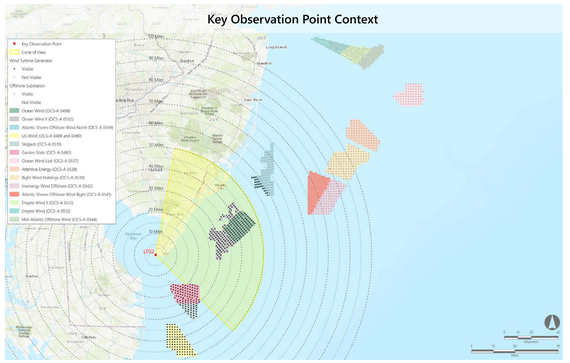
This box should be exactly 1" long on the printed panorama

Notes:

- Photosimulation Size: 66" in width by 29.3" in height. Images should be viewed from 18 inches in order to obtain the proper perspective. For on-screen viewing, user should zoom in until the 1-inch scale equals exactly one inch when measured on the screen.
- Offshore Substation location and dimensions are based on preliminary publicly available project data. Projects for which this data is not currently available, WTGs are used for all foundation positions. OSS positions and dimensions considered in this photosimulation are subject to potential modification.
- WTG positions in the photosimulations are based on a refraction value of 7/6 or an approximate 0.14 coefficient derived from observations of the constructed Block Island Wind Farm. This refraction coefficient may yield more conservative visibility results (i.e. greater turbine visibility) that the viewshed analysis results which use a refraction coefficient of 0.13.
- WTG tower, blades, and nacelle use the BOEM and FAA required color RAL 9010. The base and platform use RAL 1023 in accordance with USCG regulations.
- *The number of WTGs visible from the KOP was determined by human verified computer generated counts performed in the 3D camera views considering screening resulting from vegetation, structures, curvature of the earth and refraction. This count may vary from the actual number of WTGs visible in the respective views due to masking completed during post processing which may include people, waves, boats, or other minor obstructions that appear in the photograph. Additionally, the WTG counts assumed the WTG blades are in the upright position whereas the photosimulations assume a random rotation pattern. Considering the largest WTG in the cumulative array, this could account for up to 236 ft. (72 m) in lost maximum height depending on the rotation position.
- The cone of view indicated on the Key Observation Point Context map indicates the horizontal extent of view only and does not indicate the extent of WTG visibility.
- The resolution of the cumulative photosimulations balances the size and usability of the documents with the need for high resolution to see distant project components. Similarly to human vision, very distant turbines may appear blurry or difficult to decipher due to resolution limitations.
- The Key Observation Point Context map considers screening by curvature of the earth, viewer height, and turbine height. Landscape screening features are not considered. Therefore, in this view, the number of visible turbines depicted on the map may not match the table due to the presence of landscape screening features.

Project	Year of Development	Max Blade Tip Height (feet)	Potential Number of WTGs & OSSs Visible from KOP*	Total Number of WTGs & OSSs in Project	Theoretical Distance to Nearest Visible WTG (miles)	Theoretical Distance to Furthest Visible WTG (miles)
Ocean Wind (OCS-A 0498)	2024-2025	906	105	111	33.9	47.9
Empire Wind (OCS-A 0512)	2023-2027	951	0	72	Not Visible	Not Visible
Empire Wind II (OCS-A 0512)	2025-2027	951	0	104	Not Visible	Not Visible
Skipjack (OCS-A 0519)	2024-2030	853	33	33	25.7	34.1
Garden State (OCS-A 0482)	2023-2030	853	80	80	15.9	29.6
US Wind (OCS-A 0489 and 0490)	2024	938	98	101	32.6	49.4
Atlantic Shores Offshore Wind North (OCS-A 0549)	2025-2030	1,047	13	164	55.5	59.0
Ocean Wind II (OCS-A 0532)	2026-2030	906	111	111	26.0	43.2
Mid-Atlantic Offshore Wind (OCS-A 0544)	by 2030	853	0	104	Not Visible	Not Visible
Ocean Wind East (OCS-A 0537)	by 2030	853	0	82	Not Visible	Not Visible
Attentive Energy (OCS-A 0538)	by 2030	853	0	101	Not Visible	Not Visible
Bight Wind Holdings (OCS-A 0539)	by 2030	853	0	148	Not Visible	Not Visible
Atlantic Shores Offshore Wind Bight (OCS-A 0541)	by 2030	853	0	95	Not Visible	Not Visible
Invenergy Wind Offshore (OCS-A 0542)	by 2030	853	0	99	Not Visible	Not Visible

Key Observation Point Context



Key Observation Point Location



MATCH LINE** LT02 PANO #2



MATCH LINE** LT02 PANO #2

ATLANTIC SHORES offshore wind

Appendix A: Atlantic Shores Offshore Wind Cumulative Photosimulations

LT02: Cape May Point State Park, Lower Township, Cape May County, New Jersey

Photosimulation (Panorama 1): Scenario 5: Atlantic Shores South without the construction of other foreseeable planned activities

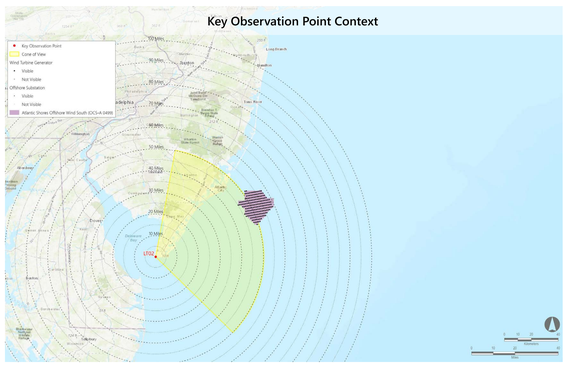
Simulation Size: 66" in width by 29.3" in height. Images should be viewed from a distance of 18 inches in order to obtain the proper perspective.

This box should be exactly 1" long on the printed panorama

Notes:

- Photosimulation Size: 66" in width by 29.3" in height. Images should be viewed from 18 inches in order to obtain the proper perspective. For on-screen viewing, user should zoom in until the 1-inch scale equals exactly one inch when measured on the screen.
- Offshore Substation location and dimensions are based on preliminary publicly available project data. Projects for which this data is not currently available, WTGs are used for all foundation positions. OSS positions and dimensions considered in this photosimulation are subject to potential modification.
- WTG positions in the photosimulations are based on a refraction value of 7/6 or an approximate 0.14 coefficient derived from observations of the constructed Block Island Wind Farm. This refraction coefficient may yield more conservative visibility results (i.e. greater turbine visibility) that the viewshed analysis results which use a refraction coefficient of 0.13.
- WTG tower, blades, and nacelle use the BOEM and FAA required color RAL 9010. The base and platform use RAL 1023 in accordance with USCG regulations.
- *The number of WTGs visible from the KOP was determined by human verified computer generated counts performed in the 3D camera views considering screening resulting from vegetation, structures, curvature of the earth and refraction. This count may vary from the actual number of WTGs visible in the respective views due to masking completed during post processing which may include people, waves, boats, or other minor obstructions that appear in the photograph. Additionally, the WTG counts assumed the WTG blades are in the upright position whereas the photosimulations assume a random rotation pattern. Considering the largest WTG in the cumulative array, this could account for up to 236 ft. (72 m) in lost maximum height depending on the rotation position.
- The cone of view indicated on the Key Observation Point Context map indicates the horizontal extent of view only and does not indicate the extent of WTG visibility.
- The resolution of the cumulative photosimulations balances the size and usability of the documents with the need for high resolution to see distant project components. Similarly to human vision, very distant turbines may appear blurry or difficult to decipher due to resolution limitations.
- The Key Observation Point Context map considers screening by curvature of the earth, viewer height, and turbine height. Landscape screening features are not considered. Therefore, in this view, the number of visible turbines depicted on the map may not match the table due to the presence of landscape screening features.

Project	Year of Development	Max Blade Tip Height (feet)	Potential Number of WTGs & OSSs Visible from KOP*	Total Number of WTGs & OSSs in Project	Theoretical Distance to Nearest Visible WTG (miles)	Theoretical Distance to Furthest Visible WTG (miles)
Atlantic Shores Offshore Wind South (OCS-A 0499)	2023-2025	1,047	145	205	45.0	58.9





LT02: Cape May Point State Park, Lower Township, Cape May County, New Jersey

Environmental Data

Date Taken: 08/25/2022
Time: 2:35 PM
Temperature: 88°F
Humidity: 40%
Visibility*: 10+ miles
Wind Direction: South
Wind Speed: 16 mph
Conditions Observed: Fair

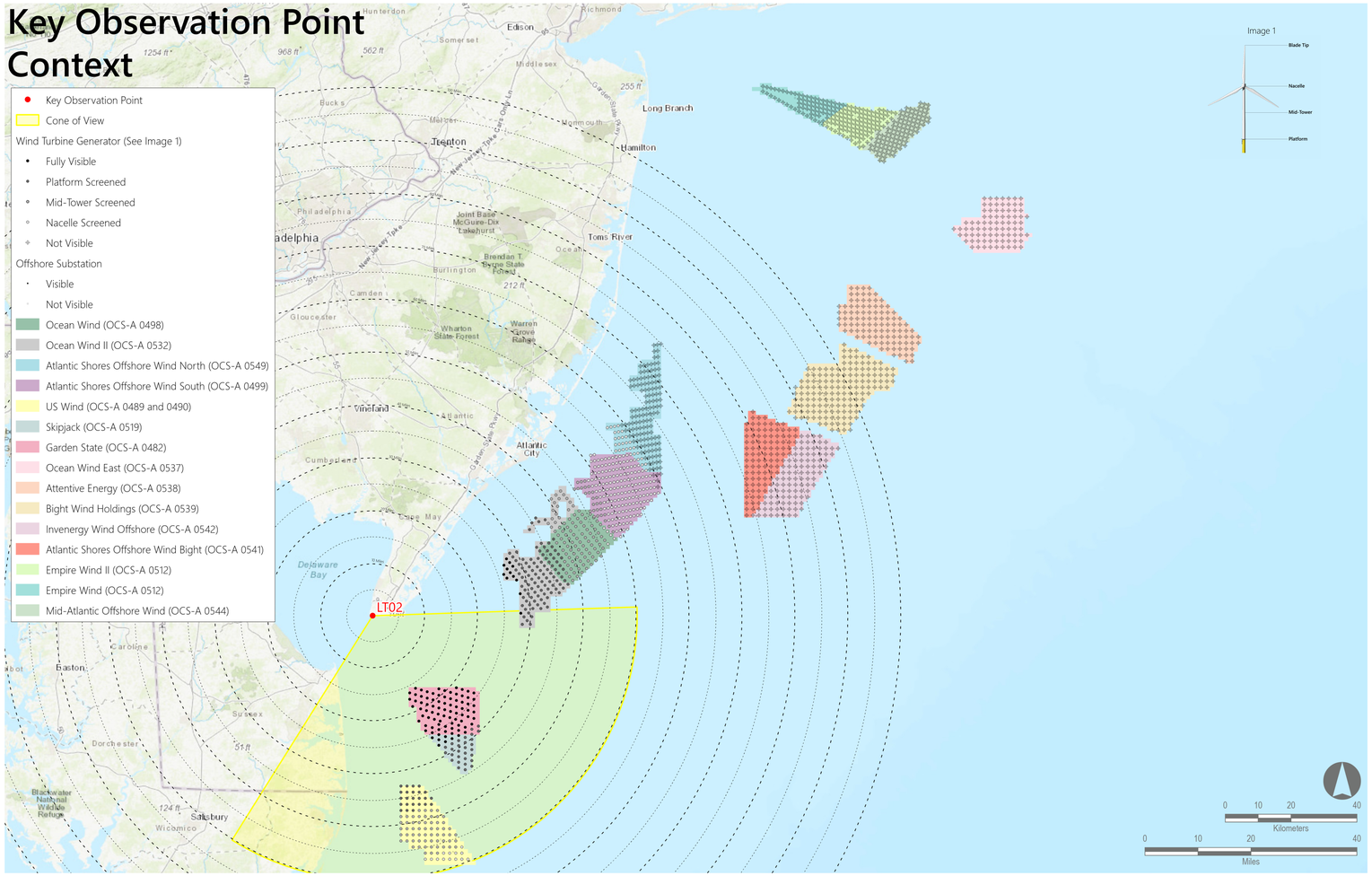
Camera Information
Camera: Canon EOS 5D Mark IV
Resolution: 30.4 Megapixels
Lens Focal Length: 50 mm
Camera Height: 150.10 feet AMSL

Key Observation Point Information

County: Cape May
Town: Lower
State: New Jersey
Location: Cape May Point State Park
Latitude, Longitude: 38.93299°N, 74.96036°W
Direction of View (Center): South-southeast (149.4°)
Field of View: 124° x 55°

Visual Resources
Character Area: Recreation, Seascape (SCA)
User Group: Residents/Tourists
Visually Sensitive Resource: Cape May Point State Park, Cape May Point State Park - Fishing Access, Cape May Point Borough Beach, Cape May Lighthouse, Bayshore Heritage Scenic Byway

Key Observation Point Context



Reasonably Foreseeable Projects Represented in Photosimulation

		Project	Year of Development	Max Blade Tip Height (feet)	Potential Number of WTGs & OSSs Visible from KOP**	Total Number of WTGs & OSSs in Project	Theoretical Distance to Nearest Visible WTG (miles)	Theoretical Distance to Furthest Visible WTG (miles)
Scenario 5	Scenario 2	Atlantic Shores Offshore Wind South (OCS-A 0499)	2025-2027	1,047	145	205	45.0	58.9
Scenario 4	Scenario 1	Ocean Wind (OCS-A 0498)	2023-2025	906	105	111	33.9	47.9
		Empire Wind (OCS-A 0512)	2024-2025	951	0	72	Not Visible	Not Visible
		Empire Wind II (OCS-A 0512)	2023-2027	951	0	104	Not Visible	Not Visible
	Scenario 3	Skipjack (OCS-A 0519)	2024-2030	853	33	33	25.7	34.1
		Garden State (OCS-A 0482)	2023-2030	853	80	80	15.9	29.6
		US Wind (OCS-A 0489 and 0490)	2024	938	98	101	32.6	49.4
		Atlantic Shores Offshore Wind North (OCS-A 0549)	2025-2030	1,047	13	164	55.5	59.0
		Ocean Wind II (OCS-A 0532)	2026-2030	906	111	111	26.0	43.2
		Mid-Atlantic Offshore Wind (OCS-A 0544)	by 2030	853	0	104	Not Visible	Not Visible
		Ocean Wind East (OCS-A 0537)	by 2030	853	0	82	Not Visible	Not Visible
		Attentive Energy (OCS-A 0538)	by 2030	853	0	101	Not Visible	Not Visible
		Bight Wind Holdings (OCS-A 0539)	by 2030	853	0	148	Not Visible	Not Visible
		Atlantic Shores Offshore Wind Bight (OCS-A 0541)	by 2030	853	0	95	Not Visible	Not Visible
		Invenergy Wind Offshore (OCS-A 0542)	by 2030	853	0	99	Not Visible	Not Visible

Notes:

- Offshore Substation location and dimensions are based on preliminary publicly available project data. Projects for which this data is not currently available, WTGs are used for all foundation positions. OSS positions and dimensions considered in this photosimulation are subject to potential modification.
- *Historical meteorological data predicts visibility within a limit of 10 statute miles. However, visibility may extend beyond this distance. The photosimulations assume visibility extends to the limit of physical visibility (including a standard refraction index).
- WTG positions in the photosimulations are based on a refraction value of 7/6 or an approximate 0.14 coefficient derived from observations of the constructed Block Island Wind Farm. This refraction coefficient may yield more conservative visibility results (i.e. greater turbine visibility) that the viewshed analysis results which use a refraction coefficient of 0.13.
- **The number of WTGs visible from the KOP was determined by human verified computer generated counts performed in the 3D camera views considering screening resulting from vegetation, structures, curvature of the earth and refraction. This count may vary from the actual number of WTGs visible in the respective views due to masking completed during post processing which may include people, waves, boats, or other minor obstructions that appear in the photograph. Additionally, the WTG counts assumed the WTG blades are in the upright position whereas the photosimulations assume a random rotation pattern. Considering the largest WTG in the cumulative array, this could account for up to 236 ft. (72 m) in lost maximum height depending on the rotation position.
- The cone of view indicated on the Key Observation Point Context map indicates the horizontal extent of view only and does not indicate the extent of WTG visibility.
- The Key Observation Point Context map considers screening by curvature of the earth, viewer height, and turbine height. Landscape screening features are not considered. Therefore, in this view, the number of visible turbines depicted on the map may not match the table due to the presence of landscape screening features.

ATLANTIC SHORES offshore wind

MATCH LINE** LT02 PANO #1



ATLANTIC SHORES offshore wind

Notes:
- Photosimulation Size: 66" in width by 29.3" in height. Images should be viewed from 18 inches in order to obtain the proper perspective. For on-screen viewing, user should zoom in until the 1-inch scale equals exactly one inch when measured on the screen.

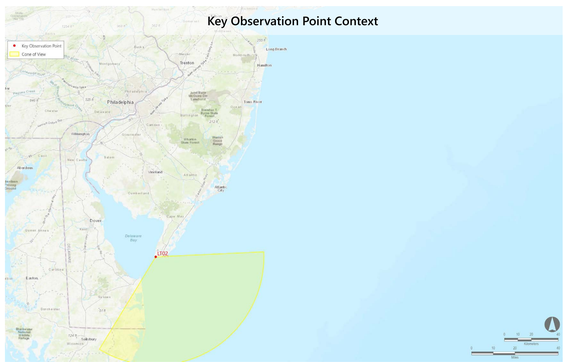
Appendix A: Atlantic Shores Offshore Wind Cumulative Photosimulations

LT02: Cape May Point State Park, Lower Township, Cape May County, New Jersey

Existing Conditions (Panorama 2)

Simulation Size: 66" in width by 29.3" in height. Images should be viewed from a distance of 18 inches in order to obtain the proper perspective.

This box should be exactly 1" long on the printed panorama





MATCH LINE** LT02 PANO #1



ATLANTIC SHORES offshore wind

Appendix A: Atlantic Shores Offshore Wind Cumulative Photosimulations

LT02: Cape May Point State Park, Lower Township, Cape May County, New Jersey

Photosimulation (Panorama 2): Scenario 1: 2023-2025 Project Construction (Ocean Wind, Empire Wind, Empire Wind II)

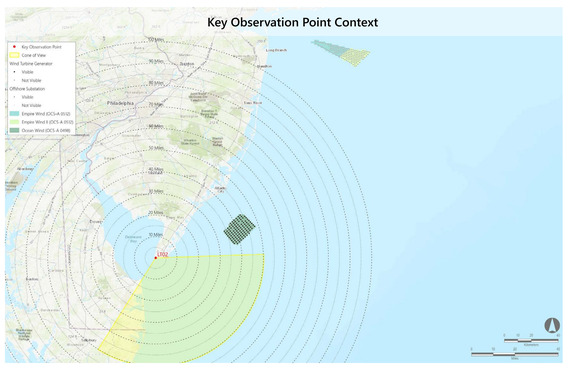
Simulation Size: 66" in width by 29.3" in height. Images should be viewed from a distance of 18 inches in order to obtain the proper perspective.

This box should be exactly 1" long on the printed panorama

Notes:

- Photosimulation Size: 66" in width by 29.3" in height. Images should be viewed from 18 inches in order to obtain the proper perspective. For on-screen viewing, user should zoom in until the 1-inch scale equals exactly one inch when measured on the screen.
- Offshore Substation location and dimensions are based on preliminary publicly available project data. Projects for which this data is not currently available, WTGs are used for all foundation positions. OSS positions and dimensions considered in this photosimulation are subject to potential modification.
- WTG positions in the photosimulations are based on a refraction value of 7/6 or an approximate 0.14 coefficient derived from observations of the constructed Block Island Wind Farm. This refraction coefficient may yield more conservative visibility results (i.e. greater turbine visibility) that the viewshed analysis results which use a refraction coefficient of 0.13.
- WTG tower, blades, and nacelle use the BOEM and FAA required color RAL 9010. The base and platform use RAL 1023 in accordance with USCG regulations.
- *The number of WTGs visible from the KOP was determined by human verified computer generated counts performed in the 3D camera views considering screening resulting from vegetation, structures, curvature of the earth and refraction. This count may vary from the actual number of WTGs visible in the respective views due to masking completed during post processing which may include people, waves, boats, or other minor obstructions that appear in the photograph. Additionally, the WTG counts assumed the WTG blades are in the upright position whereas the photosimulations assume a random rotation pattern. Considering the largest WTG in the cumulative array, this could account for up to 236 ft. (72 m) in lost maximum height depending on the rotation position.
- The cone of view indicated on the Key Observation Point Context map indicates the horizontal extent of view only and does not indicate the extent of WTG visibility.
- The resolution of the cumulative photosimulations balances the size and usability of the documents with the need for high resolution to see distant project components. Similarly to human vision, very distant turbines may appear blurry or difficult to decipher due to resolution limitations.
- The Key Observation Point Context map considers screening by curvature of the earth, viewer height, and turbine height. Landscape screening features are not considered. Therefore, in this view, the number of visible turbines depicted on the map may not match the table due to the presence of landscape screening features.

Project	Year of Development	Max Blade Tip Height (feet)	Potential Number of WTGs & OSSs Visible from KOP*	Total Number of WTGs & OSSs in Project	Theoretical Distance to Nearest Visible WTG (miles)	Theoretical Distance to Furthest Visible WTG (miles)
Ocean Wind (OCS-A 0498)	2024-2025	906	105	111	33.9	47.9
Empire Wind (OCS-A 0512)	2023-2027	951	0	72	Not Visible	Not Visible
Empire Wind II (OCS-A 0512)	2025-2027	951	0	104	Not Visible	Not Visible





MATCH LINE** LT02 PANO #1



ATLANTIC SHORES offshore wind

Appendix A: Atlantic Shores Offshore Wind Cumulative Photosimulations

LT02: Cape May Point State Park, Lower Township, Cape May County, New Jersey

Photosimulation (Panorama 2): Scenario 2: Atlantic Shores Construction (2025-2027) added to Scenario 1 (Ocean Wind, Empire Wind, Empire Wind II, Atlantic Shores South)

Simulation Size: 66" in width by 29.3" in height. Images should be viewed from a distance of 18 inches in order to obtain the proper perspective.

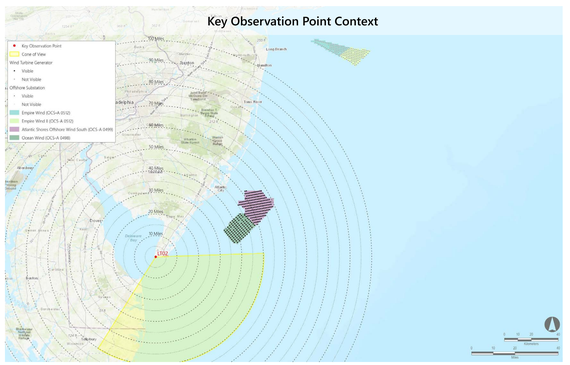
This box should be exactly 1" long on the printed panorama

Notes:

- Photosimulation Size: 66" in width by 29.3" in height. Images should be viewed from 18 inches in order to obtain the proper perspective. For on-screen viewing, user should zoom in until the 1-inch scale equals exactly one inch when measured on the screen.
- Offshore Substation location and dimensions are based on preliminary publicly available project data. Projects for which this data is not currently available, WTGs are used for all foundation positions. OSS positions and dimensions considered in this photosimulation are subject to potential modification.
- WTG positions in the photosimulations are based on a refraction value of 7/6 or an approximate 0.14 coefficient derived from observations of the constructed Block Island Wind Farm. This refraction coefficient may yield more conservative visibility results (i.e. greater turbine visibility) that the viewshed analysis results which use a refraction coefficient of 0.13.
- WTG tower blades, and nacelle use the BOEM and FAA required color RAL 9010. The base and platform use RAL 1023 in accordance with USCG regulations.
- *The number of WTGs visible from the KOP was determined by human verified computer generated counts performed in the 3D camera views considering screening resulting from vegetation, structures, curvature of the earth and refraction. This count may vary from the actual number of WTGs visible in the respective views due to masking completed during post processing which may include people, waves, boats, or other minor obstructions that appear in the photograph. Additionally, the WTG counts assumed the WTG blades are in the upright position whereas the photosimulations assume a random rotation pattern. Considering the largest WTG in the cumulative array, this could account for up to 236 ft. (72 m) in lost maximum height depending on the rotation position.
- The cone of view indicated on the Key Observation Point Context map indicates the horizontal extent of view only and does not indicate the extent of WTG visibility.
- The resolution of the cumulative photosimulations balances the size and usability of the documents with the need for high resolution to see distant project components. Similarly to human vision, very distant turbines may appear blurry or difficult to decipher due to resolution limitations.
- The Key Observation Point Context map considers screening by curvature of the earth, viewer height, and turbine height. Landscape screening features are not considered. Therefore, in this view, the number of visible turbines depicted on the map may not match the table due to the presence of landscape screening features.

Project	Year of Development	Max Blade Tip Height (feet)	Potential Number of WTGs & OSSs Visible from KOP*	Total Number of WTGs & OSSs in Project	Theoretical Distance to Nearest Visible WTG (miles)	Theoretical Distance to Furthest Visible WTG (miles)
Atlantic Shores Offshore Wind South (OCS-A 0499)	2023-2025	1,047	145	205	45.0	58.9
Ocean Wind (OCS-A 0498)	2024-2025	906	105	111	33.9	47.9
Empire Wind (OCS-A 0512)	2023-2027	951	0	72	Not Visible	Not Visible
Empire Wind II (OCS-A 0512)	2025-2027	951	0	104	Not Visible	Not Visible

Key Observation Point Context



Key Observation Point Location



MATCH LINE** LT02 PANO #1



ATLANTIC SHORES offshore wind

Appendix A: Atlantic Shores Offshore Wind Cumulative Photosimulations

LT02: Cape May Point State Park, Lower Township, Cape May County, New Jersey

Photosimulation (Panorama 2): Scenario 3: 2024-2030 Project construction added after the construction of Atlantic Shores South (Full Lease Build-out Including Atlantic Shores South)

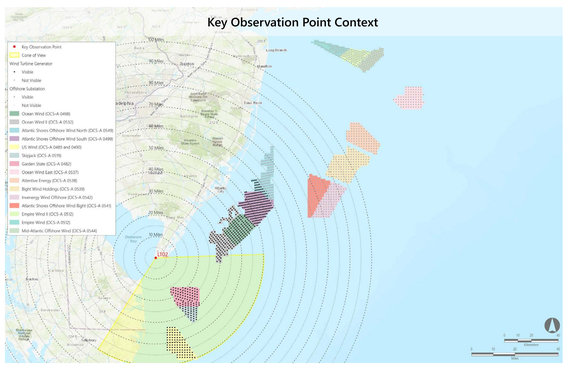
Simulation Size: 66" in width by 29.3" in height. Images should be viewed from a distance of 18 inches in order to obtain the proper perspective.

This box should be exactly 1" long on the printed panorama

Notes:

- Photosimulation Size: 66" in width by 29.3" in height. Images should be viewed from 18 inches in order to obtain the proper perspective. For on-screen viewing, user should zoom in until the 1-inch scale equals exactly one inch when measured on the screen.
- Offshore Substation location and dimensions are based on preliminary publicly available project data. Projects for which this data is not currently available, WTGs are used for all foundation positions. OSS positions and dimensions considered in this photosimulation are subject to potential modification.
- WTG positions in the photosimulations are based on a refraction value of 7/6 or an approximate 0.14 coefficient derived from observations of the constructed Block Island Wind Farm. This refraction coefficient may yield more conservative visibility results (i.e. greater turbine visibility) that the viewshed analysis results which use a refraction coefficient of 0.13.
- WTG tower, blades, and nacelle use the BOEM and FAA required color RAL 9010. The base and platform use RAL 1023 in accordance with USCG regulations.
- *The number of WTGs visible from the KOP was determined by human verified computer generated counts performed in the 3D camera views considering screening resulting from vegetation, structures, curvature of the earth and refraction. This count may vary from the actual number of WTGs visible in the respective views due to masking completed during post processing which may include people, waves, boats, or other minor obstructions that appear in the photograph. Additionally, the WTG counts assumed the WTG blades are in the upright position whereas the photosimulations assume a random rotation pattern. Considering the largest WTG in the cumulative array, this could account for up to 236 ft. (72 m) in lost maximum height depending on the rotation position.
- The cone of view indicated on the Key Observation Point Context map indicates the horizontal extent of view only and does not indicate the extent of WTG visibility.
- The resolution of the cumulative photosimulations balances the size and usability of the documents with the need for high resolution to see distant project components. Similarly to human vision, very distant turbines may appear blurry or difficult to decipher due to resolution limitations.
- The Key Observation Point Context map considers screening by curvature of the earth, viewer height, and turbine height. Landscape screening features are not considered. Therefore, in this view, the number of visible turbines depicted on the map may not match the table due to the presence of landscape screening features.

Project	Year of Development	Max Blade Tip Height (feet)	Potential Number of WTGs & OSSs Visible from KOP*	Total Number of WTGs & OSSs in Project	Theoretical Distance to Nearest Visible WTG (miles)	Theoretical Distance to Furthest Visible WTG (miles)
Atlantic Shores Offshore Wind South (OCS-A 0499)	2023-2025	1,047	145	205	45.0	58.9
Ocean Wind (OCS-A 0498)	2024-2025	906	105	111	33.9	47.9
Empire Wind (OCS-A 0512)	2023-2027	951	0	72	Not Visible	Not Visible
Empire Wind II (OCS-A 0512)	2025-2027	951	0	104	Not Visible	Not Visible
Skipjack (OCS-A 0519)	2024-2030	853	33	33	25.7	34.1
Garden State (OCS-A 0482)	2023-2030	853	80	80	15.9	29.6
US Wind (OCS-A 0489 and 0490)	2024	938	98	101	32.6	49.4
Atlantic Shores Offshore Wind North (OCS-A 0549)	2025-2030	1,047	13	164	55.5	59.0
Ocean Wind II (OCS-A 0532)	2026-2030	906	111	111	26.0	43.2
Mid-Atlantic Offshore Wind (OCS-A 0544)	by 2030	853	0	104	Not Visible	Not Visible
Ocean Wind East (OCS-A 0537)	by 2030	853	0	82	Not Visible	Not Visible
Attentive Energy (OCS-A 0538)	by 2030	853	0	101	Not Visible	Not Visible
Bight Wind Holdings (OCS-A 0539)	by 2030	853	0	148	Not Visible	Not Visible
Atlantic Shores Offshore Wind Bight (OCS-A 0541)	by 2030	853	0	95	Not Visible	Not Visible
Invenergy Wind Offshore (OCS-A 0542)	by 2030	853	0	99	Not Visible	Not Visible





MATCH LINE** LT02 PANO #1



ATLANTIC SHORES offshore wind

Appendix A: Atlantic Shores Offshore Wind Cumulative Photosimulations

LT02: Cape May Point State Park, Lower Township, Cape May County, New Jersey

Photosimulation (Panorama 2): Scenario 4: Full buildout of all lease areas without Atlantic Shores South

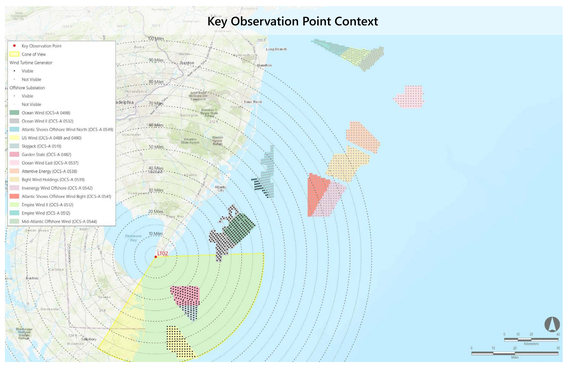
Simulation Size: 66" in width by 29.3" in height. Images should be viewed from a distance of 18 inches in order to obtain the proper perspective.

This box should be exactly 1" long on the printed panorama

Notes:

- Photosimulation Size: 66" in width by 29.3" in height. Images should be viewed from 18 inches in order to obtain the proper perspective. For on-screen viewing, user should zoom in until the 1-inch scale equals exactly one inch when measured on the screen.
- Offshore Substation location and dimensions are based on preliminary publicly available project data. Projects for which this data is not currently available, WTGs are used for all foundation positions. OSS positions and dimensions considered in this photosimulation are subject to potential modification.
- WTG positions in the photosimulations are based on a refraction value of 7/6 or an approximate 0.14 coefficient derived from observations of the constructed Block Island Wind Farm. This refraction coefficient may yield more conservative visibility results (i.e. greater turbine visibility) that the viewshed analysis results which use a refraction coefficient of 0.13.
- WTG tower, blades, and nacelle use the BOEM and FAA required color RAL 9010. The base and platform use RAL 1023 in accordance with USCG regulations.
- *The number of WTGs visible from the KOP was determined by human verified computer generated counts performed in the 3D camera views considering screening resulting from vegetation, structures, curvature of the earth and refraction. This count may vary from the actual number of WTGs visible in the respective views due to masking completed during post processing which may include people, waves, boats, or other minor obstructions that appear in the photograph. Additionally, the WTG counts assumed the WTG blades are in the upright position whereas the photosimulations assume a random rotation pattern. Considering the largest WTG in the cumulative array, this could account for up to 236 ft. (72 m) in lost maximum height depending on the rotation position.
- The cone of view indicated on the Key Observation Point Context map indicates the horizontal extent of view only and does not indicate the extent of WTG visibility.
- The resolution of the cumulative photosimulations balances the size and usability of the documents with the need for high resolution to see distant project components. Similarly to human vision, very distant turbines may appear blurry or difficult to decipher due to resolution limitations.
- The Key Observation Point Context map considers screening by curvature of the earth, viewer height, and turbine height. Landscape screening features are not considered. Therefore, in this view, the number of visible turbines depicted on the map may not match the table due to the presence of landscape screening features.

Project	Year of Development	Max Blade Tip Height (feet)	Potential Number of WTGs & OSSs Visible from KOP*	Total Number of WTGs & OSSs in Project	Theoretical Distance to Nearest Visible WTG (miles)	Theoretical Distance to Furthest Visible WTG (miles)
Ocean Wind (OCS-A 0498)	2024-2025	906	105	111	33.9	47.9
Empire Wind (OCS-A 0512)	2023-2027	951	0	72	Not Visible	Not Visible
Empire Wind II (OCS-A 0512)	2025-2027	951	0	104	Not Visible	Not Visible
Skipjack (OCS-A 0519)	2024-2030	853	33	33	25.7	34.1
Garden State (OCS-A 0482)	2023-2030	853	80	80	15.9	29.6
US Wind (OCS-A 0489 and 0490)	2024	938	98	101	32.6	49.4
Atlantic Shores Offshore Wind North (OCS-A 0549)	2025-2030	1,047	13	164	55.5	59.0
Ocean Wind II (OCS-A 0532)	2026-2030	906	111	111	26.0	43.2
Mid-Atlantic Offshore Wind (OCS-A 0544)	by 2030	853	0	104	Not Visible	Not Visible
Ocean Wind East (OCS-A 0537)	by 2030	853	0	82	Not Visible	Not Visible
Attentive Energy (OCS-A 0538)	by 2030	853	0	101	Not Visible	Not Visible
Bight Wind Holdings (OCS-A 0539)	by 2030	853	0	148	Not Visible	Not Visible
Atlantic Shores Offshore Wind Bight (OCS-A 0541)	by 2030	853	0	95	Not Visible	Not Visible
Invenergy Wind Offshore (OCS-A 0542)	by 2030	853	0	99	Not Visible	Not Visible





MATCH LINE** LT02 PANO #1



ATLANTIC SHORES offshore wind

Appendix A: Atlantic Shores Offshore Wind Cumulative Photosimulations

LT02: Cape May Point State Park, Lower Township, Cape May County, New Jersey

Photosimulation (Panorama 2): Scenario 5: Atlantic Shores South without the construction of other foreseeable planned activities

Simulation Size: 66" in width by 29.3" in height. Images should be viewed from a distance of 18 inches in order to obtain the proper perspective.

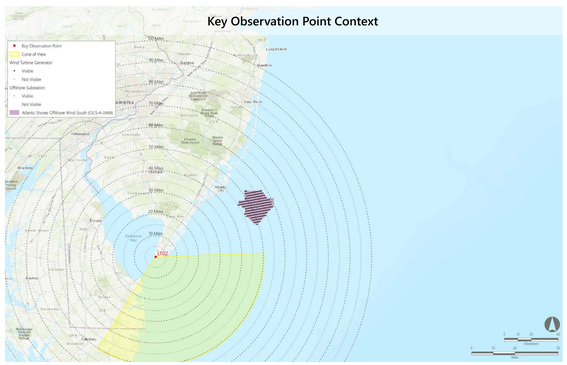
This box should be exactly 1" long on the printed panorama

Notes:

- Photosimulation Size: 66" in width by 29.3" in height. Images should be viewed from 18 inches in order to obtain the proper perspective. For on-screen viewing, user should zoom in until the 1-inch scale equals exactly one inch when measured on the screen.
- Offshore Substation location and dimensions are based on preliminary publicly available project data. Projects for which this data is not currently available, WTGs are used for all foundation positions. OSS positions and dimensions considered in this photosimulation are subject to potential modification.
- WTG positions in the photosimulations are based on a refraction value of 7/6 or an approximate 0.14 coefficient derived from observations of the constructed Block Island Wind Farm. This refraction coefficient may yield more conservative visibility results (i.e. greater turbine visibility) that the viewshed analysis results which use a refraction coefficient of 0.13.
- WTG tower, blades, and nacelle use the BOEM and FAA required color RAL 9010. The base and platform use RAL 1023 in accordance with USCG regulations.
- *The number of WTGs visible from the KOP was determined by human verified computer generated counts performed in the 3D camera views considering screening resulting from vegetation, structures, curvature of the earth and refraction. This count may vary from the actual number of WTGs visible in the respective views due to masking completed during post processing which may include people, waves, boats, or other minor obstructions that appear in the photograph. Additionally, the WTG counts assumed the WTG blades are in the upright position whereas the photosimulations assume a random rotation pattern. Considering the largest WTG in the cumulative array, this could account for up to 236 ft. (72 m) in lost maximum height depending on the rotation position.
- The cone of view indicated on the Key Observation Point Context map indicates the horizontal extent of view only and does not indicate the extent of WTG visibility.
- The resolution of the cumulative photosimulations balances the size and usability of the documents with the need for high resolution to see distant project components. Similarly to human vision, very distant turbines may appear blurry or difficult to decipher due to resolution limitations.
- The Key Observation Point Context map considers screening by curvature of the earth, viewer height, and turbine height. Landscape screening features are not considered. Therefore, in this view, the number of visible turbines depicted on the map may not match the table due to the presence of landscape screening features.

Project	Year of Development	Max Blade Tip Height (feet)	Potential Number of WTGs & OSSs Visible from KOP*	Total Number of WTGs & OSSs in Project	Theoretical Distance to Nearest Visible WTG (miles)	Theoretical Distance to Furthest Visible WTG (miles)
Atlantic Shores Offshore Wind South (OCS-A 0499)	2023-2025	1,047	145	205	45.0	58.9

Key Observation Point Context



Key Observation Point Location



OC04: Gillian's Wonderland Pier, Ocean City, Cape May County, New Jersey

Environmental Data

Date Taken: 08/25/2022
Time: 12:47 PM
Temperature: 91°F
Humidity: 29%
Visibility*: 10+ miles
Wind Direction: Northwest
Wind Speed: 3 mph
Conditions Observed: Fair

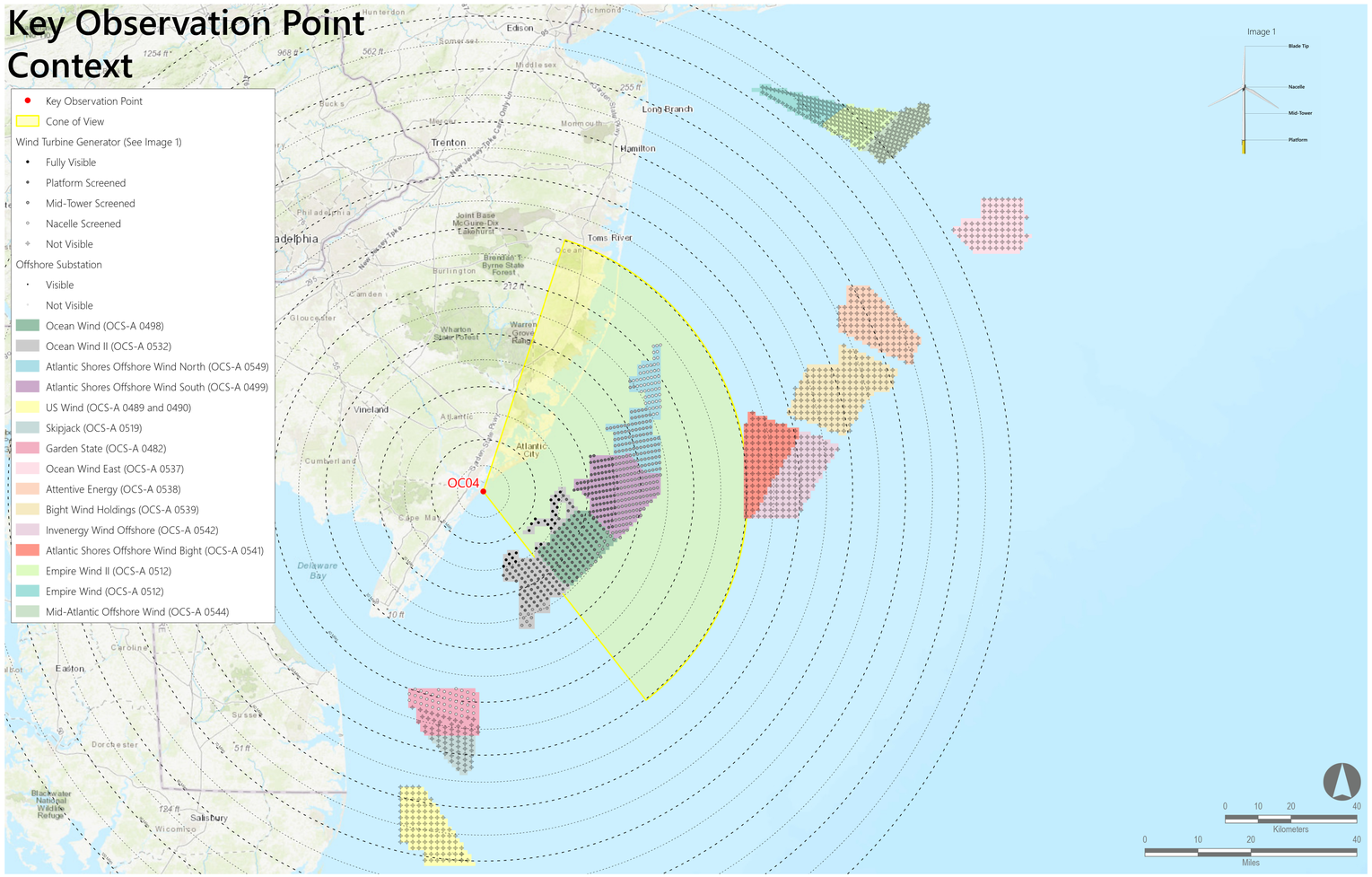
Camera Information
Camera: Canon EOS 5D Mark IV
Resolution: 30.4 Megapixels
Lens Focal Length: 50 mm
Camera Height: 5.10 feet AMSL

Key Observation Point Information

County: Cape May
Town: Ocean City
State: New Jersey
Location: Gillian's Wonderland Pier
Latitude, Longitude: 39.27506°N, 74.56878°W
Direction of View (Center): East (80.3°)
Field of View: 124° x 55°

Visual Resources
Character Area: Commercial Beachfront, Seascape (SCA)
User Group: Residents/Tourists, Fishermen
Visually Sensitive Resource: Ocean City Beachfront

Key Observation Point Context



Reasonably Foreseeable Projects Represented in Photosimulation

		Project	Year of Development	Max Blade Tip Height (feet)	Potential Number of WTGs & OSSs Visible from KOP**	Total Number of WTGs & OSSs in Project	Theoretical Distance to Nearest Visible WTG (miles)	Theoretical Distance to Furthest Visible WTG (miles)
Scenario 5	Scenario 2	Atlantic Shores Offshore Wind South (OCS-A 0499)	2025-2027	1,047	204	205	17.2	33.6
Scenario 4	Scenario 1	Ocean Wind (OCS-A 0498)	2023-2025	906	111	111	15.6	26.3
		Empire Wind (OCS-A 0512)	2024-2025	951	0	72	Not Visible	Not Visible
		Empire Wind II (OCS-A 0512)	2023-2027	951	0	104	Not Visible	Not Visible
	Scenario 3	Skipjack (OCS-A 0519)	2024-2030	853	0	33	Not Visible	Not Visible
		Garden State (OCS-A 0482)	2023-2030	853	32	80	37.6	42.6
		US Wind (OCS-A 0489 and 0490)	2024	938	0	101	Not Visible	Not Visible
		Atlantic Shores Offshore Wind North (OCS-A 0549)	2025-2030	1,047	118	164	26.1	43.5
		Ocean Wind II (OCS-A 0532)	2026-2030	906	111	111	11.0	26.8
		Mid-Atlantic Offshore Wind (OCS-A 0544)	by 2030	853	0	104	Not Visible	Not Visible
		Ocean Wind East (OCS-A 0537)	by 2030	853	0	82	Not Visible	Not Visible
		Attentive Energy (OCS-A 0538)	by 2030	853	0	101	Not Visible	Not Visible
		Bight Wind Holdings (OCS-A 0539)	by 2030	853	0	148	Not Visible	Not Visible
		Atlantic Shores Offshore Wind Bight (OCS-A 0541)	by 2030	853	0	95	Not Visible	Not Visible
		Invenergy Wind Offshore (OCS-A 0542)	by 2030	853	0	99	Not Visible	Not Visible

Notes:

- Offshore Substation location and dimensions are based on preliminary publicly available project data. Projects for which this data is not currently available, WTGs are used for all foundation positions. OSS positions and dimensions considered in this photosimulation are subject to potential modification.
- *Historical meteorological data predicts visibility within a limit of 10 statute miles. However, visibility may extend beyond this distance. The photosimulations assume visibility extends to the limit of physical visibility (including a standard refraction index).
- WTG positions in the photosimulations are based on a refraction value of 7/6 or an approximate 0.14 coefficient derived from observations of the constructed Block Island Wind Farm. This refraction coefficient may yield more conservative visibility results (i.e. greater turbine visibility) that the viewshed analysis results which use a refraction coefficient of 0.13.
- **The number of WTGs visible from the KOP was determined by human verified computer generated counts performed in the 3D camera views considering screening resulting from vegetation, structures, curvature of the earth and refraction. This count may vary from the actual number of WTGs visible in the respective views due to masking completed during post processing which may include people, waves, boats, or other minor obstructions that appear in the photograph. Additionally, the WTG counts assumed the WTG blades are in the upright position whereas the photosimulations assume a random rotation pattern. Considering the largest WTG in the cumulative array, this could account for up to 236 ft. (72 m) in lost maximum height depending on the rotation position.
- The cone of view indicated on the Key Observation Point Context map indicates the horizontal extent of view only and does not indicate the extent of WTG visibility.
- The Key Observation Point Context map considers screening by curvature of the earth, viewer height, and turbine height. Landscape screening features are not considered. Therefore, in this view, the number of visible turbines depicted on the map may not match the table due to the presence of landscape screening features.

ATLANTIC SHORES offshore wind

MATCH LINE OC04 PANO #2

MATCH LINE OC04 PANO #2

ATLANTIC SHORES offshore wind

Appendix A: Atlantic Shores Offshore Wind Cumulative Photosimulations

OC04: Gillian's Wonderland Pier, Ocean City, Cape May County, New Jersey

Existing Conditions (Panorama 1)

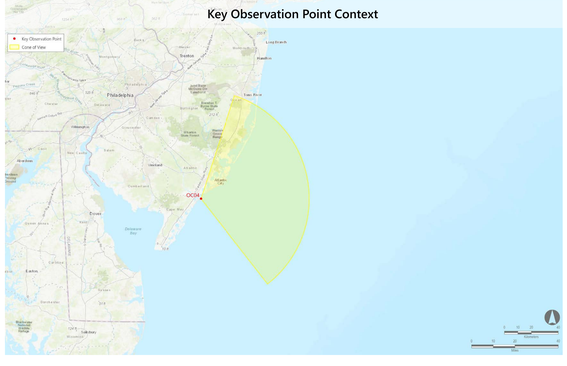
Simulation Size: 66" in width by 29.3" in height. Images should be viewed from a distance of 18 inches in order to obtain the proper perspective.

This box should be exactly 7" long on the printed panorama

Notes:

- Photosimulation Size: 66" in width by 29.3" in height. Images should be viewed from 18 inches in order to obtain the proper perspective. For on-screen viewing, user should zoom in until the 1-inch scale equals exactly one inch when measured on the screen.

Key Observation Point Context



Key Observation Point Location



MATCH LINE OC04 PANO #2

ATLANTIC SHORES offshore wind

Appendix A: Atlantic Shores Offshore Wind Cumulative Photosimulations

OC04: Gillian's Wonderland Pier, Ocean City, Cape May County, New Jersey

Photosimulation (Panorama 1): Scenario 1: 2023-2025 Project Construction (Ocean Wind, Empire Wind, Empire Wind II)

Simulation Size: 66" in width by 29.3" in height. Images should be viewed from a distance of 18 inches in order to obtain the proper perspective.

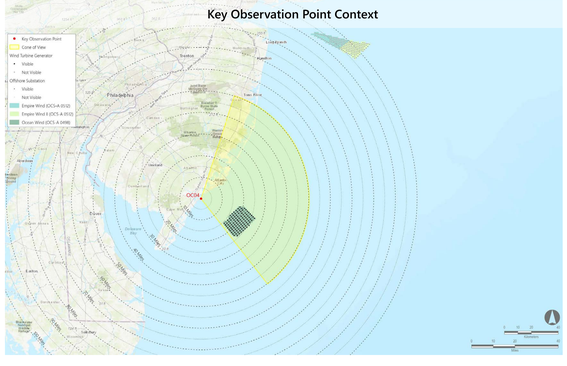
This box should be exactly 7" long on the printed panorama

Notes:

- Photosimulation Size: 66" in width by 29.3" in height. Images should be viewed from 18 inches in order to obtain the proper perspective. For on-screen viewing, user should zoom in until the 1-inch scale equals exactly one inch when measured on the screen.
- Offshore Substation location and dimensions are based on preliminary publicly available project data. Projects for which this data is not currently available, WTGs are used for all foundation positions. OSS positions and dimensions considered in this photosimulation are subject to potential modification.
- WTG positions in the photosimulations are based on a refraction value of 7/6 or an approximate 0.14 coefficient derived from observations of the constructed Block Island Wind Farm. This refraction coefficient may yield more conservative visibility results (i.e. greater turbine visibility) that the viewshed analysis results which use a refraction coefficient of 0.13.
- WTG tower, blades, and nacelle use the BOEM and FAA required color RAL 9010. The base and platform use RAL 1023 in accordance with USCG regulations.
- *The number of WTGs visible from the KOP was determined by human verified computer generated counts performed in the 3D camera views considering screening resulting from vegetation, structures, curvature of the earth and refraction. This count may vary from the actual number of WTGs visible in the respective views due to masking completed during post processing which may include people, waves, boats, or other minor obstructions that appear in the photograph. Additionally, the WTG counts assumed the WTG blades are in the upright position whereas the photosimulations assume a random rotation pattern. Considering the largest WTG in the cumulative array, this could account for up to 236 ft. (72 m) in lost maximum height depending on the rotation position.
- The cone of view indicated on the Key Observation Point Context map indicates the horizontal extent of view only and does not indicate the extent of WTG visibility.
- The resolution of the cumulative photosimulations balances the size and usability of the documents with the need for high resolution to see distant project components. Similarly to human vision, very distant turbines may appear blurry or difficult to decipher due to resolution limitations.
- The Key Observation Point Context map considers screening by curvature of the earth, viewer height, and turbine height. Landscape screening features are not considered. Therefore, in this view, the number of visible turbines depicted on the map may not match the table due to the presence of landscape screening features.

Project	Year of Development	Max Blade Tip Height (feet)	Potential Number of WTGs & OSSs Visible from KOP*	Total Number of WTGs & OSSs in Project	Theoretical Distance to Nearest Visible WTG (miles)	Theoretical Distance to Furthest Visible WTG (miles)
Ocean Wind (OCS-A 0498)	2024-2025	906	111	111	15.6	26.3
Empire Wind (OCS-A 0512)	2023-2027	951	0	72	Not Visible	Not Visible
Empire Wind II (OCS-A 0512)	2025-2027	951	0	104	Not Visible	Not Visible

Key Observation Point Context



Key Observation Point Location



MATCH LINE OC04 PANO #2

ATLANTIC SHORES offshore wind

Appendix A: Atlantic Shores Offshore Wind Cumulative Photosimulations

OC04: Gillian's Wonderland Pier, Ocean City, Cape May County, New Jersey

Photosimulation (Panorama 1): Scenario 2: Atlantic Shores Construction (2025-2027) added to Scenario 1 (Ocean Wind, Empire Wind, Empire Wind II, Atlantic Shores South)

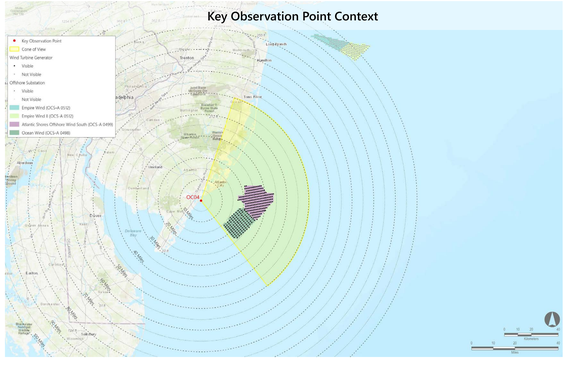
Simulation Size: 66" in width by 29.3" in height. Images should be viewed from a distance of 18 inches in order to obtain the proper perspective.

This box should be exactly 7" long on the printed panorama

Notes:

- Photosimulation Size: 66" in width by 29.3" in height. Images should be viewed from 18 inches in order to obtain the proper perspective. For on-screen viewing, user should zoom in until the 1-inch scale equals exactly one inch when measured on the screen.
- Offshore Substation location and dimensions are based on preliminary publicly available project data. Projects for which this data is not currently available, WTGs are used for all foundation positions. OSS positions and dimensions considered in this photosimulation are subject to potential modification.
- WTG positions in the photosimulations are based on a refraction value of 7/6 or an approximate 0.14 coefficient derived from observations of the constructed Block Island Wind Farm. This refraction coefficient may yield more conservative visibility results (i.e. greater turbine visibility) that the viewshed analysis results which use a refraction coefficient of 0.13.
- WTG tower, blades, and nacelle use the BOEM and FAA required color RAL 9010. The base and platform use RAL 1023 in accordance with USCG regulations.
- *The number of WTGs visible from the KOP was determined by human verified computer generated counts performed in the 3D camera views considering screening resulting from vegetation, structures, curvature of the earth and refraction. This count may vary from the actual number of WTGs visible in the respective views due to masking completed during post processing which may include people, waves, boats, or other minor obstructions that appear in the photograph. Additionally, the WTG counts assumed the WTG blades are in the upright position whereas the photosimulations assume a random rotation pattern. Considering the largest WTG in the cumulative array, this could account for up to 236 ft. (72 m) in lost maximum height depending on the rotation position.
- The cone of view indicated on the Key Observation Point Context map indicates the horizontal extent of view only and does not indicate the extent of WTG visibility.
- The resolution of the cumulative photosimulations balances the size and usability of the documents with the need for high resolution to see distant project components. Similarly to human vision, very distant turbines may appear blurry or difficult to decipher due to resolution limitations.
- The Key Observation Point Context map considers screening by curvature of the earth, viewer height, and turbine height. Landscape screening features are not considered. Therefore, in this view, the number of visible turbines depicted on the map may not match the table due to the presence of landscape screening features.

Project	Year of Development	Max Blade Tip Height (feet)	Potential Number of WTGs & OSSs Visible from KOP*	Total Number of WTGs & OSSs in Project	Theoretical Distance to Nearest Visible WTG (miles)	Theoretical Distance to Furthest Visible WTG (miles)
Atlantic Shores Offshore Wind South (OCS-A 0499)	2023-2025	1,047	204	205	17.2	33.6
Ocean Wind (OCS-A 0498)	2024-2025	906	111	111	15.6	26.3
Empire Wind (OCS-A 0512)	2023-2027	951	0	72	Not Visible	Not Visible
Empire Wind II (OCS-A 0512)	2025-2027	951	0	104	Not Visible	Not Visible





MATCH LINE OC04 PANO #2

ATLANTIC SHORES offshore wind

Appendix A: Atlantic Shores Offshore Wind Cumulative Photosimulations

OC04: Gillian's Wonderland Pier, Ocean City, Cape May County, New Jersey

Photosimulation (Panorama 1): Scenario 3: 2024-2030 Project construction added after the construction of Atlantic Shores South (Full Lease Build-out Including Atlantic Shores South)

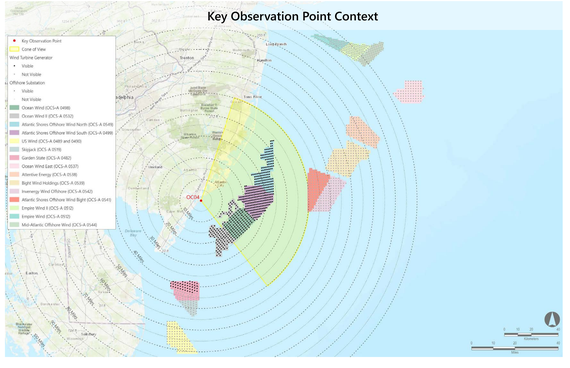
Simulation Size: 66" in width by 29.3" in height. Images should be viewed from a distance of 18 inches in order to obtain the proper perspective.

This box should be exactly 1" long on the printed panorama

Notes:

- Photosimulation Size: 66" in width by 29.3" in height. Images should be viewed from 18 inches in order to obtain the proper perspective. For on-screen viewing, user should zoom in until the 1-inch scale equals exactly one inch when measured on the screen.
- Offshore Substation location and dimensions are based on preliminary publicly available project data. Projects for which this data is not currently available, WTGs are used for all foundation positions. OSS positions and dimensions considered in this photosimulation are subject to potential modification.
- WTG positions in the photosimulations are based on a refraction value of 7/6 or an approximate 0.14 coefficient derived from observations of the constructed Block Island Wind Farm. This refraction coefficient may yield more conservative visibility results (i.e. greater turbine visibility) that the viewshed analysis results which use a refraction coefficient of 0.13.
- WTG tower, blades, and nacelle use the BOEM and FAA required color RAL 9010. The base and platform use RAL 1023 in accordance with USCG regulations.
- *The number of WTGs visible from the KOP was determined by human verified computer generated counts performed in the 3D camera views considering screening resulting from vegetation, structures, curvature of the earth and refraction. This count may vary from the actual number of WTGs visible in the respective views due to masking completed during post processing which may include people, waves, boats, or other minor obstructions that appear in the photograph. Additionally, the WTG counts assumed the WTG blades are in the upright position whereas the photosimulations assume a random rotation pattern. Considering the largest WTG in the cumulative array, this could account for up to 236 ft. (72 m) in lost maximum height depending on the rotation position.
- The cone of view indicated on the Key Observation Point Context map indicates the horizontal extent of view only and does not indicate the extent of WTG visibility.
- The resolution of the cumulative photosimulations balances the size and usability of the documents with the need for high resolution to see distant project components. Similarly to human vision, very distant turbines may appear blurry or difficult to decipher due to resolution limitations.
- The Key Observation Point Context map considers screening by curvature of the earth, viewer height, and turbine height. Landscape screening features are not considered. Therefore, in this view, the number of visible turbines depicted on the map may not match the table due to the presence of landscape screening features.

Project	Year of Development	Max Blade Tip Height (feet)	Potential Number of WTGs & OSSs Visible from KOP*	Total Number of WTGs & OSSs in Project	Theoretical Distance to Nearest Visible WTG (miles)	Theoretical Distance to Furthest Visible WTG (miles)
Atlantic Shores Offshore Wind South (OCS-A 0499)	2023-2025	1,047	204	205	17.2	33.6
Ocean Wind (OCS-A 0498)	2024-2025	906	111	111	15.6	26.3
Empire Wind (OCS-A 0512)	2023-2027	951	0	72	Not Visible	Not Visible
Empire Wind II (OCS-A 0512)	2025-2027	951	0	104	Not Visible	Not Visible
Skipjack (OCS-A 0519)	2024-2030	853	0	33	Not Visible	Not Visible
Garden State (OCS-A 0482)	2023-2030	853	32	80	37.6	42.6
US Wind (OCS-A 0489 and 0490)	2024	938	0	101	Not Visible	Not Visible
Atlantic Shores Offshore Wind North (OCS-A 0549)	2025-2030	1,047	118	164	26.1	43.5
Ocean Wind II (OCS-A 0532)	2026-2030	906	111	111	11.0	26.8
Mid-Atlantic Offshore Wind (OCS-A 0544)	by 2030	853	0	104	Not Visible	Not Visible
Ocean Wind East (OCS-A 0537)	by 2030	853	0	82	Not Visible	Not Visible
Attentive Energy (OCS-A 0538)	by 2030	853	0	101	Not Visible	Not Visible
Bight Wind Holdings (OCS-A 0539)	by 2030	853	0	148	Not Visible	Not Visible
Atlantic Shores Offshore Wind Bight (OCS-A 0541)	by 2030	853	0	95	Not Visible	Not Visible
Invenergy Wind Offshore (OCS-A 0542)	by 2030	853	0	99	Not Visible	Not Visible





MATCH LINE OC04 PANO #2



ATLANTIC SHORES offshore wind

Appendix A: Atlantic Shores Offshore Wind Cumulative Photosimulations

OC04: Gillian's Wonderland Pier, Ocean City, Cape May County, New Jersey

Photosimulation (Panorama 1): Scenario 4: Full buildout of all lease areas without Atlantic Shores South

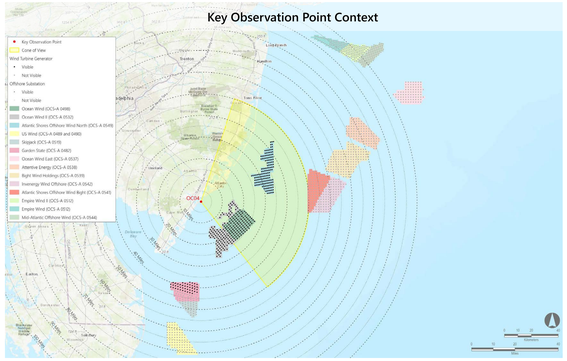
Simulation Size: 66" in width by 29.3" in height. Images should be viewed from a distance of 18 inches in order to obtain the proper perspective.

This box should be exactly 7" long on the printed panorama

Notes:

- Photosimulation Size: 66" in width by 29.3" in height. Images should be viewed from 18 inches in order to obtain the proper perspective. For on-screen viewing, user should zoom in until the 1-inch scale equals exactly one inch when measured on the screen.
- Offshore Substation location and dimensions are based on preliminary publicly available project data. Projects for which this data is not currently available, WTGs are used for all foundation positions. OSS positions and dimensions considered in this photosimulation are subject to potential modification.
- WTG positions in the photosimulations are based on a refraction value of 7/6 or an approximate 0.14 coefficient derived from observations of the constructed Block Island Wind Farm. This refraction coefficient may yield more conservative visibility results (i.e. greater turbine visibility) that the viewshed analysis results which use a refraction coefficient of 0.13.
- WTG tower, blades, and nacelle use the BOEM and FAA required color RAL 9010. The base and platform use RAL 1023 in accordance with USCG regulations.
- *The number of WTGs visible from the KOP was determined by human verified computer generated counts performed in the 3D camera views considering screening resulting from vegetation, structures, curvature of the earth and refraction. This count may vary from the actual number of WTGs visible in the respective views due to masking completed during post processing which may include people, waves, boats, or other minor obstructions that appear in the photograph. Additionally, the WTG counts assumed the WTG blades are in the upright position whereas the photosimulations assume a random rotation pattern. Considering the largest WTG in the cumulative array, this could account for up to 236 ft. (72 m) in lost maximum height depending on the rotation position.
- The cone of view indicated on the Key Observation Point Context map indicates the horizontal extent of view only and does not indicate the extent of WTG visibility.
- The resolution of the cumulative photosimulations balances the size and usability of the documents with the need for high resolution to see distant project components. Similarly to human vision, very distant turbines may appear blurry or difficult to decipher due to resolution limitations.
- The Key Observation Point Context map considers screening by curvature of the earth, viewer height, and turbine height. Landscape screening features are not considered. Therefore, in this view, the number of visible turbines depicted on the map may not match the table due to the presence of landscape screening features.

Project	Year of Development	Max Blade Tip Height (feet)	Potential Number of WTGs & OSSs Visible from KOP*	Total Number of WTGs & OSSs in Project	Theoretical Distance to Nearest Visible WTG (miles)	Theoretical Distance to Furthest Visible WTG (miles)
Ocean Wind (OCS-A 0498)	2024-2025	906	111	111	15.6	26.3
Empire Wind (OCS-A 0512)	2023-2027	951	0	72	Not Visible	Not Visible
Empire Wind II (OCS-A 0512)	2025-2027	951	0	104	Not Visible	Not Visible
Skipjack (OCS-A 0519)	2024-2030	853	0	33	Not Visible	Not Visible
Garden State (OCS-A 0482)	2023-2030	853	32	80	37.6	42.6
US Wind (OCS-A 0489 and 0490)	2024	938	0	101	Not Visible	Not Visible
Atlantic Shores Offshore Wind North (OCS-A 0549)	2025-2030	1,047	118	164	26.1	43.5
Ocean Wind II (OCS-A 0532)	2026-2030	906	111	111	11.0	26.8
Mid-Atlantic Offshore Wind (OCS-A 0544)	by 2030	853	0	104	Not Visible	Not Visible
Ocean Wind East (OCS-A 0537)	by 2030	853	0	82	Not Visible	Not Visible
Attentive Energy (OCS-A 0538)	by 2030	853	0	101	Not Visible	Not Visible
Bight Wind Holdings (OCS-A 0539)	by 2030	853	0	148	Not Visible	Not Visible
Atlantic Shores Offshore Wind Bight (OCS-A 0541)	by 2030	853	0	95	Not Visible	Not Visible
Invenergy Wind Offshore (OCS-A 0542)	by 2030	853	0	99	Not Visible	Not Visible





MATCH LINE OC04 PANO #2



ATLANTIC SHORES offshore wind

Appendix A: Atlantic Shores Offshore Wind Cumulative Photosimulations

OC04: Gillian's Wonderland Pier, Ocean City, Cape May County, New Jersey

Photosimulation (Panorama 1): Scenario 5: Atlantic Shores South without the construction of other foreseeable planned activities

Simulation Size: 66" in width by 29.3" in height. Images should be viewed from a distance of 18 inches in order to obtain the proper perspective.

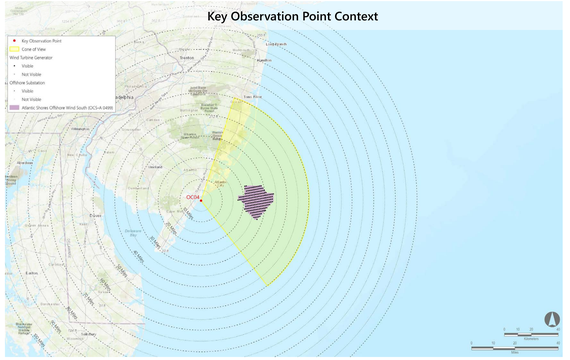
This box should be exactly 7" long on the printed panorama

Notes:

- Photosimulation Size: 66" in width by 29.3" in height. Images should be viewed from 18 inches in order to obtain the proper perspective. For on-screen viewing, user should zoom in until the 1-inch scale equals exactly one inch when measured on the screen.
- Offshore Substation location and dimensions are based on preliminary publicly available project data. Projects for which this data is not currently available, WTGs are used for all foundation positions. OSS positions and dimensions considered in this photosimulation are subject to potential modification.
- WTG positions in the photosimulations are based on a refraction value of 7/6 or an approximate 0.14 coefficient derived from observations of the constructed Block Island Wind Farm. This refraction coefficient may yield more conservative visibility results (i.e. greater turbine visibility) that the viewshed analysis results which use a refraction coefficient of 0.13.
- WTG tower, blades, and nacelle use the BOEM and FAA required color RAL 9010. The base and platform use RAL 1023 in accordance with USCG regulations.
- *The number of WTGs visible from the KOP was determined by human verified computer generated counts performed in the 3D camera views considering screening resulting from vegetation, structures, curvature of the earth and refraction. This count may vary from the actual number of WTGs visible in the respective views due to masking completed during post processing which may include people, waves, boats, or other minor obstructions that appear in the photograph. Additionally, the WTG counts assumed the WTG blades are in the upright position whereas the photosimulations assume a random rotation pattern. Considering the largest WTG in the cumulative array, this could account for up to 236 ft. (72 m) in lost maximum height depending on the rotation position.
- The cone of view indicated on the Key Observation Point Context map indicates the horizontal extent of view only and does not indicate the extent of WTG visibility.
- The resolution of the cumulative photosimulations balances the size and usability of the documents with the need for high resolution to see distant project components. Similarly to human vision, very distant turbines may appear blurry or difficult to decipher due to resolution limitations.
- The Key Observation Point Context map considers screening by curvature of the earth, viewer height, and turbine height. Landscape screening features are not considered. Therefore, in this view, the number of visible turbines depicted on the map may not match the table due to the presence of landscape screening features.

Project	Year of Development	Max Blade Tip Height (feet)	Potential Number of WTGs & OSSs Visible from KOP*	Total Number of WTGs & OSSs in Project	Theoretical Distance to Nearest Visible WTG (miles)	Theoretical Distance to Furthest Visible WTG (miles)
Atlantic Shores Offshore Wind South (OCS-A 0499)	2023-2025	1,047	204	205	17.2	33.6

Key Observation Point Context



Key Observation Point Location



OC04: Gillian's Wonderland Pier, Ocean City, Cape May County, New Jersey

Environmental Data

Date Taken: 08/25/2022
Time: 12:47 PM
Temperature: 91°F
Humidity: 29%
Visibility*: 10+ miles
Wind Direction: Northwest
Wind Speed: 3 mph
Conditions Observed: Fair

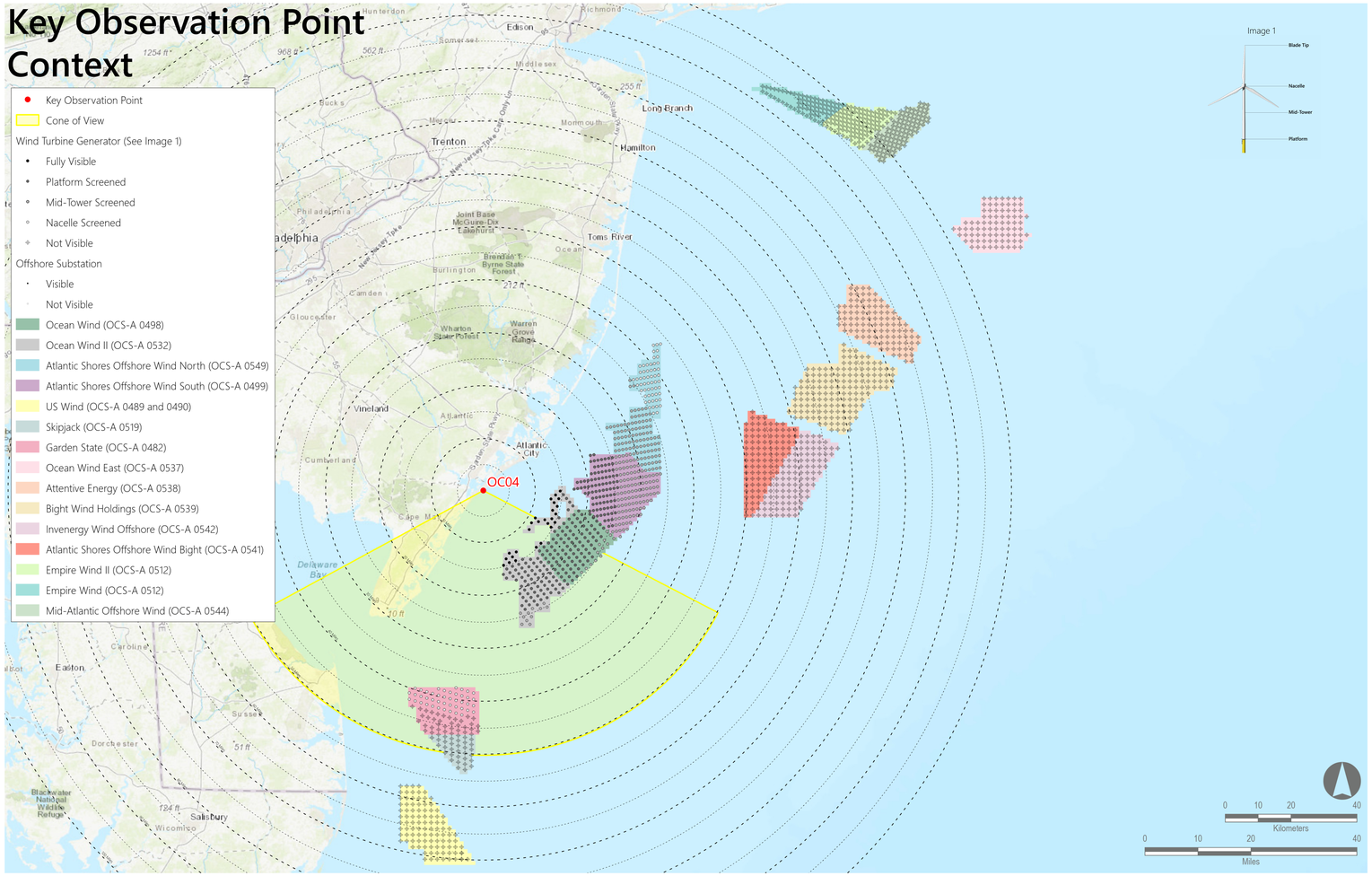
Camera Information
Camera: Canon EOS 5D Mark IV
Resolution: 30.4 Megapixels
Lens Focal Length: 50 mm
Camera Height: 5.10 feet AMSL

Key Observation Point Information

County: Cape May
Town: Ocean City
State: New Jersey
Location: Gillian's Wonderland Pier
Latitude, Longitude: 39.27506°N, 74.56878°W
Direction of View (Center): South (179.7°)
Field of View: 124° x 55°

Visual Resources
Character Area: Commercial Beachfront, Seascape (SCA)
User Group: Residents/Tourists, Fishermen
Visually Sensitive Resource: Ocean City Beachfront

Key Observation Point Context



Reasonably Foreseeable Projects Represented in Photosimulation

		Project	Year of Development	Max Blade Tip Height (feet)	Potential Number of WTGs & OSSs Visible from KOP**	Total Number of WTGs & OSSs in Project	Theoretical Distance to Nearest Visible WTG (miles)	Theoretical Distance to Furthest Visible WTG (miles)
Scenario 5	Scenario 2	Atlantic Shores Offshore Wind South (OCS-A 0499)	2025-2027	1,047	204	205	17.2	33.6
Scenario 4	Scenario 1	Ocean Wind (OCS-A 0498)	2023-2025	906	111	111	15.6	26.3
		Empire Wind (OCS-A 0512)	2024-2025	951	0	72	Not Visible	Not Visible
		Empire Wind II (OCS-A 0512)	2023-2027	951	0	104	Not Visible	Not Visible
	Scenario 3	Skipjack (OCS-A 0519)	2024-2030	853	0	33	Not Visible	Not Visible
		Garden State (OCS-A 0482)	2023-2030	853	32	80	37.6	42.6
		US Wind (OCS-A 0489 and 0490)	2024	938	0	101	Not Visible	Not Visible
		Atlantic Shores Offshore Wind North (OCS-A 0549)	2025-2030	1,047	118	164	26.1	43.5
		Ocean Wind II (OCS-A 0532)	2026-2030	906	111	111	11.0	26.8
		Mid-Atlantic Offshore Wind (OCS-A 0544)	by 2030	853	0	104	Not Visible	Not Visible
		Ocean Wind East (OCS-A 0537)	by 2030	853	0	82	Not Visible	Not Visible
		Attentive Energy (OCS-A 0538)	by 2030	853	0	101	Not Visible	Not Visible
		Bight Wind Holdings (OCS-A 0539)	by 2030	853	0	148	Not Visible	Not Visible
		Atlantic Shores Offshore Wind Bight (OCS-A 0541)	by 2030	853	0	95	Not Visible	Not Visible
		Invenergy Wind Offshore (OCS-A 0542)	by 2030	853	0	99	Not Visible	Not Visible

Notes:

- Offshore Substation location and dimensions are based on preliminary publicly available project data. Projects for which this data is not currently available, WTGs are used for all foundation positions. OSS positions and dimensions considered in this photosimulation are subject to potential modification.
- *Historical meteorological data predicts visibility within a limit of 10 statute miles. However, visibility may extend beyond this distance. The photosimulations assume visibility extends to the limit of physical visibility (including a standard refraction index).
- WTG positions in the photosimulations are based on a refraction value of 7/6 or an approximate 0.14 coefficient derived from observations of the constructed Block Island Wind Farm. This refraction coefficient may yield more conservative visibility results (i.e. greater turbine visibility) that the viewshed analysis results which use a refraction coefficient of 0.13.
- **The number of WTGs visible from the KOP was determined by human verified computer generated counts performed in the 3D camera views considering screening resulting from vegetation, structures, curvature of the earth and refraction. This count may vary from the actual number of WTGs visible in the respective views due to masking completed during post processing which may include people, waves, boats, or other minor obstructions that appear in the photograph. Additionally, the WTG counts assumed the WTG blades are in the upright position whereas the photosimulations assume a random rotation pattern. Considering the largest WTG in the cumulative array, this could account for up to 236 ft. (72 m) in lost maximum height depending on the rotation position.
- The cone of view indicated on the Key Observation Point Context map indicates the horizontal extent of view only and does not indicate the extent of WTG visibility.
- The Key Observation Point Context map considers screening by curvature of the earth, viewer height, and turbine height. Landscape screening features are not considered. Therefore, in this view, the number of visible turbines depicted on the map may not match the table due to the presence of landscape screening features.

ATLANTIC SHORES offshore wind

MATCH LINE OC04 PANO #1



MATCH LINE OC04 PANO #2

ATLANTIC SHORES offshore wind

Appendix A: Atlantic Shores Offshore Wind Cumulative Photosimulations

OC04: Gillian's Wonderland Pier, Ocean City, Cape May County, New Jersey

Existing Conditions (Panorama 2)

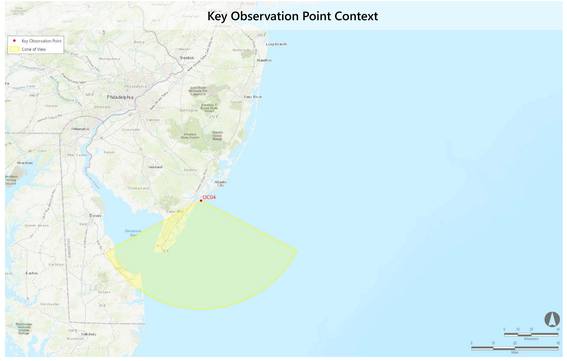
Simulation Size: 66" in width by 29.3" in height. Images should be viewed from a distance of 18 inches in order to obtain the proper perspective.

This box should measure 7" long on the printed panorama

Notes:

- Photosimulation Size: 66" in width by 29.3" in height. Images should be viewed from 18 inches in order to obtain the proper perspective. For on-screen viewing, user should zoom in until the 1-inch scale equals exactly one inch when measured on the screen.

Key Observation Point Context



Key Observation Point Location



MATCH LINE OC04 PANO #1



ATLANTIC SHORES offshore wind

Appendix A: Atlantic Shores Offshore Wind Cumulative Photosimulations

OC04: Gillian's Wonderland Pier, Ocean City, Cape May County, New Jersey

Photosimulation (Panorama 2): Scenario 1: 2023-2025 Project Construction (Ocean Wind, Empire Wind, Empire Wind II)

Simulation Size: 66" in width by 29.3" in height. Images should be viewed from a distance of 18 inches in order to obtain the proper perspective.

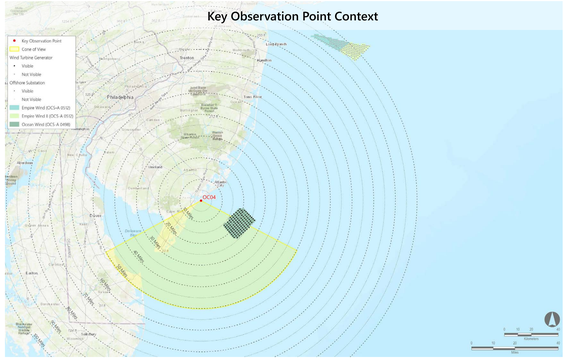
This box should measure 1" long on the printed panorama

Notes:

- Photosimulation Size: 66" in width by 29.3" in height. Images should be viewed from 18 inches in order to obtain the proper perspective. For on-screen viewing, user should zoom in until the 1-inch scale equals exactly one inch when measured on the screen.
- Offshore Substation location and dimensions are based on preliminary publicly available project data. Projects for which this data is not currently available, WTGs are used for all foundation positions. OSS positions and dimensions considered in this photosimulation are subject to potential modification.
- WTG positions in the photosimulations are based on a refraction value of 7/6 or an approximate 0.14 coefficient derived from observations of the constructed Block Island Wind Farm. This refraction coefficient may yield more conservative visibility results (i.e. greater turbine visibility) that the viewshed analysis results which use a refraction coefficient of 0.13.
- WTG tower, blades, and nacelle use the BOEM and FAA required color RAL 9010. The base and platform use RAL 1023 in accordance with USCG regulations.
- *The number of WTGs visible from the KOP was determined by human verified computer generated counts performed in the 3D camera views considering screening resulting from vegetation, structures, curvature of the earth and refraction. This count may vary from the actual number of WTGs visible in the respective views due to masking completed during post processing which may include people, waves, boats, or other minor obstructions that appear in the photograph. Additionally, the WTG counts assumed the WTG blades are in the upright position whereas the photosimulations assume a random rotation pattern. Considering the largest WTG in the cumulative array, this could account for up to 236 ft. (72 m) in lost maximum height depending on the rotation position.
- The cone of view indicated on the Key Observation Point Context map indicates the horizontal extent of view only and does not indicate the extent of WTG visibility.
- The resolution of the cumulative photosimulations balances the size and usability of the documents with the need for high resolution to see distant project components. Similarly to human vision, very distant turbines may appear blurry or difficult to decipher due to resolution limitations.
- The Key Observation Point Context map considers screening by curvature of the earth, viewer height, and turbine height. Landscape screening features are not considered. Therefore, in this view, the number of visible turbines depicted on the map may not match the table due to the presence of landscape screening features.

Project	Year of Development	Max Blade Tip Height (feet)	Potential Number of WTGs & OSSs Visible from KOP*	Total Number of WTGs & OSSs in Project	Theoretical Distance to Nearest Visible WTG (miles)	Theoretical Distance to Furthest Visible WTG (miles)
Ocean Wind (OCS-A 0498)	2024-2025	906	111	111	15.6	26.3
Empire Wind (OCS-A 0512)	2023-2027	951	0	72	Not Visible	Not Visible
Empire Wind II (OCS-A 0512)	2025-2027	951	0	104	Not Visible	Not Visible

Key Observation Point Context



Key Observation Point Location



MATCH LINE OC04 PANO #1



ATLANTIC SHORES offshore wind

Appendix A: Atlantic Shores Offshore Wind Cumulative Photosimulations

OC04: Gillian's Wonderland Pier, Ocean City, Cape May County, New Jersey

Photosimulation (Panorama 2): Scenario 2: Atlantic Shores Construction (2025-2027) added to Scenario 1 (Ocean Wind, Empire Wind, Empire Wind II, Atlantic Shores South)

Simulation Size: 66" in width by 29.3" in height. Images should be viewed from a distance of 18 inches in order to obtain the proper perspective.

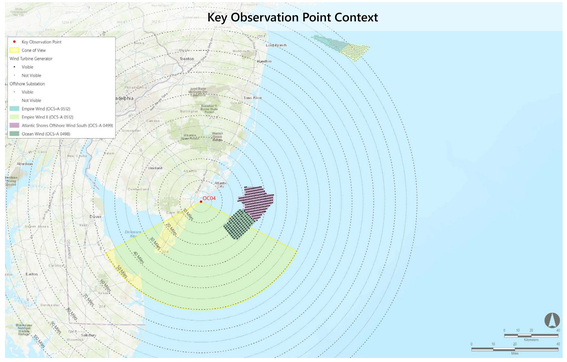
This box should be exactly 7" long on the printed panorama

Notes:

- Photosimulation Size: 66" in width by 29.3" in height. Images should be viewed from 18 inches in order to obtain the proper perspective. For on-screen viewing, user should zoom in until the 1-inch scale equals exactly one inch when measured on the screen.
- Offshore Substation location and dimensions are based on preliminary publicly available project data. Projects for which this data is not currently available, WTGs are used for all foundation positions. OSS positions and dimensions considered in this photosimulation are subject to potential modification.
- WTG positions in the photosimulations are based on a refraction value of 7/6 or an approximate 0.14 coefficient derived from observations of the constructed Block Island Wind Farm. This refraction coefficient may yield more conservative visibility results (i.e. greater turbine visibility) that the viewshed analysis results which use a refraction coefficient of 0.13.
- WTG tower, blades, and nacelle use the BOEM and FAA required color RAL 9010. The base and platform use RAL 1023 in accordance with USCG regulations.
- *The number of WTGs visible from the KOP was determined by human verified computer generated counts performed in the 3D camera views considering screening resulting from vegetation, structures, curvature of the earth and refraction. This count may vary from the actual number of WTGs visible in the respective views due to masking completed during post processing which may include people, waves, boats, or other minor obstructions that appear in the photograph. Additionally, the WTG counts assumed the WTG blades are in the upright position whereas the photosimulations assume a random rotation pattern. Considering the largest WTG in the cumulative array, this could account for up to 236 ft. (72 m) in lost maximum height depending on the rotation position.
- The cone of view indicated on the Key Observation Point Context map indicates the horizontal extent of view only and does not indicate the extent of WTG visibility.
- The resolution of the cumulative photosimulations balances the size and usability of the documents with the need for high resolution to see distant project components. Similarly to human vision, very distant turbines may appear blurry or difficult to decipher due to resolution limitations.
- The Key Observation Point Context map considers screening by curvature of the earth, viewer height, and turbine height. Landscape screening features are not considered. Therefore, in this view, the number of visible turbines depicted on the map may not match the table due to the presence of landscape screening features.

Project	Year of Development	Max Blade Tip Height (feet)	Potential Number of WTGs & OSSs Visible from KOP*	Total Number of WTGs & OSSs in Project	Theoretical Distance to Nearest Visible WTG (miles)	Theoretical Distance to Furthest Visible WTG (miles)
Atlantic Shores Offshore Wind South (OCS-A 0499)	2023-2025	1,047	204	205	17.2	33.6
Ocean Wind (OCS-A 0498)	2024-2025	906	111	111	15.6	26.3
Empire Wind (OCS-A 0512)	2023-2027	951	0	72	Not Visible	Not Visible
Empire Wind II (OCS-A 0512)	2025-2027	951	0	104	Not Visible	Not Visible

Key Observation Point Context



Key Observation Point Location



MATCH LINE OC04 PANO #1



ATLANTIC SHORES offshore wind

Appendix A: Atlantic Shores Offshore Wind Cumulative Photosimulations

OC04: Gillian's Wonderland Pier, Ocean City, Cape May County, New Jersey

Photosimulation (Panorama 2): Scenario 3: 2024-2030 Project construction added after the construction of Atlantic Shores South (Full Lease Build-out Including Atlantic Shores South)

Simulation Size: 66" in width by 29.3" in height. Images should be viewed from a distance of 18 inches in order to obtain the proper perspective.

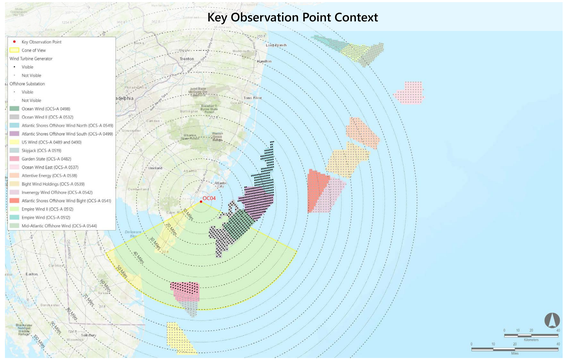
This box should measure 7" long on the printed panorama

Notes:

- Photosimulation Size: 66" in width by 29.3" in height. Images should be viewed from 18 inches in order to obtain the proper perspective. For on-screen viewing, user should zoom in until the 1-inch scale equals exactly one inch when measured on the screen.
- Offshore Substation location and dimensions are based on preliminary publicly available project data. Projects for which this data is not currently available, WTGs are used for all foundation positions. OSS positions and dimensions considered in this photosimulation are subject to potential modification.
- WTG positions in the photosimulations are based on a refraction value of 7/6 or an approximate 0.14 coefficient derived from observations of the constructed Block Island Wind Farm. This refraction coefficient may yield more conservative visibility results (i.e. greater turbine visibility) that the viewshed analysis results which use a refraction coefficient of 0.13.
- WTG tower, blades, and nacelle use the BOEM and FAA required color RAL 9010. The base and platform use RAL 1023 in accordance with USCG regulations.
- "The number of WTGs visible from the KOP was determined by human verified computer generated counts performed in the 3D camera views considering screening resulting from vegetation, structures, curvature of the earth and refraction. This count may vary from the actual number of WTGs visible in the respective views due to masking completed during post processing which may include people, waves, boats, or other minor obstructions that appear in the photograph. Additionally, the WTG counts assumed the WTG blades are in the upright position whereas the photosimulations assume a random rotation pattern. Considering the largest WTG in the cumulative array, this could account for up to 236 ft. (72 m) in lost maximum height depending on the rotation position.
- The cone of view indicated on the Key Observation Point Context map indicates the horizontal extent of view only and does not indicate the extent of WTG visibility.
- The resolution of the cumulative photosimulations balances the size and usability of the documents with the need for high resolution to see distant project components. Similarly to human vision, very distant turbines may appear blurry or difficult to decipher due to resolution limitations.
- The Key Observation Point Context map considers screening by curvature of the earth, viewer height, and turbine height. Landscape screening features are not considered. Therefore, in this view, the number of visible turbines depicted on the map may not match the table due to the presence of landscape screening features.

Project	Year of Development	Max Blade Tip Height (feet)	Potential Number of WTGs & OSSs Visible from KOP*	Total Number of WTGs & OSSs in Project	Theoretical Distance to Nearest Visible WTG (miles)	Theoretical Distance to Furthest Visible WTG (miles)
Atlantic Shores Offshore Wind South (OCS-A 0499)	2023-2025	1,047	204	205	17.2	33.6
Ocean Wind (OCS-A 0498)	2024-2025	906	111	111	15.6	26.3
Empire Wind (OCS-A 0512)	2023-2027	951	0	72	Not Visible	Not Visible
Empire Wind II (OCS-A 0512)	2025-2027	951	0	104	Not Visible	Not Visible
Skipjack (OCS-A 0519)	2024-2030	853	0	33	Not Visible	Not Visible
Garden State (OCS-A 0482)	2023-2030	853	32	80	37.6	42.6
US Wind (OCS-A 0489 and 0490)	2024	938	0	101	Not Visible	Not Visible
Atlantic Shores Offshore Wind North (OCS-A 0549)	2025-2030	1,047	118	164	26.1	43.5
Ocean Wind II (OCS-A 0532)	2026-2030	906	111	111	11.0	26.8
Mid-Atlantic Offshore Wind (OCS-A 0544)	by 2030	853	0	104	Not Visible	Not Visible
Ocean Wind East (OCS-A 0537)	by 2030	853	0	82	Not Visible	Not Visible
Attentive Energy (OCS-A 0538)	by 2030	853	0	101	Not Visible	Not Visible
Bight Wind Holdings (OCS-A 0539)	by 2030	853	0	148	Not Visible	Not Visible
Atlantic Shores Offshore Wind Bight (OCS-A 0541)	by 2030	853	0	95	Not Visible	Not Visible
Invenergy Wind Offshore (OCS-A 0542)	by 2030	853	0	99	Not Visible	Not Visible

Key Observation Point Context


Key Observation Point
Cone of View
Wind Turbine Generator
Visible
Not Visible
Offshore Substation
Visible
Not Visible
Ocean Wind (OCS-A 0498)
Ocean Wind II (OCS-A 0532)
Atlantic Shores Offshore Wind North (OCS-A 0549)
Atlantic Shores Offshore Wind South (OCS-A 0499)
US Wind (OCS-A 0489 and 0490)
Skipjack (OCS-A 0519)
Garden State (OCS-A 0482)
Ocean Wind East (OCS-A 0537)
Attentive Energy (OCS-A 0538)
Bight Wind Holdings (OCS-A 0539)
Invenergy Wind Offshore (OCS-A 0542)
Atlantic Shores Offshore Wind Bight (OCS-A 0541)
Empire Wind II (OCS-A 0512)
Empire Wind (OCS-A 0512)
Mid-Atlantic Offshore Wind (OCS-A 0544)
OC04
Ocean City
Somers Point
Egg Harbor City
Hammonton
Atlantic City
Absecon
Brigantine
Longport
Margate City
Ventnor City
Linwood
Northfield
Pleasantville
Egg Harbor Township
Galloway
Estell Manor
Port Republic
Mullica Hill
Elmer
Vineland
Millville
Bridgeton
Cumberland
Upper Deerfield
Fairfield
Lawrence
Hopewell
Millstone
Cranbury
Monroe
Jackson
Lakewood
Toms River
Manchester
Berkeley
Lacey
Little Egg Harbor
Tuckerton
Barnegat
Barnegat Light
Long Beach
Stafford
Ocean
Tabernacle
Shamong
Southampton
Medford
Evesham
Mount Laurel
Cherry Hill
Voorhees
Pennsauken
Camden
Gloucester City
Haddonfield
Collingswood
Woodbury
Deptford
Washington
Glassboro
Franklin
Mantua
Pitman
Sewell
Logan
Swedesboro
Woolwich
Harrison
Greenwich
Bridgeton
Salem
Pennsville
Carneys Point
Penns Grove
Oldmans
Pilesgrove
Alloway
Upper Pittsgrove
Quinton
Lower Alloways Creek
Mannington
Pittsgrove
Elsinboro
Upper Penns Neck
Lower Penns Neck
Pennsville
Salem

MATCH LINE OC04 PANO #1



ATLANTIC SHORES offshore wind

Appendix A: Atlantic Shores Offshore Wind Cumulative Photosimulations

OC04: Gillian's Wonderland Pier, Ocean City, Cape May County, New Jersey

Photosimulation (Panorama 2): Scenario 4: Full buildout of all lease areas without Atlantic Shores South

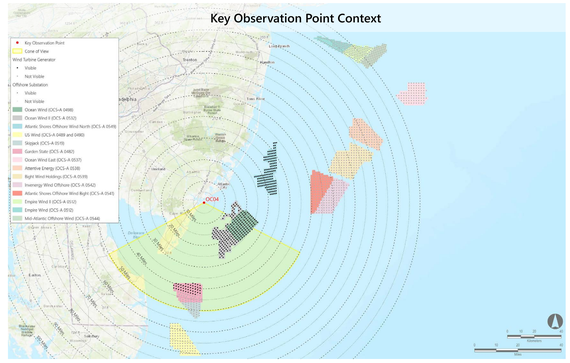
Simulation Size: 66" in width by 29.3" in height. Images should be viewed from a distance of 18 inches in order to obtain the proper perspective.

This box should measure 1" long on the printed panorama

Notes:

- Photosimulation Size: 66" in width by 29.3" in height. Images should be viewed from 18 inches in order to obtain the proper perspective. For on-screen viewing, user should zoom in until the 1-inch scale equals exactly one inch when measured on the screen.
- Offshore Substation location and dimensions are based on preliminary publicly available project data. Projects for which this data is not currently available, WTGs are used for all foundation positions. OSS positions and dimensions considered in this photosimulation are subject to potential modification.
- WTG positions in the photosimulations are based on a refraction value of 7/6 or an approximate 0.14 coefficient derived from observations of the constructed Block Island Wind Farm. This refraction coefficient may yield more conservative visibility results (i.e. greater turbine visibility) that the viewshed analysis results which use a refraction coefficient of 0.13.
- WTG tower, blades, and nacelle use the BOEM and FAA required color RAL 9010. The base and platform use RAL 1023 in accordance with USCG regulations.
- *The number of WTGs visible from the KOP was determined by human verified computer generated counts performed in the 3D camera views considering screening resulting from vegetation, structures, curvature of the earth and refraction. This count may vary from the actual number of WTGs visible in the respective views due to masking completed during post processing which may include people, waves, boats, or other minor obstructions that appear in the photograph. Additionally, the WTG counts assumed the WTG blades are in the upright position whereas the photosimulations assume a random rotation pattern. Considering the largest WTG in the cumulative array, this could account for up to 236 ft. (72 m) in lost maximum height depending on the rotation position.
- The cone of view indicated on the Key Observation Point Context map indicates the horizontal extent of view only and does not indicate the extent of WTG visibility.
- The resolution of the cumulative photosimulations balances the size and usability of the documents with the need for high resolution to see distant project components. Similarly to human vision, very distant turbines may appear blurry or difficult to decipher due to resolution limitations.
- The Key Observation Point Context map considers screening by curvature of the earth, viewer height, and turbine height. Landscape screening features are not considered. Therefore, in this view, the number of visible turbines depicted on the map may not match the table due to the presence of landscape screening features.

Project	Year of Development	Max Blade Tip Height (feet)	Potential Number of WTGs & OSSs Visible from KOP*	Total Number of WTGs & OSSs in Project	Theoretical Distance to Nearest Visible WTG (miles)	Theoretical Distance to Furthest Visible WTG (miles)
Ocean Wind (OCS-A 0498)	2024-2025	906	111	111	15.6	26.3
Empire Wind (OCS-A 0512)	2023-2027	951	0	72	Not Visible	Not Visible
Empire Wind II (OCS-A 0512)	2025-2027	951	0	104	Not Visible	Not Visible
Skipjack (OCS-A 0519)	2024-2030	853	0	33	Not Visible	Not Visible
Garden State (OCS-A 0482)	2023-2030	853	32	80	37.6	42.6
US Wind (OCS-A 0489 and 0490)	2024	938	0	101	Not Visible	Not Visible
Atlantic Shores Offshore Wind North (OCS-A 0549)	2025-2030	1,047	118	164	26.1	43.5
Ocean Wind II (OCS-A 0532)	2026-2030	906	111	111	11.0	26.8
Mid-Atlantic Offshore Wind (OCS-A 0544)	by 2030	853	0	104	Not Visible	Not Visible
Ocean Wind East (OCS-A 0537)	by 2030	853	0	82	Not Visible	Not Visible
Attentive Energy (OCS-A 0538)	by 2030	853	0	101	Not Visible	Not Visible
Bight Wind Holdings (OCS-A 0539)	by 2030	853	0	148	Not Visible	Not Visible
Atlantic Shores Offshore Wind Bight (OCS-A 0541)	by 2030	853	0	95	Not Visible	Not Visible
Invenergy Wind Offshore (OCS-A 0542)	by 2030	853	0	99	Not Visible	Not Visible





MATCH LINE OC04 PANO #1



ATLANTIC SHORES offshore wind

Appendix A: Atlantic Shores Offshore Wind Cumulative Photosimulations

OC04: Gillian's Wonderland Pier, Ocean City, Cape May County, New Jersey

Photosimulation (Panorama 2): Scenario 5: Atlantic Shores South without the construction of other foreseeable planned activities

Simulation Size: 66" in width by 29.3" in height. Images should be viewed from a distance of 18 inches in order to obtain the proper perspective.

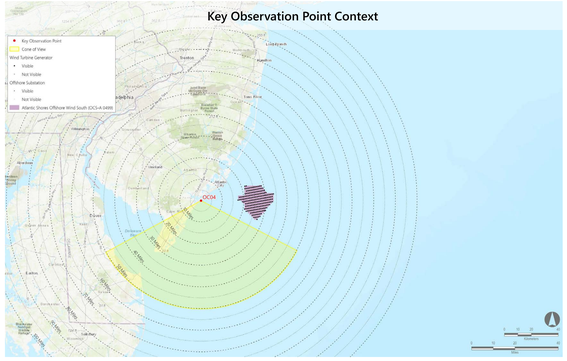
This box should measure 7" long on the printed panorama

Notes:

- Photosimulation Size: 66" in width by 29.3" in height. Images should be viewed from 18 inches in order to obtain the proper perspective. For on-screen viewing, user should zoom in until the 1-inch scale equals exactly one inch when measured on the screen.
- Offshore Substation location and dimensions are based on preliminary publicly available project data. Projects for which this data is not currently available, WTGs are used for all foundation positions. OSS positions and dimensions considered in this photosimulation are subject to potential modification.
- WTG positions in the photosimulations are based on a refraction value of 7/6 or an approximate 0.14 coefficient derived from observations of the constructed Block Island Wind Farm. This refraction coefficient may yield more conservative visibility results (i.e. greater turbine visibility) that the viewshed analysis results which use a refraction coefficient of 0.13.
- WTG tower, blades, and nacelle use the BOEM and FAA required color RAL 9010. The base and platform use RAL 1023 in accordance with USCG regulations.
- *The number of WTGs visible from the KOP was determined by human verified computer generated counts performed in the 3D camera views considering screening resulting from vegetation, structures, curvature of the earth and refraction. This count may vary from the actual number of WTGs visible in the respective views due to masking completed during post processing which may include people, waves, boats, or other minor obstructions that appear in the photograph. Additionally, the WTG counts assumed the WTG blades are in the upright position whereas the photosimulations assume a random rotation pattern. Considering the largest WTG in the cumulative array, this could account for up to 236 ft. (72 m) in lost maximum height depending on the rotation position.
- The cone of view indicated on the Key Observation Point Context map indicates the horizontal extent of view only and does not indicate the extent of WTG visibility.
- The resolution of the cumulative photosimulations balances the size and usability of the documents with the need for high resolution to see distant project components. Similarly to human vision, very distant turbines may appear blurry or difficult to decipher due to resolution limitations.
- The Key Observation Point Context map considers screening by curvature of the earth, viewer height, and turbine height. Landscape screening features are not considered. Therefore, in this view, the number of visible turbines depicted on the map may not match the table due to the presence of landscape screening features.

Project	Year of Development	Max Blade Tip Height (feet)	Potential Number of WTGs & OSSs Visible from KOP*	Total Number of WTGs & OSSs in Project	Theoretical Distance to Nearest Visible WTG (miles)	Theoretical Distance to Furthest Visible WTG (miles)
Atlantic Shores Offshore Wind South (OCS-A 0499)	2023-2025	1,047	204	205	17.2	33.6

Key Observation Point Context



Key Observation Point Location



SIC02: Townsend's Inlet Bridge, Sea Isle City, Cape May County, New Jersey

Environmental Data

Date Taken: 08/25/2022
Time: 4:58 PM
Temperature: 84°F
Humidity: 53%
Visibility*: 10+ miles
Wind Direction: South-southeast
Wind Speed: 10 mph
Conditions Observed: Fair

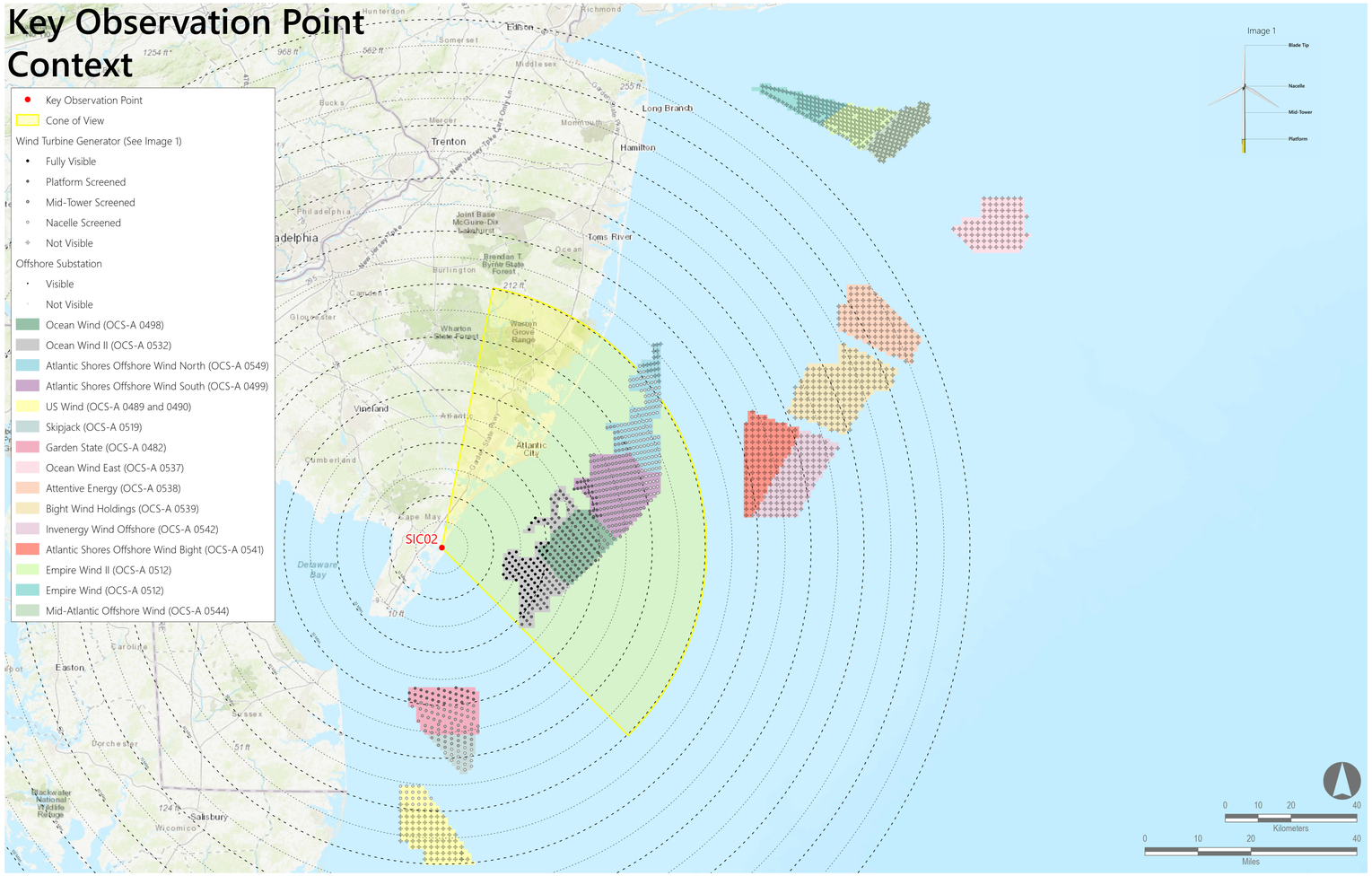
Camera Information
Camera: Canon EOS 5D Mark IV
Resolution: 30.4 Megapixels
Lens Focal Length: 50 mm
Camera Height: 40.18 feet AMSL

Key Observation Point Information

County: Cape May
Town: Ocean City
State: New Jersey
Location: Townsend's Inlet Bridge
Latitude, Longitude: 39.11919°N, 74.71576°W
Direction of View (Center): East-northeast (73.4°)
Field of View: 124° x 55°

Visual Resources
Character Area: Open Water/Ocean, Undeveloped Bay, Seascape (SCA)
User Group: Residents/Tourists
Visually Sensitive Resource: Sea Isle City Beach Dune Upland, Townsend Inlet Bridge (SI&A #3100003)

Key Observation Point Context



Reasonably Foreseeable Projects Represented in Photosimulation

		Project	Year of Development	Max Blade Tip Height (feet)	Potential Number of WTGs & OSSs Visible from KOP**	Total Number of WTGs & OSSs in Project	Theoretical Distance to Nearest Visible WTG (miles)	Theoretical Distance to Furthest Visible WTG (miles)
Scenario 5	Scenario 2	Atlantic Shores Offshore Wind South (OCS-A 0499)	2025-2027	1,047	200	205	27.4	43.6
Scenario 4	Scenario 1	Ocean Wind (OCS-A 0498)	2023-2025	906	111	111	18.5	32.6
		Empire Wind (OCS-A 0512)	2024-2025	951	0	72	Not Visible	Not Visible
		Empire Wind II (OCS-A 0512)	2023-2027	951	0	104	Not Visible	Not Visible
	Scenario 3	Skipjack (OCS-A 0519)	2024-2030	853	1	33	35.3	42.2
		Garden State (OCS-A 0482)	2023-2030	853	62	80	26.6	35.7
		US Wind (OCS-A 0489 and 0490)	2024	938	0	101	Not Visible	Not Visible
		Atlantic Shores Offshore Wind North (OCS-A 0549)	2025-2030	1,047	134	164	37.6	51.1
		Ocean Wind II (OCS-A 0532)	2026-2030	906	111	111	12.1	26.0
		Mid-Atlantic Offshore Wind (OCS-A 0544)	by 2030	853	0	104	Not Visible	Not Visible
		Ocean Wind East (OCS-A 0537)	by 2030	853	0	82	Not Visible	Not Visible
		Attentive Energy (OCS-A 0538)	by 2030	853	0	101	Not Visible	Not Visible
		Bight Wind Holdings (OCS-A 0539)	by 2030	853	0	148	Not Visible	Not Visible
		Atlantic Shores Offshore Wind Bight (OCS-A 0541)	by 2030	853	0	95	Not Visible	Not Visible
		Invenergy Wind Offshore (OCS-A 0542)	by 2030	853	0	99	Not Visible	Not Visible

Notes:

- Offshore Substation location and dimensions are based on preliminary publicly available project data. Projects for which this data is not currently available, WTGs are used for all foundation positions. OSS positions and dimensions considered in this photosimulation are subject to potential modification.
- *Historical meteorological data predicts visibility within a limit of 10 statute miles. However, visibility may extend beyond this distance. The photosimulations assume visibility extends to the limit of physical visibility (including a standard refraction index).
- WTG positions in the photosimulations are based on a refraction value of 7/6 or an approximate 0.14 coefficient derived from observations of the constructed Block Island Wind Farm. This refraction coefficient may yield more conservative visibility results (i.e. greater turbine visibility) that the viewshed analysis results which use a refraction coefficient of 0.13.
- **The number of WTGs visible from the KOP was determined by human verified computer generated counts performed in the 3D camera views considering screening resulting from vegetation, structures, curvature of the earth and refraction. This count may vary from the actual number of WTGs visible in the respective views due to masking completed during post processing which may include people, waves, boats, or other minor obstructions that appear in the photograph. Additionally, the WTG counts assumed the WTG blades are in the upright position whereas the photosimulations assume a random rotation pattern. Considering the largest WTG in the cumulative array, this could account for up to 236 ft. (72 m) in lost maximum height depending on the rotation position.
- The cone of view indicated on the Key Observation Point Context map indicates the horizontal extent of view only and does not indicate the extent of WTG visibility.
- The Key Observation Point Context map considers screening by curvature of the earth, viewer height, and turbine height. Landscape screening features are not considered. Therefore, in this view, the number of visible turbines depicted on the map may not match the table due to the presence of landscape screening features.

ATLANTIC SHORES offshore wind

MATCH LINE SIC02 PANO #2

ATLANTIC SHORES offshore wind

Appendix A: Atlantic Shores Offshore Wind Cumulative Photosimulations

SIC02: Townsend's Inlet Bridge, Sea Isle City, Cape May County, New Jersey

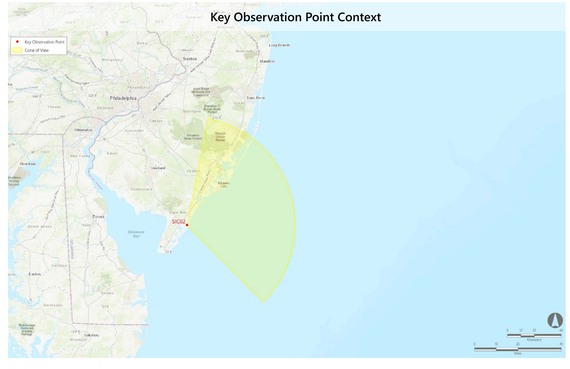
Existing Conditions (Panorama 1)

Notes:

- Photosimulation Size: 66" in width by 29.3" in height. Images should be viewed from 18 inches in order to obtain the proper perspective. For on-screen viewing, user should zoom in until the 1-inch scale equals exactly one inch when measured on the screen.

Simulation Size: 66" in width by 29.3" in height. Images should be viewed from a distance of 18 inches in order to obtain the proper perspective.

This box should be exactly 1" long on the printed panorama





MATCH LINE SIC02 PANO #2



MATCH LINE SIC02 PANO #1

ATLANTIC SHORES offshore wind

Appendix A: Atlantic Shores Offshore Wind Cumulative Photosimulations

SIC02: Townsend's Inlet Bridge, Sea Isle City, Cape May County, New Jersey

Photosimulation (Panorama 1): Scenario 1: 2023-2025 Project Construction (Ocean Wind, Empire Wind, Empire Wind II)

Simulation Size: 66" in width by 29.3" in height. Images should be viewed from a distance of 18 inches in order to obtain the proper perspective.

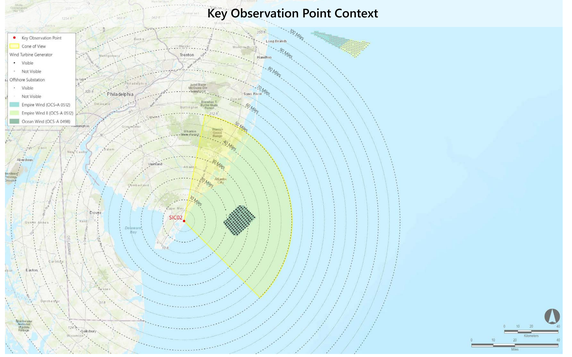
This box should be exactly 1" long on the printed panorama

Notes:

- Photosimulation Size: 66" in width by 29.3" in height. Images should be viewed from 18 inches in order to obtain the proper perspective. For on-screen viewing, user should zoom in until the 1-inch scale equals exactly one inch when measured on the screen.
- Offshore Substation location and dimensions are based on preliminary publicly available project data. Projects for which this data is not currently available, WTGs are used for all foundation positions. OSS positions and dimensions considered in this photosimulation are subject to potential modification.
- WTG positions in the photosimulations are based on a refraction value of 7/6 or an approximate 0.14 coefficient derived from observations of the constructed Block Island Wind Farm. This refraction coefficient may yield more conservative visibility results (i.e. greater turbine visibility) that the viewshed analysis results which use a refraction coefficient of 0.13.
- WTG tower, blades, and nacelle use the BOEM and FAA required color RAL 9010. The base and platform use RAL 1023 in accordance with USCG regulations.
- *The number of WTGs visible from the KOP was determined by human verified computer generated counts performed in the 3D camera views considering screening resulting from vegetation, structures, curvature of the earth and refraction. This count may vary from the actual number of WTGs visible in the respective views due to masking completed during post processing which may include people, waves, boats, or other minor obstructions that appear in the photograph. Additionally, the WTG counts assumed the WTG blades are in the upright position whereas the photosimulations assume a random rotation pattern. Considering the largest WTG in the cumulative array, this could account for up to 236 ft. (72 m) in lost maximum height depending on the rotation position.
- The cone of view indicated on the Key Observation Point Context map indicates the horizontal extent of view only and does not indicate the extent of WTG visibility.
- The resolution of the cumulative photosimulations balances the size and usability of the documents with the need for high resolution to see distant project components. Similarly to human vision, very distant turbines may appear blurry or difficult to decipher due to resolution limitations.
- The Key Observation Point Context map considers screening by curvature of the earth, viewer height, and turbine height. Landscape screening features are not considered. Therefore, in this view, the number of visible turbines depicted on the map may not match the table due to the presence of landscape screening features.

Project	Year of Development	Max Blade Tip Height (feet)	Potential Number of WTGs & OSSs Visible from KOP*	Total Number of WTGs & OSSs in Project	Theoretical Distance to Nearest Visible WTG (miles)	Theoretical Distance to Furthest Visible WTG (miles)
Ocean Wind (OCS-A 0498)	2024-2025	906	111	111	18.5	32.6
Empire Wind (OCS-A 0512)	2023-2027	951	0	72	Not Visible	Not Visible
Empire Wind II (OCS-A 0512)	2025-2027	951	0	104	Not Visible	Not Visible

Key Observation Point Context



Key Observation Point Location



MATCH LINE SIC02 PANO #2

ATLANTIC SHORES offshore wind

Appendix A: Atlantic Shores Offshore Wind Cumulative Photosimulations

SIC02: Townsend's Inlet Bridge, Sea Isle City, Cape May County, New Jersey

Photosimulation (Panorama 1): Scenario 2: Atlantic Shores Construction (2025-2027) added to Scenario 1 (Ocean Wind, Empire Wind, Empire Wind II, Atlantic Shores South)

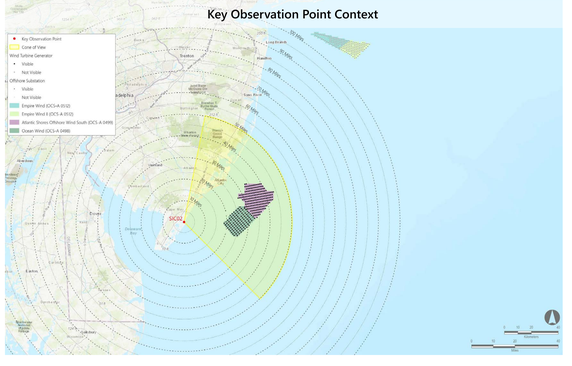
Simulation Size: 66" in width by 29.3" in height. Images should be viewed from a distance of 18 inches in order to obtain the proper perspective.

This box should be exactly 1" long on the printed panorama

Notes:

- Photosimulation Size: 66" in width by 29.3" in height. Images should be viewed from 18 inches in order to obtain the proper perspective. For on-screen viewing, user should zoom in until the 1-inch scale equals exactly one inch when measured on the screen.
- Offshore Substation location and dimensions are based on preliminary publicly available project data. Projects for which this data is not currently available, WTGs are used for all foundation positions. OSS positions and dimensions considered in this photosimulation are subject to potential modification.
- WTG positions in the photosimulations are based on a refraction value of 7/6 or an approximate 0.14 coefficient derived from observations of the constructed Block Island Wind Farm. This refraction coefficient may yield more conservative visibility results (i.e. greater turbine visibility) that the viewshed analysis results which use a refraction coefficient of 0.13.
- WTG tower, blades, and nacelle use the BOEM and FAA required color RAL 9010. The base and platform use RAL 1023 in accordance with USCG regulations.
- *The number of WTGs visible from the KOP was determined by human verified computer generated counts performed in the 3D camera views considering screening resulting from vegetation, structures, curvature of the earth and refraction. This count may vary from the actual number of WTGs visible in the respective views due to masking completed during post processing which may include people, waves, boats, or other minor obstructions that appear in the photograph. Additionally, the WTG counts assumed the WTG blades are in the upright position whereas the photosimulations assume a random rotation pattern. Considering the largest WTG in the cumulative array, this could account for up to 236 ft. (72 m) in lost maximum height depending on the rotation position.
- The cone of view indicated on the Key Observation Point Context map indicates the horizontal extent of view only and does not indicate the extent of WTG visibility.
- The resolution of the cumulative photosimulations balances the size and usability of the documents with the need for high resolution to see distant project components. Similarly to human vision, very distant turbines may appear blurry or difficult to decipher due to resolution limitations.
- The Key Observation Point Context map considers screening by curvature of the earth, viewer height, and turbine height. Landscape screening features are not considered. Therefore, in this view, the number of visible turbines depicted on the map may not match the table due to the presence of landscape screening features.

Project	Year of Development	Max Blade Tip Height (feet)	Potential Number of WTGs & OSSs Visible from KOP*	Total Number of WTGs & OSSs in Project	Theoretical Distance to Nearest Visible WTG (miles)	Theoretical Distance to Furthest Visible WTG (miles)
Atlantic Shores Offshore Wind South (OCS-A 0499)	2023-2025	1,047	200	205	27.4	43.6
Ocean Wind (OCS-A 0498)	2024-2025	906	111	111	18.5	32.6
Empire Wind (OCS-A 0512)	2023-2027	951	0	72	Not Visible	Not Visible
Empire Wind II (OCS-A 0512)	2025-2027	951	0	104	Not Visible	Not Visible





MATCH LINE SIC02 PANO #2

ATLANTIC SHORES offshore wind

Appendix A: Atlantic Shores Offshore Wind Cumulative Photosimulations

SIC02: Townsend's Inlet Bridge, Sea Isle City, Cape May County, New Jersey

Photosimulation (Panorama 1): Scenario 3: 2024-2030 Project construction added after the construction of Atlantic Shores South (Full Lease Build-out Including Atlantic Shores South)

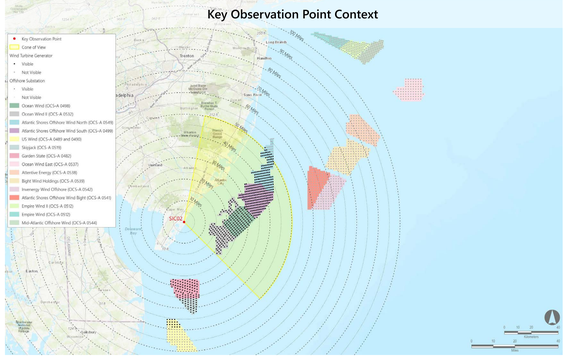
Simulation Size: 66" in width by 29.3" in height. Images should be viewed from a distance of 18 inches in order to obtain the proper perspective.

This box should be exactly 1" long on the printed panorama

Notes:

- Photosimulation Size: 66" in width by 29.3" in height. Images should be viewed from 18 inches in order to obtain the proper perspective. For on-screen viewing, user should zoom in until the 1-inch scale equals exactly one inch when measured on the screen.
- Offshore Substation location and dimensions are based on preliminary publicly available project data. Projects for which this data is not currently available, WTGs are used for all foundation positions. OSS positions and dimensions considered in this photosimulation are subject to potential modification.
- WTG positions in the photosimulations are based on a refraction value of 7/6 or an approximate 0.14 coefficient derived from observations of the constructed Block Island Wind Farm. This refraction coefficient may yield more conservative visibility results (i.e. greater turbine visibility) that the viewshed analysis results which use a refraction coefficient of 0.13.
- WTG tower, blades, and nacelle use the BOEM and FAA required color RAL 9010. The base and platform use RAL 1023 in accordance with USCG regulations.
- *The number of WTGs visible from the KOP was determined by human verified computer generated counts performed in the 3D camera views considering screening resulting from vegetation, structures, curvature of the earth and refraction. This count may vary from the actual number of WTGs visible in the respective views due to masking completed during post processing which may include people, waves, boats, or other minor obstructions that appear in the photograph. Additionally, the WTG counts assumed the WTG blades are in the upright position whereas the photosimulations assume a random rotation pattern. Considering the largest WTG in the cumulative array, this could account for up to 236 ft. (72 m) in lost maximum height depending on the rotation position.
- The cone of view indicated on the Key Observation Point Context map indicates the horizontal extent of view only and does not indicate the extent of WTG visibility.
- The resolution of the cumulative photosimulations balances the size and usability of the documents with the need for high resolution to see distant project components. Similarly to human vision, very distant turbines may appear blurry or difficult to decipher due to resolution limitations.
- The Key Observation Point Context map considers screening by curvature of the earth, viewer height, and turbine height. Landscape screening features are not considered. Therefore, in this view, the number of visible turbines depicted on the map may not match the table due to the presence of landscape screening features.

Project	Year of Development	Max Blade Tip Height (feet)	Potential Number of WTGs & OSSs Visible from KOP*	Total Number of WTGs & OSSs in Project	Theoretical Distance to Nearest Visible WTG (miles)	Theoretical Distance to Furthest Visible WTG (miles)
Atlantic Shores Offshore Wind South (OCS-A 0499)	2023-2025	1,047	200	205	27.4	43.6
Ocean Wind (OCS-A 0498)	2024-2025	906	111	111	18.5	32.6
Empire Wind (OCS-A 0512)	2023-2027	951	0	72	Not Visible	Not Visible
Empire Wind II (OCS-A 0512)	2025-2027	951	0	104	Not Visible	Not Visible
Skipjack (OCS-A 0519)	2024-2030	853	1	33	35.3	42.2
Garden State (OCS-A 0482)	2023-2030	853	62	80	26.6	35.7
US Wind (OCS-A 0489 and 0490)	2024	938	0	101	Not Visible	Not Visible
Atlantic Shores Offshore Wind North (OCS-A 0549)	2025-2030	1,047	134	164	37.6	51.1
Ocean Wind II (OCS-A 0532)	2026-2030	906	111	111	12.1	26.0
Mid-Atlantic Offshore Wind (OCS-A 0544)	by 2030	853	0	104	Not Visible	Not Visible
Ocean Wind East (OCS-A 0537)	by 2030	853	0	82	Not Visible	Not Visible
Attentive Energy (OCS-A 0538)	by 2030	853	0	101	Not Visible	Not Visible
Bight Wind Holdings (OCS-A 0539)	by 2030	853	0	148	Not Visible	Not Visible
Atlantic Shores Offshore Wind Bight (OCS-A 0541)	by 2030	853	0	95	Not Visible	Not Visible
Invenergy Wind Offshore (OCS-A 0542)	by 2030	853	0	99	Not Visible	Not Visible





MATCH LINE SIC02 PANO #2



ATLANTIC SHORES offshore wind

Appendix A: Atlantic Shores Offshore Wind Cumulative Photosimulations

SIC02: Townsend's Inlet Bridge, Sea Isle City, Cape May County, New Jersey

Photosimulation (Panorama 1): Scenario 4: Full buildout of all lease areas without Atlantic Shores South

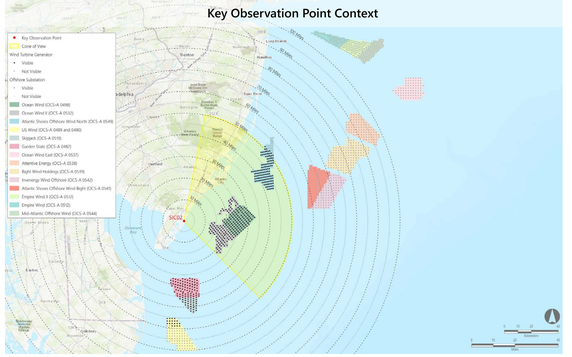
Simulation Size: 66" in width by 29.3" in height. Images should be viewed from a distance of 18 inches in order to obtain the proper perspective.

This box should be exactly 1" long on the printed panorama

Notes:

- Photosimulation Size: 66" in width by 29.3" in height. Images should be viewed from 18 inches in order to obtain the proper perspective. For on-screen viewing, user should zoom in until the 1-inch scale equals exactly one inch when measured on the screen.
- Offshore Substation location and dimensions are based on preliminary publicly available project data. Projects for which this data is not currently available, WTGs are used for all foundation positions. OSS positions and dimensions considered in this photosimulation are subject to potential modification.
- WTG positions in the photosimulations are based on a refraction value of 7/6 or an approximate 0.14 coefficient derived from observations of the constructed Block Island Wind Farm. This refraction coefficient may yield more conservative visibility results (i.e. greater turbine visibility) that the viewshed analysis results which use a refraction coefficient of 0.13.
- WTG tower, blades, and nacelle use the BOEM and FAA required color RAL 9010. The base and platform use RAL 1023 in accordance with USCG regulations.
- *The number of WTGs visible from the KOP was determined by human verified computer generated counts performed in the 3D camera views considering screening resulting from vegetation, structures, curvature of the earth and refraction. This count may vary from the actual number of WTGs visible in the respective views due to masking completed during post processing which may include people, waves, boats, or other minor obstructions that appear in the photograph. Additionally, the WTG counts assumed the WTG blades are in the upright position whereas the photosimulations assume a random rotation pattern. Considering the largest WTG in the cumulative array, this could account for up to 236 ft. (72 m) in lost maximum height depending on the rotation position.
- The cone of view indicated on the Key Observation Point Context map indicates the horizontal extent of view only and does not indicate the extent of WTG visibility.
- The resolution of the cumulative photosimulations balances the size and usability of the documents with the need for high resolution to see distant project components. Similarly to human vision, very distant turbines may appear blurry or difficult to decipher due to resolution limitations.
- The Key Observation Point Context map considers screening by curvature of the earth, viewer height, and turbine height. Landscape screening features are not considered. Therefore, in this view, the number of visible turbines depicted on the map may not match the table due to the presence of landscape screening features.

Project	Year of Development	Max Blade Tip Height (feet)	Potential Number of WTGs & OSSs Visible from KOP*	Total Number of WTGs & OSSs in Project	Theoretical Distance to Nearest Visible WTG (miles)	Theoretical Distance to Furthest Visible WTG (miles)
Ocean Wind (OCS-A 0498)	2024-2025	906	111	111	18.5	32.6
Empire Wind (OCS-A 0512)	2023-2027	951	0	72	Not Visible	Not Visible
Empire Wind II (OCS-A 0512)	2025-2027	951	0	104	Not Visible	Not Visible
Skipjack (OCS-A 0519)	2024-2030	853	1	33	35.3	42.2
Garden State (OCS-A 0482)	2023-2030	853	62	80	26.6	35.7
US Wind (OCS-A 0489 and 0490)	2024	938	0	101	Not Visible	Not Visible
Atlantic Shores Offshore Wind North (OCS-A 0549)	2025-2030	1,047	134	164	37.6	51.1
Ocean Wind II (OCS-A 0532)	2026-2030	906	111	111	12.1	26.0
Mid-Atlantic Offshore Wind (OCS-A 0544)	by 2030	853	0	104	Not Visible	Not Visible
Ocean Wind East (OCS-A 0537)	by 2030	853	0	82	Not Visible	Not Visible
Attentive Energy (OCS-A 0538)	by 2030	853	0	101	Not Visible	Not Visible
Bight Wind Holdings (OCS-A 0539)	by 2030	853	0	148	Not Visible	Not Visible
Atlantic Shores Offshore Wind Bight (OCS-A 0541)	by 2030	853	0	95	Not Visible	Not Visible
Invenergy Wind Offshore (OCS-A 0542)	by 2030	853	0	99	Not Visible	Not Visible





MATCH LINE SIC02 PANO #2

ATLANTIC SHORES offshore wind

Appendix A: Atlantic Shores Offshore Wind Cumulative Photosimulations

SIC02: Townsend's Inlet Bridge, Sea Isle City, Cape May County, New Jersey

Photosimulation (Panorama 1): Scenario 5: Atlantic Shores South without the construction of other foreseeable planned activities

Simulation Size: 66" in width by 29.3" in height. Images should be viewed from a distance of 18 inches in order to obtain the proper perspective.

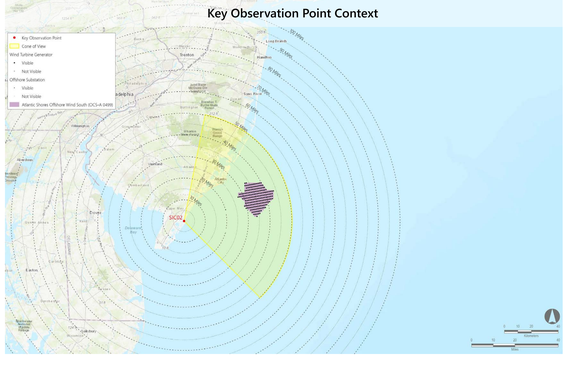
This box should be exactly 1" long on the printed panorama

Notes:

- Photosimulation Size: 66" in width by 29.3" in height. Images should be viewed from 18 inches in order to obtain the proper perspective. For on-screen viewing, user should zoom in until the 1-inch scale equals exactly one inch when measured on the screen.
- Offshore Substation location and dimensions are based on preliminary publicly available project data. Projects for which this data is not currently available, WTGs are used for all foundation positions. OSS positions and dimensions considered in this photosimulation are subject to potential modification.
- WTG positions in the photosimulations are based on a refraction value of 7/6 or an approximate 0.14 coefficient derived from observations of the constructed Block Island Wind Farm. This refraction coefficient may yield more conservative visibility results (i.e. greater turbine visibility) that the viewshed analysis results which use a refraction coefficient of 0.13.
- WTG tower, blades, and nacelle use the BOEM and FAA required color RAL 9010. The base and platform use RAL 1023 in accordance with USCG regulations.
- *The number of WTGs visible from the KOP was determined by human verified computer generated counts performed in the 3D camera views considering screening resulting from vegetation, structures, curvature of the earth and refraction. This count may vary from the actual number of WTGs visible in the respective views due to masking completed during post processing which may include people, waves, boats, or other minor obstructions that appear in the photograph. Additionally, the WTG counts assumed the WTG blades are in the upright position whereas the photosimulations assume a random rotation pattern. Considering the largest WTG in the cumulative array, this could account for up to 236 ft. (72 m) in lost maximum height depending on the rotation position.
- The cone of view indicated on the Key Observation Point Context map indicates the horizontal extent of view only and does not indicate the extent of WTG visibility.
- The resolution of the cumulative photosimulations balances the size and usability of the documents with the need for high resolution to see distant project components. Similarly to human vision, very distant turbines may appear blurry or difficult to decipher due to resolution limitations.
- The Key Observation Point Context map considers screening by curvature of the earth, viewer height, and turbine height. Landscape screening features are not considered. Therefore, in this view, the number of visible turbines depicted on the map may not match the table due to the presence of landscape screening features.

Project	Year of Development	Max Blade Tip Height (feet)	Potential Number of WTGs & OSSs Visible from KOP*	Total Number of WTGs & OSSs in Project	Theoretical Distance to Nearest Visible WTG (miles)	Theoretical Distance to Furthest Visible WTG (miles)
Atlantic Shores Offshore Wind South (OCS-A 0499)	2023-2025	1,047	200	205	27.4	43.6

Key Observation Point Context



Key Observation Point Location



SIC02: Townsend's Inlet Bridge, Sea Isle City, Cape May County, New Jersey

Environmental Data

Date Taken: 08/25/2022
Time: 4:58 PM
Temperature: 84°F
Humidity: 53%
Visibility*: 10+ miles
Wind Direction: South-southeast
Wind Speed: 10 mph
Conditions Observed: Fair

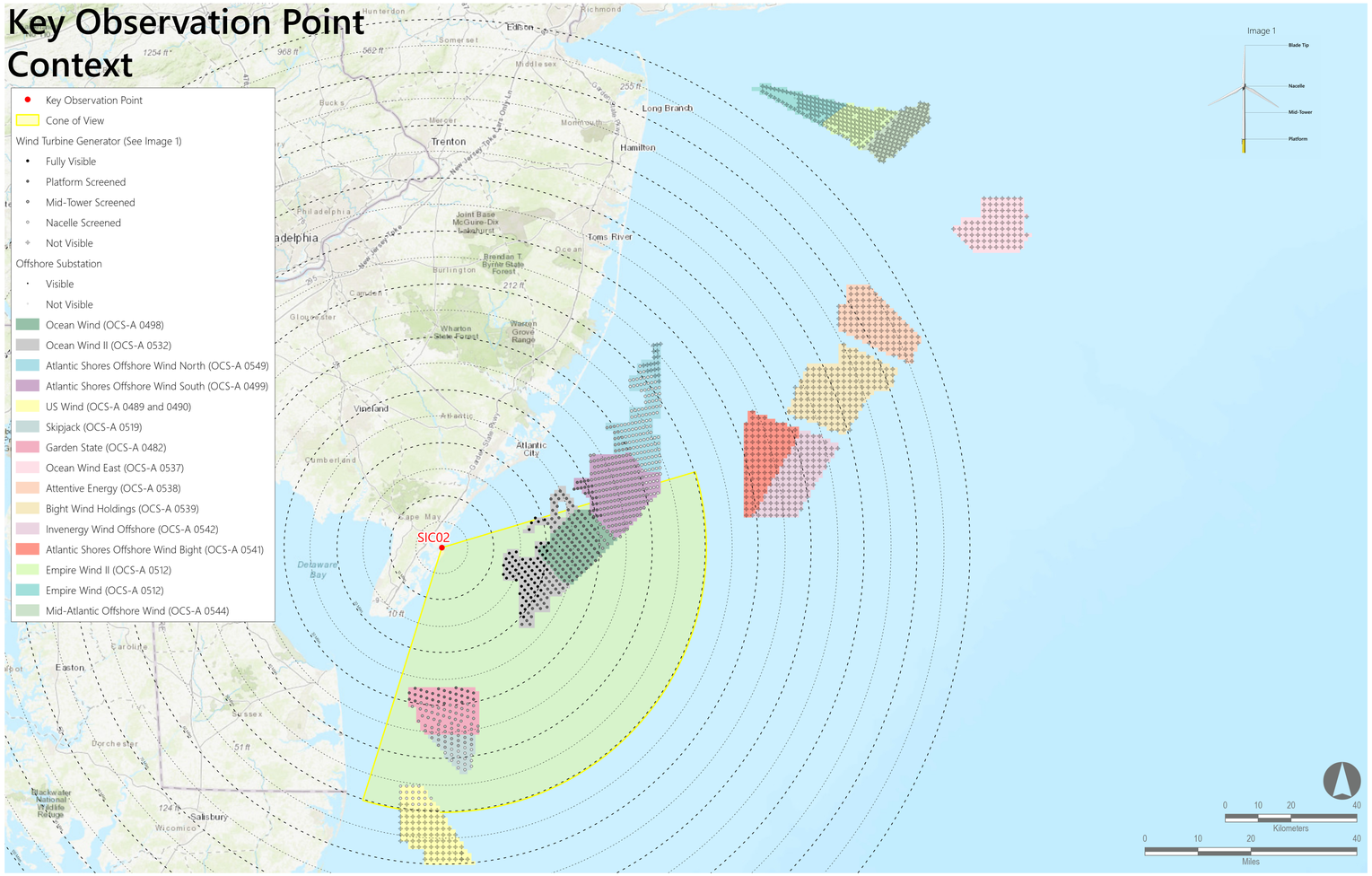
Camera Information
Camera: Canon EOS 5D Mark IV
Resolution: 30.4 Megapixels
Lens Focal Length: 50 mm
Camera Height: 40.18 feet AMSL

Key Observation Point Information

County: Cape May
Town: Ocean City
State: New Jersey
Location: Townsend's Inlet Bridge
Latitude, Longitude: 39.11919°N, 74.71576°W
Direction of View (Center): Southeast (135.6°)
Field of View: 124° x 55°

Visual Resources
Character Area: Open Water/Ocean, Undeveloped Bay, Seascape (SCA)
User Group: Residents/Tourists
Visually Sensitive Resource: Sea Isle City Beach Dune Upland, Townsend Inlet Bridge (SI&A #3100003)

Key Observation Point Context



Reasonably Foreseeable Projects Represented in Photosimulation

		Project	Year of Development	Max Blade Tip Height (feet)	Potential Number of WTGs & OSSs Visible from KOP**	Total Number of WTGs & OSSs in Project	Theoretical Distance to Nearest Visible WTG (miles)	Theoretical Distance to Furthest Visible WTG (miles)
Scenario 5	Scenario 2	Atlantic Shores Offshore Wind South (OCS-A 0499)	2025-2027	1,047	200	205	27.4	43.6
Scenario 4	Scenario 1	Ocean Wind (OCS-A 0498)	2023-2025	906	111	111	18.5	32.6
		Empire Wind (OCS-A 0512)	2024-2025	951	0	72	Not Visible	Not Visible
		Empire Wind II (OCS-A 0512)	2023-2027	951	0	104	Not Visible	Not Visible
	Scenario 3	Skipjack (OCS-A 0519)	2024-2030	853	1	33	35.3	42.2
		Garden State (OCS-A 0482)	2023-2030	853	62	80	26.6	35.7
		US Wind (OCS-A 0489 and 0490)	2024	938	0	101	Not Visible	Not Visible
		Atlantic Shores Offshore Wind North (OCS-A 0549)	2025-2030	1,047	134	164	37.6	51.1
		Ocean Wind II (OCS-A 0532)	2026-2030	906	111	111	12.1	26.0
		Mid-Atlantic Offshore Wind (OCS-A 0544)	by 2030	853	0	104	Not Visible	Not Visible
		Ocean Wind East (OCS-A 0537)	by 2030	853	0	82	Not Visible	Not Visible
		Attentive Energy (OCS-A 0538)	by 2030	853	0	101	Not Visible	Not Visible
		Bight Wind Holdings (OCS-A 0539)	by 2030	853	0	148	Not Visible	Not Visible
		Atlantic Shores Offshore Wind Bight (OCS-A 0541)	by 2030	853	0	95	Not Visible	Not Visible
		Invenergy Wind Offshore (OCS-A 0542)	by 2030	853	0	99	Not Visible	Not Visible

Notes:

- Offshore Substation location and dimensions are based on preliminary publicly available project data. Projects for which this data is not currently available, WTGs are used for all foundation positions. OSS positions and dimensions considered in this photosimulation are subject to potential modification.
- *Historical meteorological data predicts visibility within a limit of 10 statute miles. However, visibility may extend beyond this distance. The photosimulations assume visibility extends to the limit of physical visibility (including a standard refraction index).
- WTG positions in the photosimulations are based on a refraction value of 7/6 or an approximate 0.14 coefficient derived from observations of the constructed Block Island Wind Farm. This refraction coefficient may yield more conservative visibility results (i.e. greater turbine visibility) that the viewshed analysis results which use a refraction coefficient of 0.13.
- **The number of WTGs visible from the KOP was determined by human verified computer generated counts performed in the 3D camera views considering screening resulting from vegetation, structures, curvature of the earth and refraction. This count may vary from the actual number of WTGs visible in the respective views due to masking completed during post processing which may include people, waves, boats, or other minor obstructions that appear in the photograph. Additionally, the WTG counts assumed the WTG blades are in the upright position whereas the photosimulations assume a random rotation pattern. Considering the largest WTG in the cumulative array, this could account for up to 236 ft. (72 m) in lost maximum height depending on the rotation position.
- The cone of view indicated on the Key Observation Point Context map indicates the horizontal extent of view only and does not indicate the extent of WTG visibility.
- The Key Observation Point Context map considers screening by curvature of the earth, viewer height, and turbine height. Landscape screening features are not considered. Therefore, in this view, the number of visible turbines depicted on the map may not match the table due to the presence of landscape screening features.

ATLANTIC SHORES offshore wind

MATCH LINE SIC02 PANO #1



MATCH LINE SIC02 PANO #1

ATLANTIC SHORES offshore wind

Notes:

- Photosimulation Size: 66" in width by 29.3" in height. Images should be viewed from 18 inches in order to obtain the proper perspective. For on-screen viewing, user should zoom in until the 1-inch scale equals exactly one inch when measured on the screen.

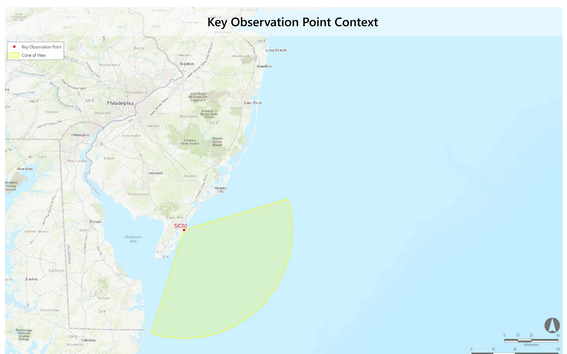
Appendix A: Atlantic Shores Offshore Wind Cumulative Photosimulations

SIC02: Townsend's Inlet Bridge, Sea Isle City, Cape May County, New Jersey

Existing Conditions (Panorama 2)

Simulation Size: 66" in width by 29.3" in height. Images should be viewed from a distance of 18 inches in order to obtain the proper perspective.

This box should be exactly 1" long on the printed panorama





MATCH LINE SIC02 PANO #1



MATCH LINE SIC02 PANO #1

ATLANTIC SHORES offshore wind

Appendix A: Atlantic Shores Offshore Wind Cumulative Photosimulations

SIC02: Townsend's Inlet Bridge, Sea Isle City, Cape May County, New Jersey

Photosimulation (Panorama 2): Scenario 1: 2023-2025 Project Construction (Ocean Wind, Empire Wind, Empire Wind II)

Simulation Size: 66" in width by 29.3" in height. Images should be viewed from a distance of 18 inches in order to obtain the proper perspective.

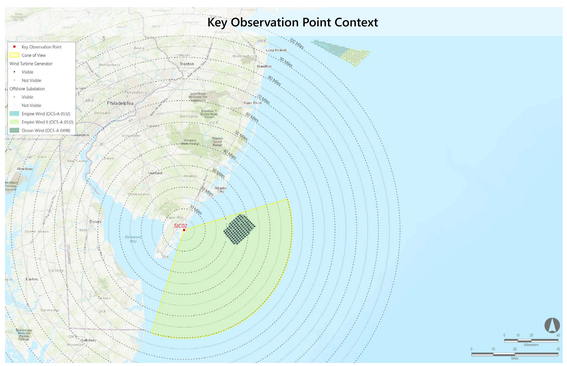
This box should be exactly 7" long on the printed panorama

Notes:

- Photosimulation Size: 66" in width by 29.3" in height. Images should be viewed from 18 inches in order to obtain the proper perspective. For on-screen viewing, user should zoom in until the 1-inch scale equals exactly one inch when measured on the screen.
- Offshore Substation location and dimensions are based on preliminary publicly available project data. Projects for which this data is not currently available, WTGs are used for all foundation positions. OSS positions and dimensions considered in this photosimulation are subject to potential modification.
- WTG positions in the photosimulations are based on a refraction value of 7/6 or an approximate 0.14 coefficient derived from observations of the constructed Block Island Wind Farm. This refraction coefficient may yield more conservative visibility results (i.e. greater turbine visibility) that the viewshed analysis results which use a refraction coefficient of 0.13.
- WTG tower, blades, and nacelle use the BOEM and FAA required color RAL 9010. The base and platform use RAL 1023 in accordance with USCG regulations.
- *The number of WTGs visible from the KOP was determined by human verified computer generated counts performed in the 3D camera views considering screening resulting from vegetation, structures, curvature of the earth and refraction. This count may vary from the actual number of WTGs visible in the respective views due to masking completed during post processing which may include people, waves, boats, or other minor obstructions that appear in the photograph. Additionally, the WTG counts assumed the WTG blades are in the upright position whereas the photosimulations assume a random rotation pattern. Considering the largest WTG in the cumulative array, this could account for up to 236 ft. (72 m) in lost maximum height depending on the rotation position.
- The cone of view indicated on the Key Observation Point Context map indicates the horizontal extent of view only and does not indicate the extent of WTG visibility.
- The resolution of the cumulative photosimulations balances the size and usability of the documents with the need for high resolution to see distant project components. Similarly to human vision, very distant turbines may appear blurry or difficult to decipher due to resolution limitations.
- The Key Observation Point Context map considers screening by curvature of the earth, viewer height, and turbine height. Landscape screening features are not considered. Therefore, in this view, the number of visible turbines depicted on the map may not match the table due to the presence of landscape screening features.

Project	Year of Development	Max Blade Tip Height (feet)	Potential Number of WTGs & OSSs Visible from KOP*	Total Number of WTGs & OSSs in Project	Theoretical Distance to Nearest Visible WTG (miles)	Theoretical Distance to Furthest Visible WTG (miles)
Ocean Wind (OCS-A 0498)	2024-2025	906	111	111	18.5	32.6
Empire Wind (OCS-A 0512)	2023-2027	951	0	72	Not Visible	Not Visible
Empire Wind II (OCS-A 0512)	2025-2027	951	0	104	Not Visible	Not Visible

Key Observation Point Context



Key Observation Point Location



MATCH LINE SIC02 PANO #1



MATCH LINE SIC02 PANO #2

ATLANTIC SHORES offshore wind

Appendix A: Atlantic Shores Offshore Wind Cumulative Photosimulations

SIC02: Townsend's Inlet Bridge, Sea Isle City, Cape May County, New Jersey

Photosimulation (Panorama 2): Scenario 2: Atlantic Shores Construction (2025-2027) added to Scenario 1 (Ocean Wind, Empire Wind, Empire Wind II, Atlantic Shores South)

Simulation Size: 66" in width by 29.3" in height. Images should be viewed from a distance of 18 inches in order to obtain the proper perspective.

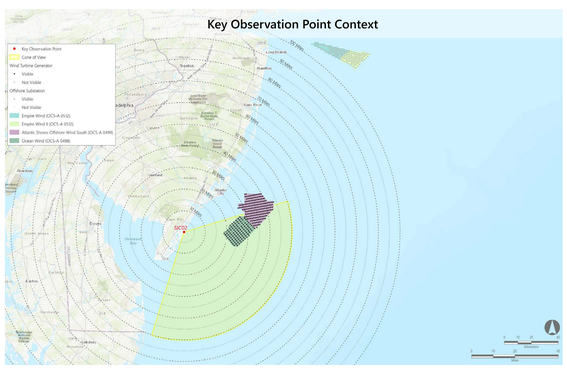
This box should be exactly 1" long on the printed panorama

Notes:

- Photosimulation Size: 66" in width by 29.3" in height. Images should be viewed from 18 inches in order to obtain the proper perspective. For on-screen viewing, user should zoom in until the 1-inch scale equals exactly one inch when measured on the screen.
- Offshore Substation location and dimensions are based on preliminary publicly available project data. Projects for which this data is not currently available, WTGs are used for all foundation positions. OSS positions and dimensions considered in this photosimulation are subject to potential modification.
- WTG positions in the photosimulations are based on a refraction value of 7/6 or an approximate 0.14 coefficient derived from observations of the constructed Block Island Wind Farm. This refraction coefficient may yield more conservative visibility results (i.e. greater turbine visibility) that the viewshed analysis results which use a refraction coefficient of 0.13.
- WTG tower, blades, and nacelle use the BOEM and FAA required color RAL 9010. The base and platform use RAL 1023 in accordance with USCG regulations.
- *The number of WTGs visible from the KOP was determined by human verified computer generated counts performed in the 3D camera views considering screening resulting from vegetation, structures, curvature of the earth and refraction. This count may vary from the actual number of WTGs visible in the respective views due to masking completed during post processing which may include people, waves, boats, or other minor obstructions that appear in the photograph. Additionally, the WTG counts assumed the WTG blades are in the upright position whereas the photosimulations assume a random rotation pattern. Considering the largest WTG in the cumulative array, this could account for up to 236 ft. (72 m) in lost maximum height depending on the rotation position.
- The cone of view indicated on the Key Observation Point Context map indicates the horizontal extent of view only and does not indicate the extent of WTG visibility.
- The resolution of the cumulative photosimulations balances the size and usability of the documents with the need for high resolution to see distant project components. Similarly to human vision, very distant turbines may appear blurry or difficult to decipher due to resolution limitations.
- The Key Observation Point Context map considers screening by curvature of the earth, viewer height, and turbine height. Landscape screening features are not considered. Therefore, in this view, the number of visible turbines depicted on the map may not match the table due to the presence of landscape screening features.

Project	Year of Development	Max Blade Tip Height (feet)	Potential Number of WTGs & OSSs Visible from KOP*	Total Number of WTGs & OSSs in Project	Theoretical Distance to Nearest Visible WTG (miles)	Theoretical Distance to Furthest Visible WTG (miles)
Atlantic Shores Offshore Wind South (OCS-A 0499)	2023-2025	1,047	200	205	27.4	43.6
Ocean Wind (OCS-A 0498)	2024-2025	906	111	111	18.5	32.6
Empire Wind (OCS-A 0512)	2023-2027	951	0	72	Not Visible	Not Visible
Empire Wind II (OCS-A 0512)	2025-2027	951	0	104	Not Visible	Not Visible

Key Observation Point Context



Key Observation Point Location



MATCH LINE SIC02 PANO #1



ATLANTIC SHORES offshore wind

Appendix A: Atlantic Shores Offshore Wind Cumulative Photosimulations

SIC02: Townsend's Inlet Bridge, Sea Isle City, Cape May County, New Jersey

Photosimulation (Panorama 2): Scenario 3: 2024-2030 Project construction added after the construction of Atlantic Shores South (Full Lease Build-out Including Atlantic Shores South)

Simulation Size: 66" in width by 29.3" in height. Images should be viewed from a distance of 18 inches in order to obtain the proper perspective.

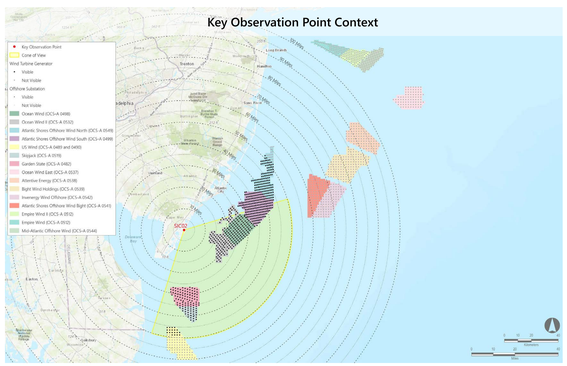
This box should be exactly 1" long on the printed panorama

Notes:

- Photosimulation Size: 66" in width by 29.3" in height. Images should be viewed from 18 inches in order to obtain the proper perspective. For on-screen viewing, user should zoom in until the 1-inch scale equals exactly one inch when measured on the screen.
- Offshore Substation location and dimensions are based on preliminary publicly available project data. Projects for which this data is not currently available, WTGs are used for all foundation positions. OSS positions and dimensions considered in this photosimulation are subject to potential modification.
- WTG positions in the photosimulations are based on a refraction value of 7/6 or an approximate 0.14 coefficient derived from observations of the constructed Block Island Wind Farm. This refraction coefficient may yield more conservative visibility results (i.e. greater turbine visibility) that the viewshed analysis results which use a refraction coefficient of 0.13.
- WTG tower, blades, and nacelle use the BOEM and FAA required color RAL 9010. The base and platform use RAL 1023 in accordance with USCG regulations.
- *The number of WTGs visible from the KOP was determined by human verified computer generated counts performed in the 3D camera views considering screening resulting from vegetation, structures, curvature of the earth and refraction. This count may vary from the actual number of WTGs visible in the respective views due to masking completed during post processing which may include people, waves, boats, or other minor obstructions that appear in the photograph. Additionally, the WTG counts assumed the WTG blades are in the upright position whereas the photosimulations assume a random rotation pattern. Considering the largest WTG in the cumulative array, this could account for up to 236 ft. (72 m) in lost maximum height depending on the rotation position.
- The cone of view indicated on the Key Observation Point Context map indicates the horizontal extent of view only and does not indicate the extent of WTG visibility.
- The resolution of the cumulative photosimulations balances the size and usability of the documents with the need for high resolution to see distant project components. Similarly to human vision, very distant turbines may appear blurry or difficult to decipher due to resolution limitations.
- The Key Observation Point Context map considers screening by curvature of the earth, viewer height, and turbine height. Landscape screening features are not considered. Therefore, in this view, the number of visible turbines depicted on the map may not match the table due to the presence of landscape screening features.

Project	Year of Development	Max Blade Tip Height (feet)	Potential Number of WTGs & OSSs Visible from KOP*	Total Number of WTGs & OSSs in Project	Theoretical Distance to Nearest Visible WTG (miles)	Theoretical Distance to Furthest Visible WTG (miles)
Atlantic Shores Offshore Wind South (OCS-A 0499)	2023-2025	1,047	200	205	27.4	43.6
Ocean Wind (OCS-A 0498)	2024-2025	906	111	111	18.5	32.6
Empire Wind (OCS-A 0512)	2023-2027	951	0	72	Not Visible	Not Visible
Empire Wind II (OCS-A 0512)	2025-2027	951	0	104	Not Visible	Not Visible
Skipjack (OCS-A 0519)	2024-2030	853	1	33	35.3	42.2
Garden State (OCS-A 0482)	2023-2030	853	62	80	26.6	35.7
US Wind (OCS-A 0489 and 0490)	2024	938	0	101	Not Visible	Not Visible
Atlantic Shores Offshore Wind North (OCS-A 0549)	2025-2030	1,047	134	164	37.6	51.1
Ocean Wind II (OCS-A 0532)	2026-2030	906	111	111	12.1	26.0
Mid-Atlantic Offshore Wind (OCS-A 0544)	by 2030	853	0	104	Not Visible	Not Visible
Ocean Wind East (OCS-A 0537)	by 2030	853	0	82	Not Visible	Not Visible
Attentive Energy (OCS-A 0538)	by 2030	853	0	101	Not Visible	Not Visible
Bight Wind Holdings (OCS-A 0539)	by 2030	853	0	148	Not Visible	Not Visible
Atlantic Shores Offshore Wind Bight (OCS-A 0541)	by 2030	853	0	95	Not Visible	Not Visible
Invenergy Wind Offshore (OCS-A 0542)	by 2030	853	0	99	Not Visible	Not Visible

Key Observation Point Context



Key Observation Point Location



MATCH LINE SIC02 PANO #1



ATLANTIC SHORES offshore wind

Appendix A: Atlantic Shores Offshore Wind Cumulative Photosimulations

SIC02: Townsend's Inlet Bridge, Sea Isle City, Cape May County, New Jersey

Photosimulation (Panorama 2): Scenario 4: Full buildout of all lease areas without Atlantic Shores South

Simulation Size: 66" in width by 29.3" in height. Images should be viewed from a distance of 18 inches in order to obtain the proper perspective.

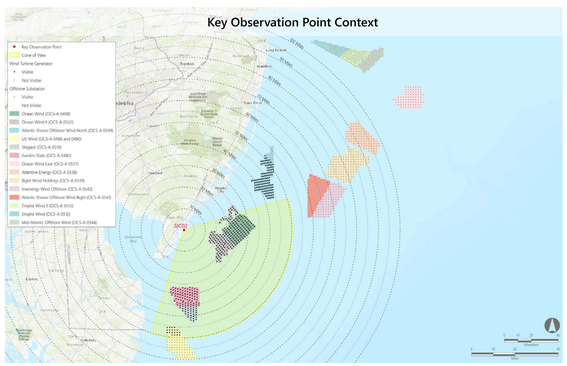
This box should be exactly 1" long on the printed panorama

Notes:

- Photosimulation Size: 66" in width by 29.3" in height. Images should be viewed from 18 inches in order to obtain the proper perspective. For on-screen viewing, user should zoom in until the 1-inch scale equals exactly one inch when measured on the screen.
- Offshore Substation location and dimensions are based on preliminary publicly available project data. Projects for which this data is not currently available, WTGs are used for all foundation positions. OSS positions and dimensions considered in this photosimulation are subject to potential modification.
- WTG positions in the photosimulations are based on a refraction value of 7/6 or an approximate 0.14 coefficient derived from observations of the constructed Block Island Wind Farm. This refraction coefficient may yield more conservative visibility results (i.e. greater turbine visibility) that the viewshed analysis results which use a refraction coefficient of 0.13.
- WTG tower, blades, and nacelle use the BOEM and FAA required color RAL 9010. The base and platform use RAL 1023 in accordance with USCG regulations.
- *The number of WTGs visible from the KOP was determined by human verified computer generated counts performed in the 3D camera views considering screening resulting from vegetation, structures, curvature of the earth and refraction. This count may vary from the actual number of WTGs visible in the respective views due to masking completed during post processing which may include people, waves, boats, or other minor obstructions that appear in the photograph. Additionally, the WTG counts assumed the WTG blades are in the upright position whereas the photosimulations assume a random rotation pattern. Considering the largest WTG in the cumulative array, this could account for up to 236 ft. (72 m) in lost maximum height depending on the rotation position.
- The cone of view indicated on the Key Observation Point Context map indicates the horizontal extent of view only and does not indicate the extent of WTG visibility.
- The resolution of the cumulative photosimulations balances the size and usability of the documents with the need for high resolution to see distant project components. Similarly to human vision, very distant turbines may appear blurry or difficult to decipher due to resolution limitations.
- The Key Observation Point Context map considers screening by curvature of the earth, viewer height, and turbine height. Landscape screening features are not considered. Therefore, in this view, the number of visible turbines depicted on the map may not match the table due to the presence of landscape screening features.

Project	Year of Development	Max Blade Tip Height (feet)	Potential Number of WTGs & OSSs Visible from KOP*	Total Number of WTGs & OSSs in Project	Theoretical Distance to Nearest Visible WTG (miles)	Theoretical Distance to Furthest Visible WTG (miles)
Ocean Wind (OCS-A 0498)	2024-2025	906	111	111	18.5	32.6
Empire Wind (OCS-A 0512)	2023-2027	951	0	72	Not Visible	Not Visible
Empire Wind II (OCS-A 0512)	2025-2027	951	0	104	Not Visible	Not Visible
Skipjack (OCS-A 0519)	2024-2030	853	1	33	35.3	42.2
Garden State (OCS-A 0482)	2023-2030	853	62	80	26.6	35.7
US Wind (OCS-A 0489 and 0490)	2024	938	0	101	Not Visible	Not Visible
Atlantic Shores Offshore Wind North (OCS-A 0549)	2025-2030	1,047	134	164	37.6	51.1
Ocean Wind II (OCS-A 0532)	2026-2030	906	111	111	12.1	26.0
Mid-Atlantic Offshore Wind (OCS-A 0544)	by 2030	853	0	104	Not Visible	Not Visible
Ocean Wind East (OCS-A 0537)	by 2030	853	0	82	Not Visible	Not Visible
Attentive Energy (OCS-A 0538)	by 2030	853	0	101	Not Visible	Not Visible
Bight Wind Holdings (OCS-A 0539)	by 2030	853	0	148	Not Visible	Not Visible
Atlantic Shores Offshore Wind Bight (OCS-A 0541)	by 2030	853	0	95	Not Visible	Not Visible
Invenergy Wind Offshore (OCS-A 0542)	by 2030	853	0	99	Not Visible	Not Visible

Key Observation Point Context



Key Observation Point Location



MATCH LINE SIC02 PANO #1



MATCH LINE SIC02 PANO #1

ATLANTIC SHORES offshore wind

Appendix A: Atlantic Shores Offshore Wind Cumulative Photosimulations

SIC02: Townsend's Inlet Bridge, Sea Isle City, Cape May County, New Jersey

Photosimulation (Panorama 2): Scenario 5: Atlantic Shores South without the construction of other foreseeable planned activities

Simulation Size: 66" in width by 29.3" in height. Images should be viewed from a distance of 18 inches in order to obtain the proper perspective.

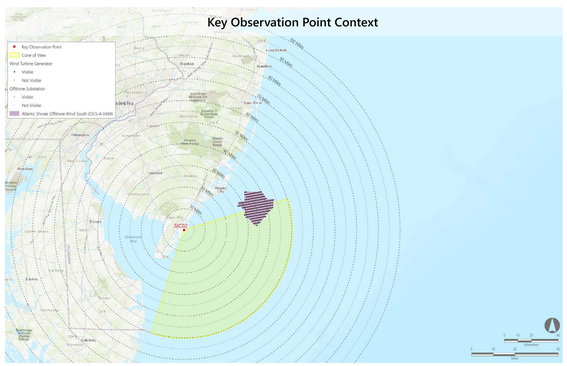
This box should be exactly 1" long on the printed panorama

Notes:

- Photosimulation Size: 66" in width by 29.3" in height. Images should be viewed from 18 inches in order to obtain the proper perspective. For on-screen viewing, user should zoom in until the 1-inch scale equals exactly one inch when measured on the screen.
- Offshore Substation location and dimensions are based on preliminary publicly available project data. Projects for which this data is not currently available, WTGs are used for all foundation positions. OSS positions and dimensions considered in this photosimulation are subject to potential modification.
- WTG positions in the photosimulations are based on a refraction value of 7/6 or an approximate 0.14 coefficient derived from observations of the constructed Block Island Wind Farm. This refraction coefficient may yield more conservative visibility results (i.e. greater turbine visibility) that the viewshed analysis results which use a refraction coefficient of 0.13.
- WTG tower, blades, and nacelle use the BOEM and FAA required color RAL 9010. The base and platform use RAL 1023 in accordance with USCG regulations.
- *The number of WTGs visible from the KOP was determined by human verified computer generated counts performed in the 3D camera views considering screening resulting from vegetation, structures, curvature of the earth and refraction. This count may vary from the actual number of WTGs visible in the respective views due to masking completed during post processing which may include people, waves, boats, or other minor obstructions that appear in the photograph. Additionally, the WTG counts assumed the WTG blades are in the upright position whereas the photosimulations assume a random rotation pattern. Considering the largest WTG in the cumulative array, this could account for up to 236 ft. (72 m) in lost maximum height depending on the rotation position.
- The cone of view indicated on the Key Observation Point Context map indicates the horizontal extent of view only and does not indicate the extent of WTG visibility.
- The resolution of the cumulative photosimulations balances the size and usability of the documents with the need for high resolution to see distant project components. Similarly to human vision, very distant turbines may appear blurry or difficult to decipher due to resolution limitations.
- The Key Observation Point Context map considers screening by curvature of the earth, viewer height, and turbine height. Landscape screening features are not considered. Therefore, in this view, the number of visible turbines depicted on the map may not match the table due to the presence of landscape screening features.

Project	Year of Development	Max Blade Tip Height (feet)	Potential Number of WTGs & OSSs Visible from KOP*	Total Number of WTGs & OSSs in Project	Theoretical Distance to Nearest Visible WTG (miles)	Theoretical Distance to Furthest Visible WTG (miles)
Atlantic Shores Offshore Wind South (OCS-A 0499)	2023–2025	1,047	200	205	27.4	43.6

Key Observation Point Context



Key Observation Point Location



SPB01: Seaside Park Beach, Seaside Park Borough, Ocean County, New Jersey

Environmental Data

Date Taken: 08/25/2022
Time: 7:05 AM
Temperature: 67°F
Humidity: 84%
Visibility*: 10+ miles
Wind Direction: West-northwest
Wind Speed: 3 mph
Conditions Observed: Fair

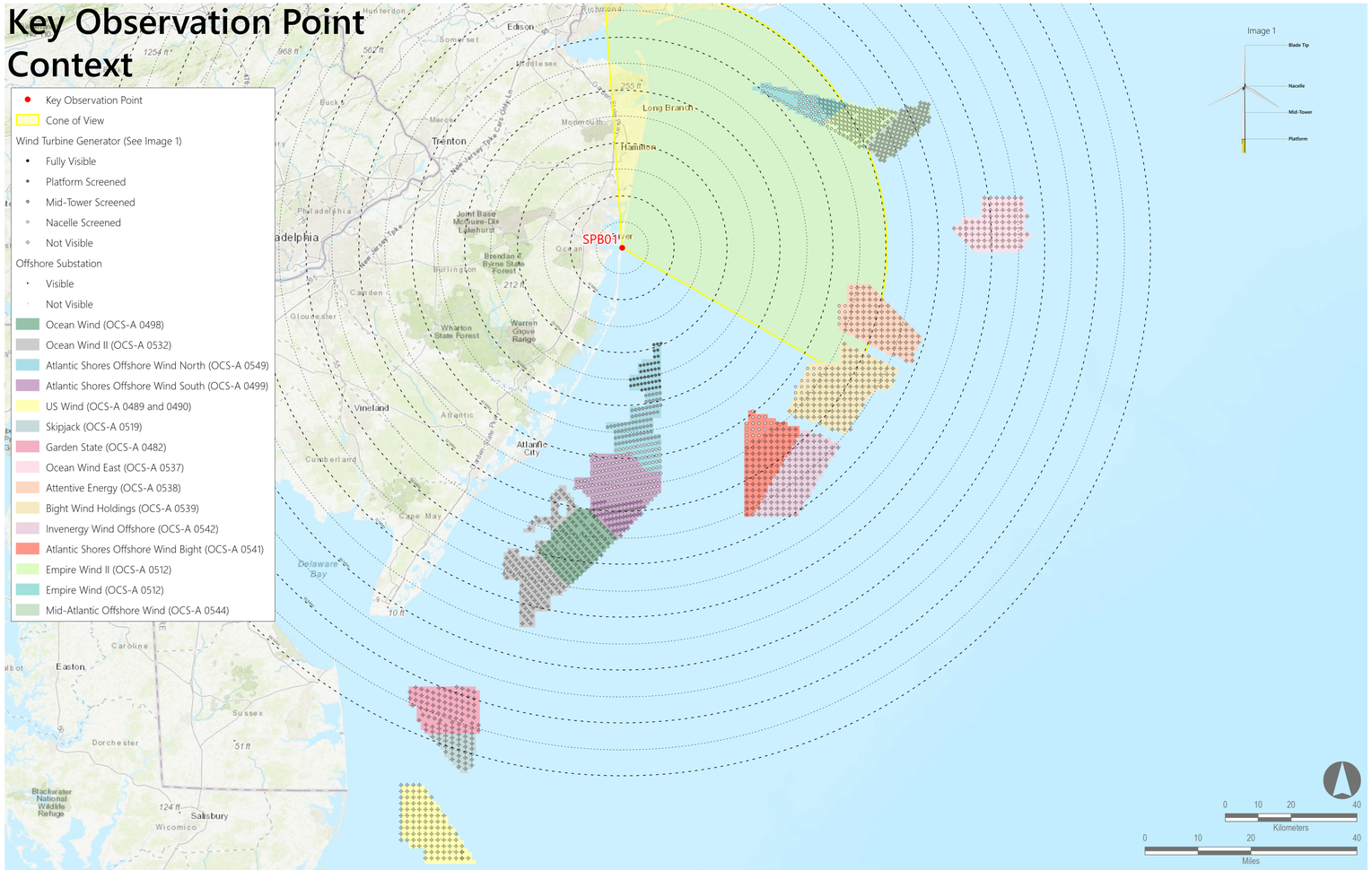
Camera Information
Camera: Canon EOS 5D Mark IV
Resolution: 30.4 Megapixels
Lens Focal Length: 50 mm
Camera Height: 16.23 feet AMSL

Key Observation Point Information

County: Ocean
Town: Seaside Park Borough
State: New Jersey
Location: Seaside Park Beach
Latitude, Longitude: 39.93530°N, 74.07163°W
Direction of View (Center): East-northeast (58.6°)
Field of View: 124° x 55°

Visual Resources
Character Area: Commercial Beachfront, Seascape (SCA)
User Group: Residents/Tourists, Fishermen
Visually Sensitive Resource: Seaside Park Beach and Boardwalk, U.S.
Life Saving Station No. 13

Key Observation Point Context



Reasonably Foreseeable Projects Represented in Photosimulation

		Project	Year of Development	Max Blade Tip Height (feet)	Potential Number of WTGs & OSSs Visible from KOP**	Total Number of WTGs & OSSs in Project	Theoretical Distance to Nearest Visible WTG (miles)	Theoretical Distance to Furthest Visible WTG (miles)
Scenario 5	Scenario 2	Atlantic Shores Offshore Wind South (OCS-A 0499)	2025-2027	1,047	118	205	39.0	48.0
Scenario 4	Scenario 1	Ocean Wind (OCS-A 0498)	2023-2025	906	0	111	Not Visible	Not Visible
		Empire Wind (OCS-A 0512)	2024-2025	951	52	72	39.8	46.1
		Empire Wind II (OCS-A 0512)	2023-2027	951	6	104	44.6	46.0
	Scenario 3	Skipjack (OCS-A 0519)	2024-2030	853	0	33	Not Visible	Not Visible
		Garden State (OCS-A 0482)	2023-2030	853	0	80	Not Visible	Not Visible
		US Wind (OCS-A 0489 and 0490)	2024	938	0	101	Not Visible	Not Visible
		Atlantic Shores Offshore Wind North (OCS-A 0549)	2025-2030	1,047	157	164	19.3	42.2
		Ocean Wind II (OCS-A 0532)	2026-2030	906	0	111	Not Visible	Not Visible
		Mid-Atlantic Offshore Wind (OCS-A 0544)	by 2030	853	0	104	Not Visible	Not Visible
		Ocean Wind East (OCS-A 0537)	by 2030	853	0	82	Not Visible	Not Visible
		Attentive Energy (OCS-A 0538)	by 2030	853	7	101	42.4	43.9
		Bight Wind Holdings (OCS-A 0539)	by 2030	853	13	148	41.8	43.8
		Atlantic Shores Offshore Wind Bight (OCS-A 0541)	by 2030	853	17	95	39.5	43.9
		Invenergy Wind Offshore (OCS-A 0542)	by 2030	853	0	99	Not Visible	Not Visible

Notes:

- Offshore Substation location and dimensions are based on preliminary publicly available project data. Projects for which this data is not currently available, WTGs are used for all foundation positions. OSS positions and dimensions considered in this photosimulation are subject to potential modification.
- *Historical meteorological data predicts visibility within a limit of 10 statute miles. However, visibility may extend beyond this distance. The photosimulations assume visibility extends to the limit of physical visibility (including a standard refraction index).
- WTG positions in the photosimulations are based on a refraction value of 7/6 or an approximate 0.14 coefficient derived from observations of the constructed Block Island Wind Farm. This refraction coefficient may yield more conservative visibility results (i.e. greater turbine visibility) that the viewshed analysis results which use a refraction coefficient of 0.13.
- **The number of WTGs visible from the KOP was determined by human verified computer generated counts performed in the 3D camera views considering screening resulting from vegetation, structures, curvature of the earth and refraction. This count may vary from the actual number of WTGs visible in the respective views due to masking completed during post processing which may include people, waves, boats, or other minor obstructions that appear in the photograph. Additionally, the WTG counts assumed the WTG blades are in the upright position whereas the photosimulations assume a random rotation pattern. Considering the largest WTG in the cumulative array, this could account for up to 236 ft. (72 m) in lost maximum height depending on the rotation position.
- The cone of view indicated on the Key Observation Point Context map indicates the horizontal extent of view only and does not indicate the extent of WTG visibility.
- The Key Observation Point Context map considers screening by curvature of the earth, viewer height, and turbine height. Landscape screening features are not considered. Therefore, in this view, the number of visible turbines depicted on the map may not match the table due to the presence of landscape screening features.

ATLANTIC SHORES offshore wind

Appendix A: Atlantic Shores Offshore Wind Cumulative Photosimulations

MATCH LINE SPB01 PANO #2

MATCH LINE SPB01 PANO #1

ATLANTIC SHORES offshore wind

Appendix A: Atlantic Shores Offshore Wind Cumulative Photosimulations

SPB01: Seaside Park Beach, Seaside Park Borough, Ocean County, New Jersey

Existing Conditions (Panorama 1)

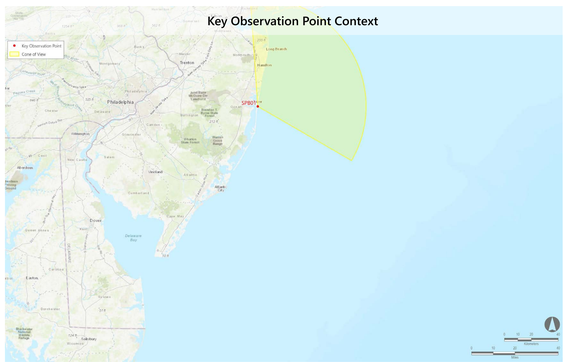
Notes:

- Photosimulation Size: 66" in width by 29.3" in height. Images should be viewed from 18 inches in order to obtain the proper perspective. For on-screen viewing, user should zoom in until the 1-inch scale equals exactly one inch when measured on the screen.

Simulation Size: 66" in width by 29.3" in height. Images should be viewed from a distance of 18 inches in order to obtain the proper perspective.

This box should be exactly 1" long on the printed panorama

Key Observation Point Context



Key Observation Point Location



MATCH LINE SPB01 PANO #2



MATCH LINE SPB01 PANO #1

ATLANTIC SHORES offshore wind

Appendix A: Atlantic Shores Offshore Wind Cumulative Photosimulations

SPB01: Seaside Park Beach, Seaside Park Borough, Ocean County, New Jersey

Photosimulation (Panorama 1): Scenario 1: 2023-2025 Project Construction (Ocean Wind, Empire Wind, Empire Wind II)

Simulation Size: 66" in width by 29.3" in height. Images should be viewed from a distance of 18 inches in order to obtain the proper perspective.

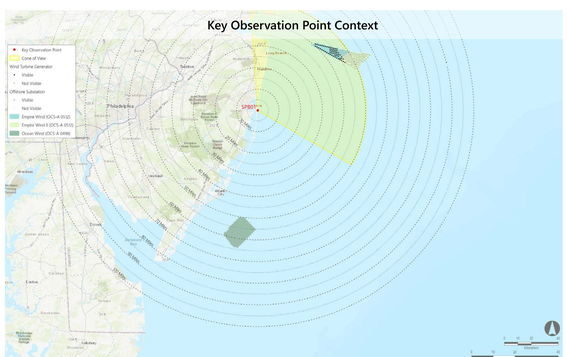
This box should be exactly 1" long on the printed panorama

Notes:

- Photosimulation Size: 66" in width by 29.3" in height. Images should be viewed from 18 inches in order to obtain the proper perspective. For on-screen viewing, user should zoom in until the 1-inch scale equals exactly one inch when measured on the screen.
- Offshore Substation location and dimensions are based on preliminary publicly available project data. Projects for which this data is not currently available, WTGs are used for all foundation positions. OSS positions and dimensions considered in this photosimulation are subject to potential modification.
- WTG positions in the photosimulations are based on a refraction value of 7/6 or an approximate 0.14 coefficient derived from observations of the constructed Block Island Wind Farm. This refraction coefficient may yield more conservative visibility results (i.e. greater turbine visibility) that the viewshed analysis results which use a refraction coefficient of 0.13.
- WTG tower, blades, and nacelle use the BOEM and FAA required color RAL 9010. The base and platform use RAL 1023 in accordance with USCG regulations.
- *The number of WTGs visible from the KOP was determined by human verified computer generated counts performed in the 3D camera views considering screening resulting from vegetation, structures, curvature of the earth and refraction. This count may vary from the actual number of WTGs visible in the respective views due to masking completed during post processing which may include people, waves, boats, or other minor obstructions that appear in the photograph. Additionally, the WTG counts assumed the WTG blades are in the upright position whereas the photosimulations assume a random rotation pattern. Considering the largest WTG in the cumulative array, this could account for up to 236 ft. (72 m) in lost maximum height depending on the rotation position.
- The cone of view indicated on the Key Observation Point Context map indicates the horizontal extent of view only and does not indicate the extent of WTG visibility.
- The resolution of the cumulative photosimulations balances the size and usability of the documents with the need for high resolution to see distant project components. Similarly to human vision, very distant turbines may appear blurry or difficult to decipher due to resolution limitations.
- The Key Observation Point Context map considers screening by curvature of the earth, viewer height, and turbine height. Landscape screening features are not considered. Therefore, in this view, the number of visible turbines depicted on the map may not match the table due to the presence of landscape screening features.

Project	Year of Development	Max Blade Tip Height (feet)	Potential Number of WTGs & OSSs Visible from KOP*	Total Number of WTGs & OSSs in Project	Theoretical Distance to Nearest Visible WTG (miles)	Theoretical Distance to Furthest Visible WTG (miles)
Ocean Wind (OCS-A 0498)	2024-2025	906	0	111	Not Visible	Not Visible
Empire Wind (OCS-A 0512)	2023-2027	951	52	72	39.8	46.1
Empire Wind II (OCS-A 0512)	2025-2027	951	6	104	44.6	46.0

Key Observation Point Context



Key Observation Point Location



MATCH LINE SPB01 PANO #2

ATLANTIC SHORES offshore wind

Appendix A: Atlantic Shores Offshore Wind Cumulative Photosimulations

SPB01: Seaside Park Beach, Seaside Park Borough, Ocean County, New Jersey

Photosimulation (Panorama 1): Scenario 2: Atlantic Shores Construction (2025-2027) added to Scenario 1 (Ocean Wind, Empire Wind, Empire Wind II, Atlantic Shores South)

Simulation Size: 66" in width by 29.3" in height. Images should be viewed from a distance of 18 inches in order to obtain the proper perspective.

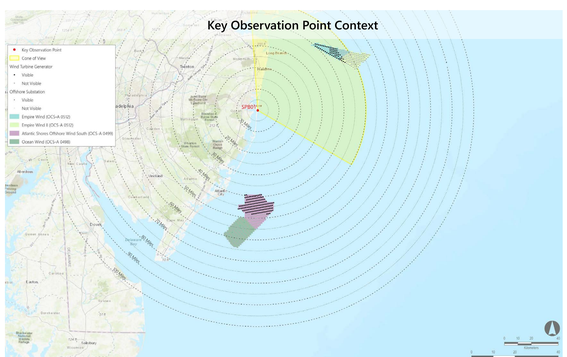
This box should be exactly 1" long on the printed panorama

Notes:

- Photosimulation Size: 66" in width by 29.3" in height. Images should be viewed from 18 inches in order to obtain the proper perspective. For on-screen viewing, user should zoom in until the 1-inch scale equals exactly one inch when measured on the screen.
- Offshore Substation location and dimensions are based on preliminary publicly available project data. Projects for which this data is not currently available, WTGs are used for all foundation positions. OSS positions and dimensions considered in this photosimulation are subject to potential modification.
- WTG positions in the photosimulations are based on a refraction value of 7/6 or an approximate 0.14 coefficient derived from observations of the constructed Block Island Wind Farm. This refraction coefficient may yield more conservative visibility results (i.e. greater turbine visibility) that the viewshed analysis results which use a refraction coefficient of 0.13.
- WTG tower, blades, and nacelle use the BOEM and FAA required color RAL 9010. The base and platform use RAL 1023 in accordance with USCG regulations.
- *The number of WTGs visible from the KOP was determined by human verified computer generated counts performed in the 3D camera views considering screening resulting from vegetation, structures, curvature of the earth and refraction. This count may vary from the actual number of WTGs visible in the respective views due to masking completed during post processing which may include people, waves, boats, or other minor obstructions that appear in the photograph. Additionally, the WTG counts assumed the WTG blades are in the upright position whereas the photosimulations assume a random rotation pattern. Considering the largest WTG in the cumulative array, this could account for up to 236 ft. (72 m) in lost maximum height depending on the rotation position.
- The cone of view indicated on the Key Observation Point Context map indicates the horizontal extent of view only and does not indicate the extent of WTG visibility.
- The resolution of the cumulative photosimulations balances the size and usability of the documents with the need for high resolution to see distant project components. Similarly to human vision, very distant turbines may appear blurry or difficult to decipher due to resolution limitations.
- The Key Observation Point Context map considers screening by curvature of the earth, viewer height, and turbine height. Landscape screening features are not considered. Therefore, in this view, the number of visible turbines depicted on the map may not match the table due to the presence of landscape screening features.

Project	Year of Development	Max Blade Tip Height (feet)	Potential Number of WTGs & OSSs Visible from KOP*	Total Number of WTGs & OSSs in Project	Theoretical Distance to Nearest Visible WTG (miles)	Theoretical Distance to Furthest Visible WTG (miles)
Atlantic Shores Offshore Wind South (OCS-A 0499)	2023-2025	1,047	118	205	39.0	48.0
Ocean Wind (OCS-A 0498)	2024-2025	906	0	111	Not Visible	Not Visible
Empire Wind (OCS-A 0512)	2023-2027	951	52	72	39.8	46.1
Empire Wind II (OCS-A 0512)	2025-2027	951	6	104	44.6	46.0

Key Observation Point Context



Key Observation Point Location



MATCH LINE SPB01 PANO #2

ATLANTIC SHORES offshore wind

Appendix A: Atlantic Shores Offshore Wind Cumulative Photosimulations

SPB01: Seaside Park Beach, Seaside Park Borough, Ocean County, New Jersey

Photosimulation (Panorama 1): Scenario 3: 2024-2030 Project construction added after the construction of Atlantic Shores South (Full Lease Build-out Including Atlantic Shores South)

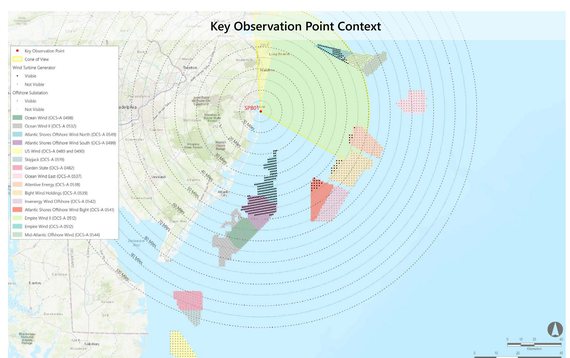
Simulation Size: 66" in width by 29.3" in height. Images should be viewed from a distance of 18 inches in order to obtain the proper perspective.

This box should be exactly 1" long on the printed panorama

Notes:

- Photosimulation Size: 66" in width by 29.3" in height. Images should be viewed from 18 inches in order to obtain the proper perspective. For on-screen viewing, user should zoom in until the 1-inch scale equals exactly one inch when measured on the screen.
- Offshore Substation location and dimensions are based on preliminary publicly available project data. Projects for which this data is not currently available, WTGs are used for all foundation positions. OSS positions and dimensions considered in this photosimulation are subject to potential modification.
- WTG positions in the photosimulations are based on a refraction value of 7/6 or an approximate 0.14 coefficient derived from observations of the constructed Block Island Wind Farm. This refraction coefficient may yield more conservative visibility results (i.e. greater turbine visibility) that the viewshed analysis results which use a refraction coefficient of 0.13.
- WTG tower, blades, and nacelle use the BOEM and FAA required color RAL 9010. The base and platform use RAL 1023 in accordance with USCG regulations.
- *The number of WTGs visible from the KOP was determined by human verified computer generated counts performed in the 3D camera views considering screening resulting from vegetation, structures, curvature of the earth and refraction. This count may vary from the actual number of WTGs visible in the respective views due to masking completed during post processing which may include people, waves, boats, or other minor obstructions that appear in the photograph. Additionally, the WTG counts assumed the WTG blades are in the upright position whereas the photosimulations assume a random rotation pattern. Considering the largest WTG in the cumulative array, this could account for up to 236 ft. (72 m) in lost maximum height depending on the rotation position.
- The cone of view indicated on the Key Observation Point Context map indicates the horizontal extent of view only and does not indicate the extent of WTG visibility.
- The resolution of the cumulative photosimulations balances the size and usability of the documents with the need for high resolution to see distant project components. Similarly to human vision, very distant turbines may appear blurry or difficult to decipher due to resolution limitations.
- The Key Observation Point Context map considers screening by curvature of the earth, viewer height, and turbine height. Landscape screening features are not considered. Therefore, in this view, the number of visible turbines depicted on the map may not match the table due to the presence of landscape screening features.

Project	Year of Development	Max Blade Tip Height (feet)	Potential Number of WTGs & OSSs Visible from KOP*	Total Number of WTGs & OSSs in Project	Theoretical Distance to Nearest Visible WTG (miles)	Theoretical Distance to Furthest Visible WTG (miles)
Atlantic Shores Offshore Wind South (OCS-A 0499)	2023-2025	1,047	118	205	39.0	48.0
Ocean Wind (OCS-A 0498)	2024-2025	906	0	111	Not Visible	Not Visible
Empire Wind (OCS-A 0512)	2023-2027	951	52	72	39.8	46.1
Empire Wind II (OCS-A 0512)	2025-2027	951	6	104	44.6	46.0
Skipjack (OCS-A 0519)	2024-2030	853	0	33	Not Visible	Not Visible
Garden State (OCS-A 0482)	2023-2030	853	0	80	Not Visible	Not Visible
US Wind (OCS-A 0489 and 0490)	2024	938	0	101	Not Visible	Not Visible
Atlantic Shores Offshore Wind North (OCS-A 0549)	2025-2030	1,047	157	164	19.3	42.2
Ocean Wind II (OCS-A 0532)	2026-2030	906	0	111	Not Visible	Not Visible
Mid-Atlantic Offshore Wind (OCS-A 0544)	by 2030	853	0	104	Not Visible	Not Visible
Ocean Wind East (OCS-A 0537)	by 2030	853	0	82	Not Visible	Not Visible
Attentive Energy (OCS-A 0538)	by 2030	853	7	101	42.4	43.9
Bight Wind Holdings (OCS-A 0539)	by 2030	853	13	148	41.8	43.8
Atlantic Shores Offshore Wind Bight (OCS-A 0541)	by 2030	853	17	95	39.5	43.9
Invenergy Wind Offshore (OCS-A 0542)	by 2030	853	0	99	Not Visible	Not Visible





MATCH LINE SPB01 PANO #2



ATLANTIC SHORES offshore wind

Appendix A: Atlantic Shores Offshore Wind Cumulative Photosimulations

SPB01: Seaside Park Beach, Seaside Park Borough, Ocean County, New Jersey

Photosimulation (Panorama 1): Scenario 4: Full buildout of all lease areas without Atlantic Shores South

Simulation Size: 66" in width by 29.3" in height. Images should be viewed from a distance of 18 inches in order to obtain the proper perspective.

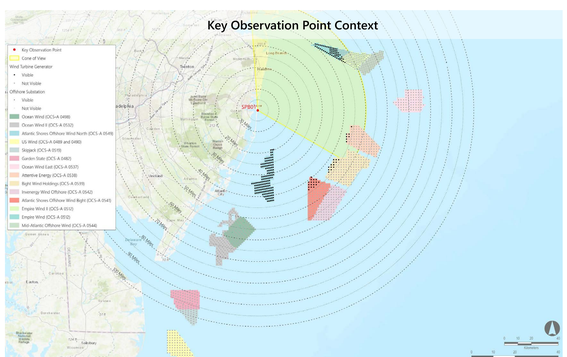
This box should be exactly 1" long on the printed panorama

Notes:

- Photosimulation Size: 66" in width by 29.3" in height. Images should be viewed from 18 inches in order to obtain the proper perspective. For on-screen viewing, user should zoom in until the 1-inch scale equals exactly one inch when measured on the screen.
- Offshore Substation location and dimensions are based on preliminary publicly available project data. Projects for which this data is not currently available, WTGs are used for all foundation positions. OSS positions and dimensions considered in this photosimulation are subject to potential modification.
- WTG positions in the photosimulations are based on a refraction value of 7/6 or an approximate 0.14 coefficient derived from observations of the constructed Block Island Wind Farm. This refraction coefficient may yield more conservative visibility results (i.e. greater turbine visibility) that the viewshed analysis results which use a refraction coefficient of 0.13.
- WTG tower, blades, and nacelle use the BOEM and FAA required color RAL 9010. The base and platform use RAL 1023 in accordance with USCG regulations.
- *The number of WTGs visible from the KOP was determined by human verified computer generated counts performed in the 3D camera views considering screening resulting from vegetation, structures, curvature of the earth and refraction. This count may vary from the actual number of WTGs visible in the respective views due to masking completed during post processing which may include people, waves, boats, or other minor obstructions that appear in the photograph. Additionally, the WTG counts assumed the WTG blades are in the upright position whereas the photosimulations assume a random rotation pattern. Considering the largest WTG in the cumulative array, this could account for up to 236 ft. (72 m) in lost maximum height depending on the rotation position.
- The cone of view indicated on the Key Observation Point Context map indicates the horizontal extent of view only and does not indicate the extent of WTG visibility.
- The resolution of the cumulative photosimulations balances the size and usability of the documents with the need for high resolution to see distant project components. Similarly to human vision, very distant turbines may appear blurry or difficult to decipher due to resolution limitations.
- The Key Observation Point Context map considers screening by curvature of the earth, viewer height, and turbine height. Landscape screening features are not considered. Therefore, in this view, the number of visible turbines depicted on the map may not match the table due to the presence of landscape screening features.

Project	Year of Development	Max Blade Tip Height (feet)	Potential Number of WTGs & OSSs Visible from KOP*	Total Number of WTGs & OSSs in Project	Theoretical Distance to Nearest Visible WTG (miles)	Theoretical Distance to Furthest Visible WTG (miles)
Ocean Wind (OCS-A 0498)	2024-2025	906	0	111	Not Visible	Not Visible
Empire Wind (OCS-A 0512)	2023-2027	951	52	72	39.8	46.1
Empire Wind II (OCS-A 0512)	2025-2027	951	6	104	44.6	46.0
Skipjack (OCS-A 0519)	2024-2030	853	0	33	Not Visible	Not Visible
Garden State (OCS-A 0482)	2023-2030	853	0	80	Not Visible	Not Visible
US Wind (OCS-A 0489 and 0490)	2024	938	0	101	Not Visible	Not Visible
Atlantic Shores Offshore Wind North (OCS-A 0549)	2025-2030	1,047	157	164	19.3	42.2
Ocean Wind II (OCS-A 0532)	2026-2030	906	0	111	Not Visible	Not Visible
Mid-Atlantic Offshore Wind (OCS-A 0544)	by 2030	853	0	104	Not Visible	Not Visible
Ocean Wind East (OCS-A 0537)	by 2030	853	0	82	Not Visible	Not Visible
Attentive Energy (OCS-A 0538)	by 2030	853	7	101	42.4	43.9
Bight Wind Holdings (OCS-A 0539)	by 2030	853	13	148	41.8	43.8
Atlantic Shores Offshore Wind Bight (OCS-A 0541)	by 2030	853	17	95	39.5	43.9
Invenergy Wind Offshore (OCS-A 0542)	by 2030	853	0	99	Not Visible	Not Visible

Key Observation Point Context



Key Observation Point Location





ATLANTIC SHORES offshore wind

Appendix A: Atlantic Shores Offshore Wind Cumulative Photosimulations

SPB01: Seaside Park Beach, Seaside Park Borough, Ocean County, New Jersey

Photosimulation (Panorama 1): Scenario 5: Atlantic Shores South without the construction of other foreseeable planned activities

Simulation Size: 66" in width by 29.3" in height. Images should be viewed from a distance of 18 inches in order to obtain the proper perspective.

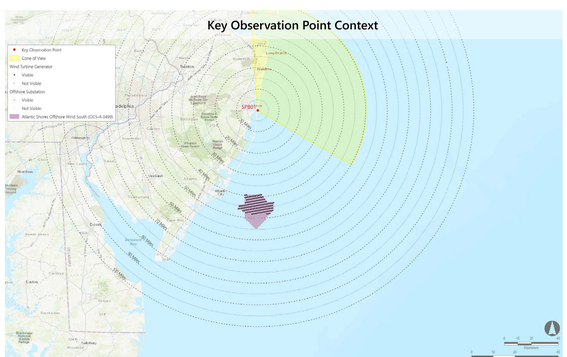
This box should be exactly 7" long on the printed panorama

Notes:

- Photosimulation Size: 66" in width by 29.3" in height. Images should be viewed from 18 inches in order to obtain the proper perspective. For on-screen viewing, user should zoom in until the 1-inch scale equals exactly one inch when measured on the screen.
- Offshore Substation location and dimensions are based on preliminary publicly available project data. Projects for which this data is not currently available, WTGs are used for all foundation positions. OSS positions and dimensions considered in this photosimulation are subject to potential modification.
- WTG positions in the photosimulations are based on a refraction value of 7/6 or an approximate 0.14 coefficient derived from observations of the constructed Block Island Wind Farm. This refraction coefficient may yield more conservative visibility results (i.e. greater turbine visibility) that the viewshed analysis results which use a refraction coefficient of 0.13.
- WTG tower, blades, and nacelle use the BOEM and FAA required color RAL 9010. The base and platform use RAL 1023 in accordance with USCG regulations.
- *The number of WTGs visible from the KOP was determined by human verified computer generated counts performed in the 3D camera views considering screening resulting from vegetation, structures, curvature of the earth and refraction. This count may vary from the actual number of WTGs visible in the respective views due to masking completed during post processing which may include people, waves, boats, or other minor obstructions that appear in the photograph. Additionally, the WTG counts assumed the WTG blades are in the upright position whereas the photosimulations assume a random rotation pattern. Considering the largest WTG in the cumulative array, this could account for up to 236 ft. (72 m) in lost maximum height depending on the rotation position.
- The cone of view indicated on the Key Observation Point Context map indicates the horizontal extent of view only and does not indicate the extent of WTG visibility.
- The resolution of the cumulative photosimulations balances the size and usability of the documents with the need for high resolution to see distant project components. Similarly to human vision, very distant turbines may appear blurry or difficult to decipher due to resolution limitations.
- The Key Observation Point Context map considers screening by curvature of the earth, viewer height, and turbine height. Landscape screening features are not considered. Therefore, in this view, the number of visible turbines depicted on the map may not match the table due to the presence of landscape screening features.

Project	Year of Development	Max Blade Tip Height (feet)	Potential Number of WTGs & OSSs Visible from KOP*	Total Number of WTGs & OSSs in Project	Theoretical Distance to Nearest Visible WTG (miles)	Theoretical Distance to Furthest Visible WTG (miles)
Atlantic Shores Offshore Wind South (OCS-A 0499)	2023-2025	1,047	118	205	39.0	48.0

Key Observation Point Context



Key Observation Point Location


Key Observation Point
Cone of View
SPB01
Ocean Boulevard
Ocean Boulevard
Ocean Boulevard

SPB01: Seaside Park Beach, Seaside Park Borough, Ocean County, New Jersey

Environmental Data

Date Taken: 08/25/2022
Time: 7:05 AM
Temperature: 67°F
Humidity: 84%
Visibility*: 10+ miles
Wind Direction: West-northwest
Wind Speed: 3 mph
Conditions Observed: Fair

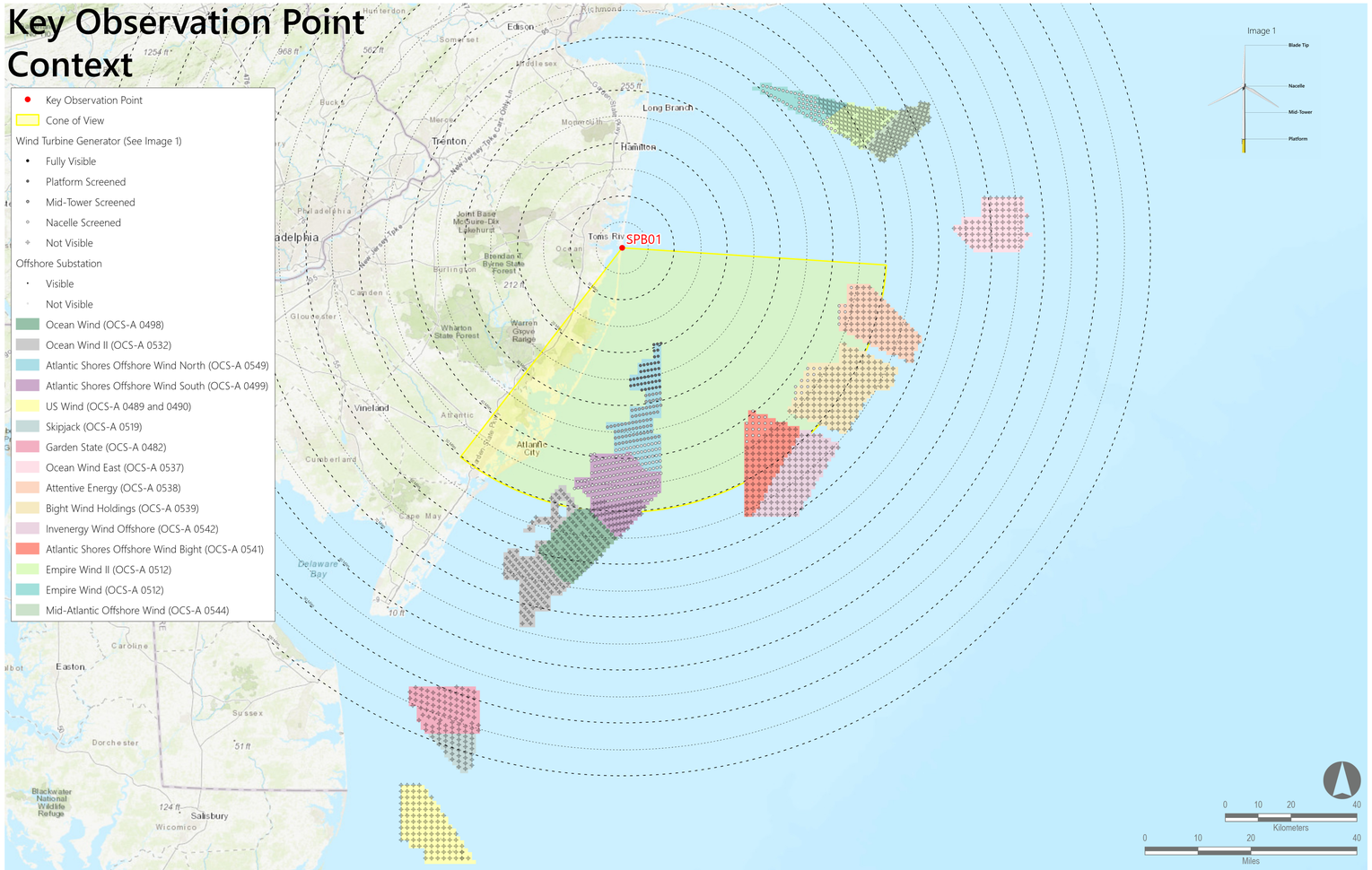
Camera Information
Camera: Canon EOS 5D Mark IV
Resolution: 30.4 Megapixels
Lens Focal Length: 50 mm
Camera Height: 16.23 feet AMSL

Key Observation Point Information

County: Ocean
Town: Seaside Park Borough
State: New Jersey
Location: Seaside Park Beach
Latitude, Longitude: 39.93530°N, 74.07163°W
Direction of View (Center): East-northeast (58.6°)
Field of View: 124° x 55°

Visual Resources
Character Area: Commercial Beachfront, Seascape (SCA)
User Group: Residents/Tourists, Fishermen
Visually Sensitive Resource: Seaside Park Beach and Boardwalk, U.S.
Life Saving Station No. 13

Key Observation Point Context



Reasonably Foreseeable Projects Represented in Photosimulation

		Project	Year of Development	Max Blade Tip Height (feet)	Potential Number of WTGs & OSSs Visible from KOP**	Total Number of WTGs & OSSs in Project	Theoretical Distance to Nearest Visible WTG (miles)	Theoretical Distance to Furthest Visible WTG (miles)
Scenario 5	Scenario 2	Atlantic Shores Offshore Wind South (OCS-A 0499)	2025-2027	1,047	118	205	39.0	48.0
Scenario 4	Scenario 1	Ocean Wind (OCS-A 0498)	2023-2025	906	0	111	Not Visible	Not Visible
		Empire Wind (OCS-A 0512)	2024-2025	951	52	72	39.8	46.1
		Empire Wind II (OCS-A 0512)	2023-2027	951	6	104	44.6	46.0
	Scenario 3	Skipjack (OCS-A 0519)	2024-2030	853	0	33	Not Visible	Not Visible
		Garden State (OCS-A 0482)	2023-2030	853	0	80	Not Visible	Not Visible
		US Wind (OCS-A 0489 and 0490)	2024	938	0	101	Not Visible	Not Visible
		Atlantic Shores Offshore Wind North (OCS-A 0549)	2025-2030	1,047	157	164	19.3	42.2
		Ocean Wind II (OCS-A 0532)	2026-2030	906	0	111	Not Visible	Not Visible
		Mid-Atlantic Offshore Wind (OCS-A 0544)	by 2030	853	0	104	Not Visible	Not Visible
		Ocean Wind East (OCS-A 0537)	by 2030	853	0	82	Not Visible	Not Visible
		Attentive Energy (OCS-A 0538)	by 2030	853	7	101	42.4	43.9
		Bight Wind Holdings (OCS-A 0539)	by 2030	853	13	148	41.8	43.8
		Atlantic Shores Offshore Wind Bight (OCS-A 0541)	by 2030	853	17	95	39.5	43.9
		Invenergy Wind Offshore (OCS-A 0542)	by 2030	853	0	99	Not Visible	Not Visible

Notes:

- Offshore Substation location and dimensions are based on preliminary publicly available project data. Projects for which this data is not currently available, WTGs are used for all foundation positions. OSS positions and dimensions considered in this photosimulation are subject to potential modification.
- *Historical meteorological data predicts visibility within a limit of 10 statute miles. However, visibility may extend beyond this distance. The photosimulations assume visibility extends to the limit of physical visibility (including a standard refraction index).
- WTG positions in the photosimulations are based on a refraction value of 7/6 or an approximate 0.14 coefficient derived from observations of the constructed Block Island Wind Farm. This refraction coefficient may yield more conservative visibility results (i.e. greater turbine visibility) that the viewshed analysis results which use a refraction coefficient of 0.13.
- **The number of WTGs visible from the KOP was determined by human verified computer generated counts performed in the 3D camera views considering screening resulting from vegetation, structures, curvature of the earth and refraction. This count may vary from the actual number of WTGs visible in the respective views due to masking completed during post processing which may include people, waves, boats, or other minor obstructions that appear in the photograph. Additionally, the WTG counts assumed the WTG blades are in the upright position whereas the photosimulations assume a random rotation pattern. Considering the largest WTG in the cumulative array, this could account for up to 236 ft. (72 m) in lost maximum height depending on the rotation position.
- The cone of view indicated on the Key Observation Point Context map indicates the horizontal extent of view only and does not indicate the extent of WTG visibility.
- The Key Observation Point Context map considers screening by curvature of the earth, viewer height, and turbine height. Landscape screening features are not considered. Therefore, in this view, the number of visible turbines depicted on the map may not match the table due to the presence of landscape screening features.

ATLANTIC SHORES offshore wind

MATCH LINE SPB01 PANO #1



MATCH LINE SPB01 PANO #2

ATLANTIC SHORES offshore wind

Appendix A: Atlantic Shores Offshore Wind Cumulative Photosimulations

SPB01: Seaside Park Beach, Seaside Park Borough, Ocean County, New Jersey

Existing Conditions (Panorama 2)

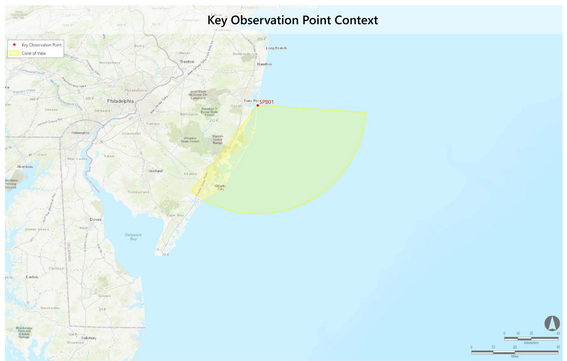
Notes:

- Photosimulation Size: 66" in width by 29.3" in height. Images should be viewed from 18 inches in order to obtain the proper perspective. For on-screen viewing, user should zoom in until the 1-inch scale equals exactly one inch when measured on the screen.

Simulation Size: 66" in width by 29.3" in height. Images should be viewed from a distance of 18 inches in order to obtain the proper perspective.

This box should be exactly 1" long on the printed panorama

Key Observation Point Context



Key Observation Point Location



MATCH LINE SPB01 PANO #1



ATLANTIC SHORES offshore wind

Appendix A: Atlantic Shores Offshore Wind Cumulative Photosimulations

SPB01: Seaside Park Beach, Seaside Park Borough, Ocean County, New Jersey

Photosimulation (Panorama 2): Scenario 1: 2023-2025 Project Construction (Ocean Wind, Empire Wind, Empire Wind II)

Simulation Size: 66" in width by 29.3" in height. Images should be viewed from a distance of 18 inches in order to obtain the proper perspective.

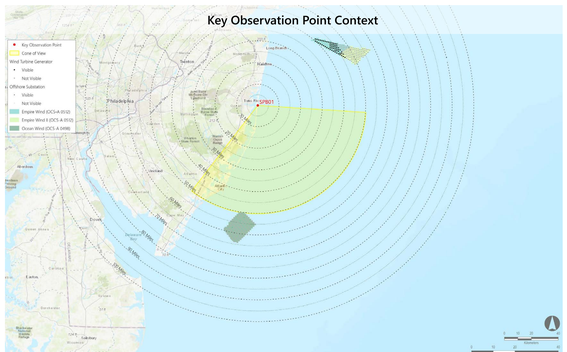
This box should be exactly 1" long on the printed panorama

Notes:

- Photosimulation Size: 66" in width by 29.3" in height. Images should be viewed from 18 inches in order to obtain the proper perspective. For on-screen viewing, user should zoom in until the 1-inch scale equals exactly one inch when measured on the screen.
- Offshore Substation location and dimensions are based on preliminary publicly available project data. Projects for which this data is not currently available, WTGs are used for all foundation positions. OSS positions and dimensions considered in this photosimulation are subject to potential modification.
- WTG positions in the photosimulations are based on a refraction value of 7/6 or an approximate 0.14 coefficient derived from observations of the constructed Block Island Wind Farm. This refraction coefficient may yield more conservative visibility results (i.e. greater turbine visibility) that the viewshed analysis results which use a refraction coefficient of 0.13.
- WTG tower, blades, and nacelle use the BOEM and FAA required color RAL 9010. The base and platform use RAL 1023 in accordance with USCG regulations.
- *The number of WTGs visible from the KOP was determined by human verified computer generated counts performed in the 3D camera views considering screening resulting from vegetation, structures, curvature of the earth and refraction. This count may vary from the actual number of WTGs visible in the respective views due to masking completed during post processing which may include people, waves, boats, or other minor obstructions that appear in the photograph. Additionally, the WTG counts assumed the WTG blades are in the upright position whereas the photosimulations assume a random rotation pattern. Considering the largest WTG in the cumulative array, this could account for up to 236 ft. (72 m) in lost maximum height depending on the rotation position.
- The cone of view indicated on the Key Observation Point Context map indicates the horizontal extent of view only and does not indicate the extent of WTG visibility.
- The resolution of the cumulative photosimulations balances the size and usability of the documents with the need for high resolution to see distant project components. Similarly to human vision, very distant turbines may appear blurry or difficult to decipher due to resolution limitations.
- The Key Observation Point Context map considers screening by curvature of the earth, viewer height, and turbine height. Landscape screening features are not considered. Therefore, in this view, the number of visible turbines depicted on the map may not match the table due to the presence of landscape screening features.

Project	Year of Development	Max Blade Tip Height (feet)	Potential Number of WTGs & OSSs Visible from KOP*	Total Number of WTGs & OSSs in Project	Theoretical Distance to Nearest Visible WTG (miles)	Theoretical Distance to Furthest Visible WTG (miles)
Ocean Wind (OCS-A 0498)	2024-2025	906	0	111	Not Visible	Not Visible
Empire Wind (OCS-A 0512)	2023-2027	951	52	72	39.8	46.1
Empire Wind II (OCS-A 0512)	2025-2027	951	6	104	44.6	46.0

Key Observation Point Context



Key Observation Point Location



MATCH LINE SPB01 PANO #1



MATCH LINE SPB01 PANO #2

ATLANTIC SHORES offshore wind

Appendix A: Atlantic Shores Offshore Wind Cumulative Photosimulations

SPB01: Seaside Park Beach, Seaside Park Borough, Ocean County, New Jersey

Photosimulation (Panorama 2): Scenario 2: Atlantic Shores Construction (2025-2027) added to Scenario 1 (Ocean Wind, Empire Wind, Empire Wind II, Atlantic Shores South)

Simulation Size: 66" in width by 29.3" in height. Images should be viewed from a distance of 18 inches in order to obtain the proper perspective.

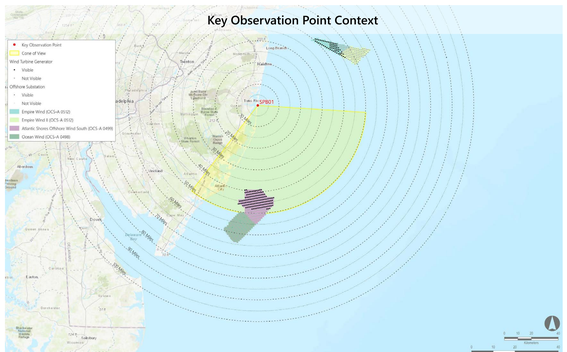
This box should be exactly 1" long on the printed panorama

Notes:

- Photosimulation Size: 66" in width by 29.3" in height. Images should be viewed from 18 inches in order to obtain the proper perspective. For on-screen viewing, user should zoom in until the 1-inch scale equals exactly one inch when measured on the screen.
- Offshore Substation location and dimensions are based on preliminary publicly available project data. Projects for which this data is not currently available, WTGs are used for all foundation positions. OSS positions and dimensions considered in this photosimulation are subject to potential modification.
- WTG positions in the photosimulations are based on a refraction value of 7/6 or an approximate 0.14 coefficient derived from observations of the constructed Block Island Wind Farm. This refraction coefficient may yield more conservative visibility results (i.e. greater turbine visibility) that the viewshed analysis results which use a refraction coefficient of 0.13.
- WTG tower, blades, and nacelle use the BOEM and FAA required color RAL 9010. The base and platform use RAL 1023 in accordance with USCG regulations.
- *The number of WTGs visible from the KOP was determined by human verified computer generated counts performed in the 3D camera views considering screening resulting from vegetation, structures, curvature of the earth and refraction. This count may vary from the actual number of WTGs visible in the respective views due to masking completed during post processing which may include people, waves, boats, or other minor obstructions that appear in the photograph. Additionally, the WTG counts assumed the WTG blades are in the upright position whereas the photosimulations assume a random rotation pattern. Considering the largest WTG in the cumulative array, this could account for up to 236 ft. (72 m) in lost maximum height depending on the rotation position.
- The cone of view indicated on the Key Observation Point Context map indicates the horizontal extent of view only and does not indicate the extent of WTG visibility.
- The resolution of the cumulative photosimulations balances the size and usability of the documents with the need for high resolution to see distant project components. Similarly to human vision, very distant turbines may appear blurry or difficult to decipher due to resolution limitations.
- The Key Observation Point Context map considers screening by curvature of the earth, viewer height, and turbine height. Landscape screening features are not considered. Therefore, in this view, the number of visible turbines depicted on the map may not match the table due to the presence of landscape screening features.

Project	Year of Development	Max Blade Tip Height (feet)	Potential Number of WTGs & OSSs Visible from KOP*	Total Number of WTGs & OSSs in Project	Theoretical Distance to Nearest Visible WTG (miles)	Theoretical Distance to Furthest Visible WTG (miles)
Atlantic Shores Offshore Wind South (OCS-A 0499)	2023-2025	1,047	118	205	39.0	48.0
Ocean Wind (OCS-A 0498)	2024-2025	906	0	111	Not Visible	Not Visible
Empire Wind (OCS-A 0512)	2023-2027	951	52	72	39.8	46.1
Empire Wind II (OCS-A 0512)	2025-2027	951	6	104	44.6	46.0

Key Observation Point Context



Key Observation Point Location



MATCH LINE SPB01 PANO #1



MATCH LINE SPB01 PANO #2

ATLANTIC SHORES offshore wind

Appendix A: Atlantic Shores Offshore Wind Cumulative Photosimulations

SPB01: Seaside Park Beach, Seaside Park Borough, Ocean County, New Jersey

Photosimulation (Panorama 2): Scenario 3: 2024-2030 Project construction added after the construction of Atlantic Shores South (Full Lease Build-out Including Atlantic Shores South)

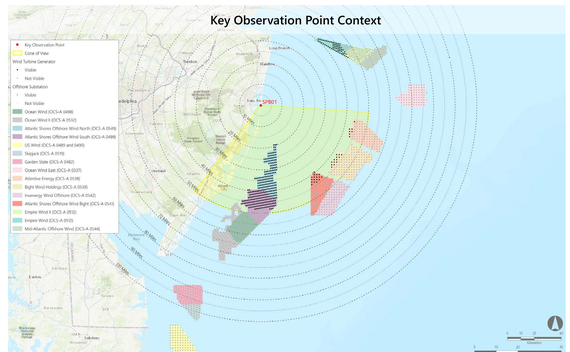
Simulation Size: 66" in width by 29.3" in height. Images should be viewed from a distance of 18 inches in order to obtain the proper perspective.

This box should be exactly 1" long on the printed panorama

Notes:

- Photosimulation Size: 66" in width by 29.3" in height. Images should be viewed from 18 inches in order to obtain the proper perspective. For on-screen viewing, user should zoom in until the 1-inch scale equals exactly one inch when measured on the screen.
- Offshore Substation location and dimensions are based on preliminary publicly available project data. Projects for which this data is not currently available, WTGs are used for all foundation positions. OSS positions and dimensions considered in this photosimulation are subject to potential modification.
- WTG positions in the photosimulations are based on a refraction value of 7/6 or an approximate 0.14 coefficient derived from observations of the constructed Block Island Wind Farm. This refraction coefficient may yield more conservative visibility results (i.e. greater turbine visibility) that the viewshed analysis results which use a refraction coefficient of 0.13.
- WTG tower, blades, and nacelle use the BOEM and FAA required color RAL 9010. The base and platform use RAL 1023 in accordance with USCG regulations.
- *The number of WTGs visible from the KOP was determined by human verified computer generated counts performed in the 3D camera views considering screening resulting from vegetation, structures, curvature of the earth and refraction. This count may vary from the actual number of WTGs visible in the respective views due to masking completed during post processing which may include people, waves, boats, or other minor obstructions that appear in the photograph. Additionally, the WTG counts assumed the WTG blades are in the upright position whereas the photosimulations assume a random rotation pattern. Considering the largest WTG in the cumulative array, this could account for up to 236 ft. (72 m) in lost maximum height depending on the rotation position.
- The cone of view indicated on the Key Observation Point Context map indicates the horizontal extent of view only and does not indicate the extent of WTG visibility.
- The resolution of the cumulative photosimulations balances the size and usability of the documents with the need for high resolution to see distant project components. Similarly to human vision, very distant turbines may appear blurry or difficult to decipher due to resolution limitations.
- The Key Observation Point Context map considers screening by curvature of the earth, viewer height, and turbine height. Landscape screening features are not considered. Therefore, in this view, the number of visible turbines depicted on the map may not match the table due to the presence of landscape screening features.

Project	Year of Development	Max Blade Tip Height (feet)	Potential Number of WTGs & OSSs Visible from KOP*	Total Number of WTGs & OSSs in Project	Theoretical Distance to Nearest Visible WTG (miles)	Theoretical Distance to Furthest Visible WTG (miles)
Atlantic Shores Offshore Wind South (OCS-A 0499)	2023-2025	1,047	118	205	39.0	48.0
Ocean Wind (OCS-A 0498)	2024-2025	906	0	111	Not Visible	Not Visible
Empire Wind (OCS-A 0512)	2023-2027	951	52	72	39.8	46.1
Empire Wind II (OCS-A 0512)	2025-2027	951	6	104	44.6	46.0
Skipjack (OCS-A 0519)	2024-2030	853	0	33	Not Visible	Not Visible
Garden State (OCS-A 0482)	2023-2030	853	0	80	Not Visible	Not Visible
US Wind (OCS-A 0489 and 0490)	2024	938	0	101	Not Visible	Not Visible
Atlantic Shores Offshore Wind North (OCS-A 0549)	2025-2030	1,047	157	164	19.3	42.2
Ocean Wind II (OCS-A 0532)	2026-2030	906	0	111	Not Visible	Not Visible
Mid-Atlantic Offshore Wind (OCS-A 0544)	by 2030	853	0	104	Not Visible	Not Visible
Ocean Wind East (OCS-A 0537)	by 2030	853	0	82	Not Visible	Not Visible
Attentive Energy (OCS-A 0538)	by 2030	853	7	101	42.4	43.9
Bight Wind Holdings (OCS-A 0539)	by 2030	853	13	148	41.8	43.8
Atlantic Shores Offshore Wind Bight (OCS-A 0541)	by 2030	853	17	95	39.5	43.9
Invenergy Wind Offshore (OCS-A 0542)	by 2030	853	0	99	Not Visible	Not Visible





MATCH LINE SPB01 PANO #1



MATCH LINE SPB01 PANO #2

ATLANTIC SHORES offshore wind

Appendix A: Atlantic Shores Offshore Wind Cumulative Photosimulations

SPB01: Seaside Park Beach, Seaside Park Borough, Ocean County, New Jersey

Photosimulation (Panorama 2): Scenario 4: Full buildout of all lease areas without Atlantic Shores South

Simulation Size: 66" in width by 29.3" in height. Images should be viewed from a distance of 18 inches in order to obtain the proper perspective.

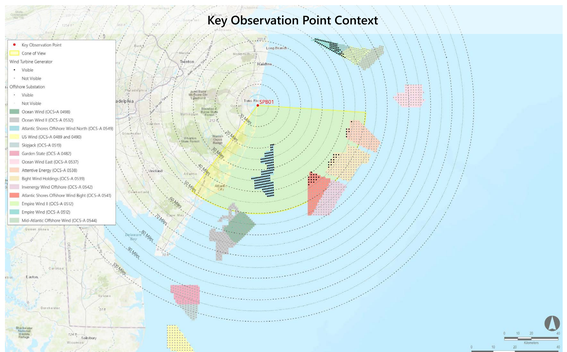
This box should be exactly 1" long on the printed panorama

Notes:

- Photosimulation Size: 66" in width by 29.3" in height. Images should be viewed from 18 inches in order to obtain the proper perspective. For on-screen viewing, user should zoom in until the 1-inch scale equals exactly one inch when measured on the screen.
- Offshore Substation location and dimensions are based on preliminary publicly available project data. Projects for which this data is not currently available, WTGs are used for all foundation positions. OSS positions and dimensions considered in this photosimulation are subject to potential modification.
- WTG positions in the photosimulations are based on a refraction value of 7/6 or an approximate 0.14 coefficient derived from observations of the constructed Block Island Wind Farm. This refraction coefficient may yield more conservative visibility results (i.e. greater turbine visibility) that the viewshed analysis results which use a refraction coefficient of 0.13.
- WTG tower, blades, and nacelle use the BOEM and FAA required color RAL 9010. The base and platform use RAL 1023 in accordance with USCG regulations.
- *The number of WTGs visible from the KOP was determined by human verified computer generated counts performed in the 3D camera views considering screening resulting from vegetation, structures, curvature of the earth and refraction. This count may vary from the actual number of WTGs visible in the respective views due to masking completed during post processing which may include people, waves, boats, or other minor obstructions that appear in the photograph. Additionally, the WTG counts assumed the WTG blades are in the upright position whereas the photosimulations assume a random rotation pattern. Considering the largest WTG in the cumulative array, this could account for up to 236 ft. (72 m) in lost maximum height depending on the rotation position.
- The cone of view indicated on the Key Observation Point Context map indicates the horizontal extent of view only and does not indicate the extent of WTG visibility.
- The resolution of the cumulative photosimulations balances the size and usability of the documents with the need for high resolution to see distant project components. Similarly to human vision, very distant turbines may appear blurry or difficult to decipher due to resolution limitations.
- The Key Observation Point Context map considers screening by curvature of the earth, viewer height, and turbine height. Landscape screening features are not considered. Therefore, in this view, the number of visible turbines depicted on the map may not match the table due to the presence of landscape screening features.

Project	Year of Development	Max Blade Tip Height (feet)	Potential Number of WTGs & OSSs Visible from KOP*	Total Number of WTGs & OSSs in Project	Theoretical Distance to Nearest Visible WTG (miles)	Theoretical Distance to Furthest Visible WTG (miles)
Ocean Wind (OCS-A 0498)	2024-2025	906	0	111	Not Visible	Not Visible
Empire Wind (OCS-A 0512)	2023-2027	951	52	72	39.8	46.1
Empire Wind II (OCS-A 0512)	2025-2027	951	6	104	44.6	46.0
Skipjack (OCS-A 0519)	2024-2030	853	0	33	Not Visible	Not Visible
Garden State (OCS-A 0482)	2023-2030	853	0	80	Not Visible	Not Visible
US Wind (OCS-A 0489 and 0490)	2024	938	0	101	Not Visible	Not Visible
Atlantic Shores Offshore Wind North (OCS-A 0549)	2025-2030	1,047	157	164	19.3	42.2
Ocean Wind II (OCS-A 0532)	2026-2030	906	0	111	Not Visible	Not Visible
Mid-Atlantic Offshore Wind (OCS-A 0544)	by 2030	853	0	104	Not Visible	Not Visible
Ocean Wind East (OCS-A 0537)	by 2030	853	0	82	Not Visible	Not Visible
Attentive Energy (OCS-A 0538)	by 2030	853	7	101	42.4	43.9
Bight Wind Holdings (OCS-A 0539)	by 2030	853	13	148	41.8	43.8
Atlantic Shores Offshore Wind Bight (OCS-A 0541)	by 2030	853	17	95	39.5	43.9
Invenergy Wind Offshore (OCS-A 0542)	by 2030	853	0	99	Not Visible	Not Visible

Key Observation Point Context



Key Observation Point Location



MATCH LINE SPB01 PANO #1



MATCH LINE SPB01 PANO #2

ATLANTIC SHORES offshore wind

Appendix A: Atlantic Shores Offshore Wind Cumulative Photosimulations

SPB01: Seaside Park Beach, Seaside Park Borough, Ocean County, New Jersey

Photosimulation (Panorama 2): Scenario 5: Atlantic Shores South without the construction of other foreseeable planned activities

Simulation Size: 66" in width by 29.3" in height. Images should be viewed from a distance of 18 inches in order to obtain the proper perspective.

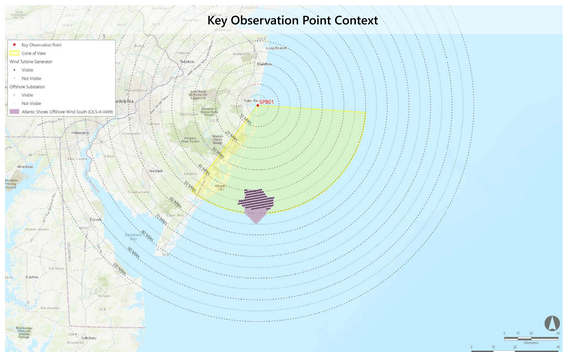
This box should be exactly 1" long on the printed panorama

Notes:

- Photosimulation Size: 66" in width by 29.3" in height. Images should be viewed from 18 inches in order to obtain the proper perspective. For on-screen viewing, user should zoom in until the 1-inch scale equals exactly one inch when measured on the screen.
- Offshore Substation location and dimensions are based on preliminary publicly available project data. Projects for which this data is not currently available, WTGs are used for all foundation positions. OSS positions and dimensions considered in this photosimulation are subject to potential modification.
- WTG positions in the photosimulations are based on a refraction value of 7/6 or an approximate 0.14 coefficient derived from observations of the constructed Block Island Wind Farm. This refraction coefficient may yield more conservative visibility results (i.e. greater turbine visibility) that the viewshed analysis results which use a refraction coefficient of 0.13.
- WTG tower, blades, and nacelle use the BOEM and FAA required color RAL 9010. The base and platform use RAL 1023 in accordance with USCG regulations.
- *The number of WTGs visible from the KOP was determined by human verified computer generated counts performed in the 3D camera views considering screening resulting from vegetation, structures, curvature of the earth and refraction. This count may vary from the actual number of WTGs visible in the respective views due to masking completed during post processing which may include people, waves, boats, or other minor obstructions that appear in the photograph. Additionally, the WTG counts assumed the WTG blades are in the upright position whereas the photosimulations assume a random rotation pattern. Considering the largest WTG in the cumulative array, this could account for up to 236 ft. (72 m) in lost maximum height depending on the rotation position.
- The cone of view indicated on the Key Observation Point Context map indicates the horizontal extent of view only and does not indicate the extent of WTG visibility.
- The resolution of the cumulative photosimulations balances the size and usability of the documents with the need for high resolution to see distant project components. Similarly to human vision, very distant turbines may appear blurry or difficult to decipher due to resolution limitations.
- The Key Observation Point Context map considers screening by curvature of the earth, viewer height, and turbine height. Landscape screening features are not considered. Therefore, in this view, the number of visible turbines depicted on the map may not match the table due to the presence of landscape screening features.

Project	Year of Development	Max Blade Tip Height (feet)	Potential Number of WTGs & OSSs Visible from KOP*	Total Number of WTGs & OSSs in Project	Theoretical Distance to Nearest Visible WTG (miles)	Theoretical Distance to Furthest Visible WTG (miles)
Atlantic Shores Offshore Wind South (OCS-A 0499)	2023-2025	1,047	118	205	39.0	48.0

Key Observation Point Context



Key Observation Point Location



Attachment H-2: Alternative Simulations

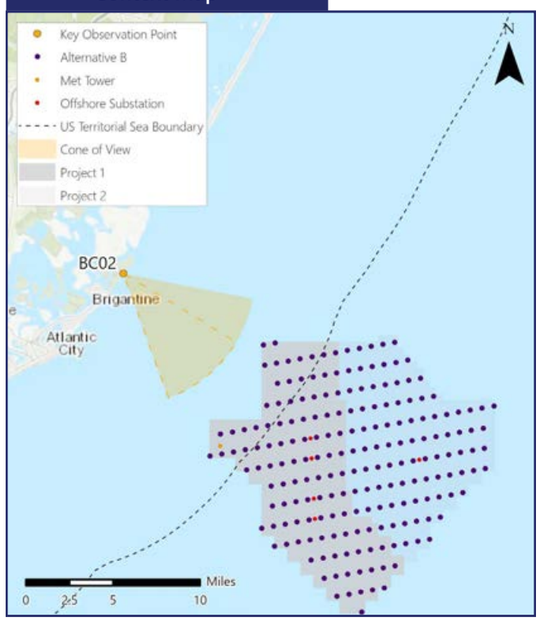
BC02 North Brigantine Natural Area - Alternative B

Brigantine City, Atlantic County, New Jersey



The image above is a +/- 124° panorama photograph from the North Brigantine Natural Area, panning clockwise from northeast-east (left) to south (right). The yellow rectangle within the photo represents the extent of the photosimulation photo(s).

Context Map



Location Map



Simulation Information

Coordinates:	39.42954°N, 74.33968°W
Character Area:	Undeveloped Beach, Seascape (SCA)
User Group:	Residents/Tourists, Fishermen
Direction of View:	Southeast
Distance to Nearest Visible Turbine:	9.03 miles
Visually Sensitive Resource:	North Brigantine State Natural Area

Environmental Information

Date Taken:	08/18/2020
Time:	12:00 PM
Temperature:	84°F
Humidity:	53%
Visibility:	10 miles
Wind Direction:	West-southwest
Wind Speed:	3 mph
Conditions Observed:	Fair

Photograph Information

Camera:	Canon EOS 5D Mark IV
Resolution:	30.4 Megapixels
Focal Length:	50mm
Camera Height:	11.06 feet AMSL

Notes

Printed at 100%, the photosimulations are 15 inches wide by 10 inches high. At this size, the photosimulation(s) should be viewed from a distance of 21 inches.

Simulated Photograph(s)



Photograph ASOW2799



Photograph ASOW2803

BC02 North Brigantine Natural Area - Alternative B

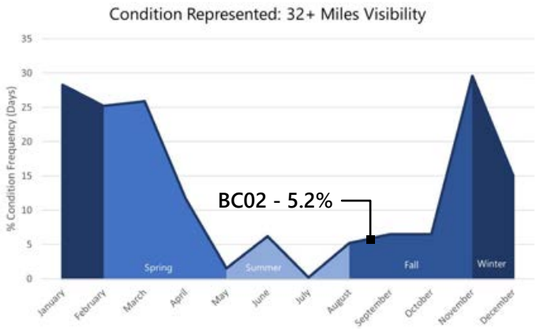
Brigantine City, Atlantic County, New Jersey

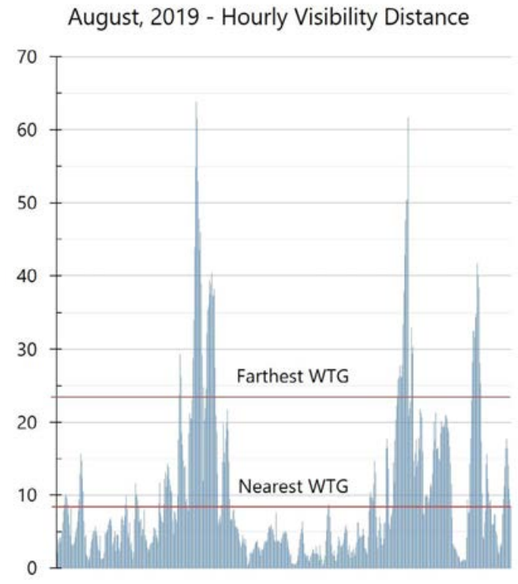
KOP Information

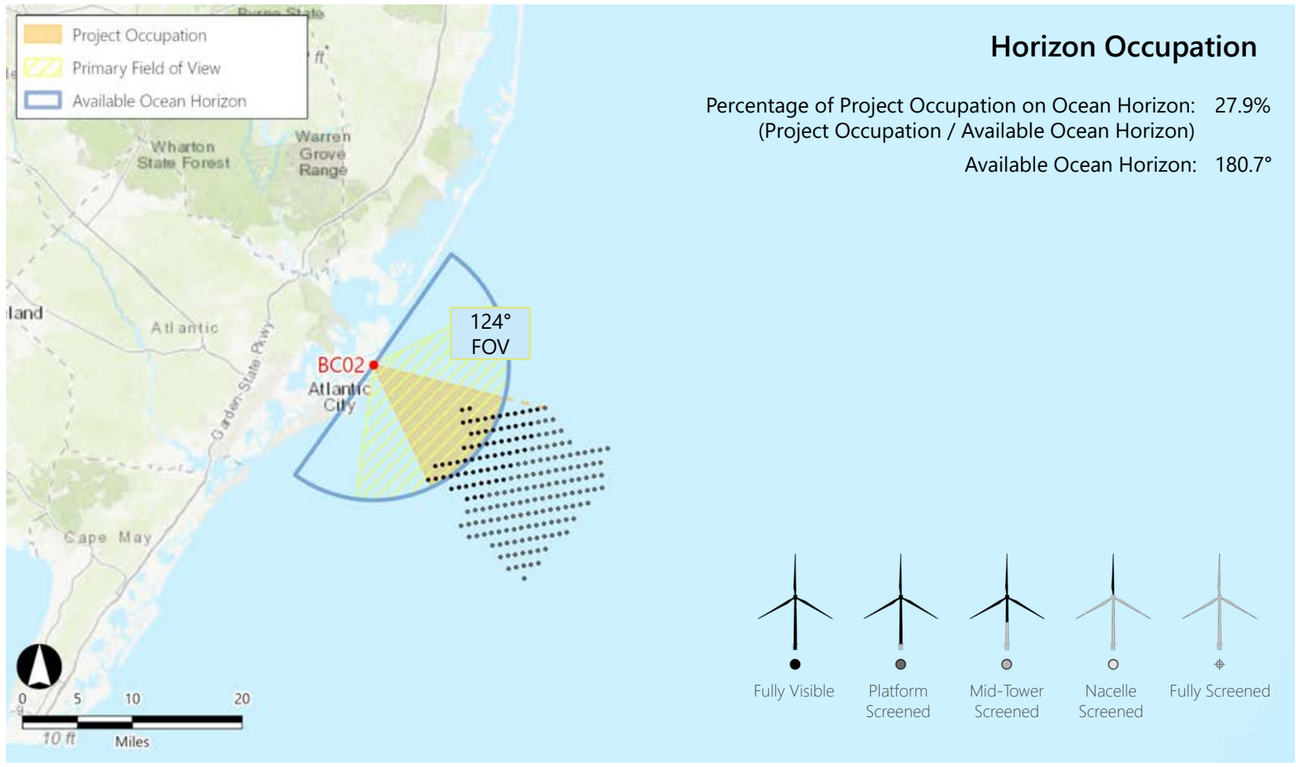
Primary Field of View:	East
Distance to Closest WTG:	9.03 miles
Camera Height:	11.06 ft
User Groups:	Residents, Tourists, Fishermen

Atmospheric Perspective

The effect the atmosphere has on the appearance of an object as viewed from a distance.



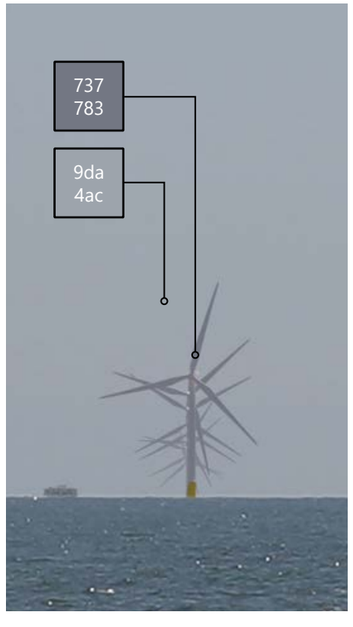




Horizon Occupation

Percentage of Project Occupation on Ocean Horizon: 27.9%
(Project Occupation / Available Ocean Horizon)

Available Ocean Horizon: 180.7°





WTG Color Contrast

Color Contrast Rating:



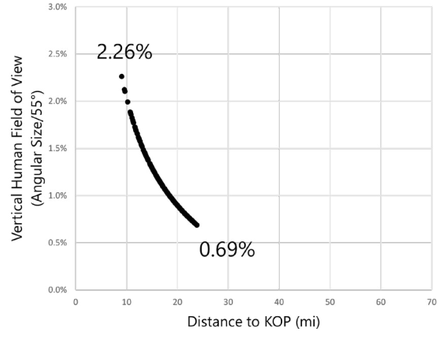
Lighting Condition:	Side lit
Season:	Summer
Sky Condition:	Fair
Atmospheric Condition:	>10 Miles

SIMILAR VIEWING PARAMETERS:

KOP LEHT02 Illustrates the project from 11.91 miles in the back lit condition. This provides an indication of how the turbines may appear from this KOP during morning conditions.

Vertical Occupation

Percentage of Human FOV: 2.26% (1.24° / 55°)
(Considering the nearest visible turbine)



Photosimulation - Alternative B (COP Layout)

This scale is designed to insure the simulation images are printed at the intended size.

Printed at 100% the resulting simulation size is 15 inches wide by 10 inches high. At this size and focal length, the simulation should be viewed from a distance of 21 inches.

Atlantic Shores Offshore Wind Project
Outer Continental Shelf OCS-A 0499
Key Observation Point: BC02 - North Brigantine Natural Area - Alternative B
Photosimulations: BOEM EIS Alternatives Visual Effects Analysis

Photosimulation - Alternative B (COP Layout)

This scale is designed to insure the simulation images are printed at the intended size.

Printed at 100% the resulting simulation size is 15 inches wide by 10 inches high. At this size and focal length, the simulation should be viewed from a distance of 21 inches.

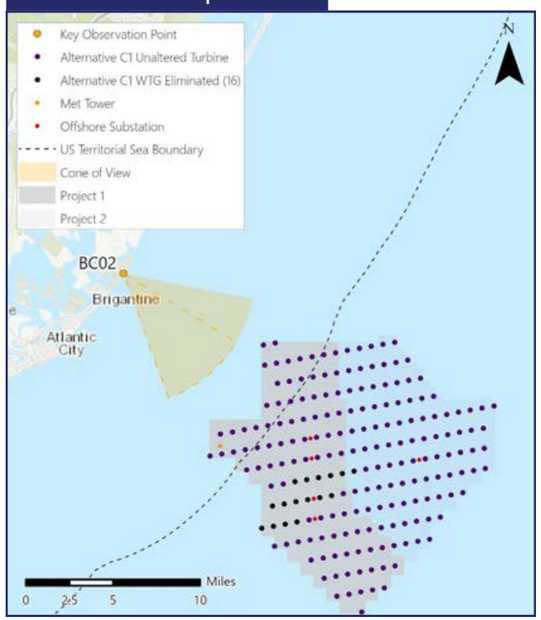
BC02 North Brigantine Natural Area - Alternative C1

Brigantine City, Atlantic County, New Jersey

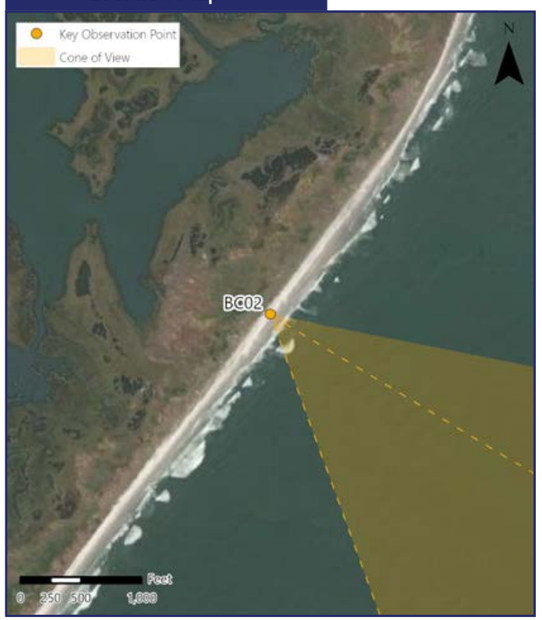


The image above is a +/- 124° panorama photograph from the North Brigantine Natural Area, panning clockwise from northeast-east (left) to south (right). The yellow rectangle within the photo represents the extent of the photosimulation photo(s).

Context Map



Location Map



Simulation Information

Coordinates:	39.42954°N, 74.33968°W
Character Area:	Undeveloped Beach, Seascape (SCA)
User Group:	Residents/Tourists, Fishermen
Direction of View:	Southeast
Distance to Nearest Visible Turbine:	9.03 miles
Visually Sensitive Resource:	North Brigantine State Natural Area

Environmental Information

Date Taken:	08/18/2020
Time:	12:00 PM
Temperature:	84°F
Humidity:	53%
Visibility:	10 miles
Wind Direction:	West-southwest
Wind Speed:	3 mph
Conditions Observed:	Fair

Photograph Information

Camera:	Canon EOS 5D Mark IV
Resolution:	30.4 Megapixels
Focal Length:	50mm
Camera Height:	11.06 feet AMSL

Notes

Printed at 100%, the photosimulations are 15 inches wide by 10 inches high. At this size, the photosimulation(s) should be viewed from a distance of 21 inches.

Simulated Photograph(s)



Photograph ASOW2799



Photograph ASOW2803

BC02 North Brigantine Natural Area - Alternative C1

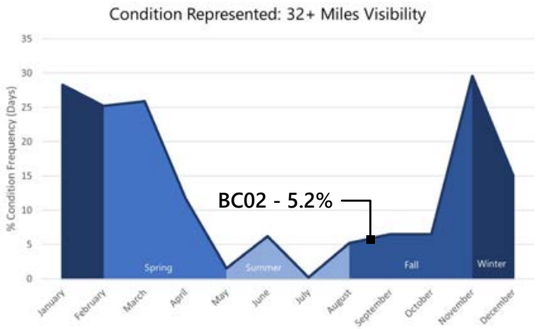
Brigantine City, Atlantic County, New Jersey

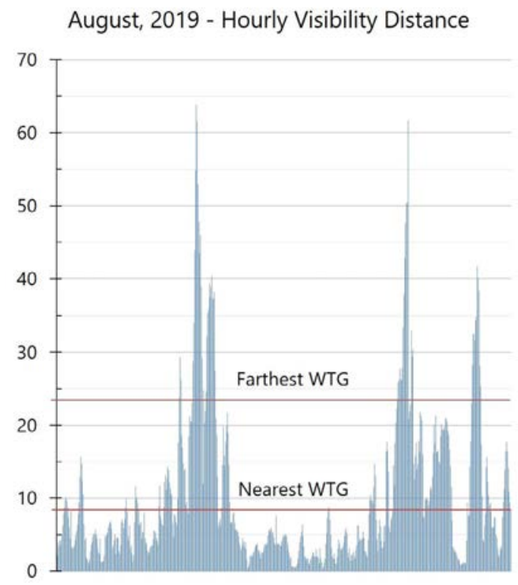
KOP Information

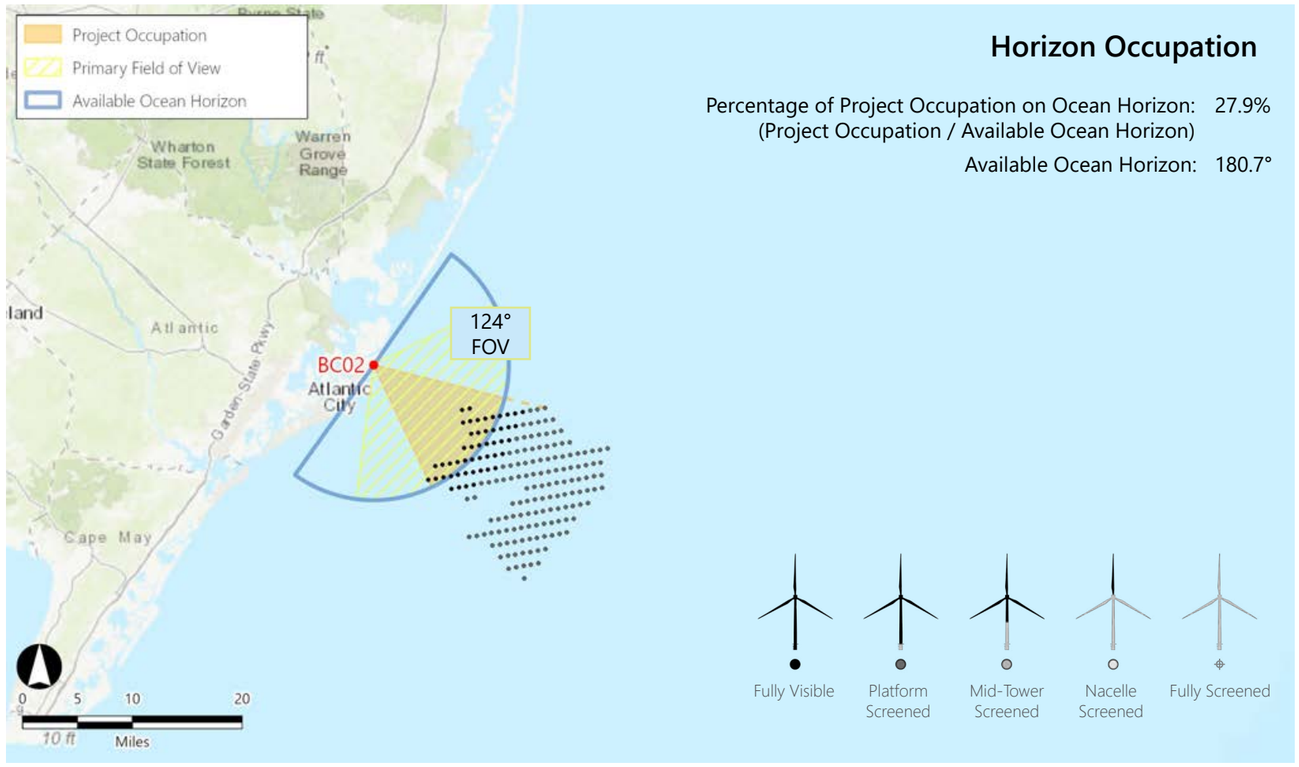
Primary Field of View:	East
Distance to Closest WTG:	9.03 miles
Camera Height:	11.06 ft
User Groups:	Residents, Tourists, Fishermen

Atmospheric Perspective

The effect the atmosphere has on the appearance of an object as viewed from a distance.



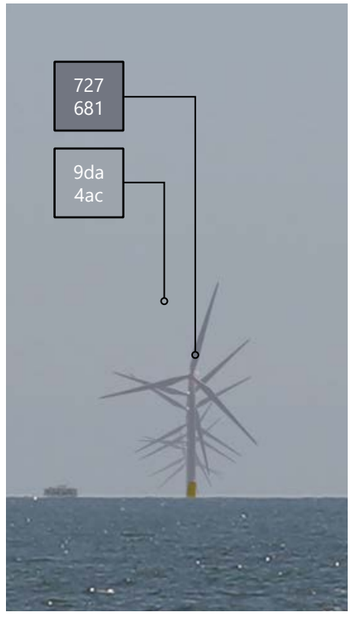




Horizon Occupation

Percentage of Project Occupation on Ocean Horizon: 27.9%
(Project Occupation / Available Ocean Horizon)

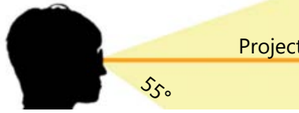
Available Ocean Horizon: 180.7°





WTG Color Contrast

Color Contrast Rating:



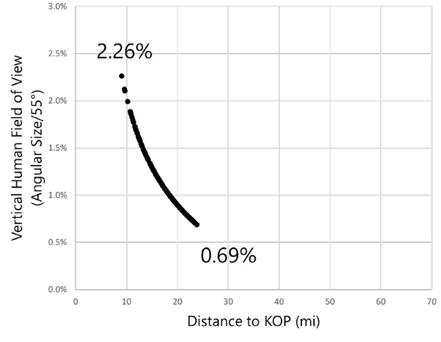
Lighting Condition:	Side lit
Season:	Summer
Sky Condition:	Fair
Atmospheric Condition:	>10 Miles

SIMILAR VIEWING PARAMETERS:

KOP LEHT02 Illustrates the project from 11.91 miles in the back lit condition. This provides an indication of how the turbines may appear from this KOP during morning conditions.

Vertical Occupation

Percentage of Human FOV: 2.26% (1.24° / 55°)
(Considering the nearest visible turbine)



Photosimulation - Alternative C1 Lobster Hole Avoidance

This scale is designed to insure the simulation images are printed at the intended size.

Printed at 100% the resulting simulation size is 15 inches wide by 10 inches high. At this size and focal length, the simulation should be viewed from a distance of 21 inches.

Atlantic Shores Offshore Wind Project
Outer Continental Shelf OCS-A 0499

Key Observation Point: BC02 - North Brigantine Natural Area - Alternative C1
Photosimulations: BOEM EIS Alternatives Visual Effects Analysis

Photosimulation - Alternative C1 Lobster Hole Avoidance

This scale is designed to insure the simulation images are printed at the intended size.

Printed at 100% the resulting simulation size is 15 inches wide by 10 inches high. At this size and focal length, the simulation should be viewed from a distance of 21 inches.

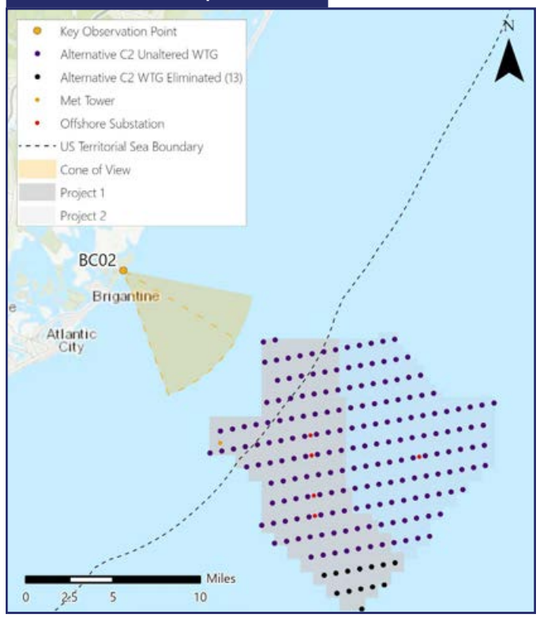
BC02 North Brigantine Natural Area - Alternative C2

Brigantine City, Atlantic County, New Jersey



The image above is a +/- 124° panorama photograph from the North Brigantine Natural Area, panning clockwise from northeast-east (left) to south (right). The yellow rectangle within the photo represents the extent of the photosimulation photo(s).

Context Map



Location Map



Simulation Information

Coordinates:	39.42954°N, 74.33968°W
Character Area:	Undeveloped Beach, Seascape (SCA)
User Group:	Residents/Tourists, Fishermen
Direction of View:	Southeast
Distance to Nearest Visible Turbine:	9.03 miles
Visually Sensitive Resource:	North Brigantine State Natural Area

Environmental Information

Date Taken:	08/18/2020
Time:	12:00 PM
Temperature:	84°F
Humidity:	53%
Visibility:	10 miles
Wind Direction:	West-southwest
Wind Speed:	3 mph
Conditions Observed:	Fair

Photograph Information

Camera:	Canon EOS 5D Mark IV
Resolution:	30.4 Megapixels
Focal Length:	50mm
Camera Height:	11.06 feet AMSL

Notes

Printed at 100%, the photosimulations are 15 inches wide by 10 inches high. At this size, the photosimulation(s) should be viewed from a distance of 21 inches.

Simulated Photograph(s)



Photograph ASOW2799



Photograph ASOW2803

BC02 North Brigantine Natural Area - Alternative C2

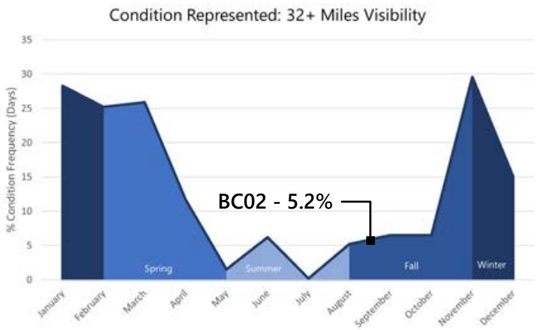
Brigantine City, Atlantic County, New Jersey

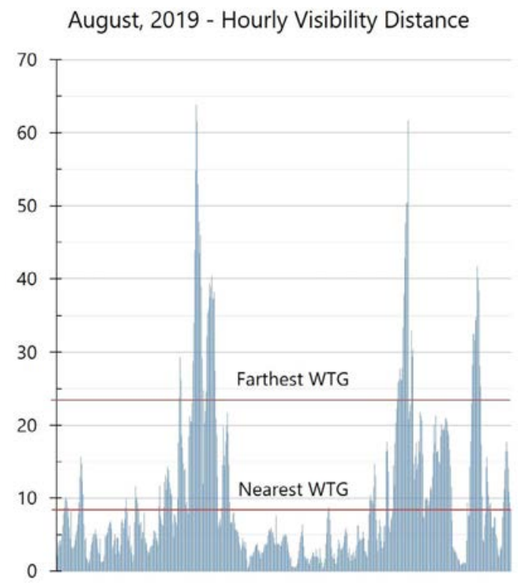
KOP Information

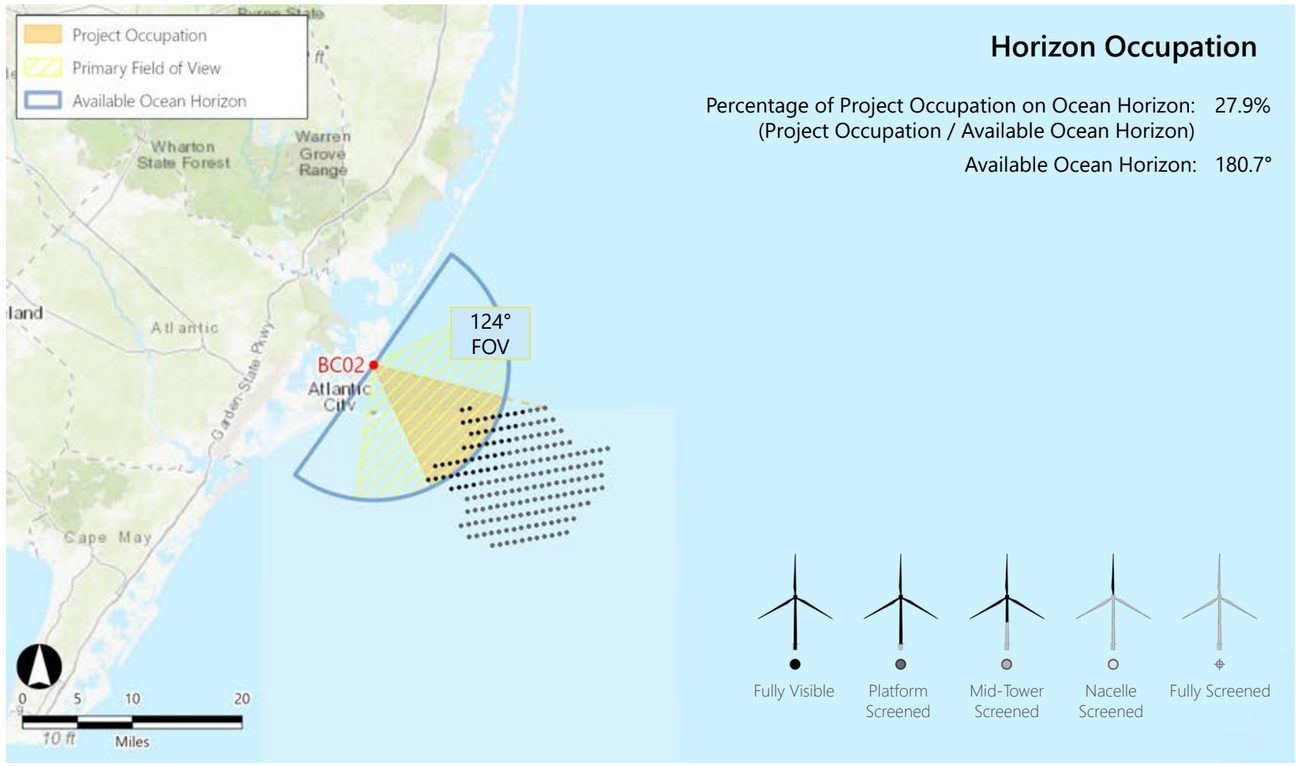
Primary Field of View:	East
Distance to Closest WTG:	9.03 miles
Camera Height:	11.06 ft
User Groups:	Residents, Tourists, Fishermen

Atmospheric Perspective

The effect the atmosphere has on the appearance of an object as viewed from a distance.



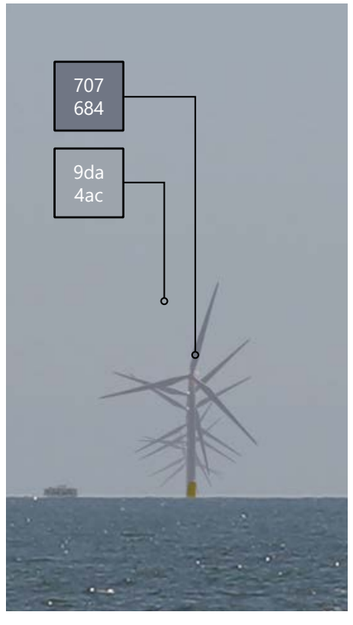




Horizon Occupation

Percentage of Project Occupation on Ocean Horizon: 27.9%
(Project Occupation / Available Ocean Horizon)

Available Ocean Horizon: 180.7°





WTG Color Contrast

Color Contrast Rating:



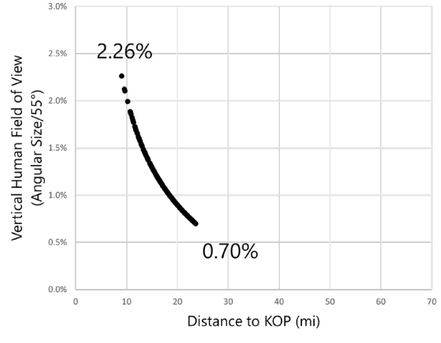
Lighting Condition:	Side lit
Season:	Summer
Sky Condition:	Fair
Atmospheric Condition:	>10 Miles

SIMILAR VIEWING PARAMETERS:

KOP LEHT02 Illustrates the project from 11.91 miles in the back lit condition. This provides an indication of how the turbines may appear from this KOP during morning conditions.

Vertical Occupation

Percentage of Human FOV: 2.26% (1.24° / 55°)
(Considering the nearest visible turbine)



Photosimulation - Alternative C2 Sand Ridge Complex Avoidance

This scale is designed to insure the simulation images are printed at the intended size.

Printed at 100% the resulting simulation size is 15 inches wide by 10 inches high. At this size and focal length, the simulation should be viewed from a distance of 21 inches.

Atlantic Shores Offshore Wind Project
Outer Continental Shelf OCS-A 0499
Key Observation Point: BC02 - North Brigantine Natural Area - Alternative C2
Photosimulations: BOEM EIS Alternatives Visual Effects Analysis

Photosimulation - Alternative C2 Sand Ridge Complex Avoidance

This scale is designed to insure the simulation images are printed at the intended size.

Printed at 100% the resulting simulation size is 15 inches wide by 10 inches high. At this size and focal length, the simulation should be viewed from a distance of 21 inches.

Atlantic Shores Offshore Wind Project
Outer Continental Shelf OCS-A 0499
Key Observation Point: BC02 - North Brigantine Natural Area - Alternative C2
Photosimulations: BOEM EIS Alternatives Visual Effects Analysis

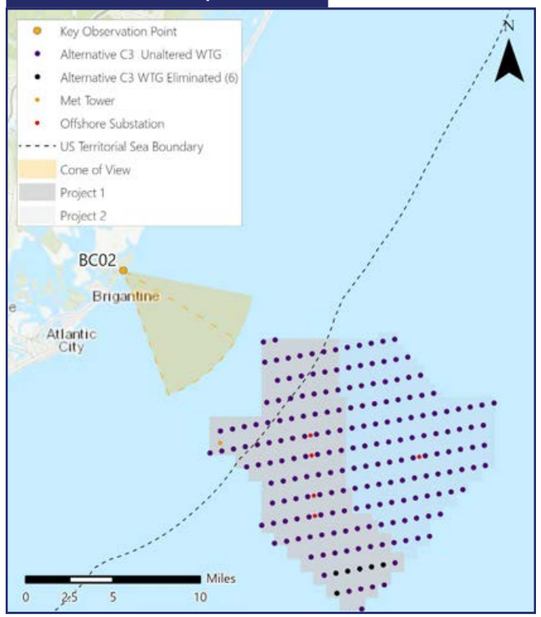
BC02 North Brigantine Natural Area - Alternative C3

Brigantine City, Atlantic County, New Jersey



The image above is a +/- 124° panorama photograph from the North Brigantine Natural Area, panning clockwise from northeast-east (left) to south (right). The yellow rectangle within the photo represents the extent of the photosimulation photo(s).

Context Map



Location Map



Simulation Information

Coordinates:	39.42954°N, 74.33968°W
Character Area:	Undeveloped Beach, Seascape (SCA)
User Group:	Residents/Tourists, Fishermen
Direction of View:	Southeast
Distance to Nearest Visible Turbine:	9.03 miles
Visually Sensitive Resource:	North Brigantine State Natural Area

Environmental Information

Date Taken:	08/18/2020
Time:	12:00 PM
Temperature:	84°F
Humidity:	53%
Visibility:	10 miles
Wind Direction:	West-southwest
Wind Speed:	3 mph
Conditions Observed:	Fair

Photograph Information

Camera:	Canon EOS 5D Mark IV
Resolution:	30.4 Megapixels
Focal Length:	50mm
Camera Height:	11.06 feet AMSL

Notes

Printed at 100%, the photosimulations are 15 inches wide by 10 inches high. At this size, the photosimulation(s) should be viewed from a distance of 21 inches.

Simulated Photograph(s)



Photograph ASOW2799



Photograph ASOW2803

BC02 North Brigantine Natural Area - Alternative C3

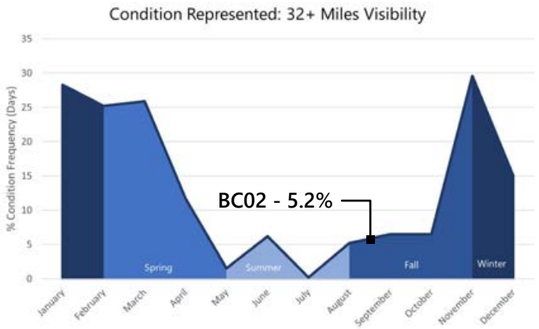
Brigantine City, Atlantic County, New Jersey

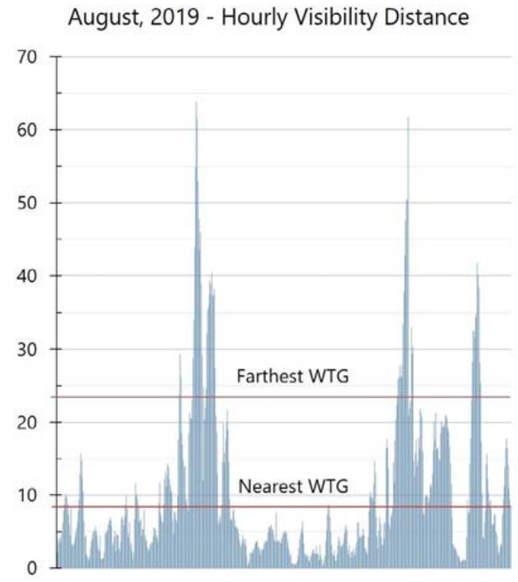
KOP Information

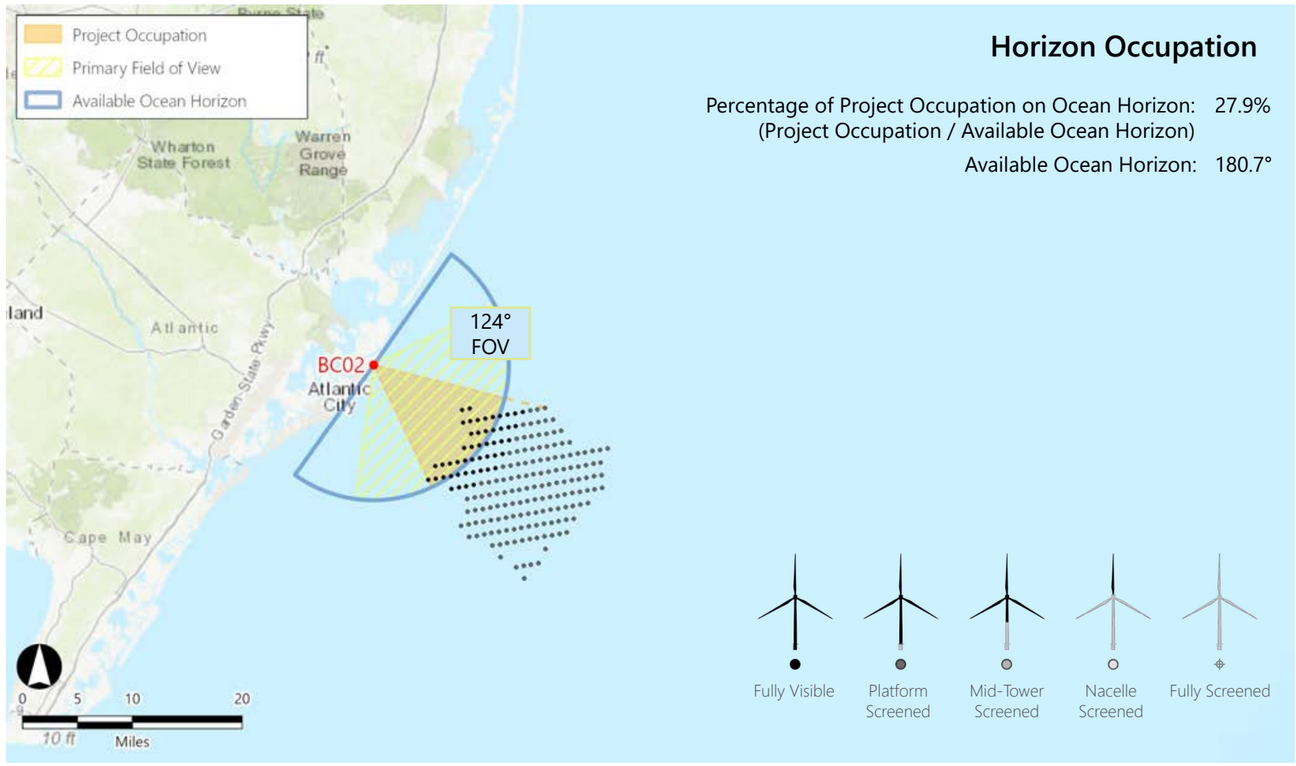
Primary Field of View:	East
Distance to Closest WTG:	9.03 miles
Camera Height:	11.06 ft
User Groups:	Residents, Tourists, Fishermen

Atmospheric Perspective

The effect the atmosphere has on the appearance of an object as viewed from a distance.



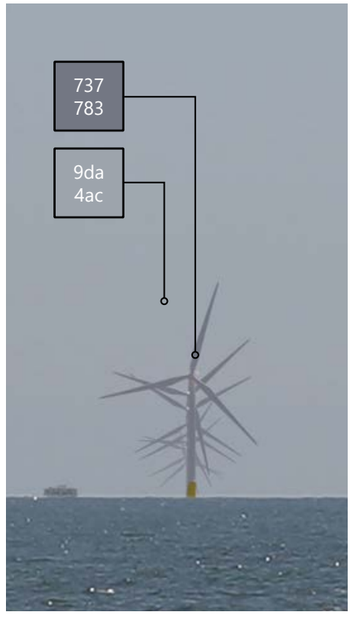




Horizon Occupation

Percentage of Project Occupation on Ocean Horizon: 27.9%
(Project Occupation / Available Ocean Horizon)

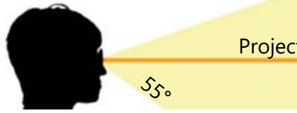
Available Ocean Horizon: 180.7°





WTG Color Contrast

Color Contrast Rating:



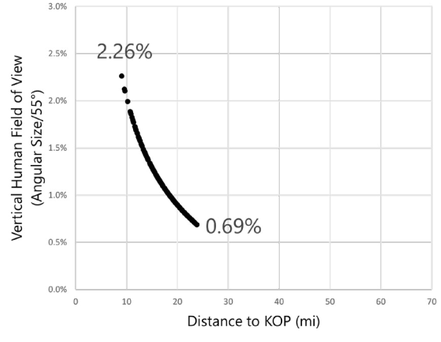
Lighting Condition:	Side lit
Season:	Summer
Sky Condition:	Fair
Atmospheric Condition:	>10 Miles

SIMILAR VIEWING PARAMETERS:

KOP LEHT02 Illustrates the project from 11.91 miles in the back lit condition. This provides an indication of how the turbines may appear from this KOP during morning conditions.

Vertical Occupation

Percentage of Human FOV: 2.26% (1.24° / 55°)
(Considering the nearest visible turbine)



Photosimulation - Alternative C3 Demarcated Sand Ridge Complex Avoidance

This scale is designed to insure the simulation images are printed at the intended size.

Printed at 100% the resulting simulation size is 15 inches wide by 10 inches high. At this size and focal length, the simulation should be viewed from a distance of 21 inches.

Atlantic Shores Offshore Wind Project
Outer Continental Shelf OCS-A 0499
Key Observation Point: BC02 - North Brigantine Natural Area - Alternative C3
Photosimulations: BOEM EIS Alternatives Visual Effects Analysis

Photosimulation - Alternative C3 Demarcated Sand Ridge Complex Avoidance

This scale is designed to insure the simulation images are printed at the intended size.

Printed at 100% the resulting simulation size is 15 inches wide by 10 inches high. At this size and focal length, the simulation should be viewed from a distance of 21 inches.

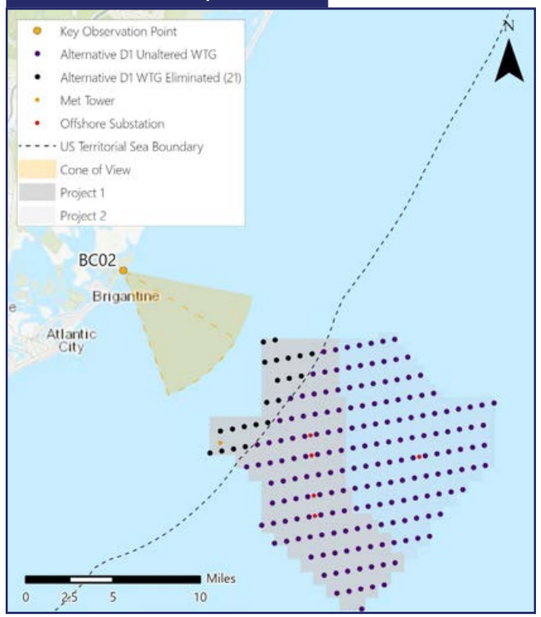
BC02 North Brigantine Natural Area - Alternative D1

Brigantine City, Atlantic County, New Jersey



The image above is a +/- 124° panorama photograph from the North Brigantine Natural Area, panning clockwise from northeast-east (left) to south (right). The yellow rectangle within the photo represents the extent of the photosimulation photo(s).

Context Map



Location Map



Simulation Information

Coordinates:	39.42954°N, 74.33968°W
Character Area:	Undeveloped Beach, Seascape (SCA)
User Group:	Residents/Tourists, Fishermen
Direction of View:	Southeast
Distance to Nearest Visible Turbine:	12.08 miles
Visually Sensitive Resource:	North Brigantine State Natural Area

Environmental Information

Date Taken:	08/18/2020
Time:	12:00 PM
Temperature:	84°F
Humidity:	53%
Visibility:	10 miles
Wind Direction:	West-southwest
Wind Speed:	3 mph
Conditions Observed:	Fair

Photograph Information

Camera:	Canon EOS 5D Mark IV
Resolution:	30.4 Megapixels
Focal Length:	50mm
Camera Height:	11.06 feet AMSL

Notes

Printed at 100%, the photosimulations are 15 inches wide by 10 inches high. At this size, the photosimulation(s) should be viewed from a distance of 21 inches.

Simulated Photograph(s)



Photograph ASOW2799



Photograph ASOW2803

BC02 North Brigantine Natural Area - Alternative D1

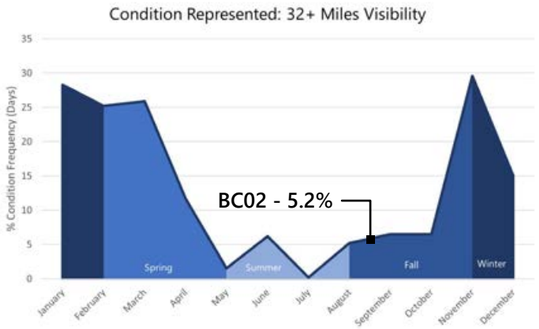
Brigantine City, Atlantic County, New Jersey

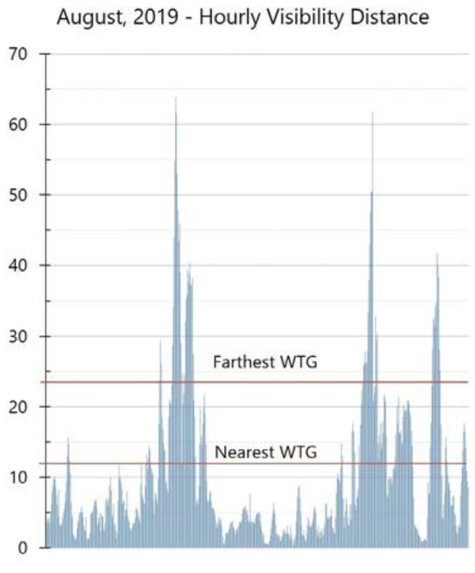
KOP Information

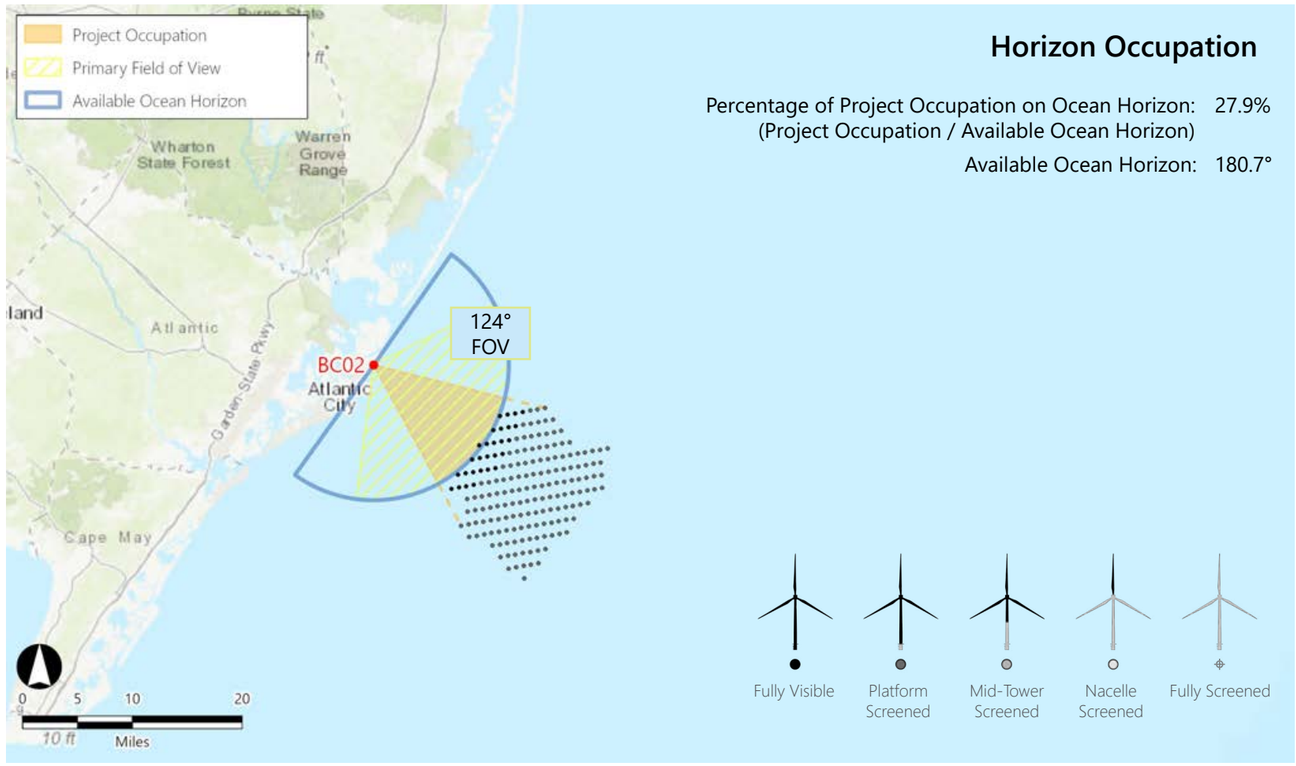
Primary Field of View:	East
Distance to Closest WTG:	12.08 miles
Camera Height:	11.06 ft
User Groups:	Residents, Tourists, Fishermen

Atmospheric Perspective

The effect the atmosphere has on the appearance of an object as viewed from a distance.



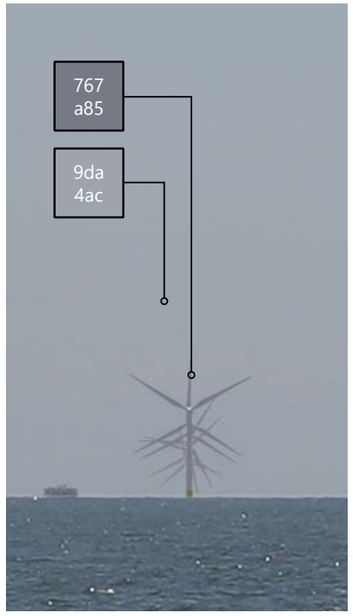




Horizon Occupation

Percentage of Project Occupation on Ocean Horizon: 27.9%
(Project Occupation / Available Ocean Horizon)

Available Ocean Horizon: 180.7°





WTG Color Contrast

Color Contrast Rating:



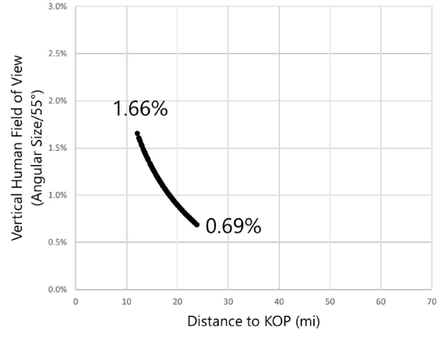
Lighting Condition:	Side lit
Season:	Summer
Sky Condition:	Fair
Atmospheric Condition:	>10 Miles

SIMILAR VIEWING PARAMETERS:

KOP LEHT02 Illustrates the project from 11.91 miles in the back lit condition. This provides an indication of how the turbines may appear from this KOP during morning conditions.

Vertical Occupation

Percentage of Human FOV: 1.66% (0.91° / 55°)
(Considering the nearest visible turbine)



Photosimulation - Alternative D1 No Surface Occupancy of Up to 12 Miles from Shore

This scale is designed to insure the simulation images are printed at the intended size.

Printed at 100% the resulting simulation size is 15 inches wide by 10 inches high. At this size and focal length, the simulation should be viewed from a distance of 21 inches.

Atlantic Shores Offshore Wind Project
Outer Continental Shelf OCS-A 0499

Key Observation Point: BC02 - North Brigantine Natural Area - Alternative D1
Photosimulations: BOEM EIS Alternatives Visual Effects Analysis

Photosimulation - Alternative D1 No Surface Occupancy of Up to 12 Miles from Shore

This scale is designed to insure the simulation images are printed at the intended size.

Printed at 100% the resulting simulation size is 15 inches wide by 10 inches high. At this size and focal length, the simulation should be viewed from a distance of 21 inches.

Atlantic Shores Offshore Wind Project
Outer Continental Shelf OCS-A 0499
Key Observation Point: BC02 - North Brigantine Natural Area - Alternative D1
Photosimulations: BOEM EIS Alternatives Visual Effects Analysis

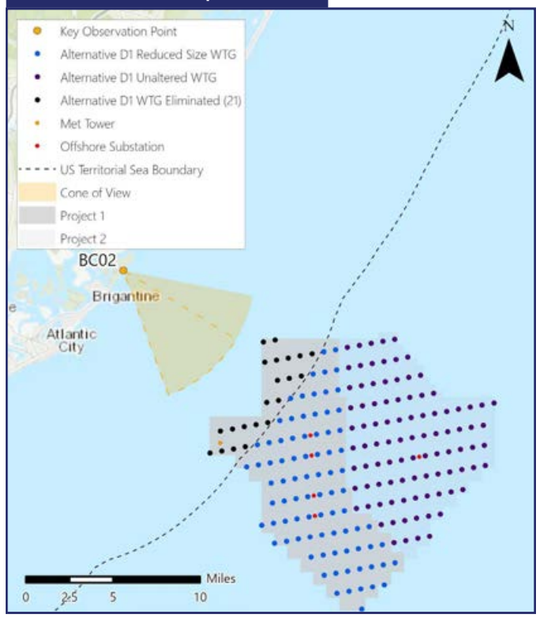
BC02 North Brigantine Natural Area - Alternative D1

Brigantine City, Atlantic County, New Jersey



The image above is a +/- 124° panorama photograph from the North Brigantine Natural Area, panning clockwise from northeast-east (left) to south (right). The yellow rectangle within the photo represents the extent of the photosimulation photo(s).

Context Map



Location Map



Simulation Information

Coordinates:	39.42954°N, 74.33968°W
Character Area:	Undeveloped Beach, Seascape (SCA)
User Group:	Residents/Tourists, Fishermen
Direction of View:	Southeast
Distance to Nearest Visible Turbine:	12.08 miles
Visually Sensitive Resource:	North Brigantine State Natural Area

Environmental Information

Date Taken:	08/18/2020
Time:	12:00 PM
Temperature:	84°F
Humidity:	53%
Visibility:	10 miles
Wind Direction:	West-southwest
Wind Speed:	3 mph
Conditions Observed:	Fair

Photograph Information

Camera:	Canon EOS 5D Mark IV
Resolution:	30.4 Megapixels
Focal Length:	50mm
Camera Height:	11.06 feet AMSL

Notes

Printed at 100%, the photosimulations are 15 inches wide by 10 inches high. At this size, the photosimulation(s) should be viewed from a distance of 21 inches.

Simulated Photograph(s)



Photograph ASOW2799



Photograph ASOW2803

BC02 North Brigantine Natural Area - Alternative D1

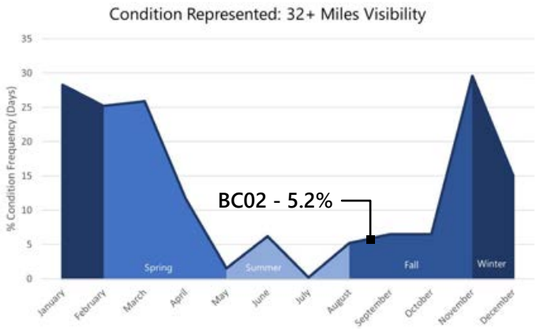
Brigantine City, Atlantic County, New Jersey

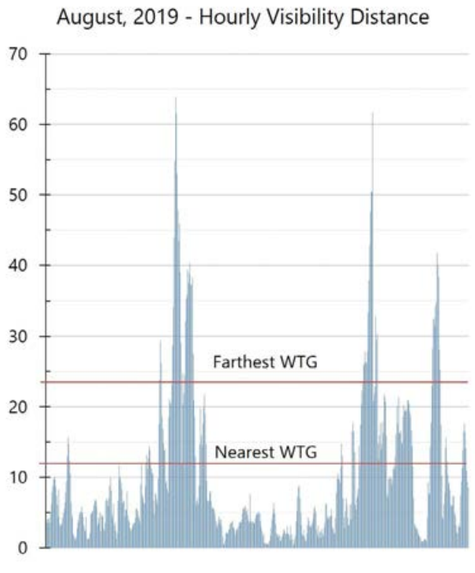
KOP Information

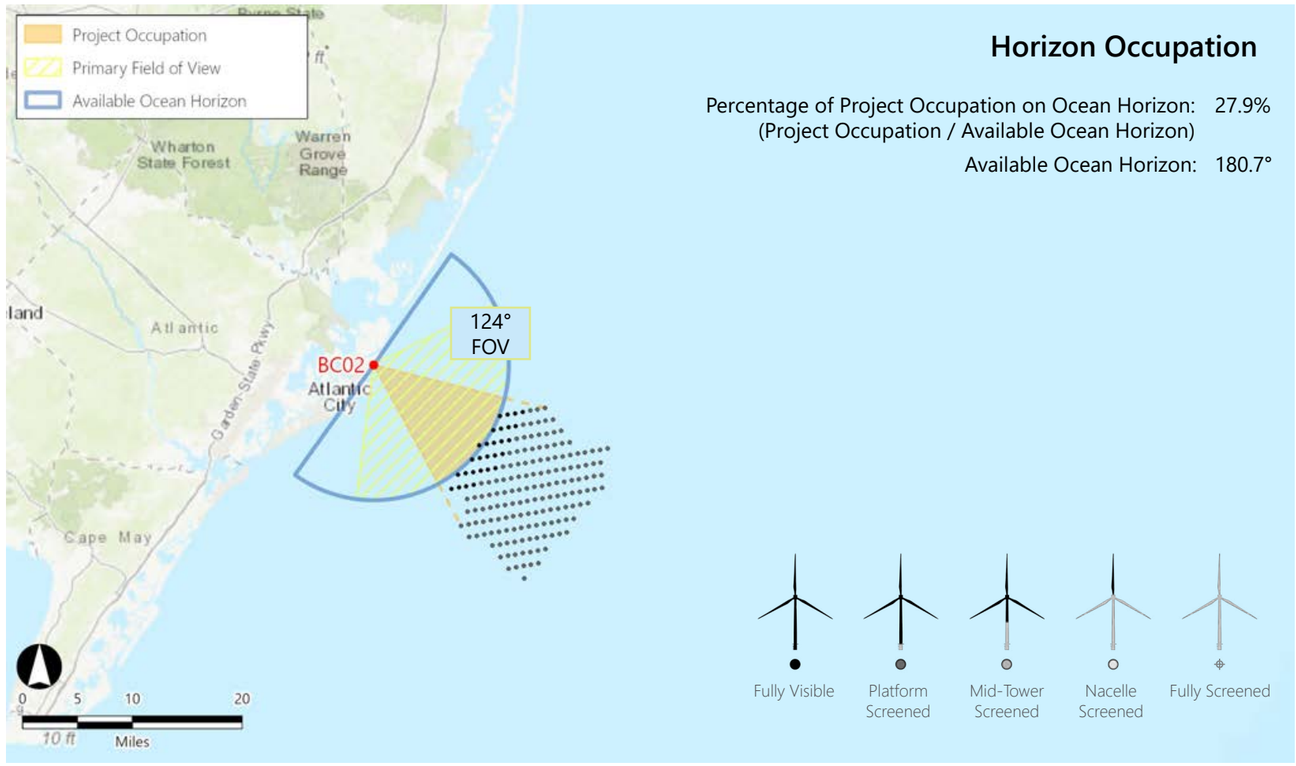
Primary Field of View:	East
Distance to Closest WTG:	12.08 miles
Camera Height:	11.06 ft
User Groups:	Residents, Tourists, Fishermen

Atmospheric Perspective

The effect the atmosphere has on the appearance of an object as viewed from a distance.



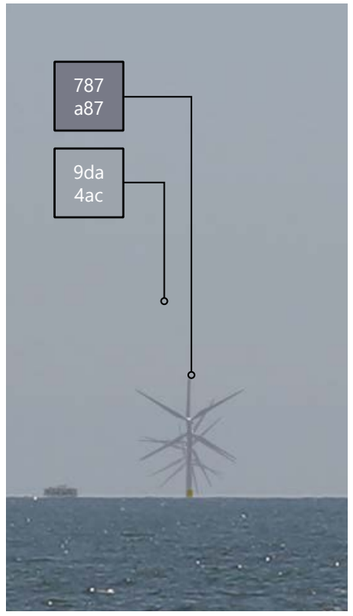




Horizon Occupation

Percentage of Project Occupation on Ocean Horizon: 27.9%
(Project Occupation / Available Ocean Horizon)

Available Ocean Horizon: 180.7°





WTG Color Contrast

Color Contrast Rating:



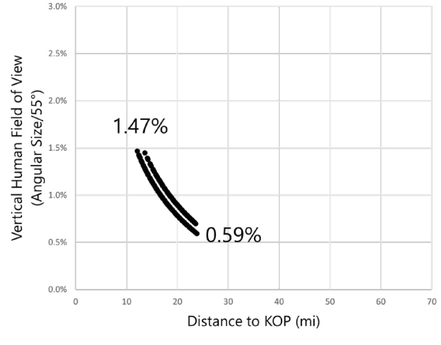
Lighting Condition:	Side lit
Season:	Summer
Sky Condition:	Fair
Atmospheric Condition:	>10 Miles

SIMILAR VIEWING PARAMETERS:

KOP LEHT02 Illustrates the project from 11.91 miles in the back lit condition. This provides an indication of how the turbines may appear from this KOP during morning conditions.

Vertical Occupation

Percentage of Human FOV: 1.47% (0.81° / 55°)
(Considering the nearest visible turbine)



Photosimulation - Alternative D1 No Surface Occupancy of Up to 12 Miles from Shore
Project 1: 932 ft Minimum Design Scenario Project 2: 1046.6 ft Maximum Design Scenario

This scale is designed to insure the simulation images are printed at the intended size.

Printed at 100% the resulting simulation size is 15 inches wide by 10 inches high. At this size and focal length, the simulation should be viewed from a distance of 21 inches.

Atlantic Shores Offshore Wind Project
Outer Continental Shelf OCS-A 0499
Key Observation Point: BC02 - North Brigantine Natural Area - Alternative D1
Photosimulations: BOEM EIS Alternatives Visual Effects Analysis

Photosimulation - Alternative D1 No Surface Occupancy of Up to 12 Miles from Shore
Project 1: 932 ft Minimum Design Scenario Project 2: 1046.6 ft Maximum Design Scenario

This scale is designed to insure the simulation images are printed at the intended size.

Printed at 100% the resulting simulation size is 15 inches wide by 10 inches high. At this size and focal length, the simulation should be viewed from a distance of 21 inches.

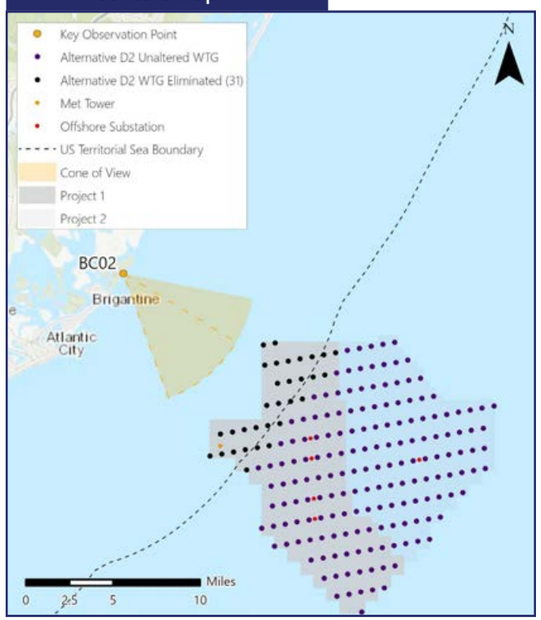
BC02 North Brigantine Natural Area - Alternative D2

Brigantine City, Atlantic County, New Jersey



The image above is a +/- 124° panorama photograph from the North Brigantine Natural Area, panning clockwise from northeast-east (left) to south (right). The yellow rectangle within the photo represents the extent of the photosimulation photo(s).

Context Map



Location Map



Simulation Information

Coordinates:	39.42954°N, 74.33968°W
Character Area:	Undeveloped Beach, Seascape (SCA)
User Group:	Residents/Tourists, Fishermen
Direction of View:	Southeast
Distance to Nearest Visible Turbine:	12.86 miles
Visually Sensitive Resource:	North Brigantine State Natural Area

Environmental Information

Date Taken:	08/18/2020
Time:	12:00 PM
Temperature:	84°F
Humidity:	53%
Visibility:	10 miles
Wind Direction:	West-southwest
Wind Speed:	3 mph
Conditions Observed:	Fair

Photograph Information

Camera:	Canon EOS 5D Mark IV
Resolution:	30.4 Megapixels
Focal Length:	50mm
Camera Height:	11.06 feet AMSL

Notes

Printed at 100%, the photosimulations are 15 inches wide by 10 inches high. At this size, the photosimulation(s) should be viewed from a distance of 21 inches.

Simulated Photograph(s)



Photograph ASOW2799



Photograph ASOW2803

BC02 North Brigantine Natural Area - Alternative D2

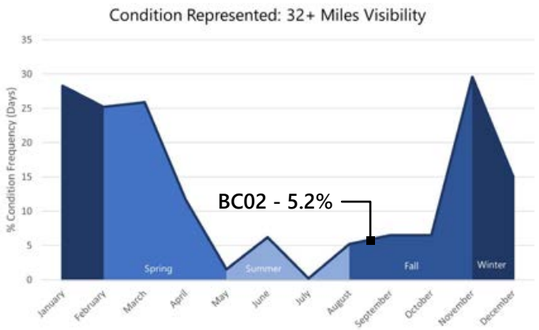
Brigantine City, Atlantic County, New Jersey

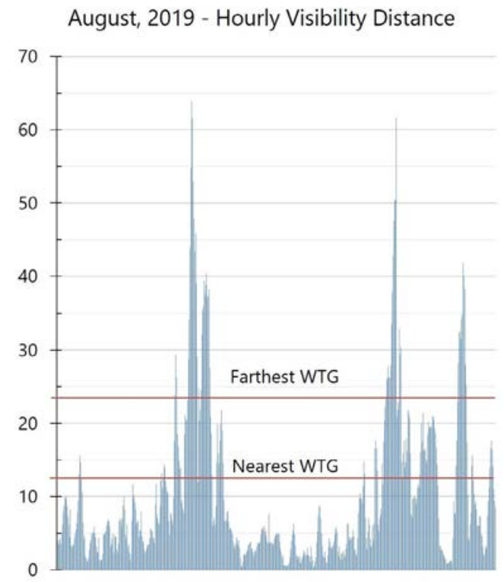
KOP Information

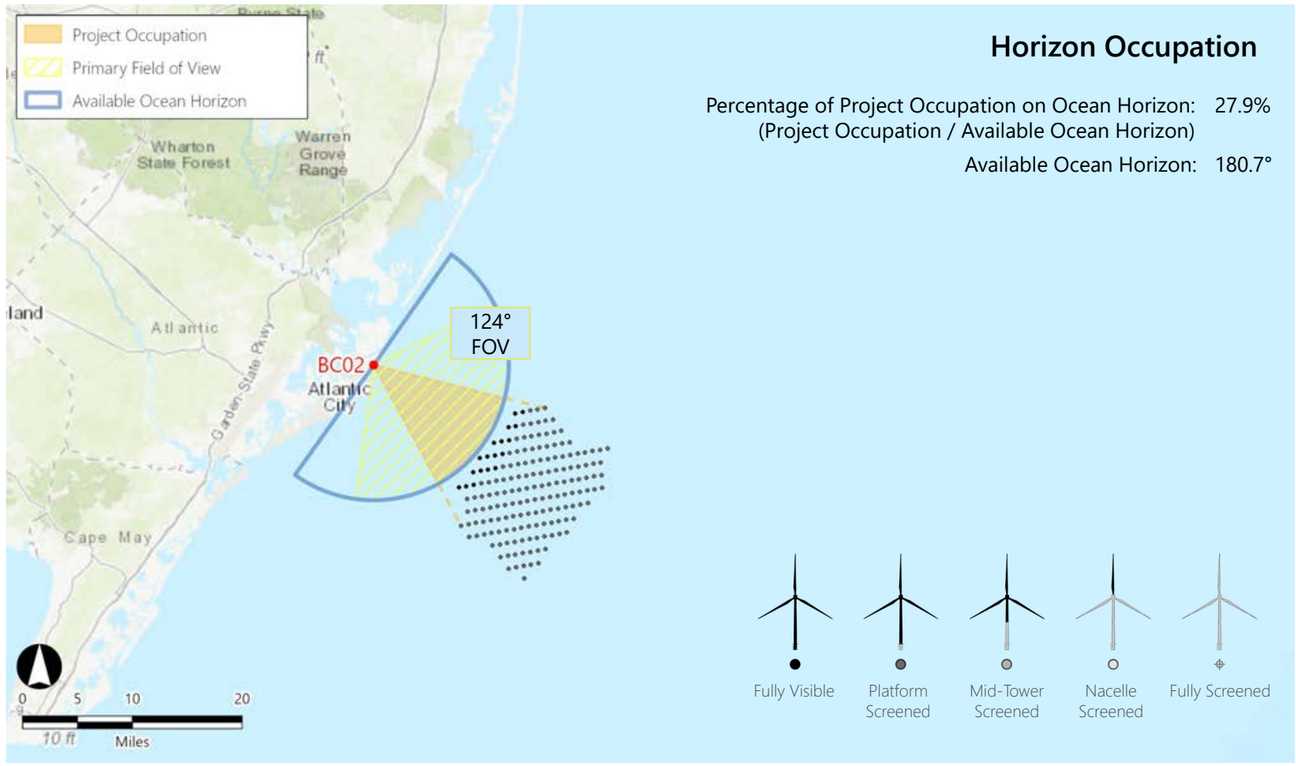
Primary Field of View:	East
Distance to Closest WTG:	12.86 miles
Camera Height:	11.06 ft
User Groups:	Residents, Tourists, Fishermen

Atmospheric Perspective

The effect the atmosphere has on the appearance of an object as viewed from a distance.



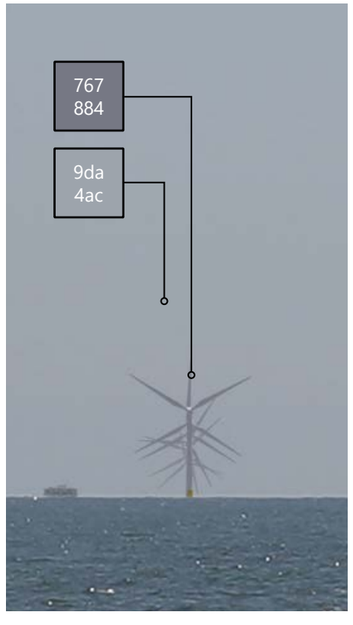




Horizon Occupation

Percentage of Project Occupation on Ocean Horizon: 27.9%
(Project Occupation / Available Ocean Horizon)

Available Ocean Horizon: 180.7°





WTG Color Contrast

Color Contrast Rating:



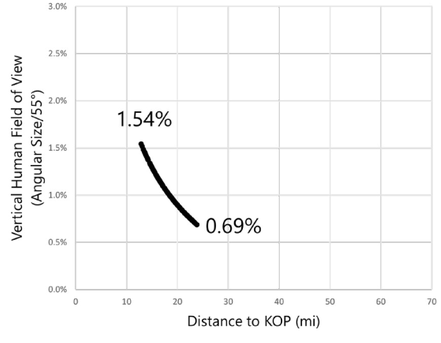
Lighting Condition:	Side lit
Season:	Summer
Sky Condition:	Fair
Atmospheric Condition:	>10 Miles

SIMILAR VIEWING PARAMETERS:

KOP LEHT02 Illustrates the project from 11.91 miles in the back lit condition. This provides an indication of how the turbines may appear from this KOP during morning conditions.

Vertical Occupation

Percentage of Human FOV: 1.54% (0.85° / 55°)
(Considering the nearest visible turbine)



Photosimulation - Alternative D2 No Surface Occupancy of Up to 12.75 Miles from Shore

This scale is designed to insure the simulation images are printed at the intended size.

Printed at 100% the resulting simulation size is 15 inches wide by 10 inches high. At this size and focal length, the simulation should be viewed from a distance of 21 inches.

Atlantic Shores Offshore Wind Project
Outer Continental Shelf OCS-A 0499
Key Observation Point: BC02 - North Brigantine Natural Area - Alternative D2
Photosimulations: BOEM EIS Alternatives Visual Effects Analysis

Photosimulation - Alternative D2 No Surface Occupancy of Up to 12.75 Miles from Shore

This scale is designed to insure the simulation images are printed at the intended size.

Printed at 100% the resulting simulation size is 15 inches wide by 10 inches high. At this size and focal length, the simulation should be viewed from a distance of 21 inches.

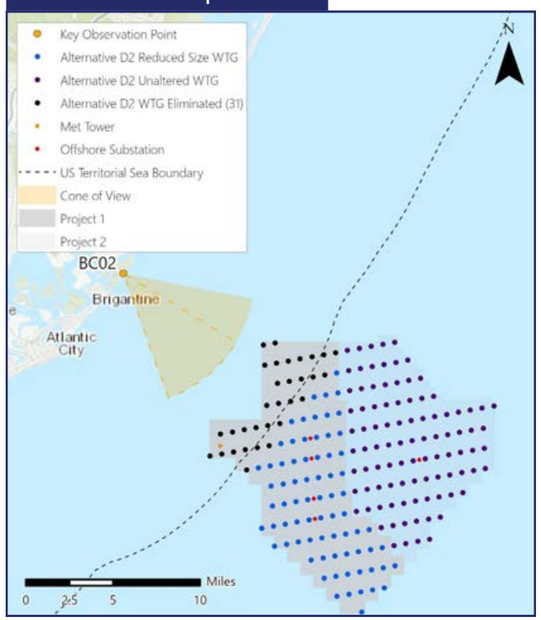
BC02 North Brigantine Natural Area - Alternative D2

Brigantine City, Atlantic County, New Jersey



The image above is a +/- 124° panorama photograph from the North Brigantine Natural Area, panning clockwise from northeast-east (left) to south (right). The yellow rectangle within the photo represents the extent of the photosimulation photo(s).

Context Map



Location Map



Simulation Information

Coordinates:	39.42954°N, 74.33968°W
Character Area:	Undeveloped Beach, Seascape (SCA)
User Group:	Residents/Tourists, Fishermen
Direction of View:	Southeast
Distance to Nearest Visible Turbine:	12.86 miles
Visually Sensitive Resource:	North Brigantine State Natural Area

Environmental Information

Date Taken:	08/18/2020
Time:	12:00 PM
Temperature:	84°F
Humidity:	53%
Visibility:	10 miles
Wind Direction:	West-southwest
Wind Speed:	3 mph
Conditions Observed:	Fair

Photograph Information

Camera:	Canon EOS 5D Mark IV
Resolution:	30.4 Megapixels
Focal Length:	50mm
Camera Height:	11.06 feet AMSL

Notes

Printed at 100%, the photosimulations are 15 inches wide by 10 inches high. At this size, the photosimulation(s) should be viewed from a distance of 21 inches.

Simulated Photograph(s)



Photograph ASOW2799



Photograph ASOW2803

BC02 North Brigantine Natural Area - Alternative D2

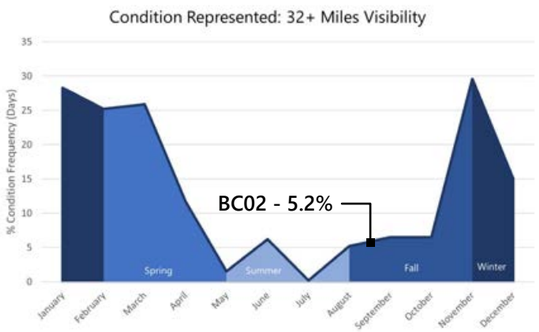
Brigantine City, Atlantic County, New Jersey

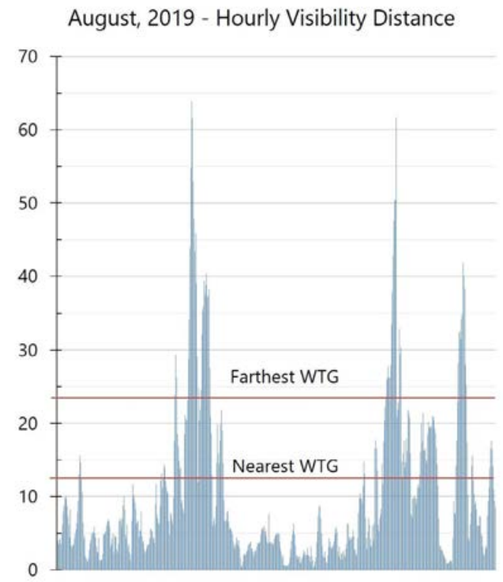
KOP Information

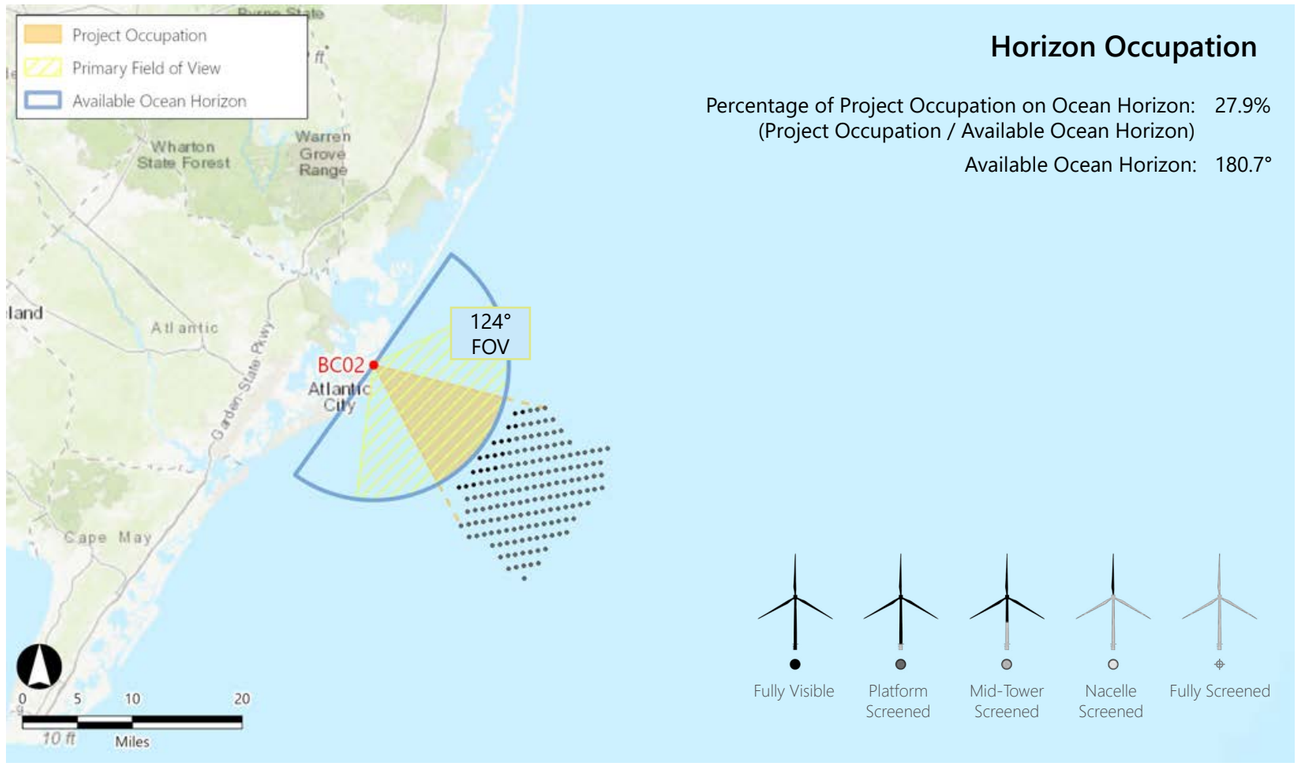
Primary Field of View:	East
Distance to Closest WTG:	12.86 miles
Camera Height:	11.06 ft
User Groups:	Residents, Tourists, Fishermen

Atmospheric Perspective

The effect the atmosphere has on the appearance of an object as viewed from a distance.



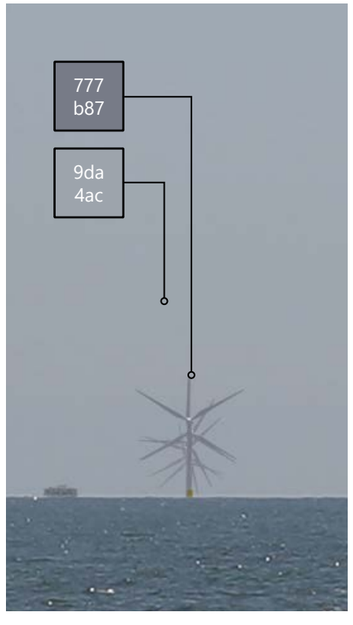




Horizon Occupation

Percentage of Project Occupation on Ocean Horizon: 27.9%
(Project Occupation / Available Ocean Horizon)

Available Ocean Horizon: 180.7°





WTG Color Contrast

Color Contrast Rating:



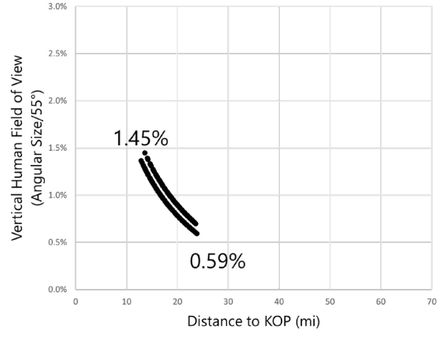
Lighting Condition:	Side lit
Season:	Summer
Sky Condition:	Fair
Atmospheric Condition:	>10 Miles

SIMILAR VIEWING PARAMETERS:

KOP LEHT02 Illustrates the project from 11.91 miles in the back lit condition. This provides an indication of how the turbines may appear from this KOP during morning conditions.

Vertical Occupation

Percentage of Human FOV: 1.45% (0.80° / 55°)
(Considering the nearest visible turbine)



Photosimulation - Alternative D2 No Surface Occupancy of Up to 12.75 Miles from Shore
Project 1: 932 ft Minimum Design Scenario Project 2: 1046.6 ft Maximum Design Scenario

0 1 in 2 in

This scale is designed to insure the simulation images are printed at the intended size.

Printed at 100% the resulting simulation size is 15 inches wide by 10 inches high. At this size and focal length, the simulation should be viewed from a distance of 21 inches.

Atlantic Shores Offshore Wind Project
Outer Continental Shelf OCS-A 0499
Key Observation Point: BC02 - North Brigantine Natural Area - Alternative D2
Photosimulations: BOEM EIS Alternatives Visual Effects Analysis

Photosimulation - Alternative D2 No Surface Occupancy of Up to 12.75 Miles from Shore
Project 1: 932 ft Minimum Design Scenario Project 2: 1046.6 ft Maximum Design Scenario

0 1 in 2 in

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Atlantic Shores Offshore Wind Project
Outer Continental Shelf OCS-A 0499
Key Observation Point: BC02 - North Brigantine Natural Area - Alternative D2
Photosimulations: BOEM EIS Alternatives Visual Effects Analysis

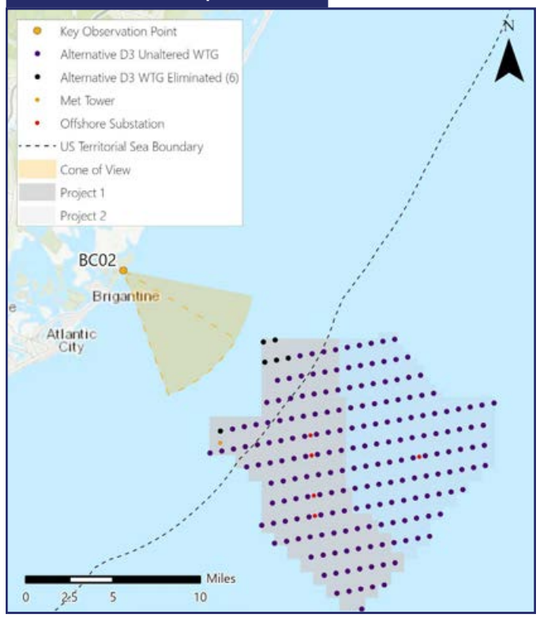
BC02 North Brigantine Natural Area - Alternative D3

Brigantine City, Atlantic County, New Jersey



The image above is a +/- 124° panorama photograph from the North Brigantine Natural Area, panning clockwise from northeast-east (left) to south (right). The yellow rectangle within the photo represents the extent of the photosimulation photo(s).

Context Map



Location Map



Simulation Information

Coordinates:	39.42954°N, 74.33968°W
Character Area:	Undeveloped Beach, Seascape (SCA)
User Group:	Residents/Tourists, Fishermen
Direction of View:	Southeast
Distance to Nearest Visible Turbine:	10.86 miles
Visually Sensitive Resource:	North Brigantine State Natural Area

Environmental Information

Date Taken:	08/18/2020
Time:	12:00 PM
Temperature:	84°F
Humidity:	53%
Visibility:	10 miles
Wind Direction:	West-southwest
Wind Speed:	3 mph
Conditions Observed:	Fair

Photograph Information

Camera:	Canon EOS 5D Mark IV
Resolution:	30.4 Megapixels
Focal Length:	50mm
Camera Height:	11.06 feet AMSL

Notes

Printed at 100%, the photosimulations are 15 inches wide by 10 inches high. At this size, the photosimulation(s) should be viewed from a distance of 21 inches.

Simulated Photograph(s)



Photograph ASOW2799



Photograph ASOW2803

BC02 North Brigantine Natural Area - Alternative D3

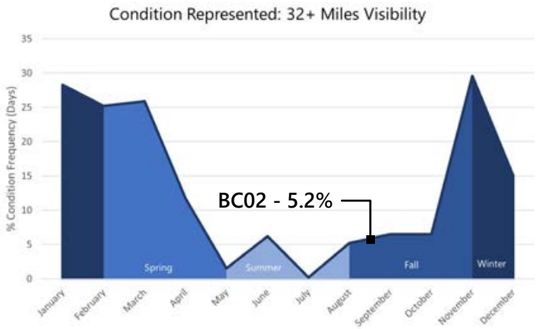
Brigantine City, Atlantic County, New Jersey

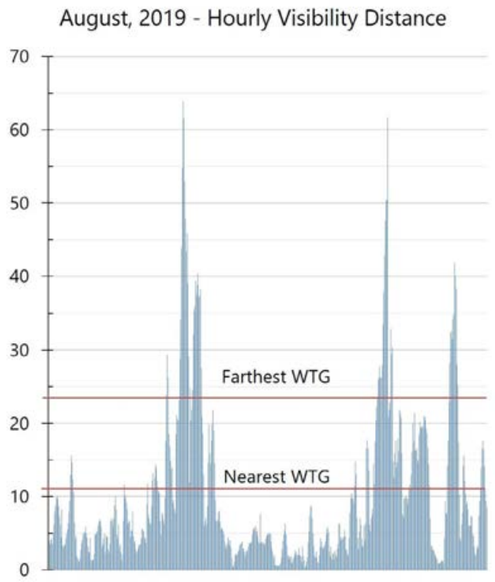
KOP Information

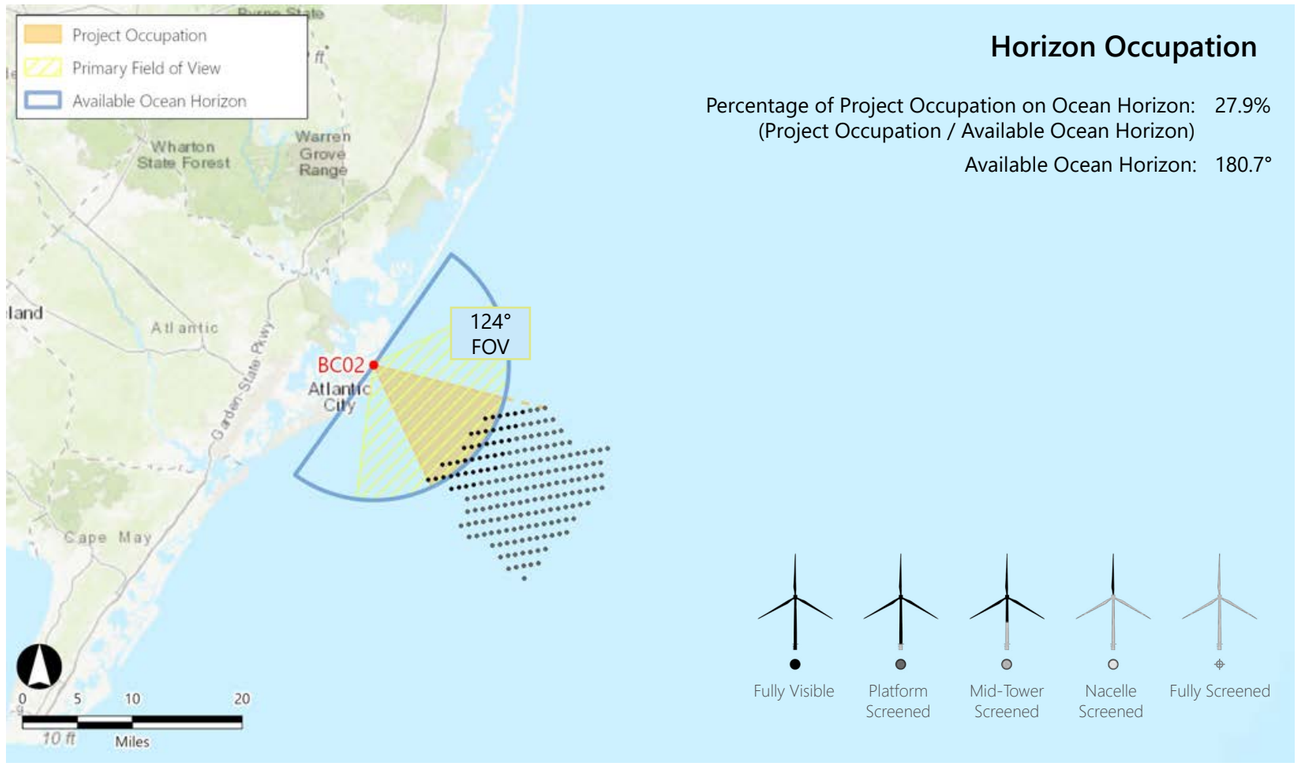
Primary Field of View:	East
Distance to Closest WTG:	10.86 miles
Camera Height:	11.06 ft
User Groups:	Residents, Tourists, Fishermen

Atmospheric Perspective

The effect the atmosphere has on the appearance of an object as viewed from a distance.



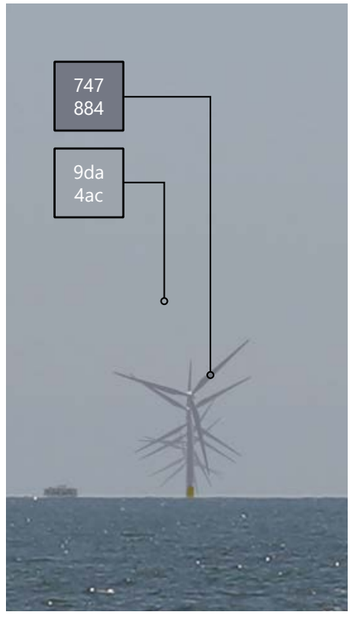




Horizon Occupation

Percentage of Project Occupation on Ocean Horizon: 27.9%
(Project Occupation / Available Ocean Horizon)

Available Ocean Horizon: 180.7°





WTG Color Contrast

Color Contrast Rating:



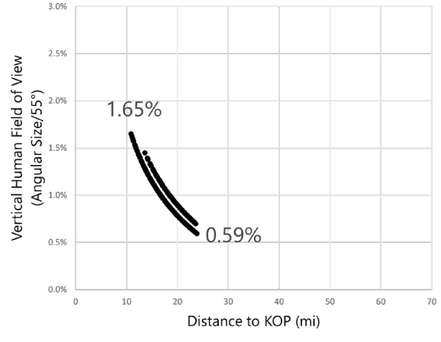
Lighting Condition:	Side lit
Season:	Summer
Sky Condition:	Fair
Atmospheric Condition:	>10 Miles

SIMILAR VIEWING PARAMETERS:

KOP LEHT02 Illustrates the project from 11.91 miles in the back lit condition. This provides an indication of how the turbines may appear from this KOP during morning conditions.

Vertical Occupation

Percentage of Human FOV: 1.86% (1.02° / 55°)
(Considering the nearest visible turbine)



Photosimulation - Alternative D3 No Surface Occupancy of Up to 10.8 Miles from Shore

This scale is designed to insure the simulation images are printed at the intended size.

Printed at 100% the resulting simulation size is 15 inches wide by 10 inches high. At this size and focal length, the simulation should be viewed from a distance of 21 inches.

Atlantic Shores Offshore Wind Project
Outer Continental Shelf OCS-A 0499

Key Observation Point: BC02 - North Brigantine Natural Area - Alternative D3
Photosimulations: BOEM EIS Alternatives Visual Effects Analysis

Photosimulation - Alternative D3 No Surface Occupancy of Up to 10.8 Miles from Shore

This scale is designed to insure the simulation images are printed at the intended size.

Printed at 100% the resulting simulation size is 15 inches wide by 10 inches high. At this size and focal length, the simulation should be viewed from a distance of 21 inches.

Atlantic Shores Offshore Wind Project
Outer Continental Shelf OCS-A 0499
Key Observation Point: BC02 - North Brigantine Natural Area - Alternative D3
Photosimulations: BOEM EIS Alternatives Visual Effects Analysis

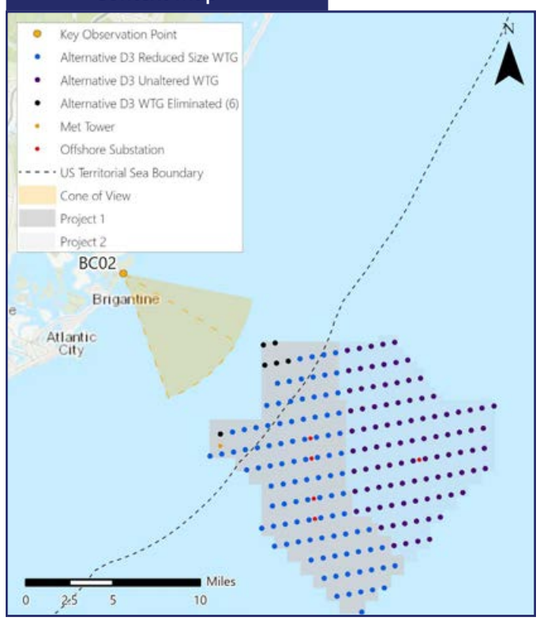
BC02 North Brigantine Natural Area - Alternative D3

Brigantine City, Atlantic County, New Jersey



The image above is a +/- 124° panorama photograph from the North Brigantine Natural Area, panning clockwise from northeast-east (left) to south (right). The yellow rectangle within the photo represents the extent of the photosimulation photo(s).

Context Map



Location Map



Simulation Information

Coordinates:	39.42954°N, 74.33968°W
Character Area:	Undeveloped Beach, Seascape (SCA)
User Group:	Residents/Tourists, Fishermen
Direction of View:	Southeast
Distance to Nearest Visible Turbine:	10.86 miles
Visually Sensitive Resource:	North Brigantine State Natural Area

Environmental Information

Date Taken:	08/18/2020
Time:	12:00 PM
Temperature:	84°F
Humidity:	53%
Visibility:	10 miles
Wind Direction:	West-southwest
Wind Speed:	3 mph
Conditions Observed:	Fair

Photograph Information

Camera:	Canon EOS 5D Mark IV
Resolution:	30.4 Megapixels
Focal Length:	50mm
Camera Height:	11.06 feet AMSL

Notes

Printed at 100%, the photosimulations are 15 inches wide by 10 inches high. At this size, the photosimulation(s) should be viewed from a distance of 21 inches.

Simulated Photograph(s)



Photograph ASOW2799



Photograph ASOW2803

BC02 North Brigantine Natural Area - Alternative D3

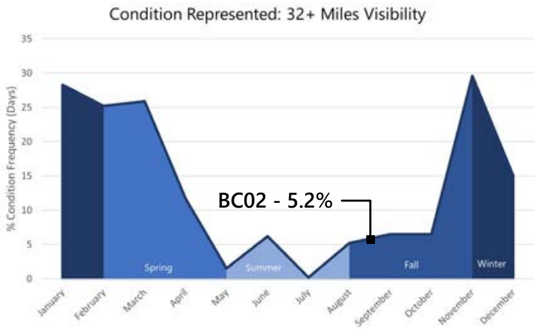
Brigantine City, Atlantic County, New Jersey

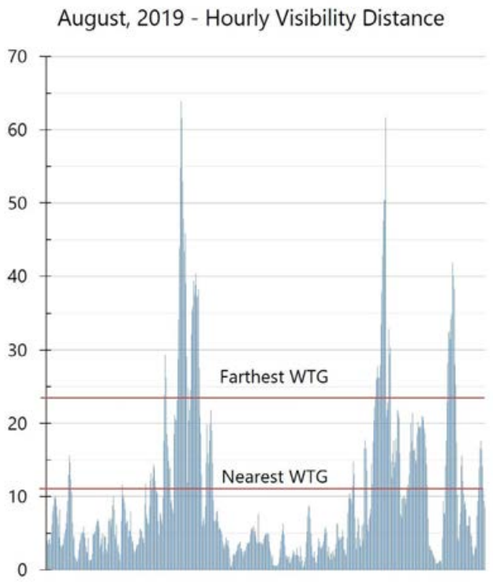
KOP Information

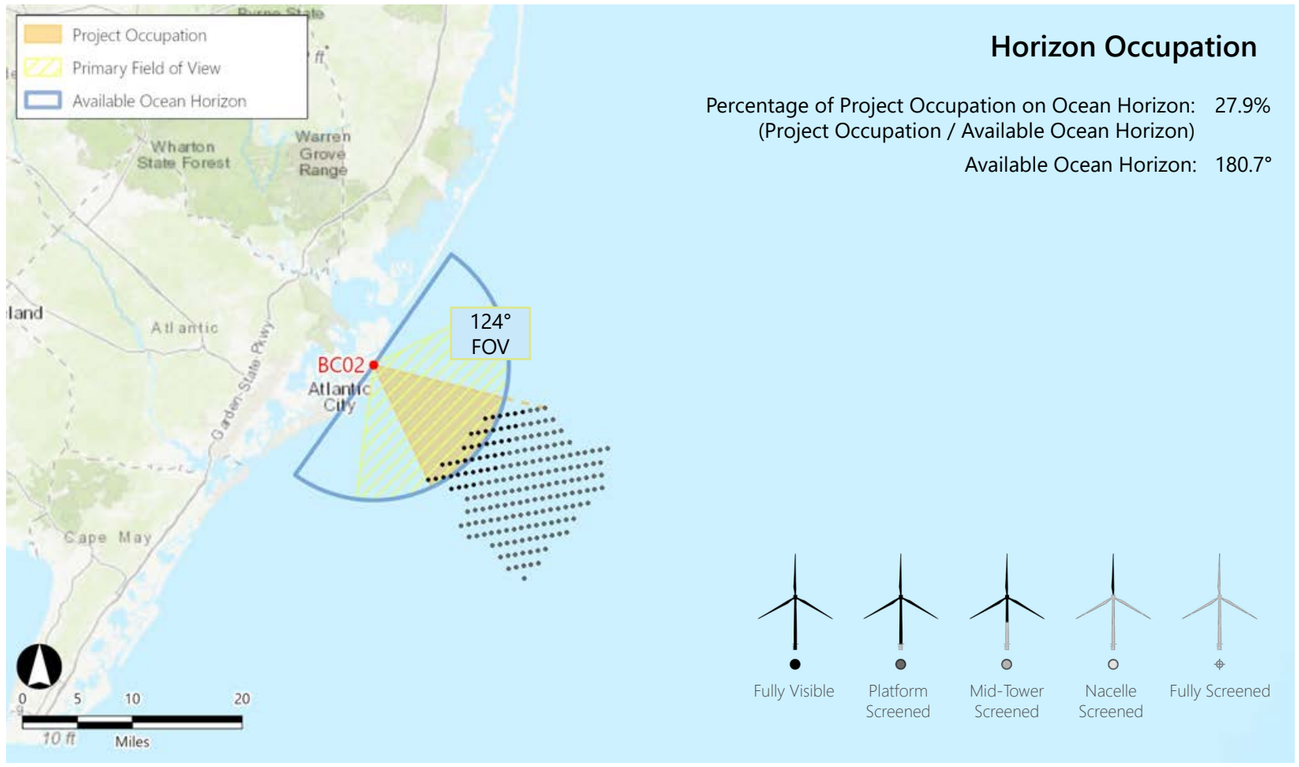
Primary Field of View:	East
Distance to Closest WTG:	10.86 miles
Camera Height:	11.06 ft
User Groups:	Residents, Tourists, Fishermen

Atmospheric Perspective

The effect the atmosphere has on the appearance of an object as viewed from a distance.



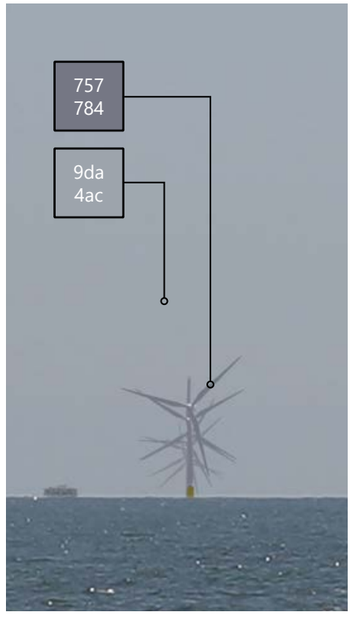




Horizon Occupation

Percentage of Project Occupation on Ocean Horizon: 27.9%
(Project Occupation / Available Ocean Horizon)

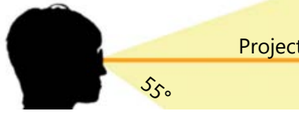
Available Ocean Horizon: 180.7°





WTG Color Contrast

Color Contrast Rating:



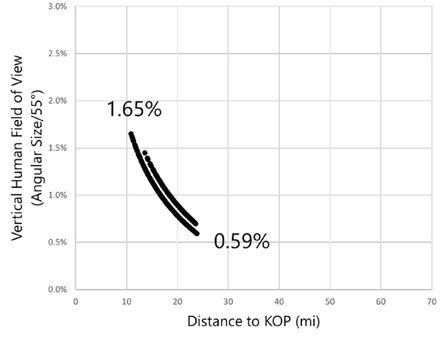
Lighting Condition:	Side lit
Season:	Summer
Sky Condition:	Fair
Atmospheric Condition:	>10 Miles

SIMILAR VIEWING PARAMETERS:

KOP LEHT02 Illustrates the project from 11.91 miles in the back lit condition. This provides an indication of how the turbines may appear from this KOP during morning conditions.

Vertical Occupation

Percentage of Human FOV: 1.65% (0.91° / 55°)
(Considering the nearest visible turbine)



Photosimulation - Alternative D3 No Surface Occupancy of Up to 10.8 Miles from Shore
Project 1: 932 ft Minimum Design Scenario Project 2: 1046.6 ft Maximum Design Scenario

This scale is designed to insure the simulation images are printed at the intended size.

Printed at 100% the resulting simulation size is 15 inches wide by 10 inches high. At this size and focal length, the simulation should be viewed from a distance of 21 inches.

Atlantic Shores Offshore Wind Project
Outer Continental Shelf OCS-A 0499
Key Observation Point: BC02 - North Brigantine Natural Area - Alternative D3
Photosimulations: BOEM EIS Alternatives Visual Effects Analysis

Photosimulation - Alternative D3 No Surface Occupancy of Up to 10.8 Miles from Shore
Project 1: 932 ft Minimum Design Scenario Project 2: 1046.6 ft Maximum Design Scenario

This scale is designed to insure the simulation images are printed at the intended size.

Printed at 100% the resulting simulation size is 15 inches wide by 10 inches high. At this size and focal length, the simulation should be viewed from a distance of 21 inches.

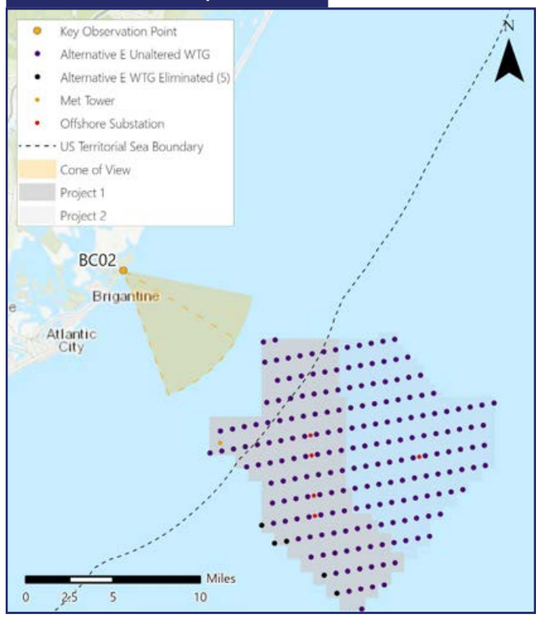
BC02 North Brigantine Natural Area - Alternative E1

Brigantine City, Atlantic County, New Jersey



The image above is a +/- 124° panorama photograph from the North Brigantine Natural Area, panning clockwise from northeast-east (left) to south (right). The yellow rectangle within the photo represents the extent of the photosimulation photo(s).

Context Map



Location Map



Simulation Information

Coordinates:	39.42954°N, 74.33968°W
Character Area:	Undeveloped Beach, Seascape (SCA)
User Group:	Residents/Tourists, Fishermen
Direction of View:	Southeast
Distance to Nearest Visible Turbine:	9.03 miles
Visually Sensitive Resource:	North Brigantine State Natural Area

Environmental Information

Date Taken:	08/18/2020
Time:	12:00 PM
Temperature:	84°F
Humidity:	53%
Visibility:	10 miles
Wind Direction:	West-southwest
Wind Speed:	3 mph
Conditions Observed:	Fair

Photograph Information

Camera:	Canon EOS 5D Mark IV
Resolution:	30.4 Megapixels
Focal Length:	50mm
Camera Height:	11.06 feet AMSL

Notes

Printed at 100%, the photosimulations are 15 inches wide by 10 inches high. At this size, the photosimulation(s) should be viewed from a distance of 21 inches.

Simulated Photograph(s)



Photograph ASOW2799



Photograph ASOW2803

BC02 North Brigantine Natural Area - Alternative E1

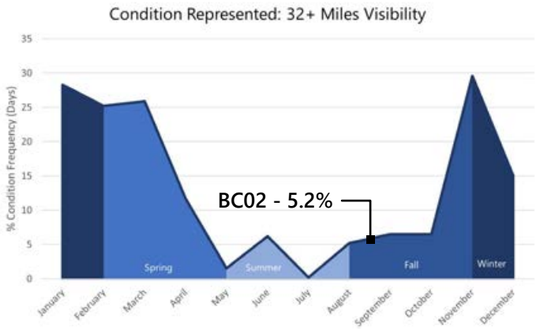
Brigantine City, Atlantic County, New Jersey

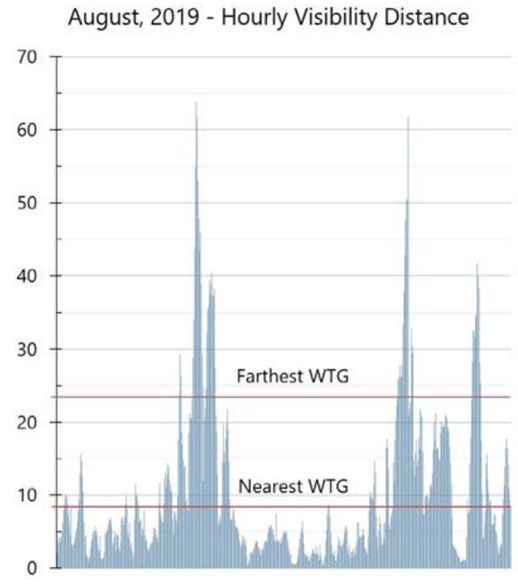
KOP Information

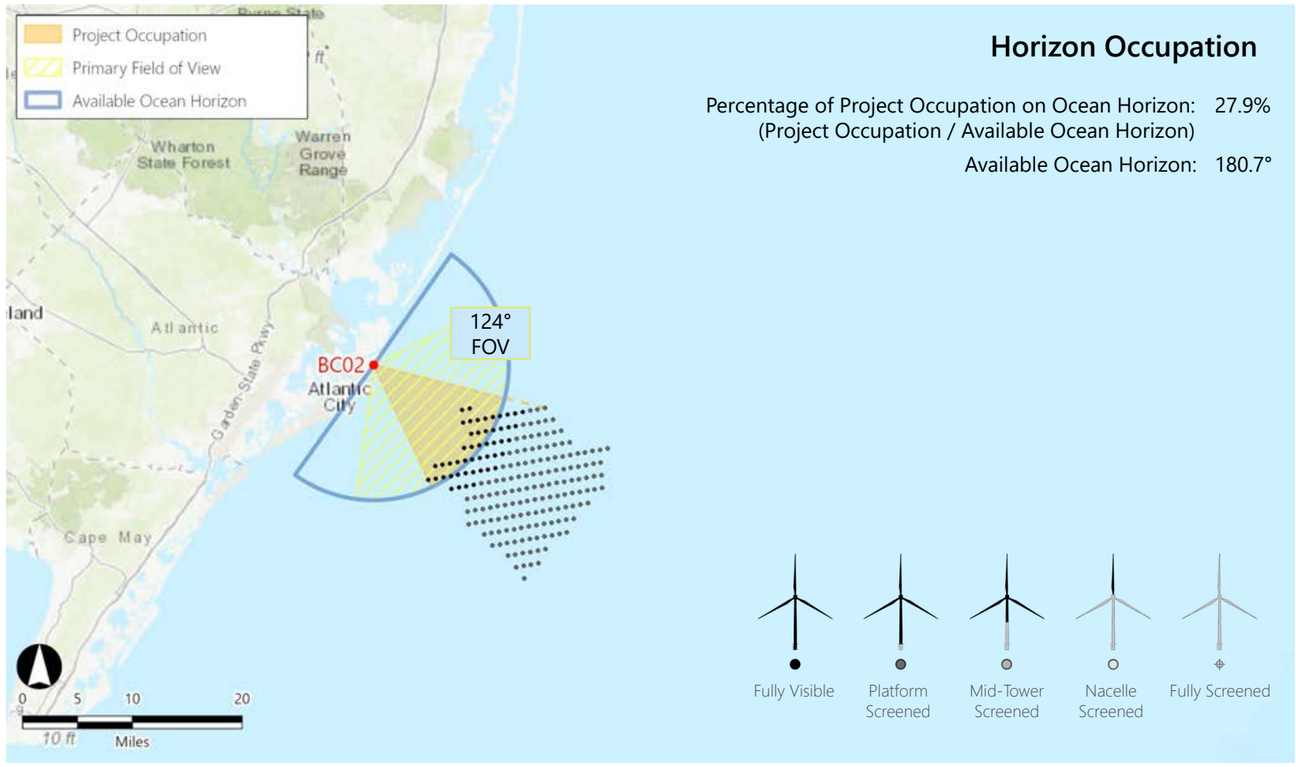
Primary Field of View:	East
Distance to Closest WTG:	9.03 miles
Camera Height:	11.06 ft
User Groups:	Residents, Tourists, Fishermen

Atmospheric Perspective

The effect the atmosphere has on the appearance of an object as viewed from a distance.



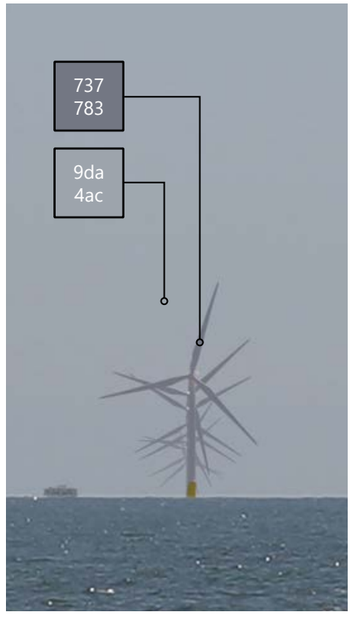




Horizon Occupation

Percentage of Project Occupation on Ocean Horizon: 27.9%
(Project Occupation / Available Ocean Horizon)

Available Ocean Horizon: 180.7°





WTG Color Contrast

Color Contrast Rating:



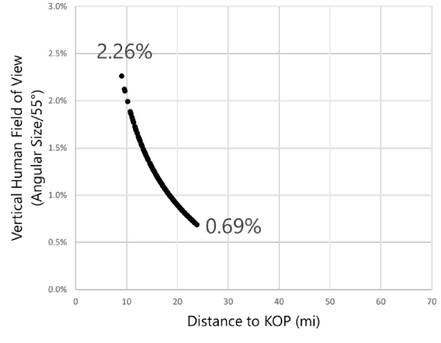
Lighting Condition:	Side lit
Season:	Summer
Sky Condition:	Fair
Atmospheric Condition:	>10 Miles

SIMILAR VIEWING PARAMETERS:

KOP LEHT02 Illustrates the project from 11.91 miles in the back lit condition. This provides an indication of how the turbines may appear from this KOP during morning conditions.

Vertical Occupation

Percentage of Human FOV: 2.26% (1.24° / 55°)
(Considering the nearest visible turbine)



Photosimulation - Alternative E1 Setback Between OCS-A 0499 and OCS-A 0498

This scale is designed to insure the simulation images are printed at the intended size.

Printed at 100% the resulting simulation size is 15 inches wide by 10 inches high. At this size and focal length, the simulation should be viewed from a distance of 21 inches.

Atlantic Shores Offshore Wind Project
Outer Continental Shelf OCS-A 0499
Key Observation Point: BC02 - North Brigantine Natural Area - Alternative E1
Photosimulations: BOEM EIS Alternatives Visual Effects Analysis

Photosimulation - Alternative E1 Setback Between OCS-A 0499 and OCS-A 0498

This scale is designed to insure the simulation images are printed at the intended size.

Printed at 100% the resulting simulation size is 15 inches wide by 10 inches high. At this size and focal length, the simulation should be viewed from a distance of 21 inches.

Atlantic Shores Offshore Wind Project
Outer Continental Shelf OCS-A 0499
Key Observation Point: BC02 - North Brigantine Natural Area - Alternative E1
Photosimulations: BOEM EIS Alternatives Visual Effects Analysis

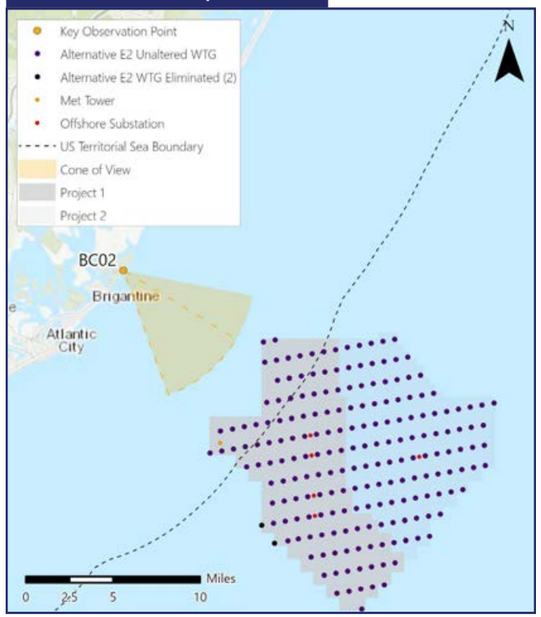
BC02 North Brigantine Natural Area - Alternative E2

Brigantine City, Atlantic County, New Jersey



The image above is a +/- 124° panorama photograph from the North Brigantine Natural Area, panning clockwise from northeast-east (left) to south (right). The yellow rectangle within the photo represents the extent of the photosimulation photo(s).

Context Map



Location Map



Simulation Information

Coordinates:	39.42954°N, 74.33968°W
Character Area:	Undeveloped Beach, Seascape (SCA)
User Group:	Residents/Tourists, Fishermen
Direction of View:	Southeast
Distance to Nearest Visible Turbine:	9.03 miles
Visually Sensitive Resource:	North Brigantine State Natural Area

Environmental Information

Date Taken:	08/18/2020
Time:	12:00 PM
Temperature:	84°F
Humidity:	53%
Visibility:	10 miles
Wind Direction:	West-southwest
Wind Speed:	3 mph
Conditions Observed:	Fair

Photograph Information

Camera:	Canon EOS 5D Mark IV
Resolution:	30.4 Megapixels
Focal Length:	50mm
Camera Height:	11.06 feet AMSL

Notes

Printed at 100%, the photosimulations are 15 inches wide by 10 inches high. At this size, the photosimulation(s) should be viewed from a distance of 21 inches.

Simulated Photograph(s)



Photograph ASOW2799



Photograph ASOW2803

BC02 North Brigantine Natural Area - Alternative E2

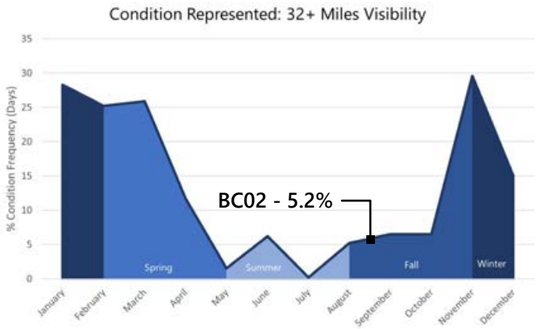
Brigantine City, Atlantic County, New Jersey

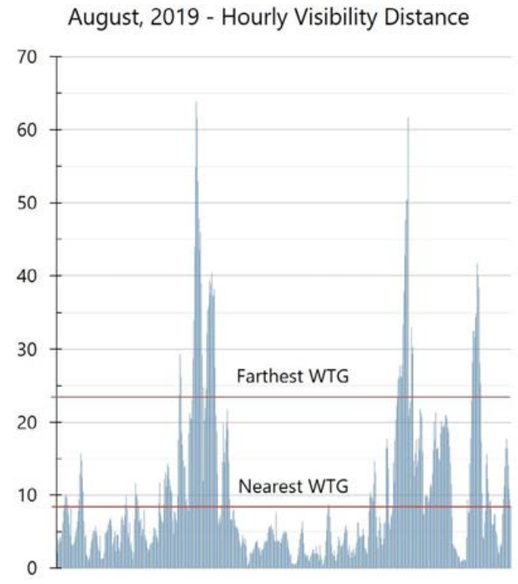
KOP Information

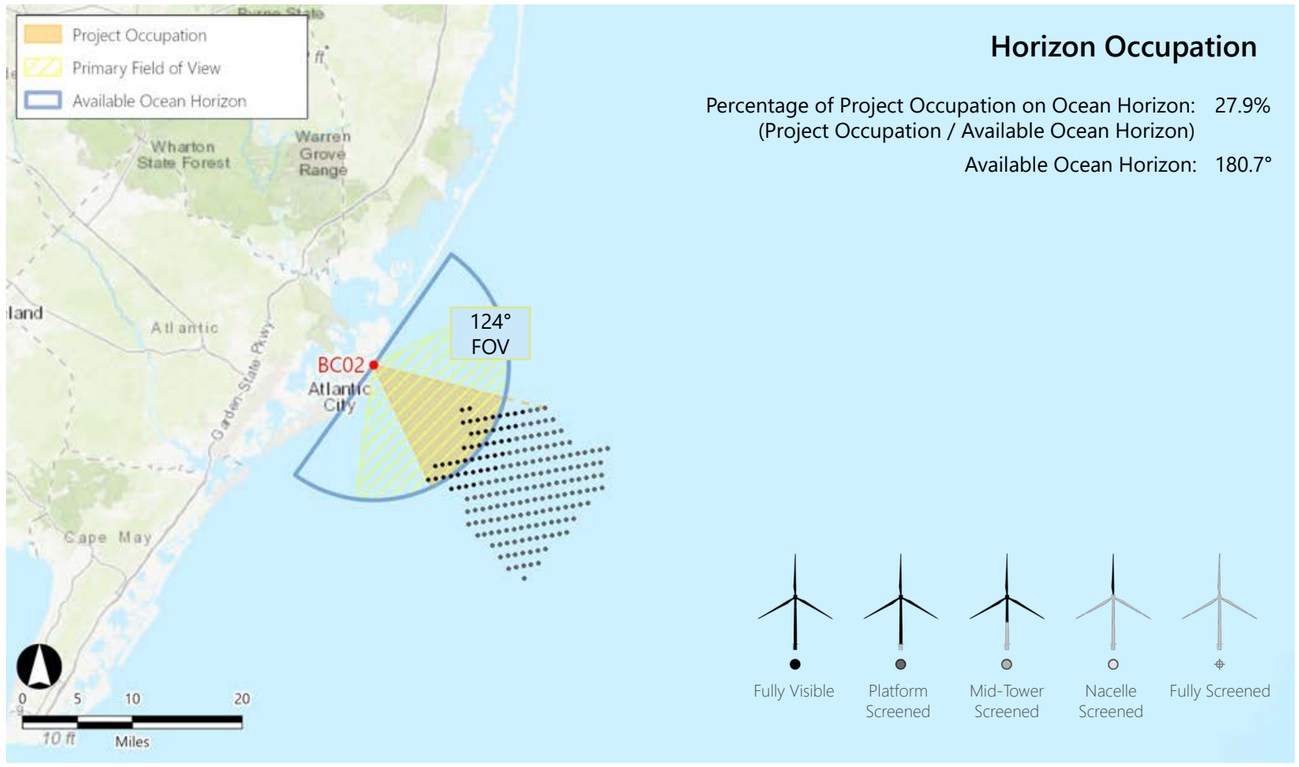
Primary Field of View:	East
Distance to Closest WTG:	9.03 miles
Camera Height:	11.06 ft
User Groups:	Residents, Tourists, Fishermen

Atmospheric Perspective

The effect the atmosphere has on the appearance of an object as viewed from a distance.



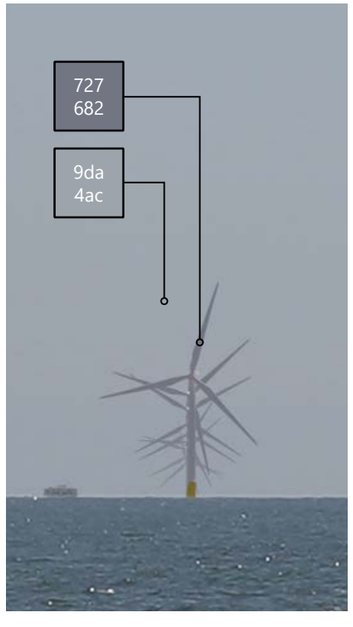




Horizon Occupation

Percentage of Project Occupation on Ocean Horizon: 27.9%
(Project Occupation / Available Ocean Horizon)

Available Ocean Horizon: 180.7°





WTG Color Contrast

Color Contrast Rating:



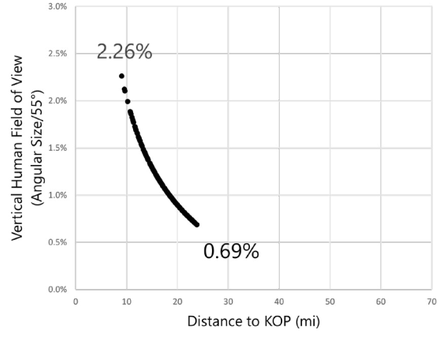
Lighting Condition:	Side lit
Season:	Summer
Sky Condition:	Fair
Atmospheric Condition:	>10 Miles

SIMILAR VIEWING PARAMETERS:

KOP LEHT02 Illustrates the project from 11.91 miles in the back lit condition. This provides an indication of how the turbines may appear from this KOP during morning conditions.

Vertical Occupation

Percentage of Human FOV: 2.26% (1.24° / 55°)
(Considering the nearest visible turbine)



Photosimulation - Alternative E2 Setback Between OCS-A 0499 and OCS-A 0498

This scale is designed to insure the simulation images are printed at the intended size.

Printed at 100% the resulting simulation size is 15 inches wide by 10 inches high. At this size and focal length, the simulation should be viewed from a distance of 21 inches.

Atlantic Shores Offshore Wind Project
Outer Continental Shelf OCS-A 0499
Key Observation Point: BC02 - North Brigantine Natural Area - Alternative E2
Photosimulations: BOEM EIS Alternatives Visual Effects Analysis

Photosimulation - Alternative E2 Setback Between OCS-A 0499 and OCS-A 0498

0 1 in 2 in

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Atlantic Shores Offshore Wind Project
Outer Continental Shelf OCS-A 0499
Key Observation Point: BC02 - North Brigantine Natural Area - Alternative E2
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