Appendix H

Seascape, Landscape, and Visual Impact Assessment

Appendix H: Seascape, Landscape, and Visual Impact Assessment

H.1 Introduction

This appendix describes the seascape, landscape, and visual impact assessment (SLVIA) methodology and key findings that BOEM used to identify the potential impacts of offshore wind structures (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 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). An overview map of visual resources present in the geographic analysis area is included as Attachment H-1, *Scenic Resources Overview Map*. Visual simulations of the Proposed Action alone, other planned offshore wind projects without the Proposed Action, and other offshore wind projects in combination with the Proposed Action are included in Attachment H-2, *Cumulative Visual Simulations*.

The demarcation line between seascape and open ocean is the U.S. states jurisdictional boundary, 3 nautical miles (3.45 statute miles) (5.5 kilometers) seaward from the coastline (US 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.

H.2 Method of Analysis

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

The VIA analyzes and evaluates the impacts on people of adding the proposed development to views from selected viewpoints. It also evaluates the change to the composition of the view itself and assesses how the people who are likely to be at that viewpoint may be affected by the change to the view. Enjoyment of a particular view is dependent on the viewer and, in the VIA, the impact receptors are people. 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.

The magnitude of effect in a seascape, open ocean, landscape, or view depends on the project's nature, scale, prominence, and visual contrast of the change, geographic extent, and its experiential duration and reversibility. The SLVIA offshore geographic analysis area consists of the earth curvature (EC) based extent of the zone of theoretical visibility and zones of visual influence (COP, Appendix II-M1; Atlantic Shores 2023), as follows.

- Offshore turbine array area where the WTGs and OSSs would be located plus a 45.1-mile (72.6-kilometer) radius area. This distance extends to the Cape May Lighthouse (elevated viewpoint) and includes the maximum extent of 42.5 miles (68.4 kilometers) within which a seascape, landscape, or visual effect could occur, given potential visibility of the maximum height of the WTG rotor (1,046.6 feet [319 meters]) from viewers' 5.9-foot (1.8-meter) eye level above sea level.
- The OSS (maximum height of 296 feet [90.2 meters]) would potentially be visible to a distance of 23.8 miles (38.3 kilometers).

WTG visibility would vary through 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.

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). 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.

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, EC has decreasing effect on the visible height of individual WTGs.

Onshore to offshore view distances to the Project WTA range from 8.7 miles (14.0 kilometers) to 45 miles (72.4 kilometers). At the 8.7-mile (14.0-kilometer) distance, the Project WTA would occupy 37.6° (30 percent) of the typical human's 124° horizontal FOV and 0.6° (1 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.

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 Chapter 3, Section 3.6.9, *Scenic and Visual Resources*, of the EIS, along with analysis in this appendix.

The SLVIA methodology and parameters consider local stakeholders' identity, culture, values, and issues and the understanding of baseline maritime conditions. Project activities for all stages of the Project life cycle (construction and installation, O&M, and decommissioning) are assessed against the environmental baseline to identify the potential interactions between the Project and the seascape, landscape, and viewers. Potential impacts are assessed to determine an impact level consistent with the definitions in Table H-1.

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Table H-1. Definitions of potential adverse impact levels

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

Impact Level	Impact Type	Definition
		viewer concern for change is high, then evaluate the nature of the sensitivity to determine if elevating the impact to the next level is justified.
Major	Adverse	**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 SLIA 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 2023) indicate that daytime and nighttime visibility of WTGs and OSSs would be noticeable to the casual observer from seascape character areas, the open ocean character area, landscape character areas, and viewer viewpoints.

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

Based on COP VIA Technical Report Table 1.2-2 (Atlantic Shores 2023), 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 seascape character areas, the open ocean character area, and landscape character areas are listed throughout this appendix.

Table H-2. Seascape, open ocean, and landscape character types within the Offshore Project area viewsheds

Character Area	Square Miles (Square Kilometers) of Seascape, Ocean, 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 Area			
Atlantic City	3.1 (112.68)	0.2 (0.5)	6.9
Commercial Beachfront	1.4 (3.6)	0.9 (2.3)	68.7
Commercial Strip Development	29.5 (76.4)	0.4 (1.0)	1.5

Character Area	Square Miles (Square Kilometers) of Seascape, Ocean, 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
Dredged Lagoon	14.3 (37.0)	3.5 (9.1)	3.3
Recreation	20.2 (52.3)	0.6 (1.6)	3.2
Residential Beachfront	8.2 (21.3	3.1 (7.9)	37.0
Town/Village Center	2.6 (6.7)	<0.1 (<0.3)	0.3
Undeveloped Beach	7.9 (20.5)	3.05 (7.9)	38.5
Landscape Character Area			
Agriculture	110.2 (8.0)	<0.1 (<0.1)	<0.1
Atlantic City	3.1 (112.68)	0.2 (0.5)	6.9
Bayfront Residential	3.3 (8.5)	0.2 (0.5)	6.1
Commercial Strip Development	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	26.6 (68.9)	0.7 (1.8)	2.6
Inland Residential	223.8 (579.6)	1.1 (2.8)	0.5
Limited Access Highway	9.6 (24.9)	0.3 (7.8)	3.6
Recreation	20.2 (52.3)	0.6 (1.6)	3.2
Salt Marsh	214.7 (556.1)	112 (290.1)	52.1
Undeveloped Bay	209.1 (549.7)	155.6 (403.1)	74.4

Source: COP Appendix II-M1, Table 1.2-2; Atlantic Shores 2023.

Summary descriptions of offshore geographic analysis area character areas are informed by the COP VIA Technical Report (Appendix II-M1; Atlantic Shores 2023).

Open Ocean

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.

Seascape Character Areas

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, a condition exacerbated by a high concentration of vacant lots scattered throughout the city.

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. Topography is typically level along the boardwalk, with beaches that slope gently downward toward the shoreline. Vegetation may be present in the form of ornamental shrubs, but mostly consists of dune grass along the edge of the adjacent beaches. The availability of open views toward the ocean varies within this character area. In some areas, views will be screened by dunes or framed by commercial structures, piers, jetties, signs, and other human-made structures. However, in other areas, such as along the sandy shorelines or looking out from a pier, viewers will be afforded open views of neighboring piers, sandy beaches, and the ocean. One side of this character area is always connected to the ocean, with surrounding landscape on the inland side typically commercial, recreation, and residential. The boardwalk area in Atlantic City 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 (Memorial Day to Labor Day) with a near constant presence of crowds, bringing with them a variety of colorful beach equipment such as beach umbrellas, chairs, towels, trash, trash receptacles, lifeguard chairs, and maintenance equipment storage sheds. Individual beaches not separated by dunes often blend together due to the high and continuous volume of users. 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.

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 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.

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.

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.

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.

Landscape Character Areas

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.

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, a condition exacerbated by a high concentration of vacant lots scattered throughout the city.

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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. The New Jersey Pine Barrens typically include pitch pine and scrub oak forests. The forest understory is made up of mixed shrubs, saplings, and herbaceous vegetation including orchids and other unique plant species. 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. Scattered residences, local roads, small fields, and wetlands may occur within this zone but are subordinate to the visual dominance of the surrounding forest. Landforms within this zone are relatively flat, although gently rolling topography is present in places. 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.

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 area is present on very small sites on the interior or bay side of the islands in the form of power stations, maintenance lots, parking areas, and small airports,

including Ocean City Municipal Airport and Bader Field Airport. 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, as in the case of airports. However, it is more typical for views from the Industrial/Developed character area on the barrier islands to be limited because the sites are small, fenced, and adjacent to densely developed areas. This condition is exemplified by municipal maintenance lots and small industrial businesses and materials storage lots. The USCG Training Center on Cape May is the singular instance of a site with views of the ocean. Some large sites are adjacent to forest, which buffers their loud, unsightly, or otherwise intrusive nature from neighboring properties. Open industrial sites offer extensive views within themselves, but the views usually extend only to the property's edge, which is typically bordered by dense forest vegetation. Smaller instances of this character area are scattered throughout the mainland and include recycling centers, active and abandoned mine sites, industrial parks, transit stations, military training centers, self-storage facilities, and industrial fabrication, warehouse, and distribution facilities. These 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, views into and across the character area are interrupted by fencing, trees, and brush, although infrequent glimpses of the stark and utilitarian interior may appear through periodic gaps in the perimeter buffer.

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.

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.

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.

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.

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 inland of the barrier islands.

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 2023.

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
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 2023.

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 2023.

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 2023.

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-7. Each WTG would have two L-864 flashing red obstruction lights at the top of the nacelle, one of which is required to be lit (BOEM 2021). WTGs would have additional intermediate lighting on the tower utilizing low-intensity red flashing (L-810) obstruction lighting (see Section 2.1.1.2, *Offshore Activities and Facilities,* in the EIS). 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 lower low water and highest astronomical tide.

Tables H-8 and H-9 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 2023). FOVs are valid and reliable indicators of the magnitude of view occupation by Proposed Action facilities.

Table H-7. 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) MLLW	0–42.5 (68.4)
Aviation Light	595 (181.3) MLLW	0–32.6 (53.5)
Met Tower	590.6 (180) MLLW	0-32.5 (52.3)
Nacelle	585 (178.3) MLLW	0–32.4 (52.1)
Hub	574.2 (175) MLLW	0–32.1 (51.7)
Mid-tower Light	287 (87.5) MLLW	0–23.5 (37.8)
OSS	295.3 (90) HAT	0–23.8 (38.3)
Yellow Tower Base Color	50 (15.2) HAT	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.
HAT = highest astronomical tide; MLLW = mean lower low water

Table H-8. 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-9. 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) MLLW	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.
MLLW = mean lower low water

Table H-10 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 2023), 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.

Visual contrast determinations involve comparisons of characteristics of the seascape, open ocean, and landscape before and after Project implementation. The range of potential contrasts includes strong, moderate, weak, and none (BOEM 2021). The strongest daytime contrasts would result from tranquil and flat seas combined with 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-10. 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	Weak	Strong	Weak	Medium	4	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	Weak	Strong	Weak	Medium	4	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-8-C	<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-17-C	0.1 (0.3)	NA	NA	NA	NA	NA	Structures **Minor**	Weak	Weak	Weak	Weak	Medium	3	Same as Proposed Action	Same as Proposed Action
KOP-45-L	<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-48-L	<0.1 (<0.1)	NA	NA	NA	NA	NA	Structures **Minor**	Weak	Weak	Weak	Weak	Medium	3	Same as Proposed Action	Same as Proposed Action
KOP-49-L	<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

[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-64 KOP-OO1 Recreational, Fishing, and Tour Boat Area, KOP-65 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-8-C Cardiff Tilton Club, KOP-17-C Cardiff Tilton Road, KOP-45-L Larrabee Lanes Pond Road, KOP-48-L Larrabee Randolph Road, and KOP-49-L Larrabee Oak Glen Road.

[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 (NAEP 2012).

[4] Elevated observation deck or lighthouse.

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

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-11 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 2023) 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. 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 in these areas would be noticeably reduced on approximately 3 out of 4–5 days.

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-11 lists the Proposed Action's noticeable features based on their heights, distances, and EC.

Table H-11. Noticeable elements and impacts by seascape character area, open ocean character area, and landscape character area

Noticeable Elements Impacts	Seascape Areas, Open Ocean Area, 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 Landscape Character Areas: Bayfront Residential, Commercial Strip Development, Dredged Lagoon, Forest, Industrial/Developed, Inland Residential, Recreation, Salt Marsh, Undeveloped Bay

Noticeable Elements Impacts	Seascape Areas, Open Ocean Area, and Landscape Character Areas
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-12 lists the Proposed Action's noticeable features based on their heights, distances, and EC.

Table H-12. 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
Aviation Light **Negligible**	KOP-BHB01 Beach Haven Historic District (Nighttime) KOP-LAT01 Edwin B. Forsythe National Wildlife Refuge-Woodmansee Estate (Nighttime)

Noticeable Elements Impacts	Offshore and Onshore Observation Points
Onshore Substation and/or Converter Station Structures **Major**	KOP-8-C Cardiff Tilton Club KOP-45-L Larrabee Lanes Pond Road KOP-49-L Larrabee Oak Glen Road
Onshore Substation and/or Converter Station Structures **Minor**	KOP-17-C Cardiff Tilton Road KOP-48-L Larrabee Randolph Road

Table H-13 summarizes the Proposed Action's WTA distance, percent of FOV occupied by the WTA, and effects on the seascape units, open ocean unit, and landscape units.

Table H-13. 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	Seascape Areas, Open Ocean Area, 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
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:
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-14 summarizes the Proposed Action's WTA distance, percent of FOV occupied by the WTA, and effects on the KOPs.

Table H14. 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)

Distance in Miles (Kilometers) Noticeability Effects	Offshore and Onshore Key Observation Points
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-8-C Cardiff Tilton Club KOP-17-C Cardiff Tilton Road KOP-45-L Larrabee Lanes Pond Road KOP-48-L Larrabee Randolph Road KOP-49-L Larrabee Oak Glen Road

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 H-15. 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

Percent (°) of 124° FOV Percent of View Effects[1]	Offshore Key Observation Points
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 2023) and summarized in Table H-16.

Table H-16. Foreground view framing and intervening elements for the Proposed Action WTA

Foreground Element(s) Influence[1]	Seascape Areas,[2] Open Ocean Area, Landscape Areas,[2] and Offshore Key Observation Points
Open Ocean **Negligible Influence**	Open Ocean Character Area: Ocean VIA: KOP-OO1 Recreational Fishing, Pleasure, and Tour Boat Area KOP-OO2 Commercial and Cruise Ship Shipping Lanes

Foreground Element(s) Influence[1]	Seascape Areas,[2] Open Ocean Area, Landscape Areas,[2] and Offshore Key Observation Points
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 2023. Nearby view receptor locations may vary from screened to open views of the WTA.
[2] Variable foreground element conditions and influences within seascape and landscape character 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 2023). 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 2023). The COP landscape and seascape 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 seascape, open ocean, and landscape are listed in Table H-17.

Table H-17. Visual contrasts to seascape, open ocean, and landscape for the Proposed Action

Contrast Rating Effects	Seascape, Open Ocean, 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 **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]
	Commercial Strip Development	29.5 [76.4])	0.32 [0.82])

Contrast Rating Effects	Seascape, Open Ocean, and Landscape	Overall Area (square miles [square kilometers])	Impact Area (square miles [square kilometers])
	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]	Area 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-18.

Table H18. Visual contrasts to KOPs for the Proposed Action

Contrast Rating Effects	Seascape, Open Ocean, Landscape, and Offshore and Onshore Key Observation Points (square miles [square kilometers])
Strong Contrasts **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-BHB01 Beach Haven Historic District (Daytime) KOP-BHB02 Beach Haven, Center Street

Contrast Rating Effects	Seascape, Open Ocean, Landscape, and Offshore and Onshore Key Observation Points (square miles [square kilometers])
	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
Moderate Contrasts **Moderate**	VIA: 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
Weak Contrasts **Minor**	SVIA: 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
None (Unseen) **Negligible**	VIA: KOP-BHB01 Beach Haven Historic District (Nighttime) KOP-LAT01 Edwin B. Forsythe NWR-Woodmansee Estate (Nighttime)

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

Table H-19 summarizes Proposed Action impacts on the seascape character units, open ocean character unit, and landscape character units throughout the geographic analysis area. The seascape, open ocean, landscape, and viewer experience criteria listed in Table H-1 and consideration of the preceding assessments would result in impact levels for seascape, open ocean, and landscape character units as shown in Table H-19.

Table H-19. Impact levels on seascape character, open ocean character, and landscape character

Impact Level	Seashore Character Areas, Open Ocean Character Area, 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]

Impact Level	Seashore Character Areas, Open Ocean Character Area, and Landscape Character Areas	Overall Character Area (square miles [square kilometers])	Impacted Character Area (square miles [square kilometers])
	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]
	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]

Impact Level	Seashore Character Areas, Open Ocean Character Area, and Landscape Character Areas	Overall Character Area (square miles [square kilometers])	Impacted Character Area (square miles [square kilometers])
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 Road Onshore Area:**		
	Agriculture	1.560 [4.041]	0.019 [0.048]
	Forest	14.379 [37.243]	0.020 [0.052]
	High Density Residential	2.081 [5.089]	<0.001 [<0.001]
	Industrial	1.971 [5.104]	<0.001 [<0.001]
	Inland Water	0.366 [0.949]	<0.001 [<0.001]
	Low Density Residential	3.251 [8.419]	0.028 [0.072]
	Medium Density Residential	9.426 [24.413]	0.001 [0.001]
	Recreation	1.337 [4.463]	<0.001 [<0.001]

H.3.1.5 Impact Levels on the Viewer Experience

Table H-20 summarizes Proposed Action impacts on the viewer experience (KOP locations) throughout the geographic analysis area. The seascape, open ocean, landscape, and viewer experience criteria listed in Table H-1 and consideration of the preceding assessments would result in impact levels for KOPs as shown in Table H-20.

Table H-20. Impact levels on the viewer experience for the Proposed Action

Impact Level	Offshore and Onshore Key Observation Points
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-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 KOP-8-C Cardiff Tilton Club KOP-45-L Larrabee Lanes Pond Road KOP-49-L Larrabee Oak Glen Road
Moderate	VIA: 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
Minor	VIA: 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 KOP-17-C Cardiff Tilton Road KOP-48-L Larrabee Randolph Road
Negligible	None

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 seascape character, open ocean character, landscape character, and viewer experience. These effects include direct physical effects on the seascape, open ocean, and landscape or changes to the distinct character of the seascape, open ocean, and landscape.

Effects on seascape character, open ocean character, and landscape character can occur in the following conditions (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 seascape, open ocean, and landscape.

Attachment H-2portrays 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.

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 Offshore Wind 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 Offshore Wind South OCS-A 0499 (Atlantic Shores Offshore Wind Bight OCS-A 0541, Atlantic Shores Offshore Wind North OCS-A 0539, Attentive Energy OCS-A 0538, Bight Wind Holdings 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 Ocean Winds East 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, Bight

Wind Holdings 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 seascape character, open ocean character, and landscape character are described listed in Table H-21. Increased impacts to the seascape character areas, open ocean character area, 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-22.

The effects on seascape character, open ocean character, and landscape character of other WTAs in combination with the Proposed Action are described in Table H-23.

The effects on viewer experience of other WTAs in combination with the Proposed Action are described in Table H-24.

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Table H-21. Other WTAs' seascape, open ocean, 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, and D
	Seascape[5]	Open Ocean	Landscape[5]	Seascape	Open Ocean	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**	136° (110%)	82° to 360° (66 to 290%)	136° (110%)	R, AL, N, H, O, M, Y Major	Strong	Strong	Strong	Strong	Large	6	Same as Proposed Action	Same as Proposed Action
ASB 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
ASN 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
BWH 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
EW 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
EWII 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
M-A 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
OWE 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, ASB = Atlantic Shores Offshore Wind Bight (previously [COP VIA] Hudson South E) OCS-A 0541, ASN = Atlantic Shores Offshore Wind North OCS-A 0549, BWH = Bight Wind Holdings (previously [COP VIA] Hudson South C) OCS-A 0539, EW = Empire Wind OCS-A 0512, EWII = Empire Wind II OCS-A 0512, GS = Garden State OCS-A 0482, IE = Invenergy Wind Offshore (previously [COP VIA] Hudson South F) OCS-A 0542, M-A = Mid-Atlantic Offshore Wind (previously [COP VIA] Hudson North) OCS-A 0544, OW = Ocean Wind OCS-A-0498, OWII = Ocean Wind II OCS-A532, OWE = Ocean Wind East (previously [COP VIA] Central Bight) OCS-A 0537, SW = Skipjack OCS-A 0519, US = US Wind OCS-A 0490

[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 (NAEP 2012).

[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-22. Other WTAs' cumulative viewer experience WTA distances, FOVs, noticeable elements, visual contrasts, scale of change, and prominence

	Distance in Miles (Kilometers) and Impact														FOV Degrees (% of 124°)	Noticeable Elements [3] and Impact Level[4]	Visual Contrast, Scale of Change, and Prominence							
View[1]	AE[2]	ASB[2]	ASN[2]	BWH[2]	EW[2]	EWII[2]	GS[2]	IE[2]	M-A[2]	OW[2]	OWII[2]	OWE[2]	SW[2]	US[2]			Form	Line	Color	Texture	Scale	Prominence[5]	Alternatives D1, D2, D3	Alternatives C1, C2, C3, and D
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
OC04	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 to Weak	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, ASB = Atlantic Shores Offshore Wind Bight (previously [COP VIA] Hudson South E) OCS-A 0541, ASN = Atlantic Shores Offshore Wind North OCS-A 0549, ASS = Atlantic Shores Offshore Wind South OCS-A 0499, BWH = Bight Wind Holdings (previously [COP VIA] Hudson South C) OCS-A 0539, EW = Empire Wind OCS-A 0512, EWII = Empire Wind II OCS-A 0512, GS = Garden State OCS-A 0482, IE = Invenergy Wind Offshore (previously [COP VIA] Hudson South F) OCS-A 0542, M-A = Mid-Atlantic Offshore Wind (previously [COP VIA] Hudson North) OCS-A 0544, OW = Ocean Wind OCS-A-0498, OWII = Ocean Wind II OCS-A532, OWE = Ocean Wind East (previously [COP VIA] Central Bight) OCS-A 0537, SW = Skipjack OCS-A 0519, US = US Wind OCS-A 0490

[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 (NAEP 2012).

Table H-23. Atlantic Shores Offshore Wind South and other WTAs' seascape, open ocean, 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, and D
	Seascape[5] Distance and Impact	Open Ocean Distance and Impact	Landscape[5] Distance and Impact	Seascape	Open Ocean	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**	136° (110%)	82° to 360° (66 to 290%)	136° (110%)	R, AL, N, H, O, M, Y Major	Strong	Strong	Strong	Strong	Large	6	Same as Proposed Action	Same as Proposed Action
ASB 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
ASN 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
ASS 2027	8.7 (14.0) **Major**	0 (0)–42.5 (68.4) **Major**	9.0 (14.5) **Major**											Same as Proposed Action	Same as Proposed Action
BWH 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
EW 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
EWII 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
M-A 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
OWE 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, ASB = Atlantic Shores Offshore Wind Bight (previously [COP VIA] Hudson South E) OCS-A 0541, ASN = Atlantic Shores Offshore Wind North OCS-A 0549, ASS = Atlantic Shores Offshore Wind South OCS-A 0499, BWH = Bight Wind Holdings (previously [COP VIA] Hudson South C) OCS-A 0539, EW = Empire Wind OCS-A 0512, EWII = Empire Wind II OCS-A 0512, GS = Garden State OCS-A 0482, IE = Invenergy Wind Offshore (previously [COP VIA] Hudson South F) OCS-A 0542, M-A = Mid-Atlantic Offshore Wind (previously [COP VIA] Hudson North) OCS-A 0544, OW = Ocean Wind OCS-A-0498, OWII = Ocean Wind II OCS-A532, OWE = Ocean Wind East (previously [COP VIA] Central Bight) OCS-A 0537, SW = Skipjack OCS-A 0519, US = US Wind OCS-A 0490

[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 (NAEP 2012).
[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-24. Atlantic Shores Offshore Wind South and other WTAs' cumulative viewer experience WTA distances, FOVs, noticeable elements, visual contrasts, scale of change, and prominence

	Distance in Miles (Kilometers) and Impact															FOV Degrees (% of 124°)	Noticeable Elements[3] and Impact Level[4]	Visual Contrast, Scale of Change, and Prominence							
View[1]	AE[2]	ASB[2]	ASN[2]	ASS[2]	BWH[2]	EW[2]	EWII[2]	GS[2]	IE[2]	M-A[2]	OW[2]	OWII[2]	OWE[2]	SW[2]	US[2]			Form	Line	Color	Texture	Scale	Prominence[5]	Alternatives D1, D2, D3	Alternatives C1, C2, C3, and D
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%)	AL Moderate	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 to Weak	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, ASB = Atlantic Shores Offshore Wind Bight (previously [COP VIA] Hudson South E) OCS-A 0541, ASN = Atlantic Shores Offshore Wind North OCS-A 0549, ASS = Atlantic Shores Offshore Wind South OCS-A 0499, BWH = Bight Wind Holdings (previously [COP VIA] Hudson South C) OCS-A 0539, EW = Empire Wind OCS-A 0512, EWII = Empire Wind II OCS-A 0512, GS = Garden State OCS-A 0482, IE = Invenergy Wind Offshore (previously [COP VIA] Hudson South F) OCS-A 0542, M-A = Mid-Atlantic Offshore Wind (previously [COP VIA] Hudson North) OCS-A 0544, OW = Ocean Wind OCS-A-0498, OWII = Ocean Wind II OCS-A532, OWE = Ocean Wind East (previously [COP VIA] Central Bight) OCS-A 0537, SW = Skipjack OCS-A 0519, US = US Wind OCS-A 0490.
[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 (NAEP 2012).

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 seascape, open ocean, and landscape before and after implementation of Alternatives D1, D2, and D3 are indicated in Table H-10. There would be a slight difference in contrasts between Alternative D1, D2, and D3 and the Proposed Action due to the removal of WTG positions from the shoreward edge. Tables H-25 and H-26 list Alternative D1 WTA 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 miles (1.9 kilometers), and the horizontal FOVs would vary by 15° in the 124° FOV. The vertical FOVs would vary by less than 1° (0.7° variation) of the viewer 55° FOV. These results indicate small changes to the FOV results compared to the Proposed Action (Tables H-8 and H-9).

Table H-25. Horizontal FOV occupied by Alternative D1

Noticeable Element	Width[1] Miles (Kilometers)	Distance[2] Miles (Kilometers)	Horizontal FOV	Human FOV	Percent of FOV
WTGs	13.8 (22.2)	14.1 (22.7)	44.4°	124°	36%

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

Table H-26. Vertical FOV occupied by Alternative D1

Noticeable Element	Height Feet (Meters) MLLW	Distance Miles (Kilometers)	Visible Height[1] Feet (Meters)	Vertical FOV	Human FOV	Percent of FOV
Rotor Blade Tip	1,046.6 (391)	14.1 (22.7)	962 (293.1)	0.7°	55°	1%

[1] Based on intervening EC, clear-day, and clear-night conditions.
MLLW = mean lower low water

Tables H-27 and H-28 list Alternative D2 WTA 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 miles (1.9 kilometers), and the horizontal FOVs would vary by 12° in the 124° FOV. The vertical FOVs would vary by less than 1° (0.5° variation) of the viewer 55° FOV. These results indicate small changes to the FOV results compared to the Proposed Action (Tables H-8 and H-9).

Table H-27. Horizontal FOV occupied by Alternative D2

Noticeable Element	Width[1] Miles (Kilometers)	Distance[2] Miles (Kilometers)	Horizontal FOV	Human FOV	Percent of FOV
WTGs	13.8 (22.2)	12.8 (20.6)	47.1°	124°	38%

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

Table H-28. Vertical FOV occupied by Alternative D2

Noticeable Element	Height Feet (Meters) MLLW	Distance Miles (Kilometers)	Visible Height[1] Feet (Meters)	Vertical FOV	Human FOV	Percent of FOV
Rotor Blade Tip	1,046.6 (391)	12.8 (20.6)	981 (299)	0.8°	55°	1%

[1] Based on intervening EC, clear-day, and clear-night conditions.
MLLW = mean lower low water

Table H-29 and H-30 list Alternative D3 WTA 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 2.1 miles (3.4 kilometers), and the horizontal FOVs would vary by 5° in the 124° view FOV. The vertical FOVs would vary by less than 1° (0.7° variation) of the viewer 55° FOV. These results indicate slight changes to the FOV results compared to the Proposed Action (Tables H-8 and H-9).

Table H-29. Horizontal FOV occupied by Alternative D3

Noticeable Element	Width[1] Miles (Kilometers)	Distance[2] Miles (Kilometers)	Horizontal FOV	Human FOV	Percent of FOV
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-30. Vertical FOV occupied by Alternative D3

Noticeable Element	Height Feet (Meters) MLLW	Distance Miles (Kilometers)	Visible Height[1] Feet (Meters)	Vertical FOV	Human FOV	Percent of FOV
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.
MLLW = mean lower low water

H.3.2.1 Conclusion

The effects of Alternatives D1, D2, and D3 on seascape character, open ocean 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, 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 seascape character, open ocean 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 seascape character units, open ocean character unit, 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-31 and H-32) 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-31. 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-32. 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) MLLW	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.
MLLW = mean lower low water

H.3.3.1 Conclusions

The effects of Alternatives C1, C2, C3, E, and F on seascape character, open ocean 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 Seascape, Open Ocean, and Landscape Impact Assessment Summary

The SLIA considers the impacts on the physical elements and features that make up a seascape, open ocean, or landscape and the aesthetic, perceptual, and experiential aspects of the seascape, open ocean, or landscape that contribute to its distinctive character. These impacts affect the feel, character, or sense of place of an area of seascape, open ocean, or landscape. Based on the SLIA impact range factors presented in Table H-1 and the geographic analysis area seascape character, open ocean character, and landscape character analyses (Tables H-16 through H-24), Table H-33 and Table H-34 summarize the effects of the character of the offshore and onshore components of the Project with the aspects that contribute to the distinctive character of the seascape, open ocean, and landscape areas from which the Project would be visible (BOEM 2021).

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

High magnitudes of visual impact would occur in the seascape character areas and 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. Impacts of the Proposed Action on seascape character, open ocean character, and landscape character range from **negligible** to **major**.

Table H-33. Seascape character, open ocean character, landscape character and geographic extent, scale, contrasts, size and scale, and duration impact 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
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			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-33. Seascape character, open ocean character, and landscape character 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	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 seascape, open ocean, or landscape character area.
[2] Key Elements = The essential visual components of the seascape, open ocean, or landscape character area.
[3] Key Quality = The main value factor of the seascape, open ocean, or landscape character area.

H.5 Visual Impact Assessment Summary

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-33 and the geographic analysis area viewer experience analyses, Table H-34 summarizes the viewer sensitivity, view receptor susceptibility, view value, and measures of effects from the visible character and magnitude of the offshore and onshore components of the Project (BOEM 2021). Impacts of the Proposed Action on viewer experiences range from n**egligible** to **major**.

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Table H-34. 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)	X			X			X			X				X				Same as Proposed Action
KOP-AC03 (Nighttime)[3]	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)	X			X			X			X				X				Same as Proposed Action
KOP-BHB01 (Nighttime)[4]	X			X			X					X				X		Same as Proposed Action
KOP-BHB02	X			X			X			X				X				Same as Proposed Action
KOP-BHB03	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	X			X			X			X				X				Same as Proposed Action
KOP-OC01	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	X			X			X				X					X		Same as Proposed Action
KOP-SIC02	X			X			X				X				X			Same as Proposed Action
KOP-8-C	X			X			X			X				X				Same as Proposed Action
KOP-17-C	X			X			X					X				X		Same as Proposed Action
KOP-45-L	X			X			X			X				X				Same as Proposed Action
KOP-48-L	X			X			X					X				X		Same as Proposed Action
KOP-49-L	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-64 KOP-OO1 Recreational, Fishing, and Tour Boat Area, KOP-65 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-8-C Cardiff Tilton Club, KOP-17-C Cardiff Tilton Road, KOP-45-L Larrabee Lanes Pond Road, KOP-48-L Larrabee Randolph Road, and KOP-49-L Larrabee Oak Glen Road.
[2] Elevated observation deck or lighthouse.
[3] Nighttime scenario with ALDS implemented.

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H.6 References

Atlantic Shores Offshore Wind South, LLC (Atlantic Shores). 2023. *Atlantic Shores Offshore Wind South, Construction and Operations Plan*. May. Available: https://www.boem.gov/renewable-energy/state-activities/atlantic-shores-south.

Bislins, Walter. 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.

National Association of Environmental Professionals (NAEP). 2012. *Offshore Wind Turbine Visibility and Visual Impact Thresholds*. Available: https://blmwyomingvisual.anl.gov/docs/EnvPractice_Offshore%20Wind%20Turbine%20Visibility%20and%20Visual%20Impact%20Threshold%20Distances.pdf.

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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

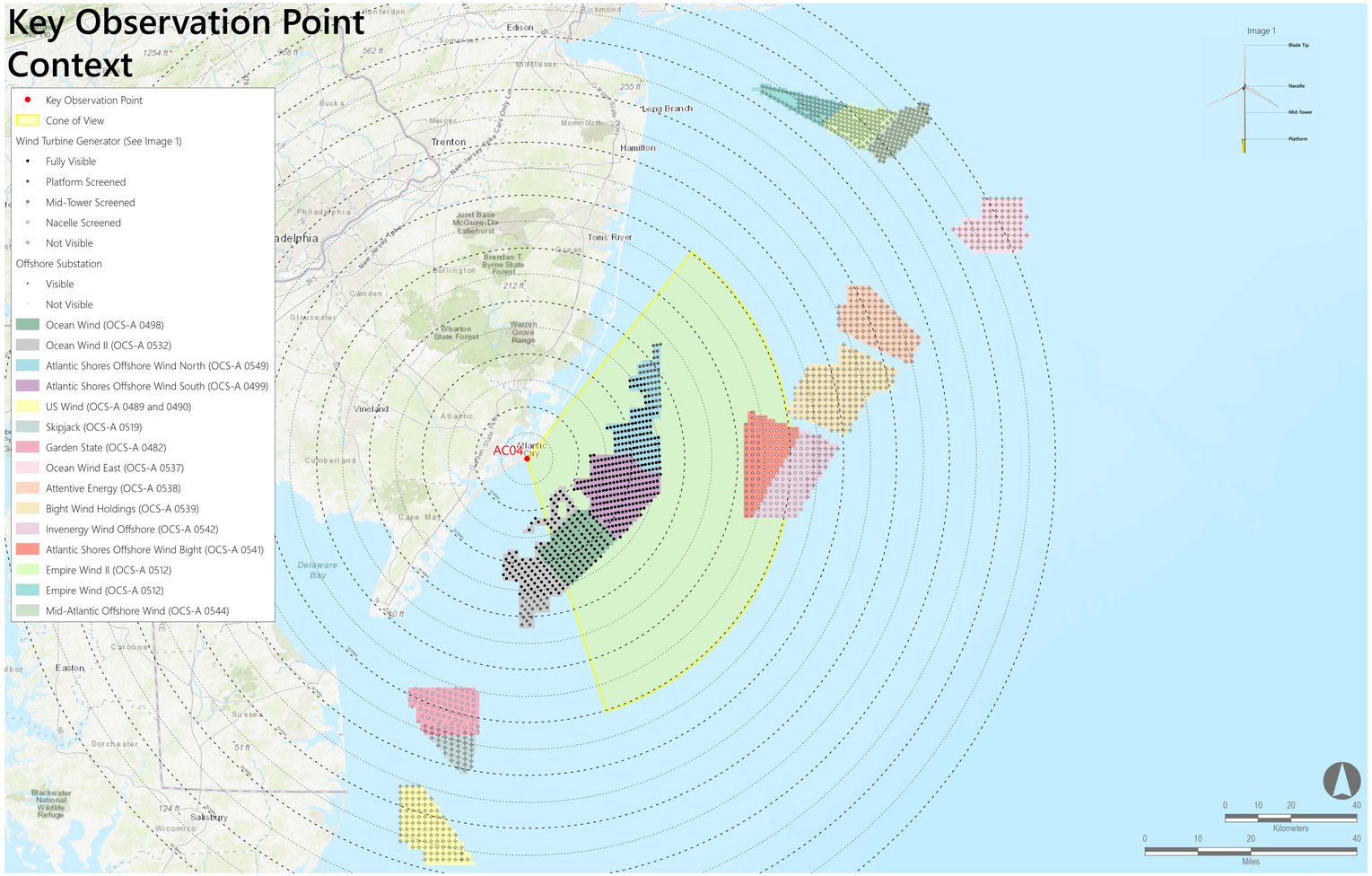
Camera Information
Camera: Canon EOS 5D Mark IV
Resolution: 30.4 Megapixels
Lens Focal Length: 50 mm
Camera Height: 117.26 feet AMSL

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)

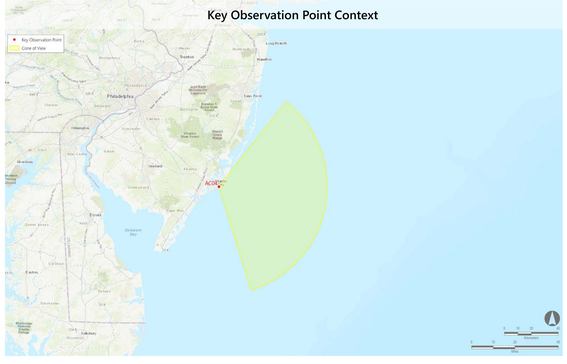
Notes:

- 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

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 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.

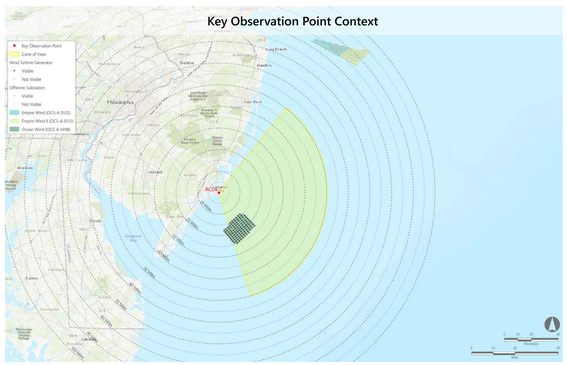
This box should be exactly 1' long on the printed panorama

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 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 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.

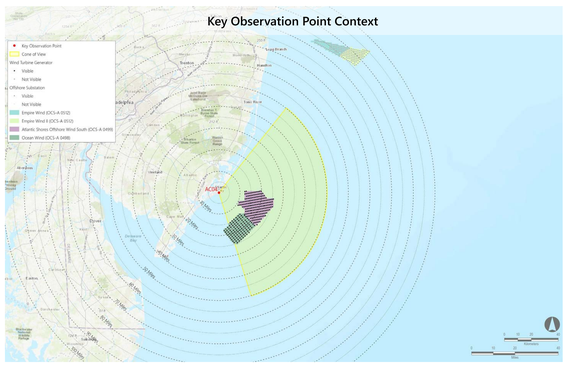
This box should be exactly 1' long on the printed panorama

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

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

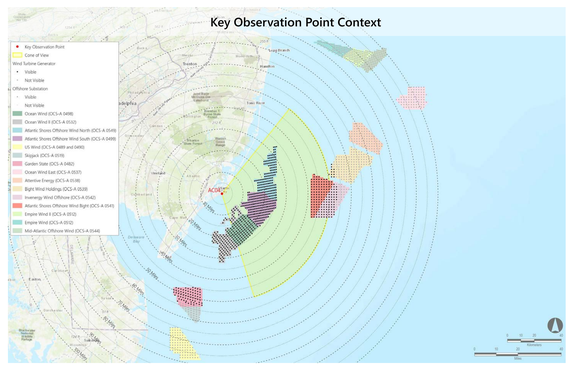
Simulation Size: 66" in width by 29.3" in height. Images should be viewed from a distance of 18 inches in order to obtain the proper perspective.

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

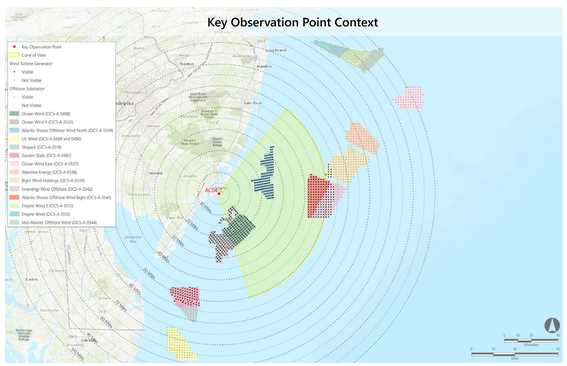
Simulation Size: 66" in width by 29.3" in height. Images should be viewed from a distance of 18 inches in order to obtain the proper perspective.

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 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



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

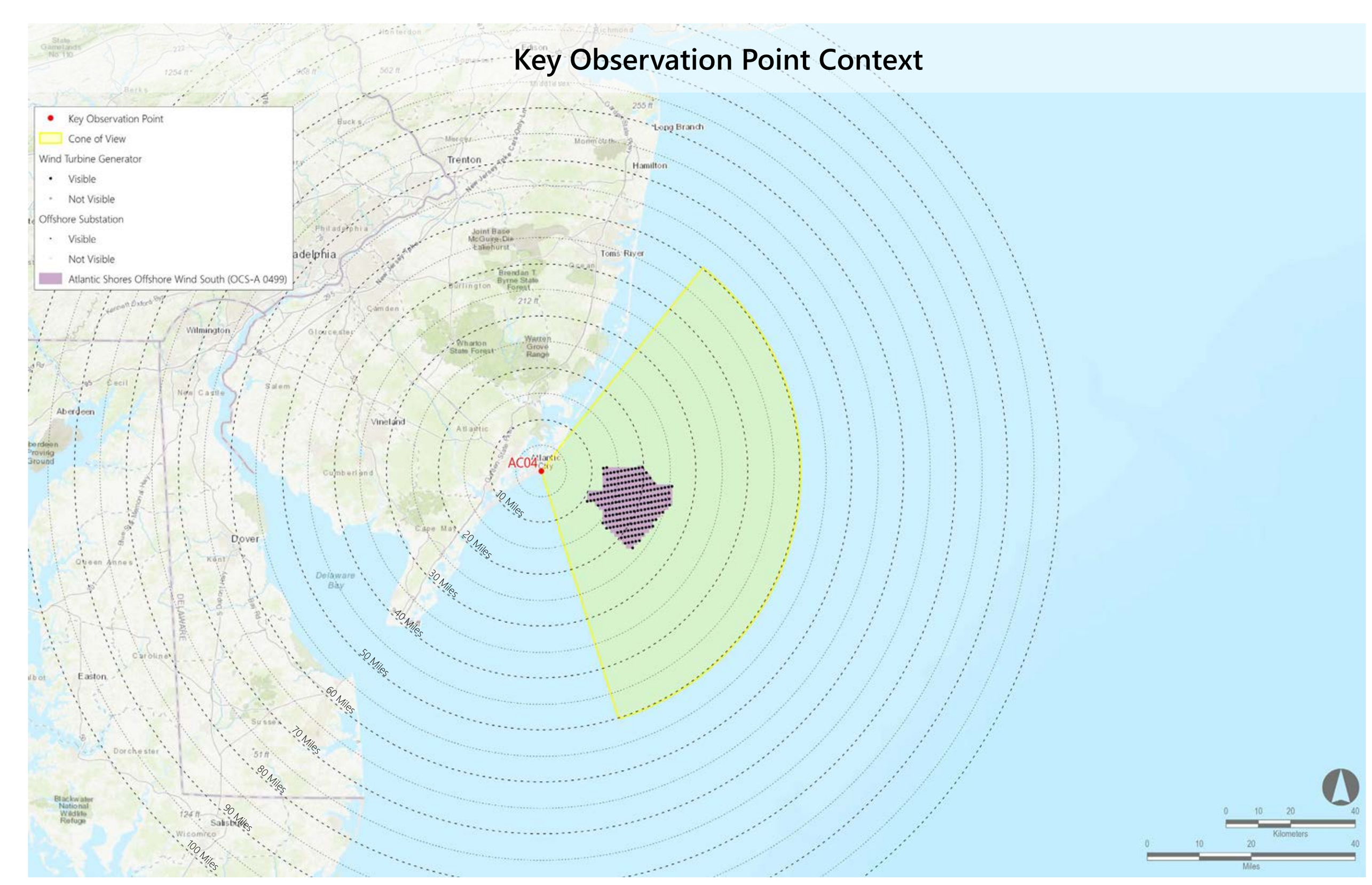
Simulation Size: 66" in width by 29.3" in height. Images should be viewed from a distance of 18 inches in order to obtain the proper perspective.

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



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

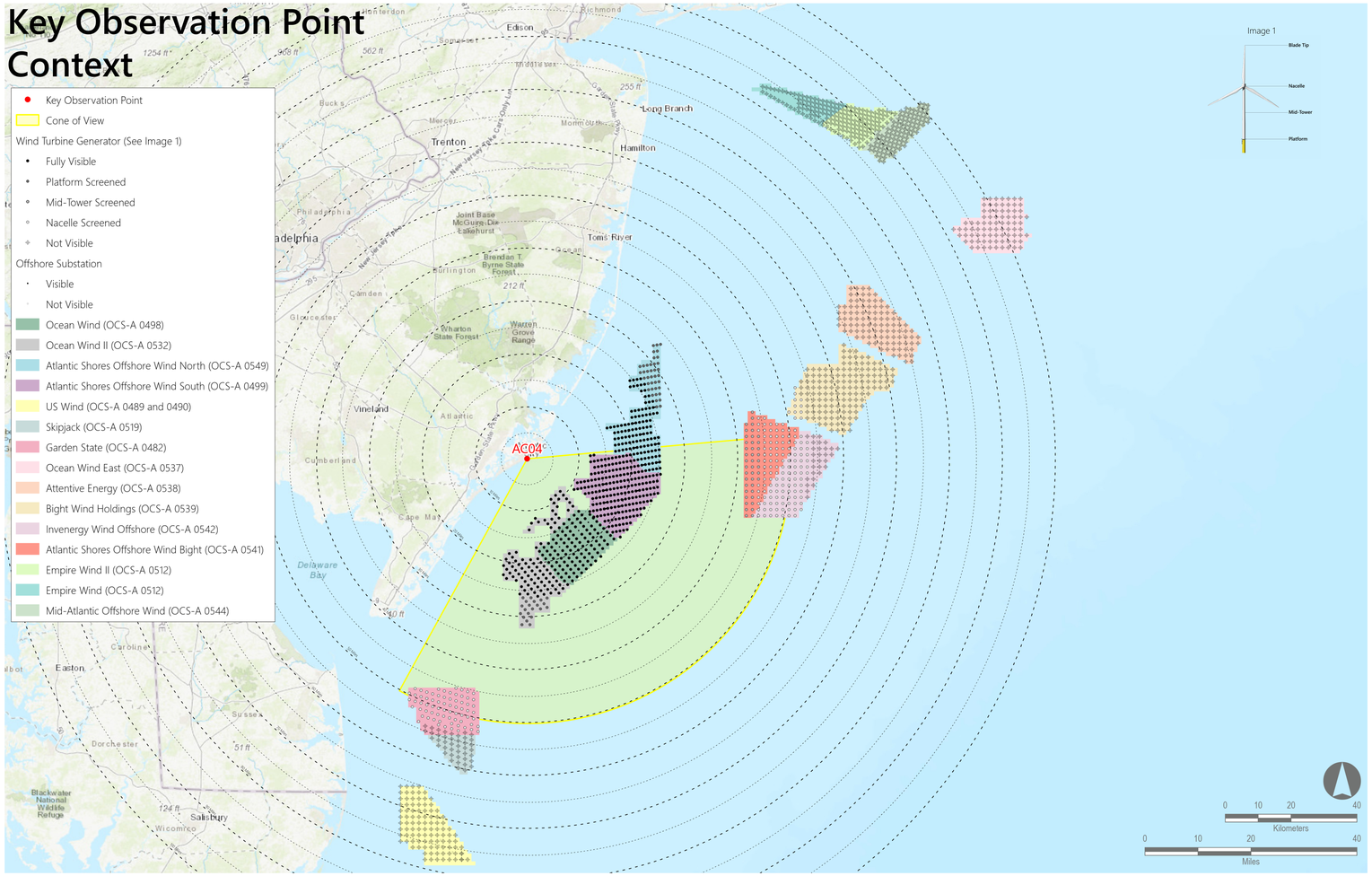
Camera Information
Camera: Canon EOS 5D Mark IV
Resolution: 30.4 Megapixels
Lens Focal Length: 50 mm
Camera Height: 117.26 feet AMSL

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)

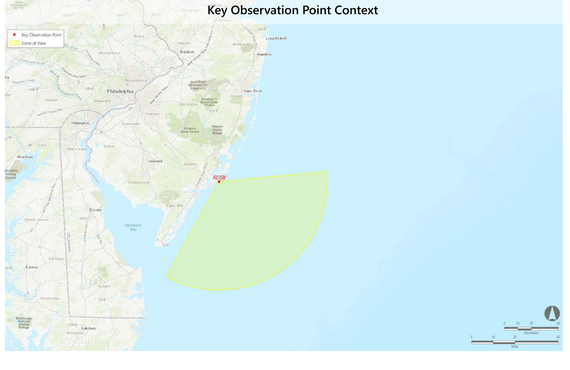
Simulation Size: 66" in width by 29.3" in height. Images should be viewed from a distance of 18 inches in order to obtain the proper perspective.

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

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.

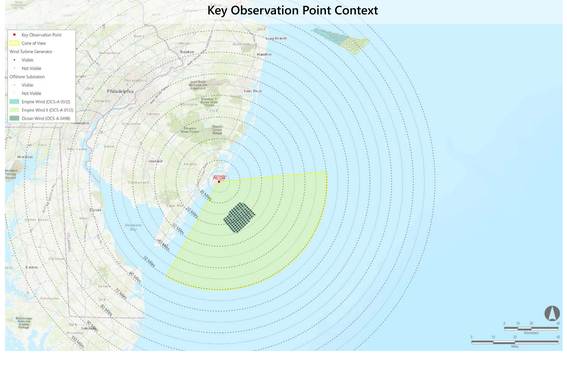
This box should be exactly 7" long on the printed panorama

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

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 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.

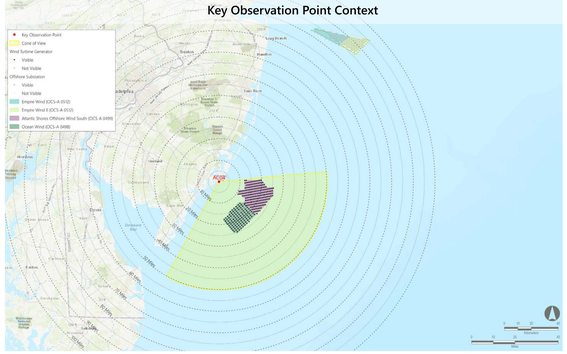
This box should be exactly 1" long on the printed panorama

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

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: 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)

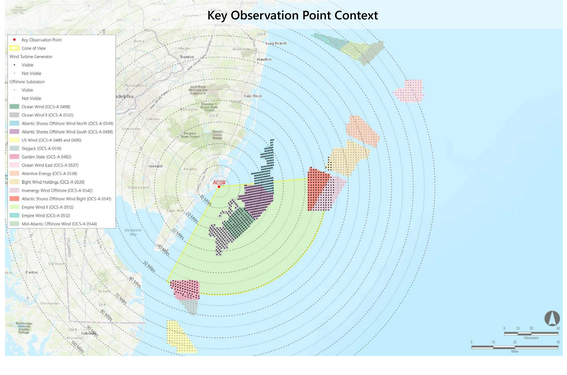
Simulation Size: 66" in width by 29.3" in height. Images should be viewed from a distance of 18 inches in order to obtain the proper perspective.

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.

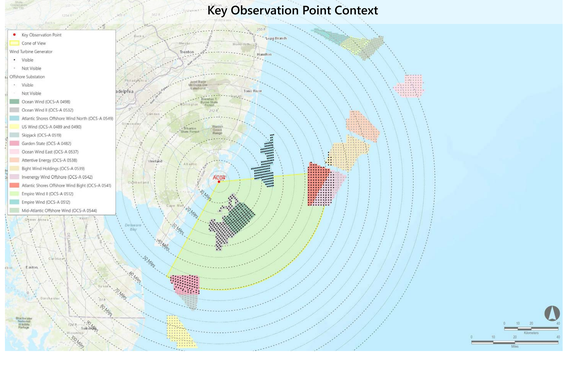
This box should be exactly 7" long on the printed panorama

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 Location

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.

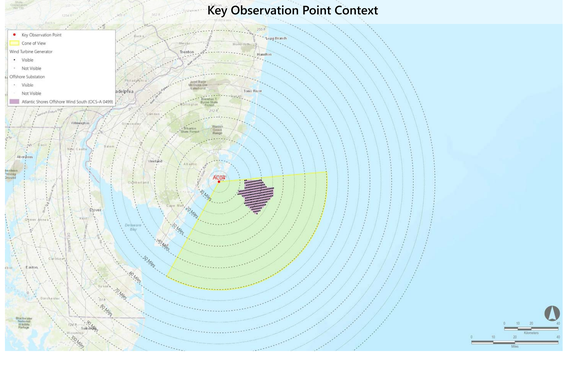
This box should be exactly 7" long on the printed panorama

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 Location

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

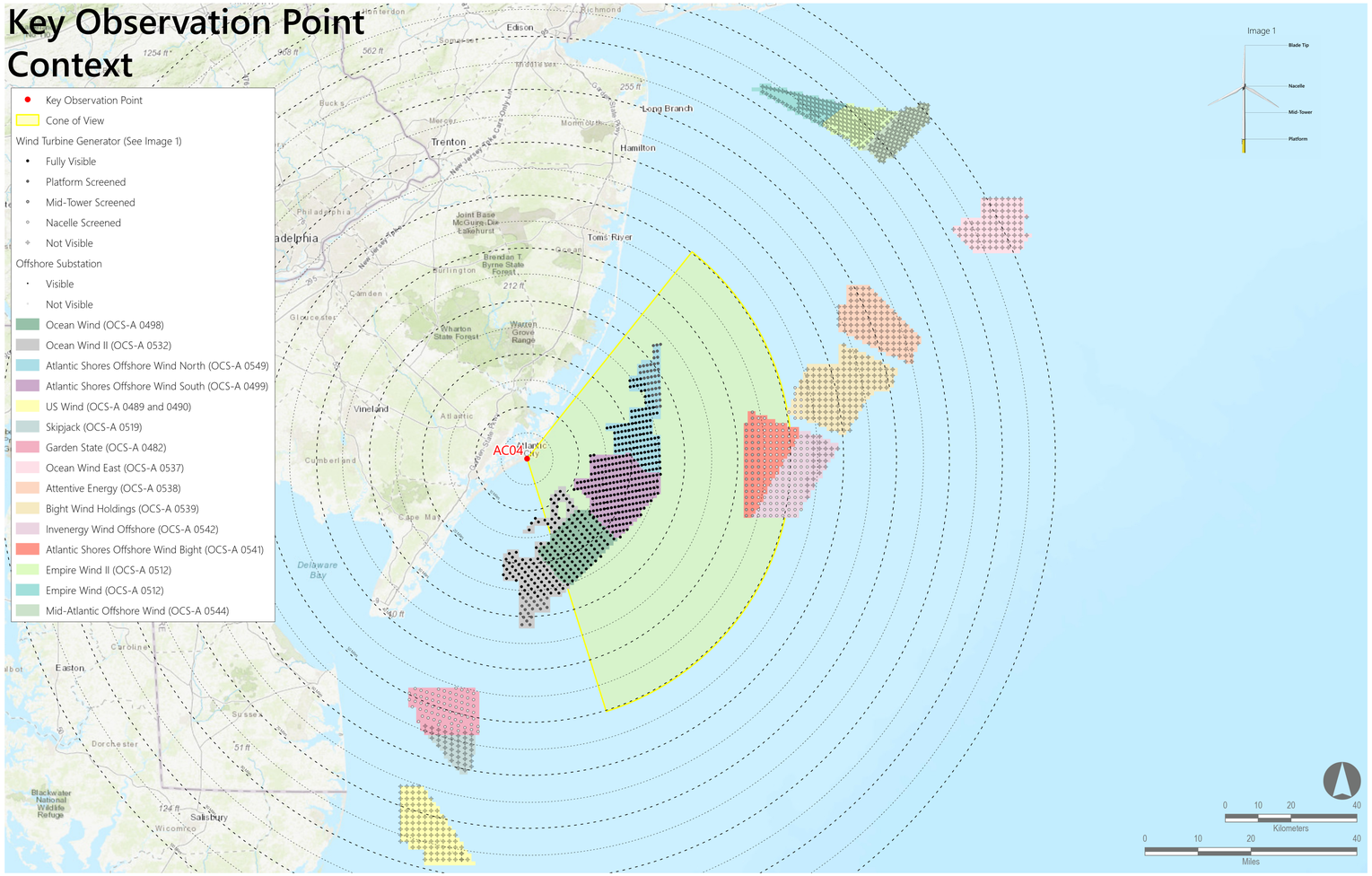
Camera Information
Camera: Canon EOS 5D Mark IV
Resolution: 30.4 Megapixels
Lens Focal Length: 50 mm
Camera Height: 117.26 feet AMSL

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)

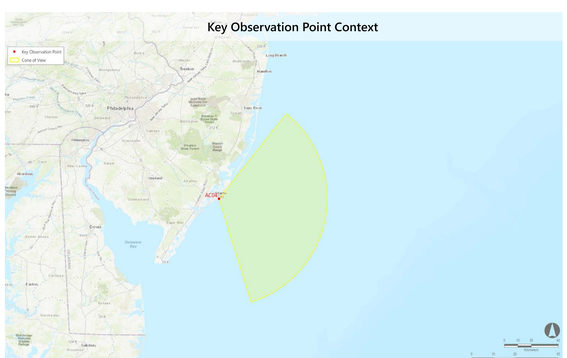
Notes:

- 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

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 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)

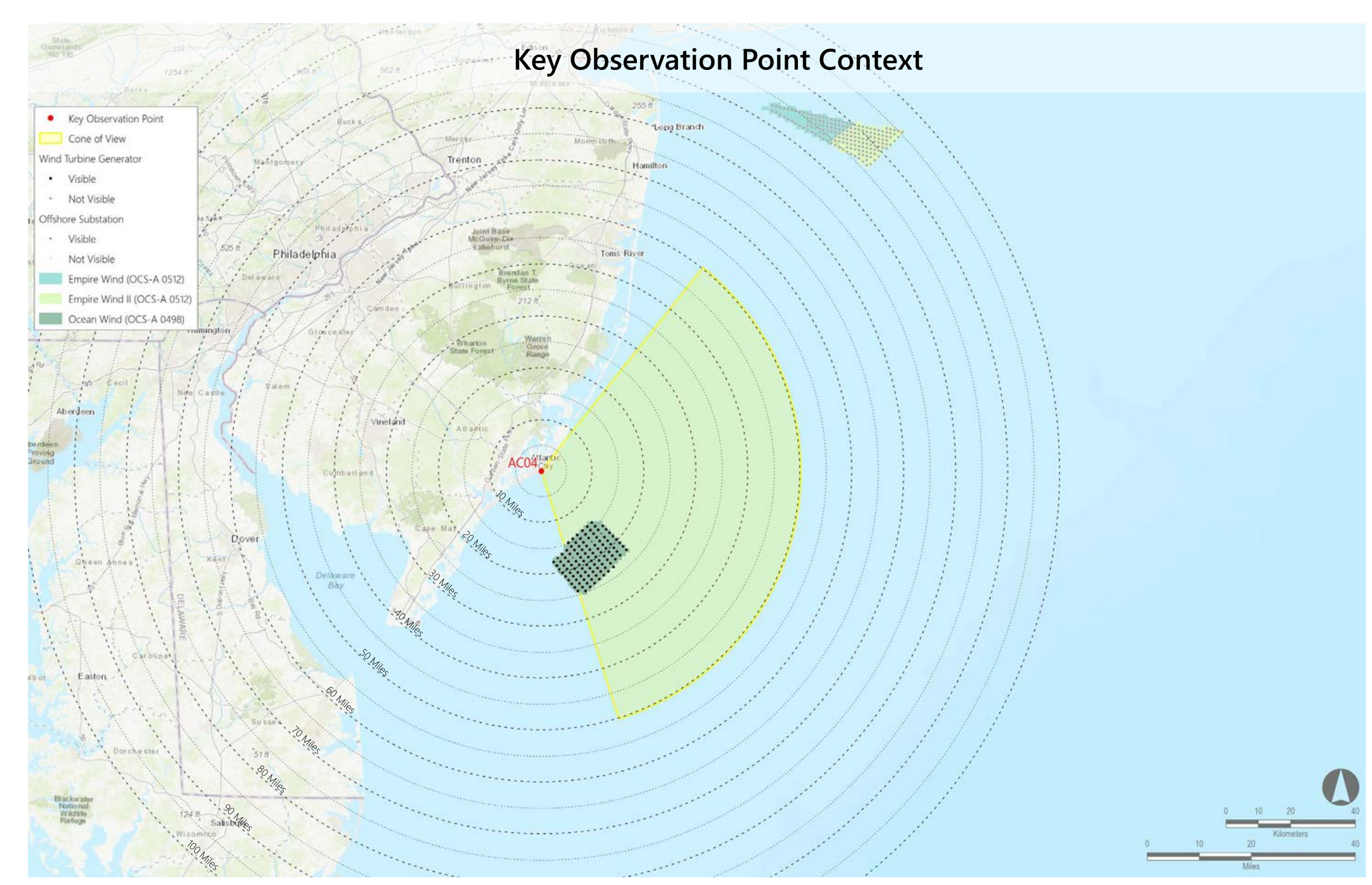
Simulation Size: 66" in width by 29.3" in height. Images should be viewed from a distance of 18 inches in order to obtain the proper perspective.

This box should 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



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

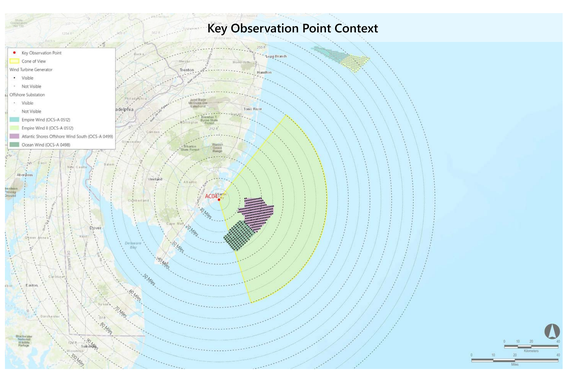
Simulation Size: 66" in width by 29.3" in height. Images should be viewed from a distance of 18 inches in order to obtain the proper perspective.

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.
- 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.
- 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



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)

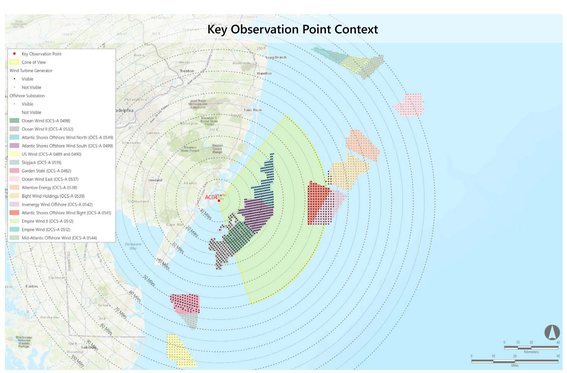
Simulation Size: 66" in width by 29.3" in height. Images should be viewed from a distance of 18 inches in order to obtain the proper perspective.

This box should measure 1" 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

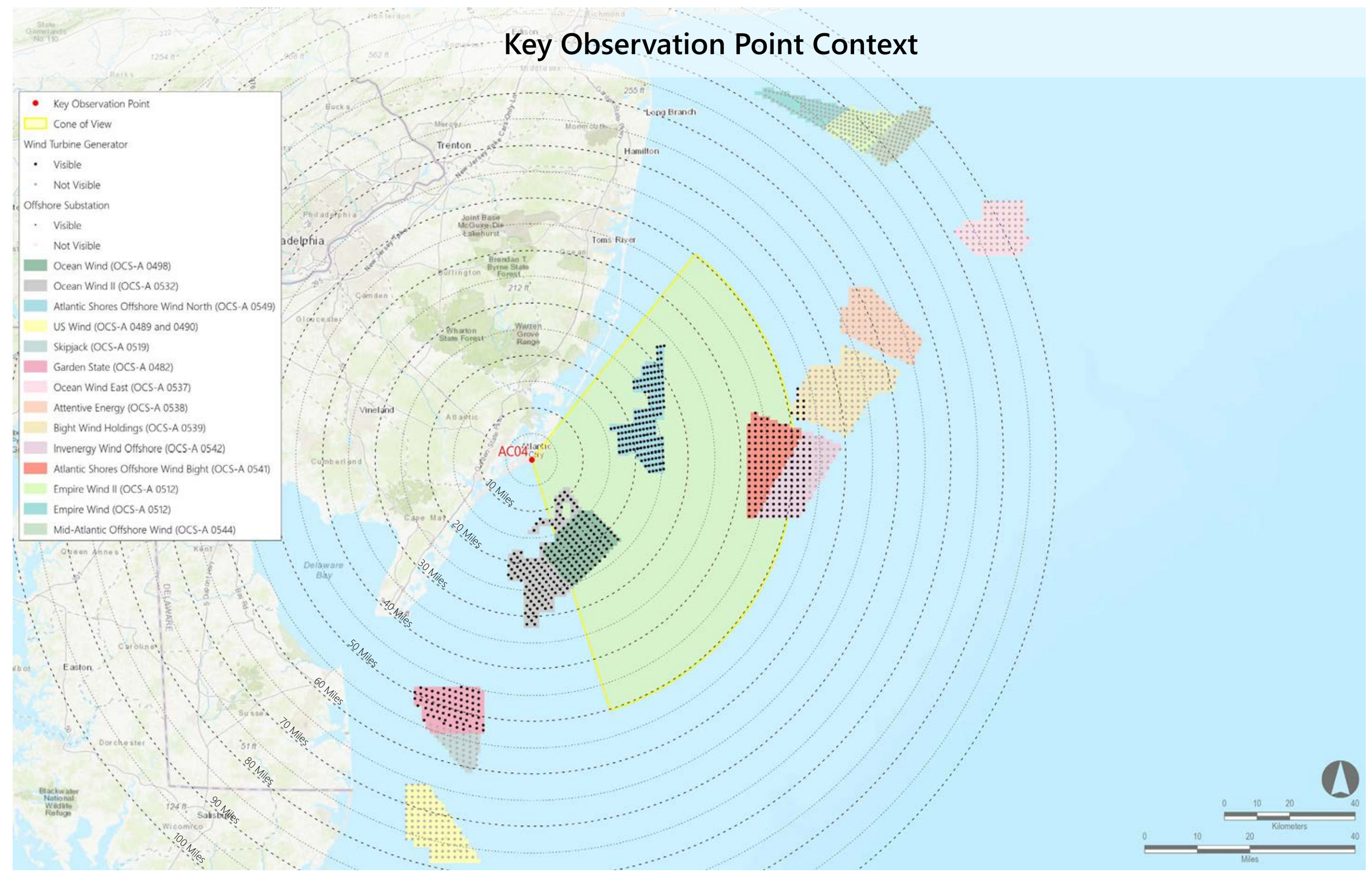
Photosimulation (Panorama 1): Scenario 4: Full buildout of all lease areas without Atlantic Shores South

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 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
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

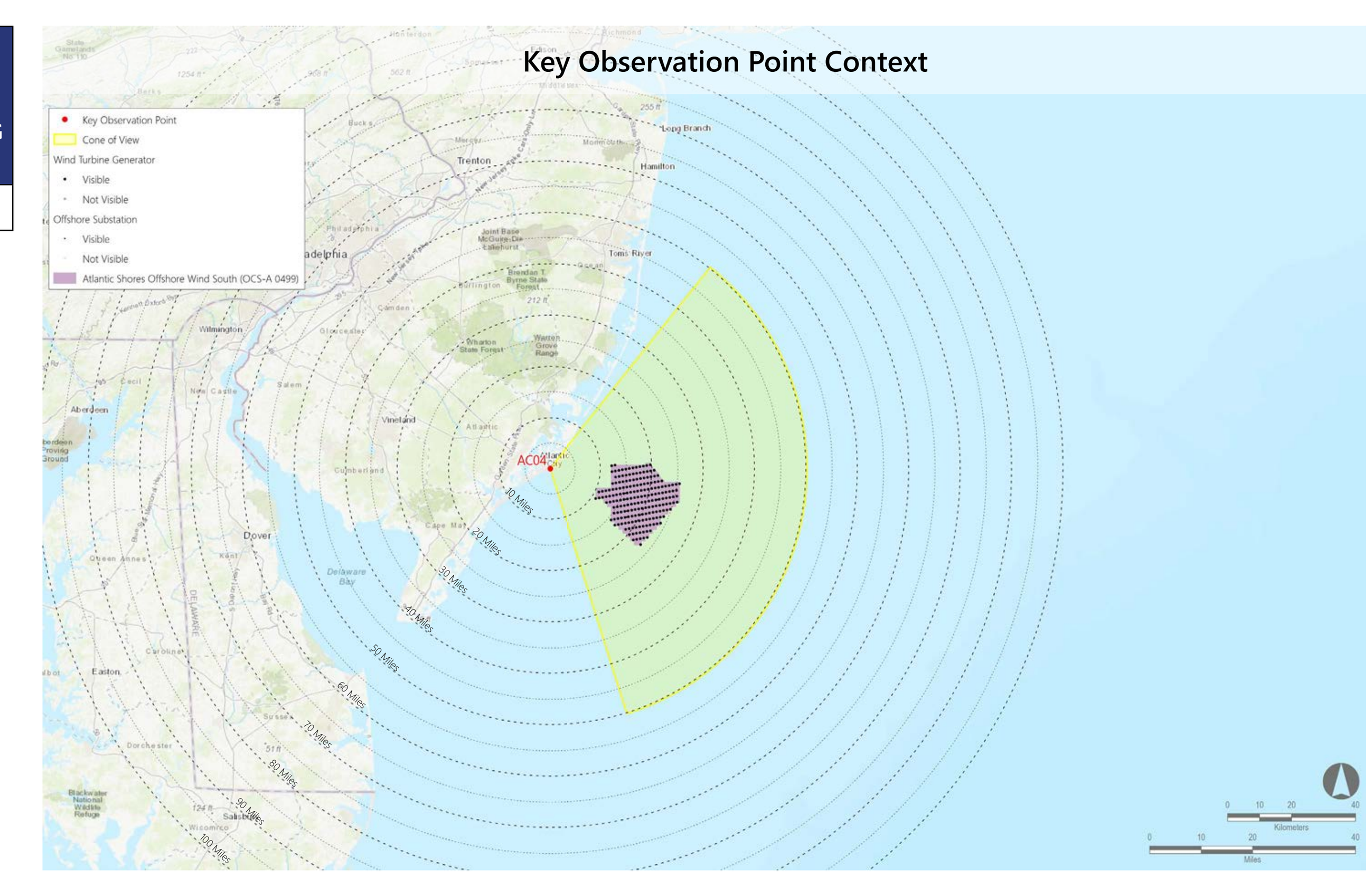
Simulation Size: 66" in width by 29.3" in height. Images should be viewed from a distance of 18 inches in order to obtain the proper perspective.

This box should 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



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

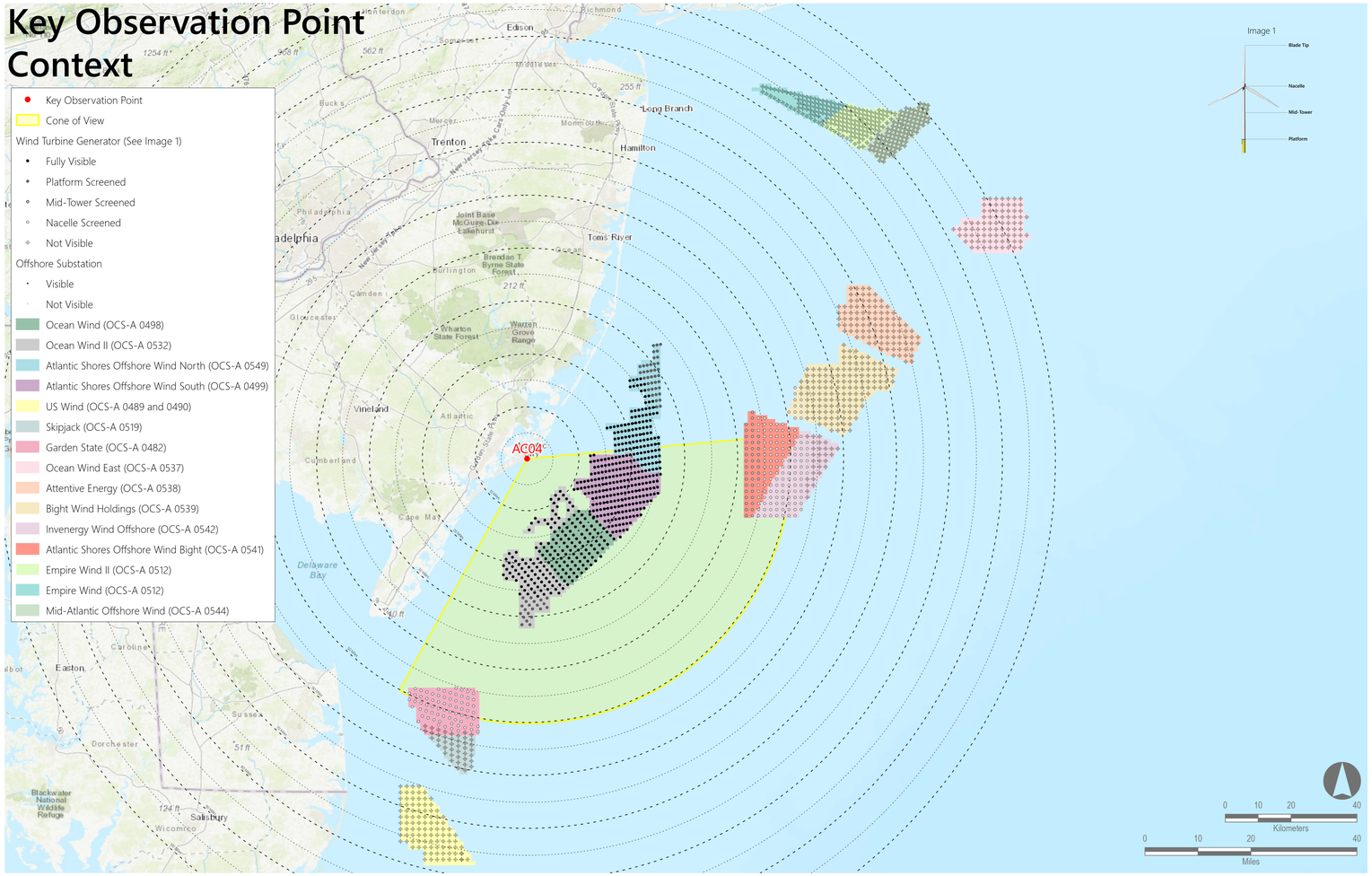
Camera Information
Camera: Canon EOS 5D Mark IV
Resolution: 30.4 Megapixels
Lens Focal Length: 50 mm
Camera Height: 117.26 feet AMSL

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



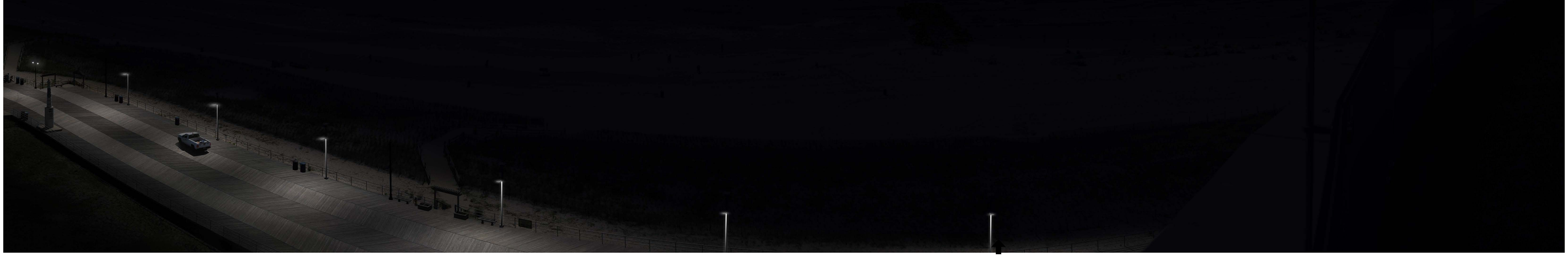
Reasonably Foreseeable Projects Represented in Photosimulation

		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)

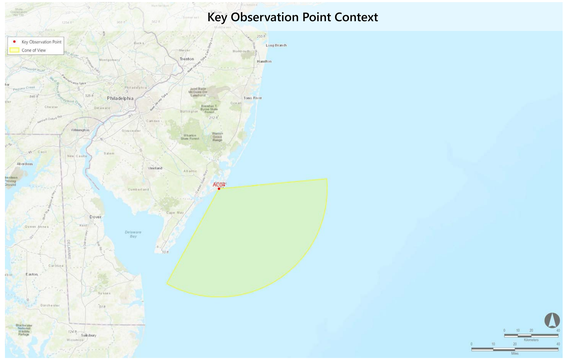
Notes:

- 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.

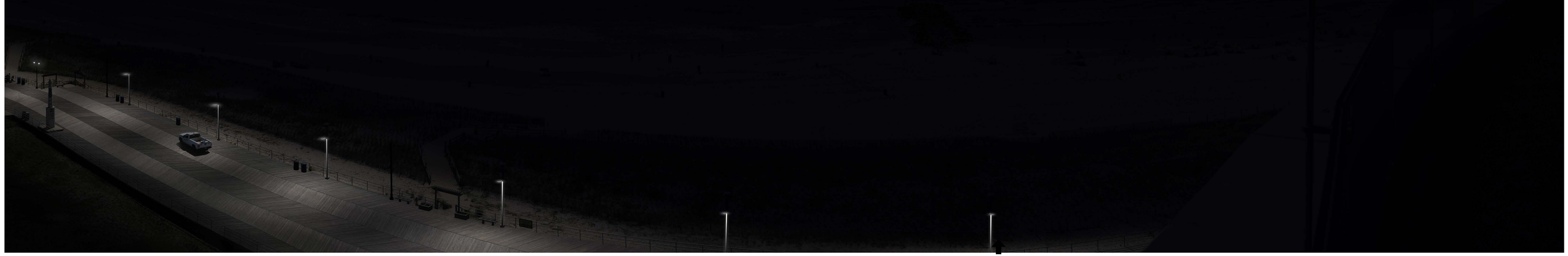
This box should be exactly 1" long on the printed panorama

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.

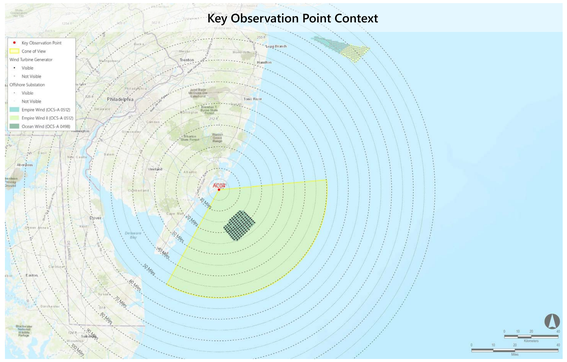
This box should be exactly 1" long on the printed panorama

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.

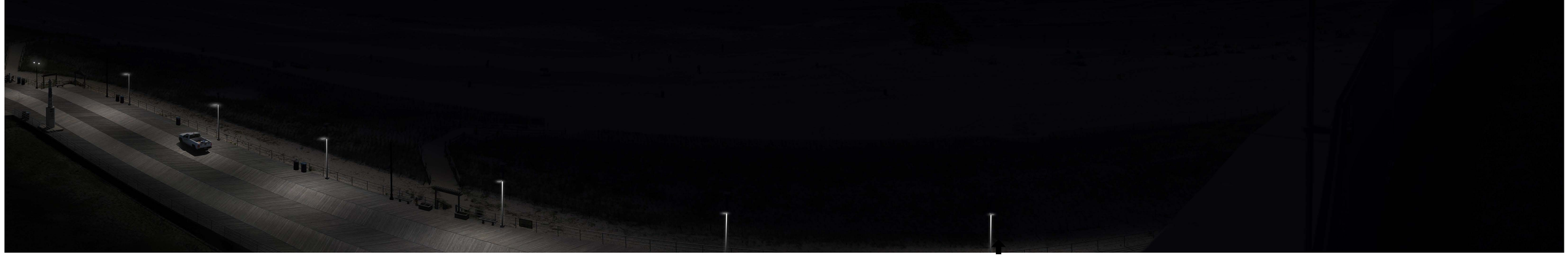
Project	Year of Development	Max Blade Tip Height (feet)	Potential Number of WTGs & OSSs Visible from KOP*	Total Number of WTGs & OSSs in Project	Theoretical Distance to Nearest Visible WTG (miles)	Theoretical Distance to Furthest Visible WTG (miles)
Ocean Wind (OCS-A 0498)	2024-2025	906	111	111	13.9	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.

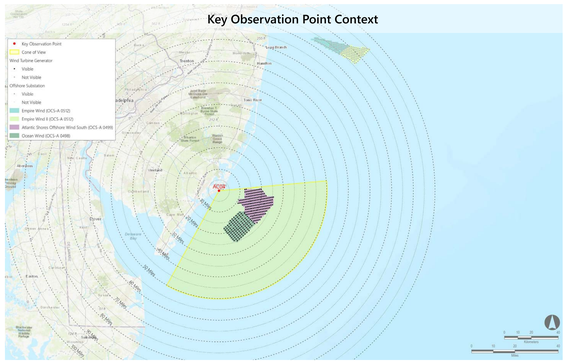
This box should be exactly 1" long on the printed panorama

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.

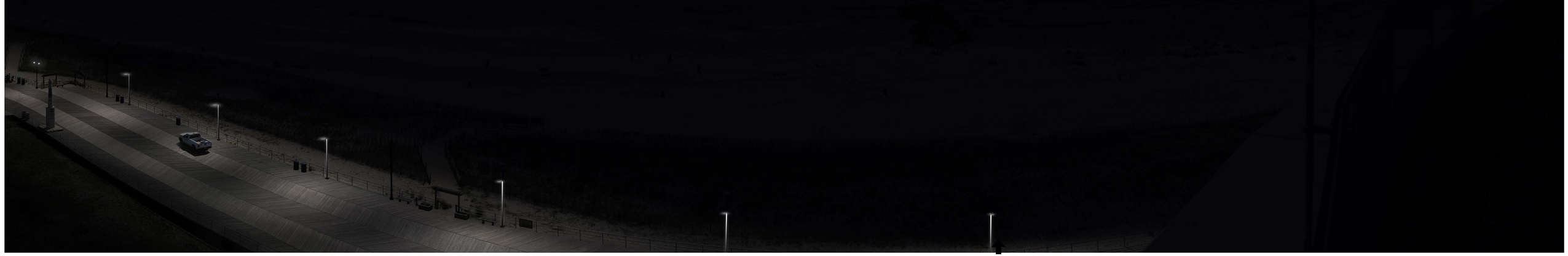
Project	Year of Development	Max Blade Tip Height (feet)	Potential Number of WTGs & OSSs Visible from KOP*	Total Number of WTGs & OSSs in Project	Theoretical Distance to Nearest Visible WTG (miles)	Theoretical Distance to Furthest Visible WTG (miles)
Atlantic Shores Offshore Wind South (OCS-A 0499)	2023-2025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

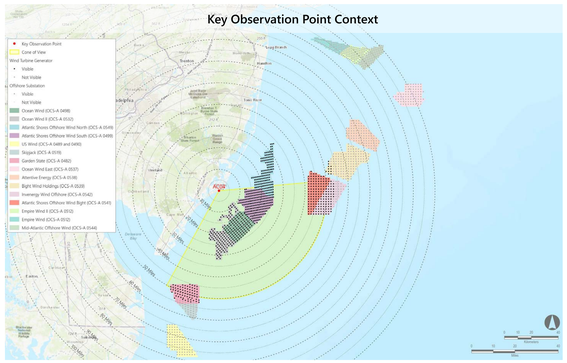
This box should be exactly 1" long on the printed panorama

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.

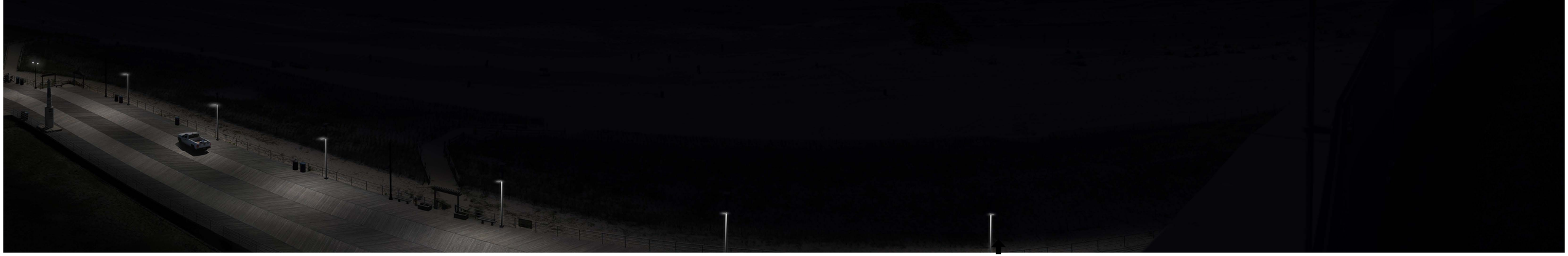
Project	Year of Development	Max Blade Tip Height (feet)	Potential Number of WTGs & OSSs Visible from KOP*	Total Number of WTGs & OSSs in Project	Theoretical Distance to Nearest Visible WTG (miles)	Theoretical Distance to Furthest Visible WTG (miles)
Atlantic Shores Offshore Wind South (OCS-A 0499)	2023-2025	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
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 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.
- 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)
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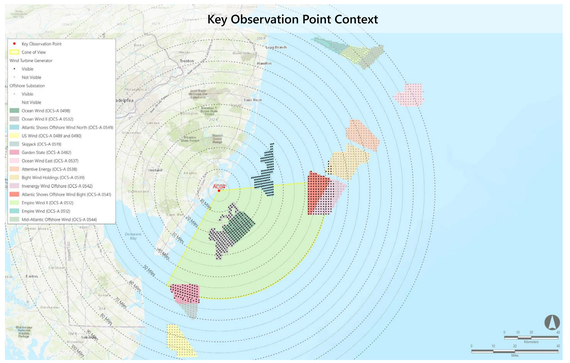
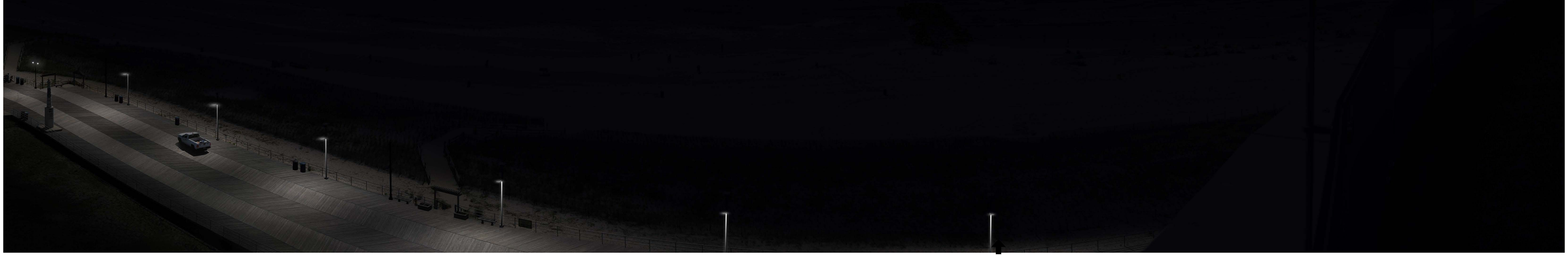
Empire Wind (OCS-A 0512)	2023-2027	951	0	72	Not Visible	Not Visible
Empire Wind II (OCS-A 0512)	2025-2027	951	0	104	Not Visible	Not Visible
Skipjack (OCS-A 0519)	2024-2030	853	0	33	Not Visible	Not Visible
Garden State (OCS-A 0482)	2023-2030	853	0	80	Not Visible	Not Visible
US Wind (OCS-A 0489 and 0490)	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 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.

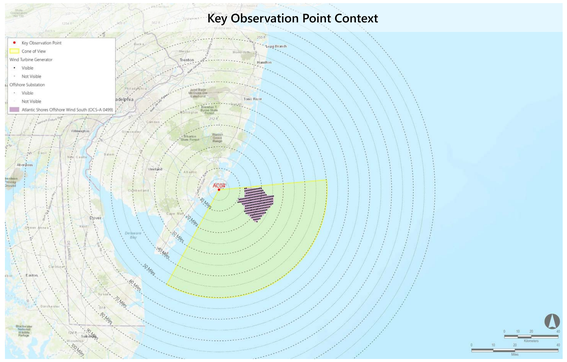
This box should be exactly 1" long on the printed panorama

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.
- 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

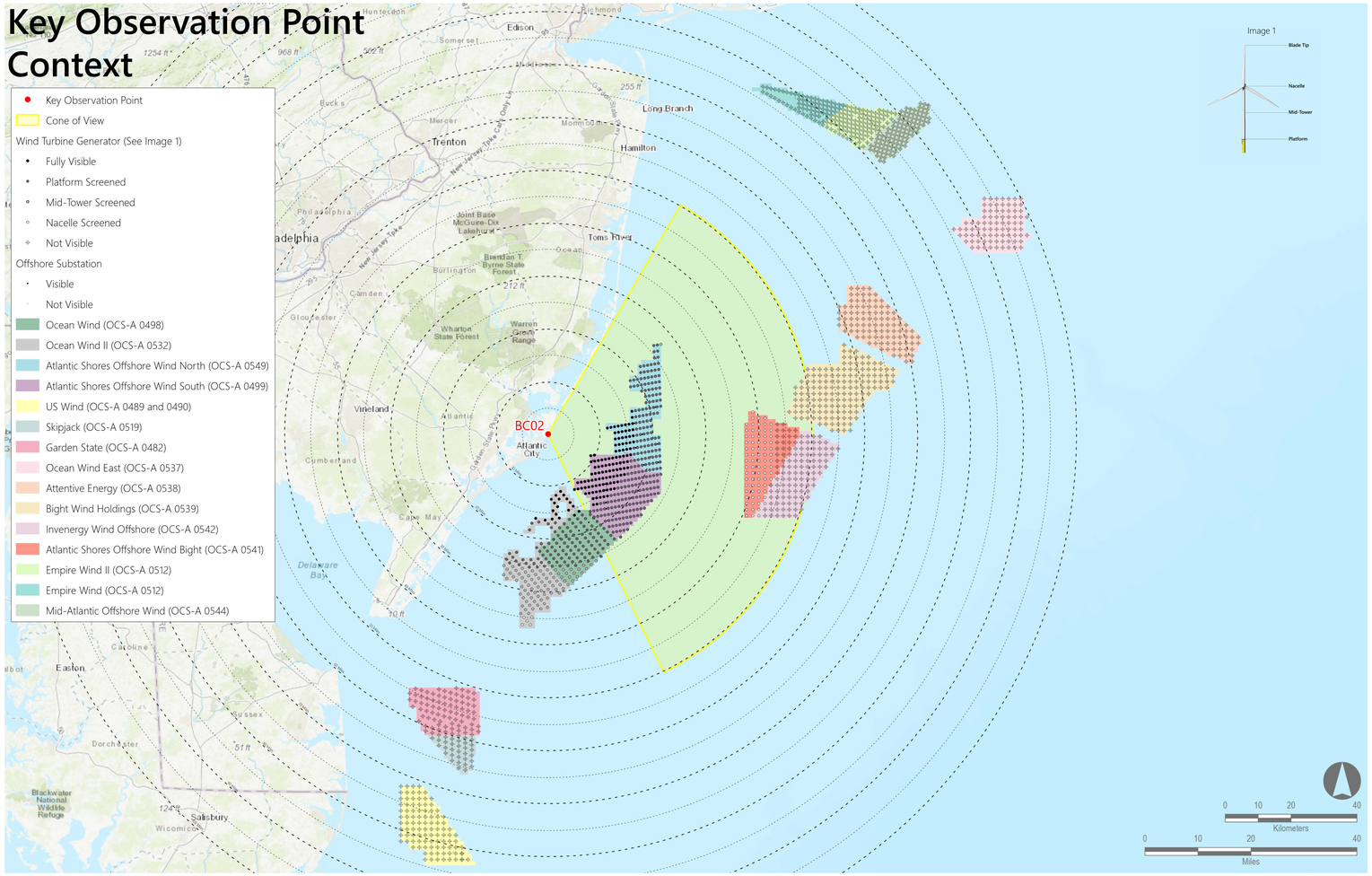
Camera Information
Camera: Canon EOS 5D Mark IV
Resolution: 30.4 Megapixels
Lens Focal Length: 50 mm
Camera Height: 11.06 feet AMSL

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

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

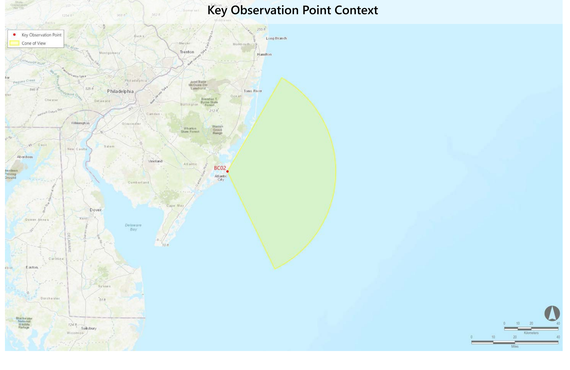
BC02: North Brigantine Natural Area, Brigantine City, Atlantic County, New Jersey

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

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)

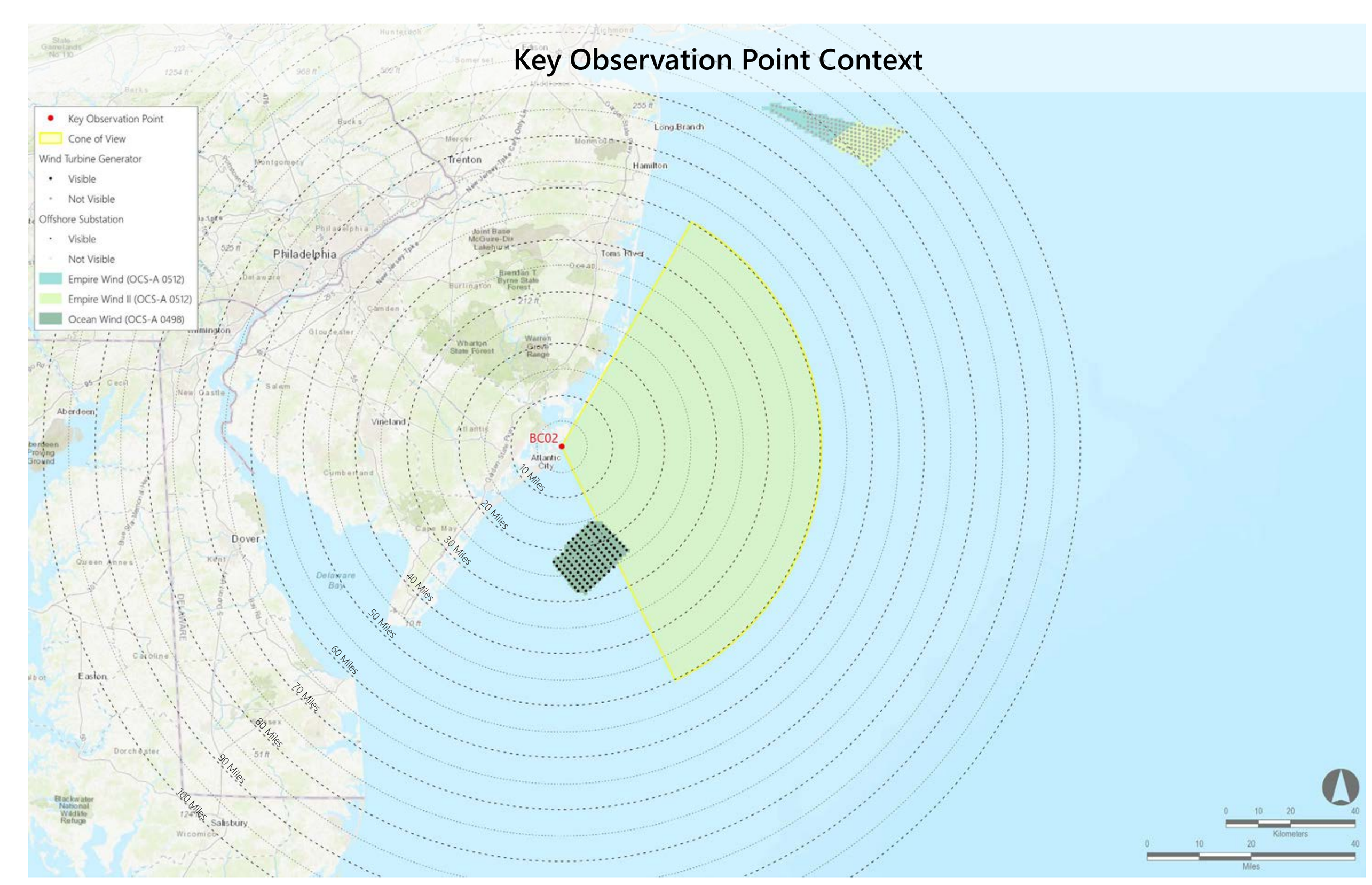
Simulation Size: 66" in width by 29.3" in height. Images should be viewed from a distance of 18 inches in order to obtain the proper perspective.

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



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 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.

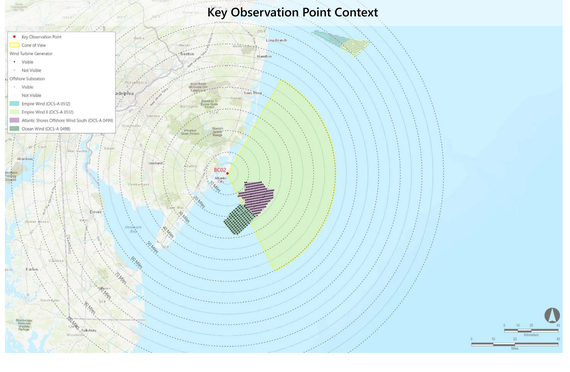
This box should be exactly 1" long on the printed panorama

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

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)

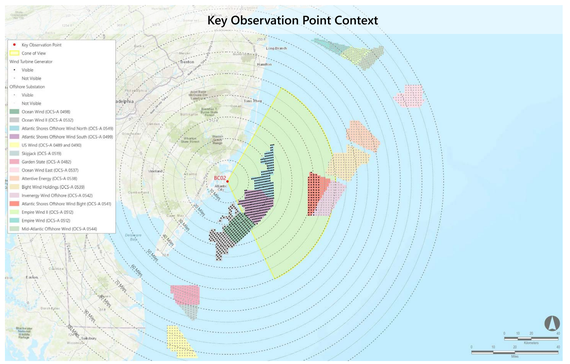
Simulation Size: 66" in width by 29.3" in height. Images should be viewed from a distance of 18 inches in order to obtain the proper perspective.

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

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.

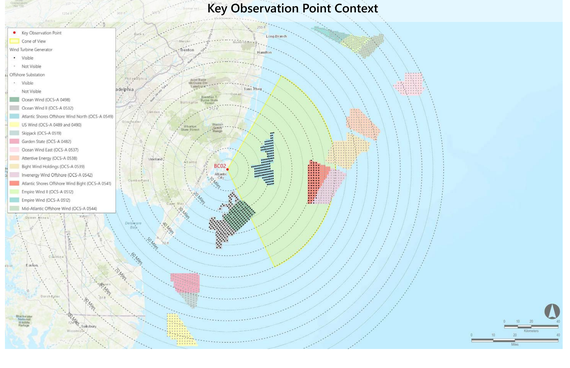
This box should be exactly 1" long on the printed panorama

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

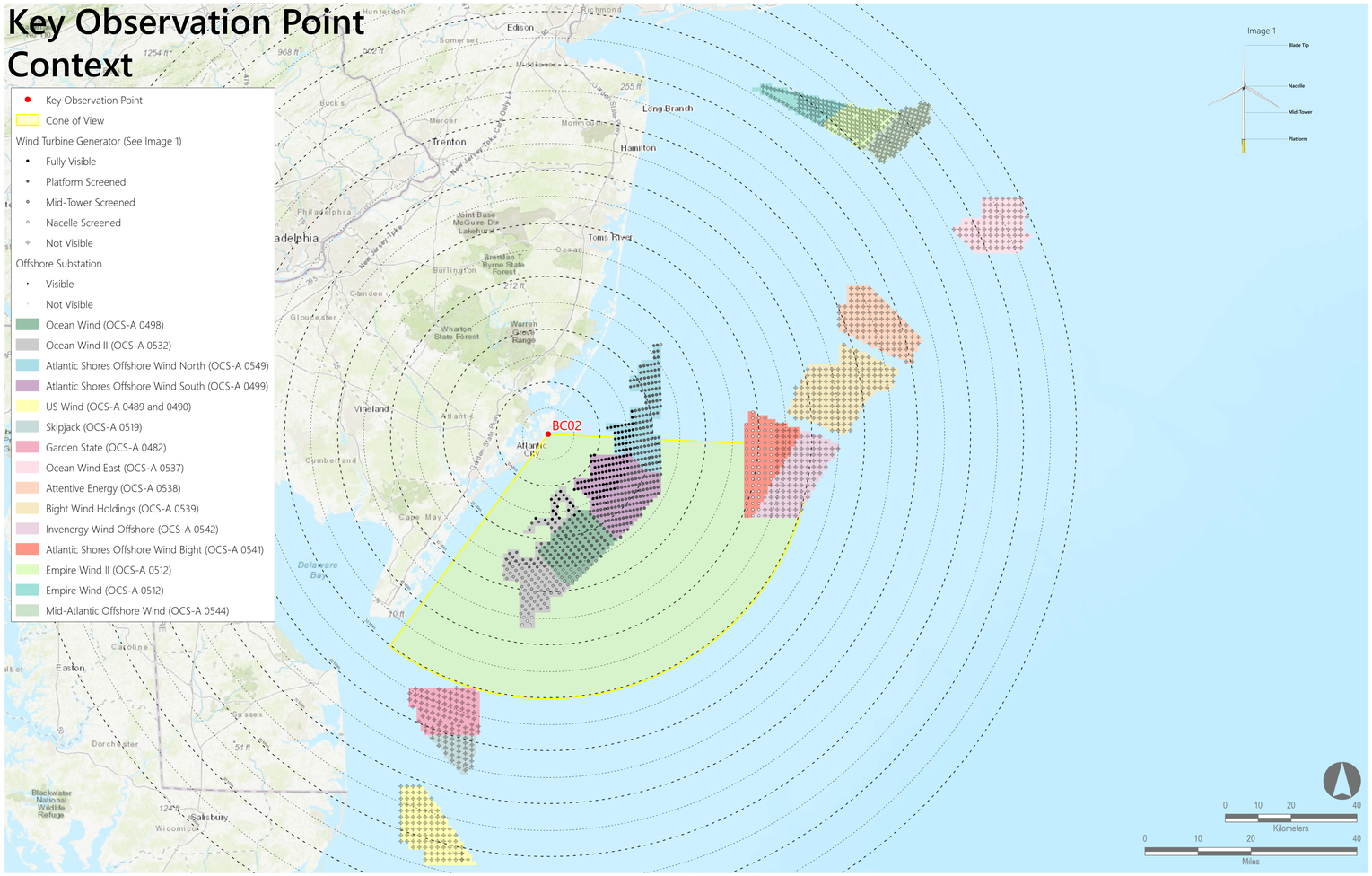
Camera Information
Camera: Canon EOS 5D Mark IV
Resolution: 30.4 Megapixels
Lens Focal Length: 50 mm
Camera Height: 11.06 feet AMSL

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)

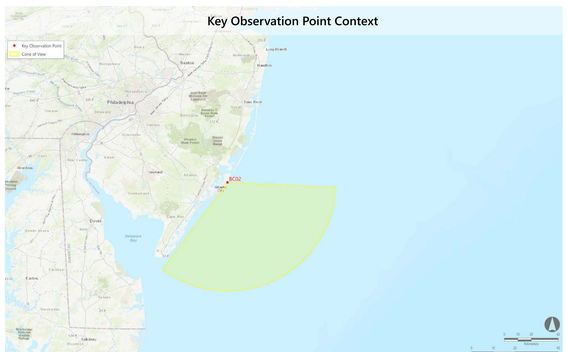
Notes:

- 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 #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 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.

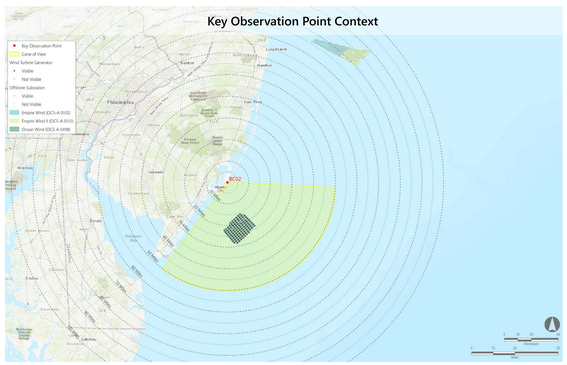
This box should be exactly 1" long on the printed panorama

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

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.

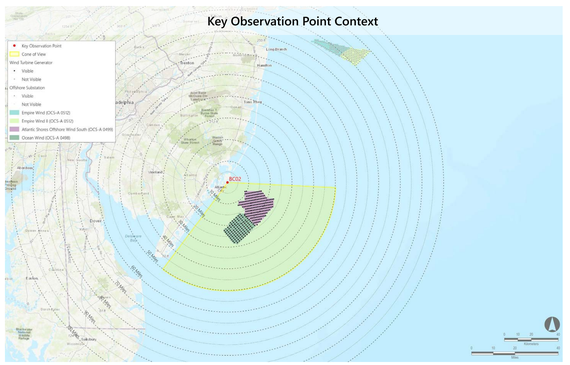
This box should be exactly 1" long on the printed panorama

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 #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 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.

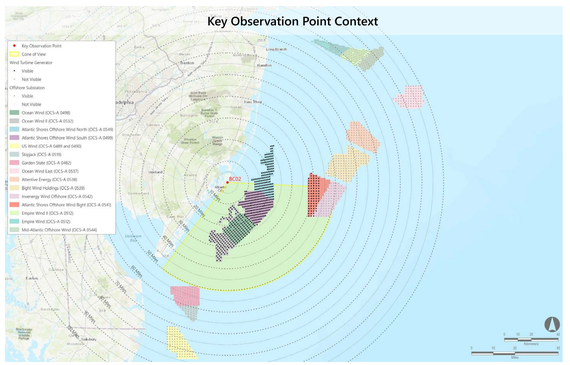
This box should be exactly 1" long on the printed panorama

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.

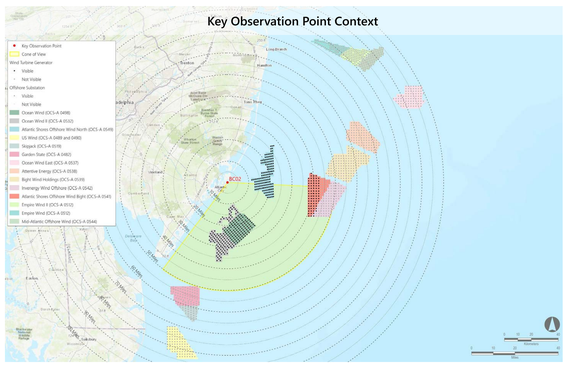
This box should be exactly 1" long on the printed panorama

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

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 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.

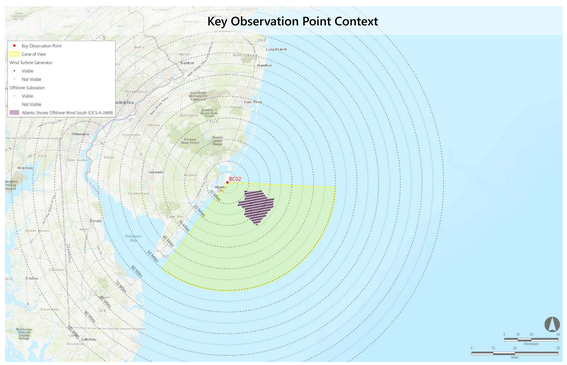
This box should be exactly 1" long on the printed panorama

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

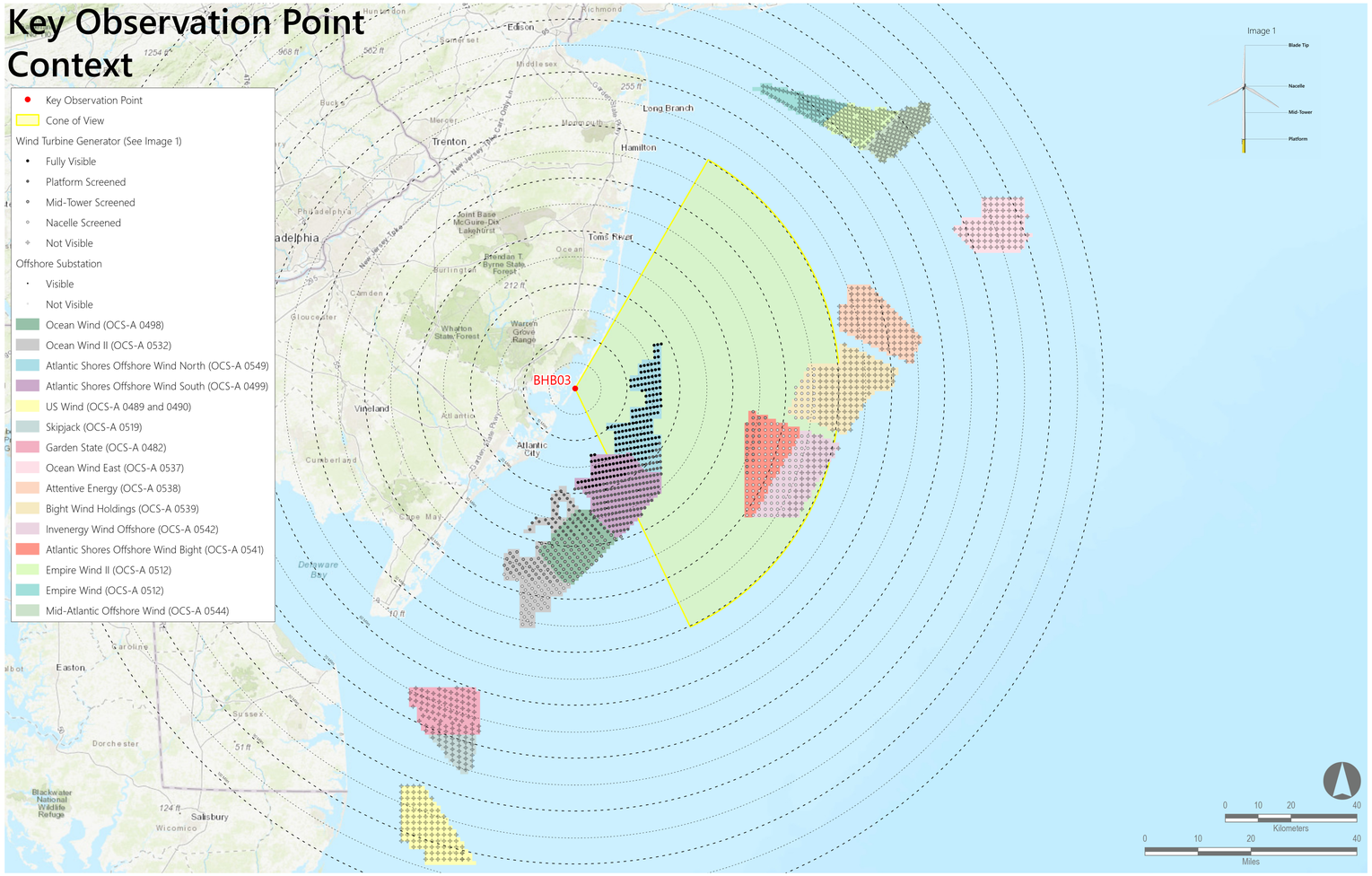
Camera Information
Camera: Canon EOS 5D Mark IV
Resolution: 30.4 Megapixels
Lens Focal Length: 50 mm
Camera Height: 26.85 feet AMSL

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

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

Existing Conditions (Panorama 1)

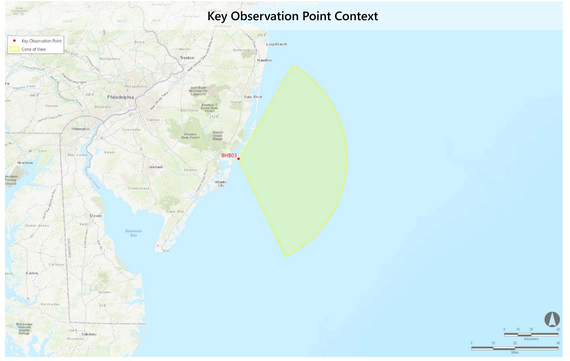
Notes:

- 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 measure 1" long on the printed panorama

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)

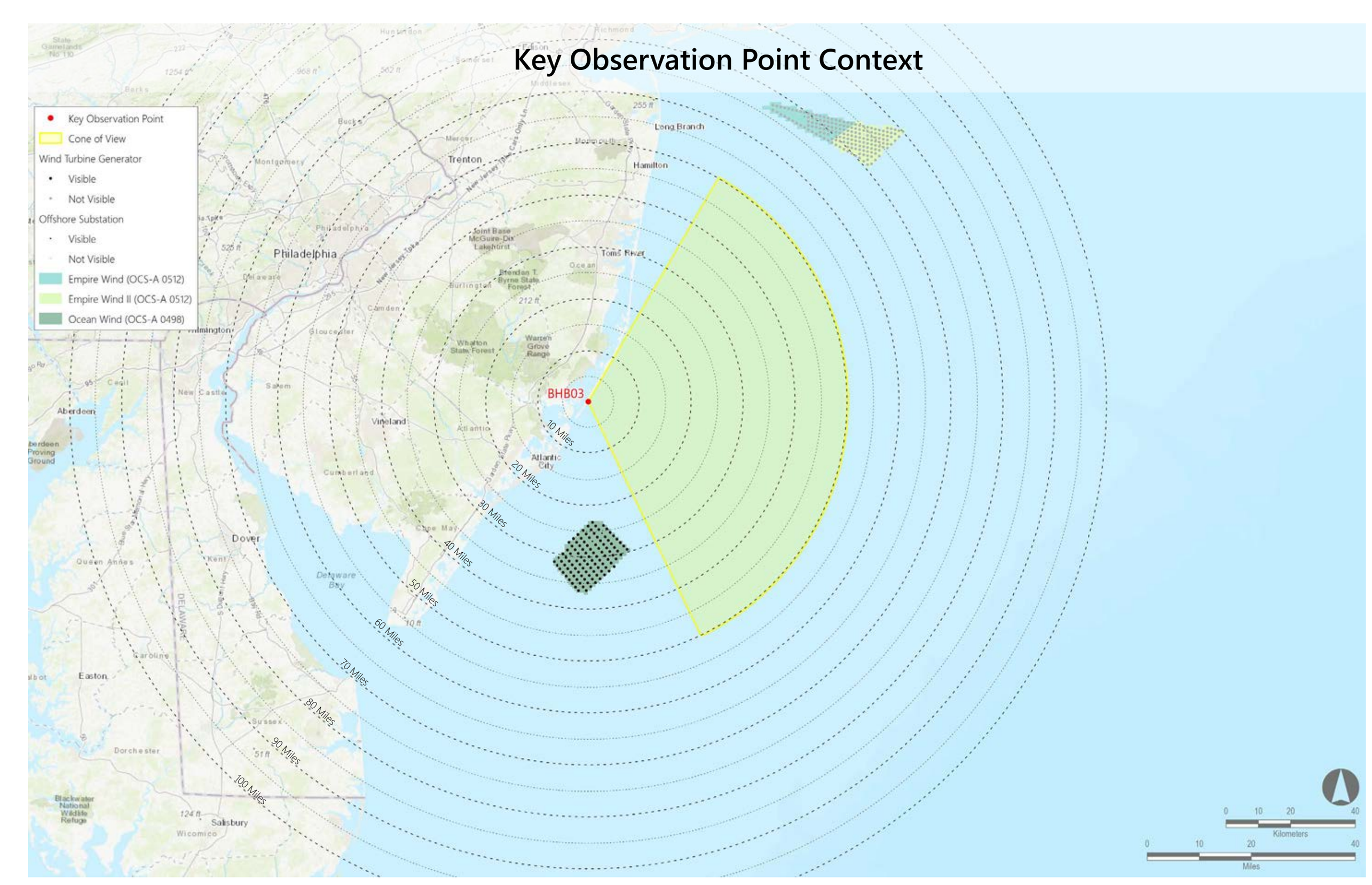
Simulation Size: 66" in width by 29.3" in height. Images should be viewed from a distance of 18 inches in order to obtain the proper perspective.

This box should 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



MATCH LINE BHB03 PANO #2

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.

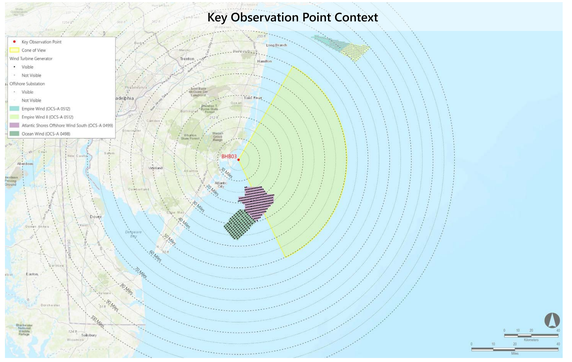
This box should measure 1" long on the printed panorama

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

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)

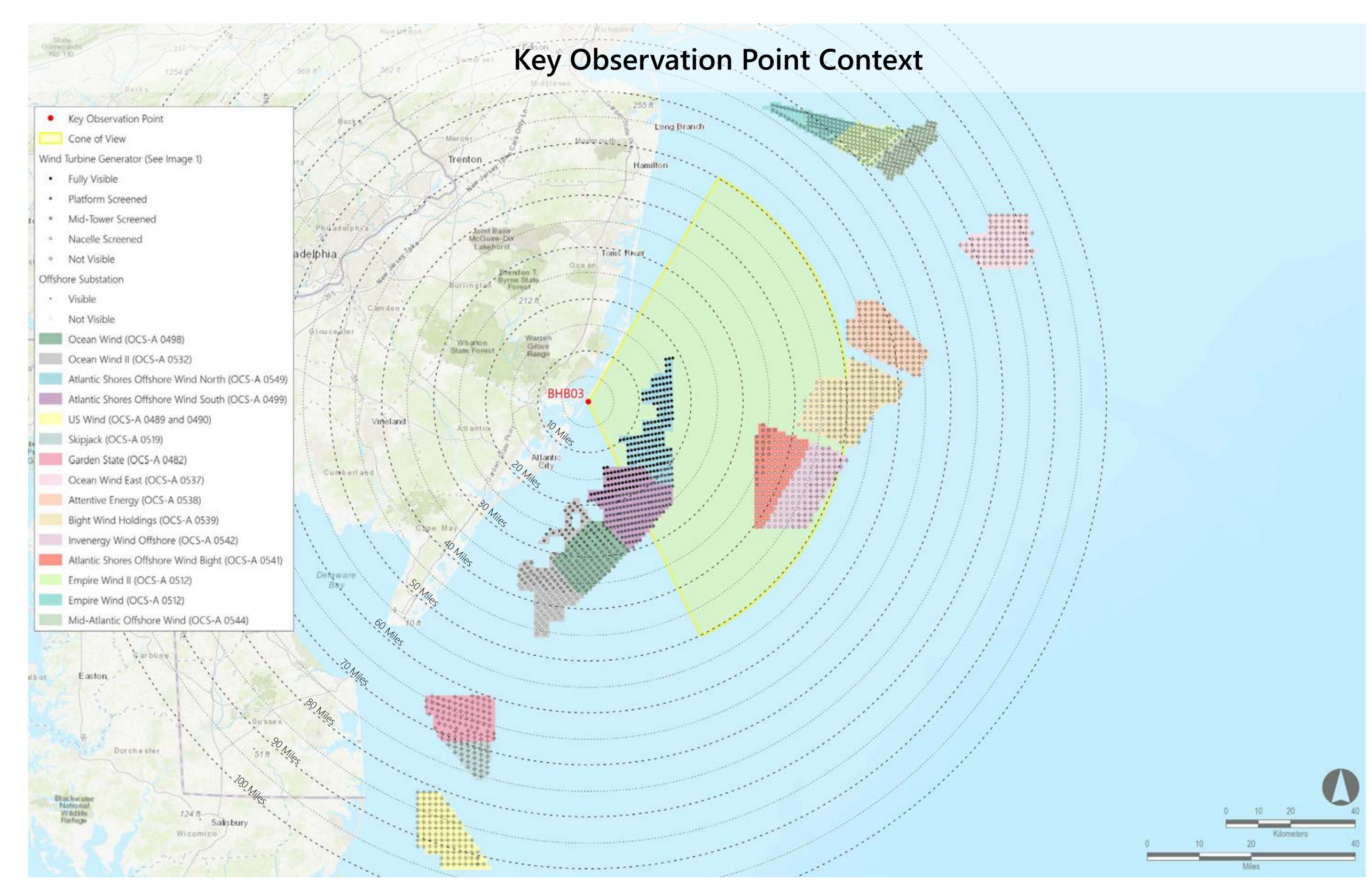
Simulation Size: 66" in width by 29.3" in height. Images should be viewed from a distance of 18 inches in order to obtain the proper perspective.

This box should 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



MATCH LINE BHB03 PANO #2

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.

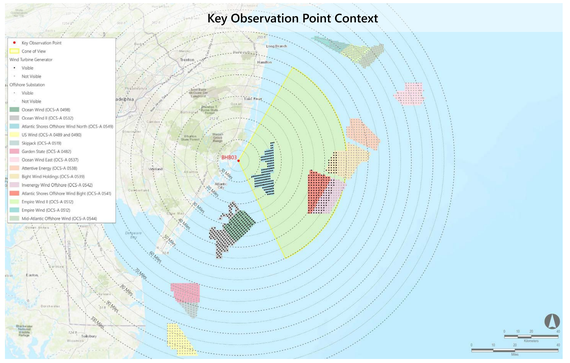
This box should measure 1" long on the printed panorama

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

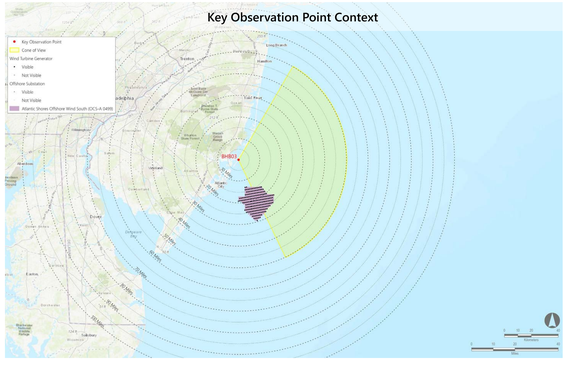
Simulation Size: 66" in width by 29.3" in height. Images should be viewed from a distance of 18 inches in order to obtain the proper perspective.

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



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

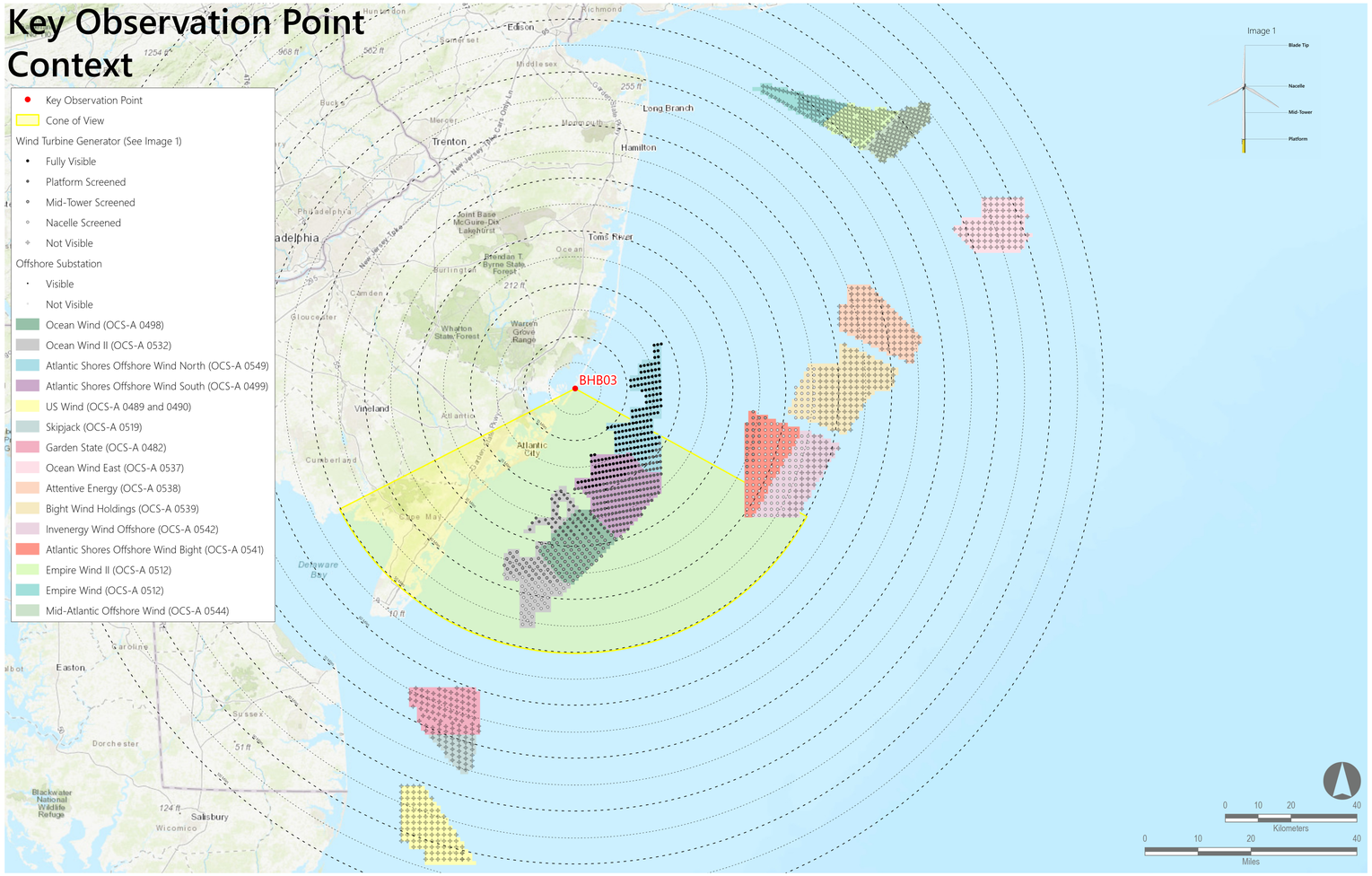
Camera Information
Camera: Canon EOS 5D Mark IV
Resolution: 30.4 Megapixels
Lens Focal Length: 50 mm
Camera Height: 26.85 feet AMSL

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

Appendix A: Atlantic Shores Offshore Wind Cumulative Photosimulations

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:

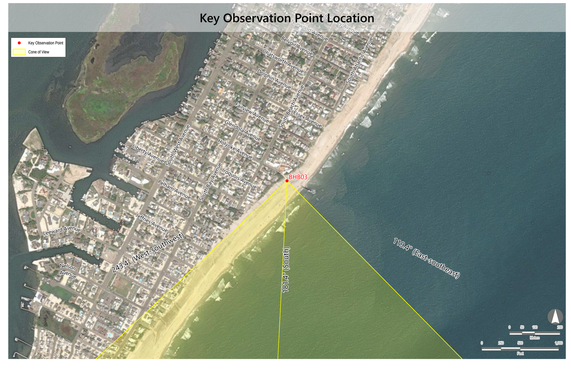
- Photosimulation Size: 66" in width by 29.3" in height. Images should be viewed from 18 inches in order to obtain the proper perspective. For on-screen viewing, user should zoom in until the 1-inch scale equals exactly one inch when measured on the screen.

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

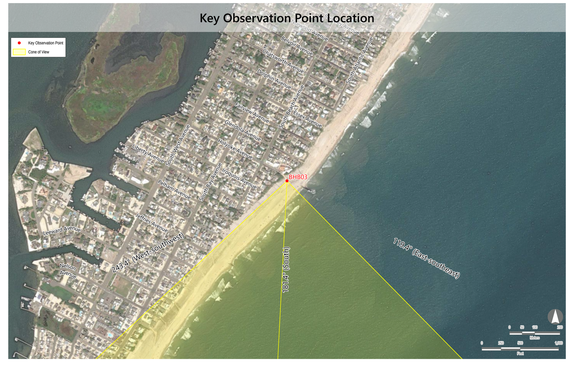
Notes:

- 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.

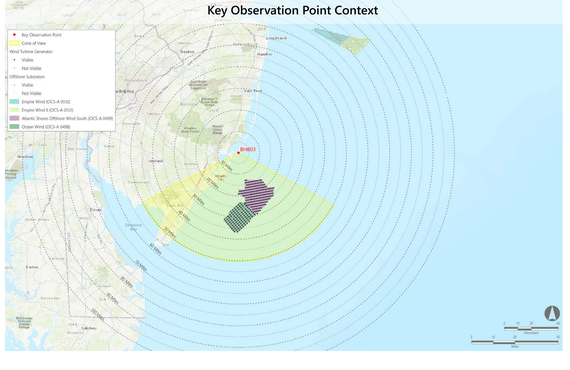
This box should be exactly 1" long on the printed panorama

Notes:

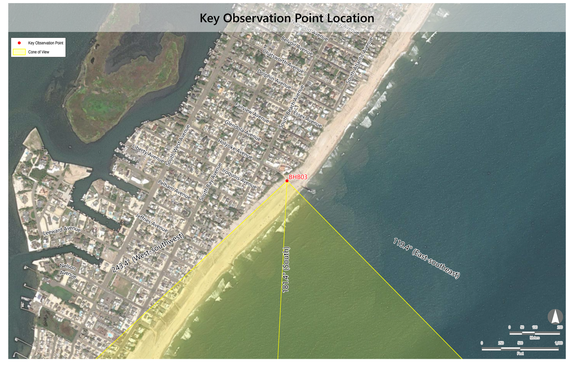
- Photosimulation Size: 66" in width by 29.3" in height. Images should be viewed from 18 inches in order to obtain the proper perspective. For on-screen viewing, user should zoom in until the 1-inch scale equals exactly one inch when measured on the screen.
- Offshore Substation location and dimensions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

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 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.

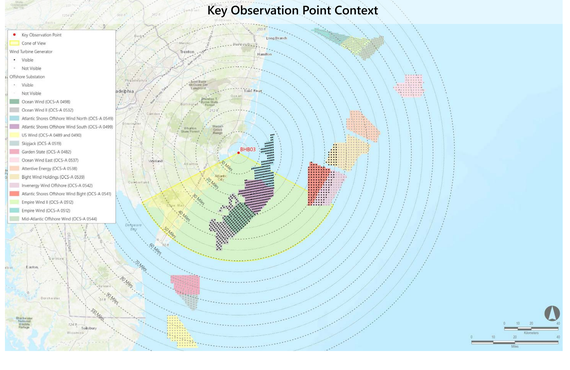
This box should be exactly 1" long on the printed panorama

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.

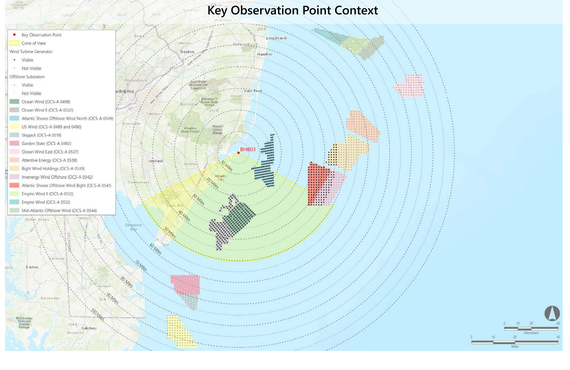
This box should be exactly 1" long on the printed panorama

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 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 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

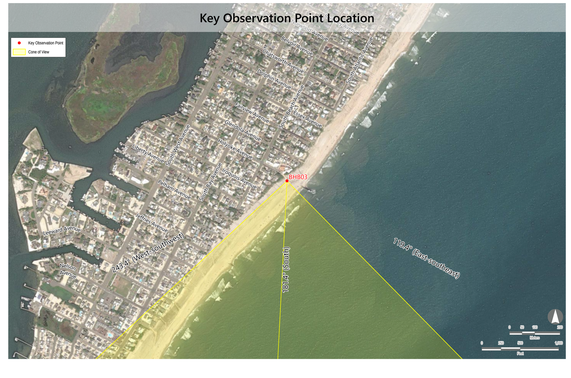
Notes:

- 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

Key Observation Point Context

Key Observation Point Location



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

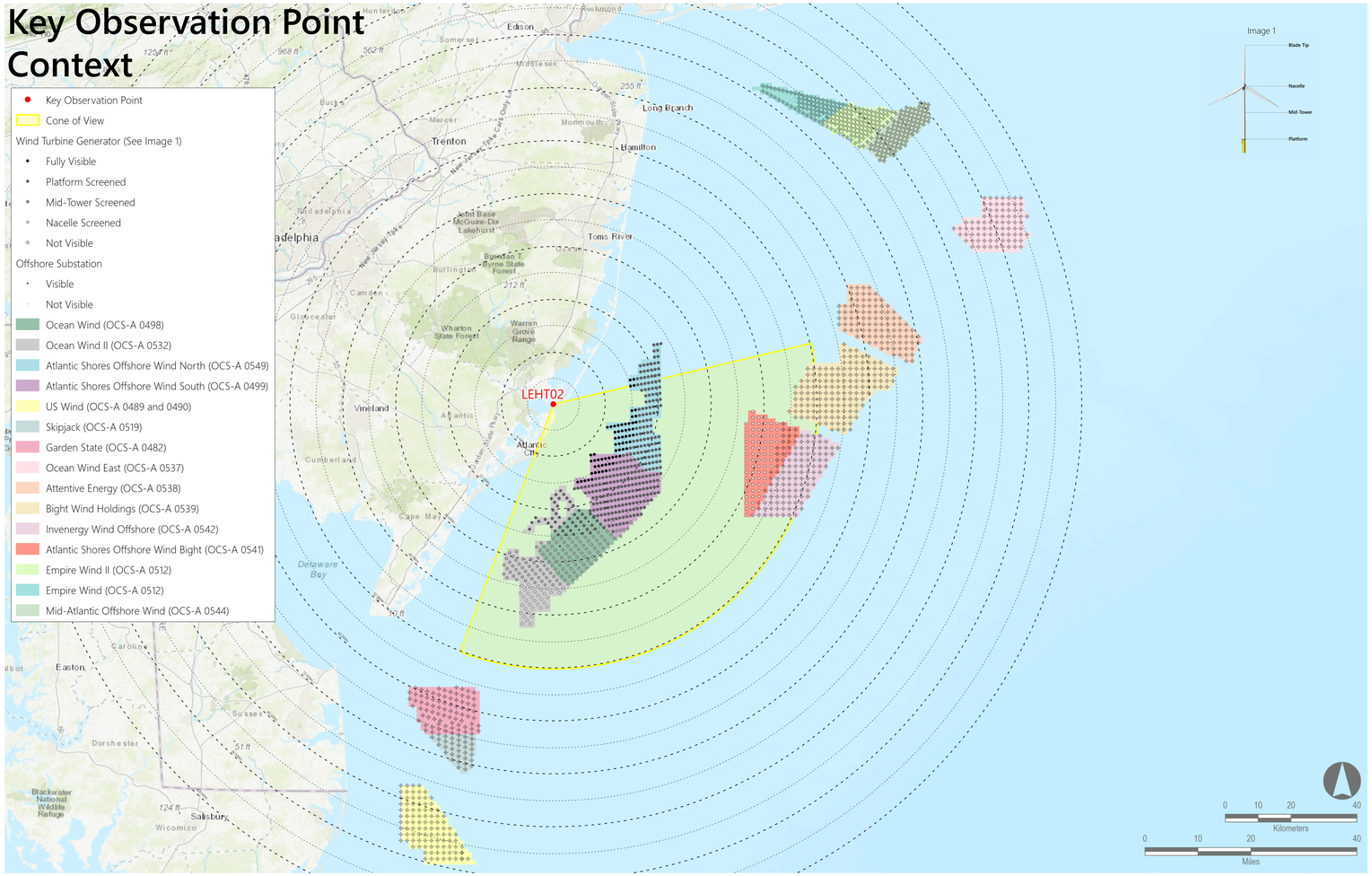
Camera Information
Camera: Canon EOS 5D Mark IV
Resolution: 30.4 Megapixels
Lens Focal Length: 50 mm
Camera Height: 10.00 feet AMSL

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)

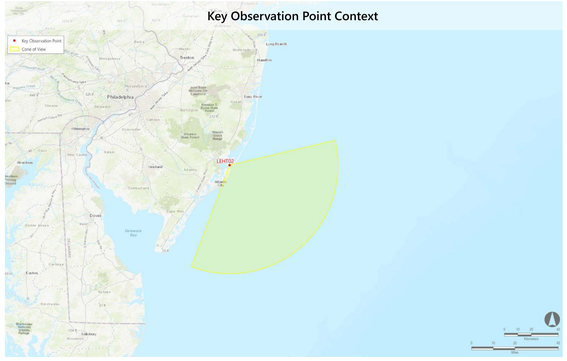
Simulation Size: 66" in width by 29.3" in height. Images should be viewed from a distance of 18 inches in order to obtain the proper perspective.

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

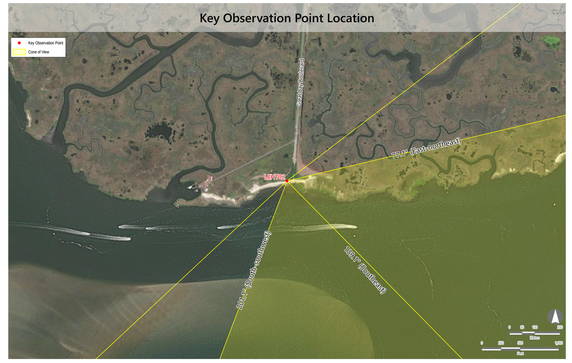
Notes:

- 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.

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)

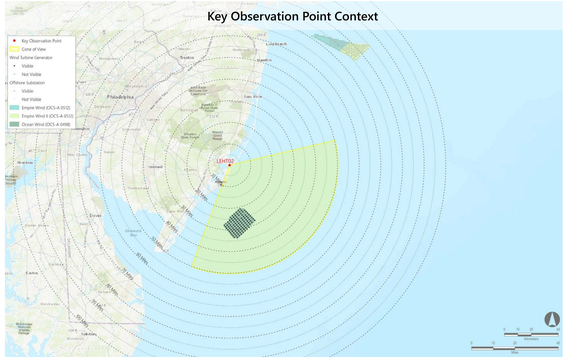
Simulation Size: 66" in width by 29.3" in height. Images should be viewed from a distance of 18 inches in order to obtain the proper perspective.

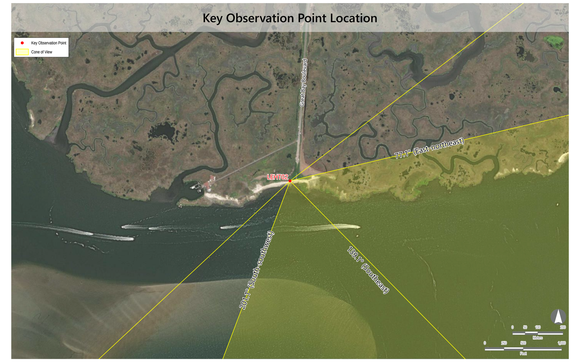
This box should be exactly 1" long on the printed panorama

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	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 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.

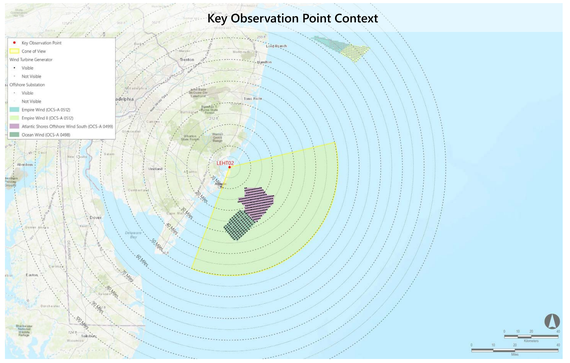
This box should be exactly 7" long on the printed panorama

Notes:

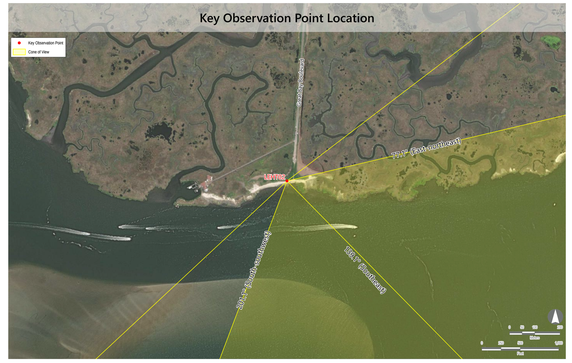
- Photosimulation Size: 66" in width by 29.3" in height. Images should be viewed from 18 inches in order to obtain the proper perspective. For on-screen viewing, user should zoom in until the 1-inch scale equals exactly one inch when measured on the screen.
- Offshore Substation location and dimensions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

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

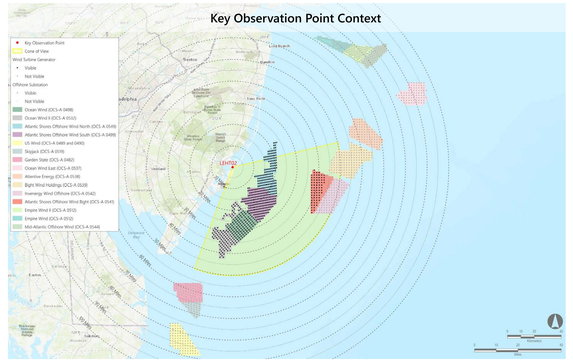
Simulation Size: 66" in width by 29.3" in height. Images should be viewed from a distance of 18 inches in order to obtain the proper perspective.

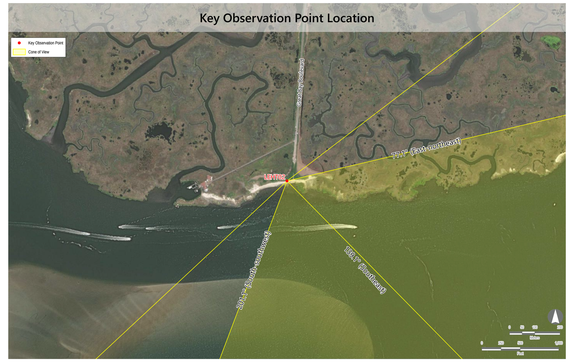
This line should be exactly 1" long on the printed panorama

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	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

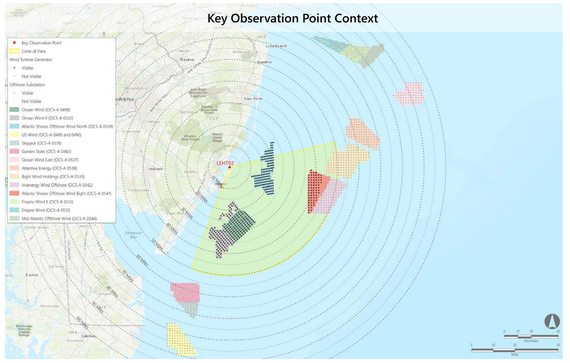
Simulation Size: 66" in width by 29.3" in height. Images should be viewed from a distance of 18 inches in order to obtain the proper perspective.

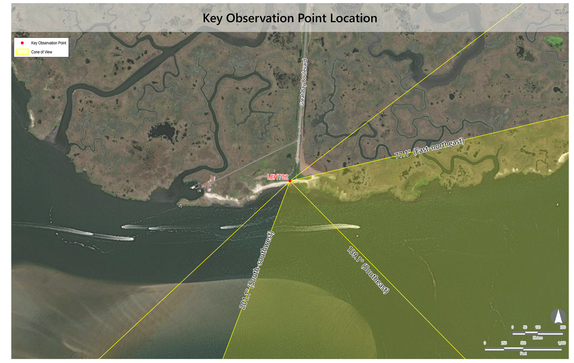
This box should be exactly 7" long on the printed panorama

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.

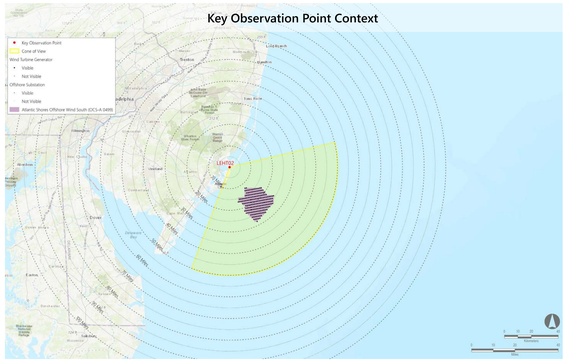
This box should be exactly 7" long on the printed panorama

Notes:

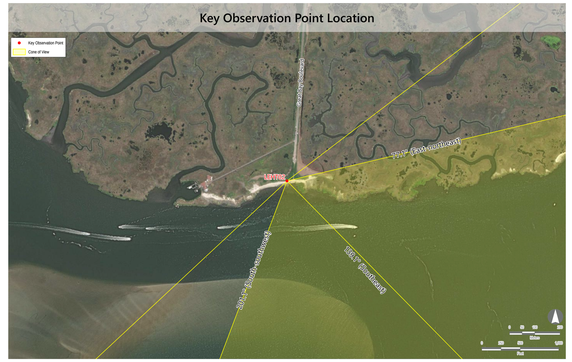
- Photosimulation Size: 66" in width by 29.3" in height. Images should be viewed from 18 inches in order to obtain the proper perspective. For on-screen viewing, user should zoom in until the 1-inch scale equals exactly one inch when measured on the screen.
- Offshore Substation location and dimensions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

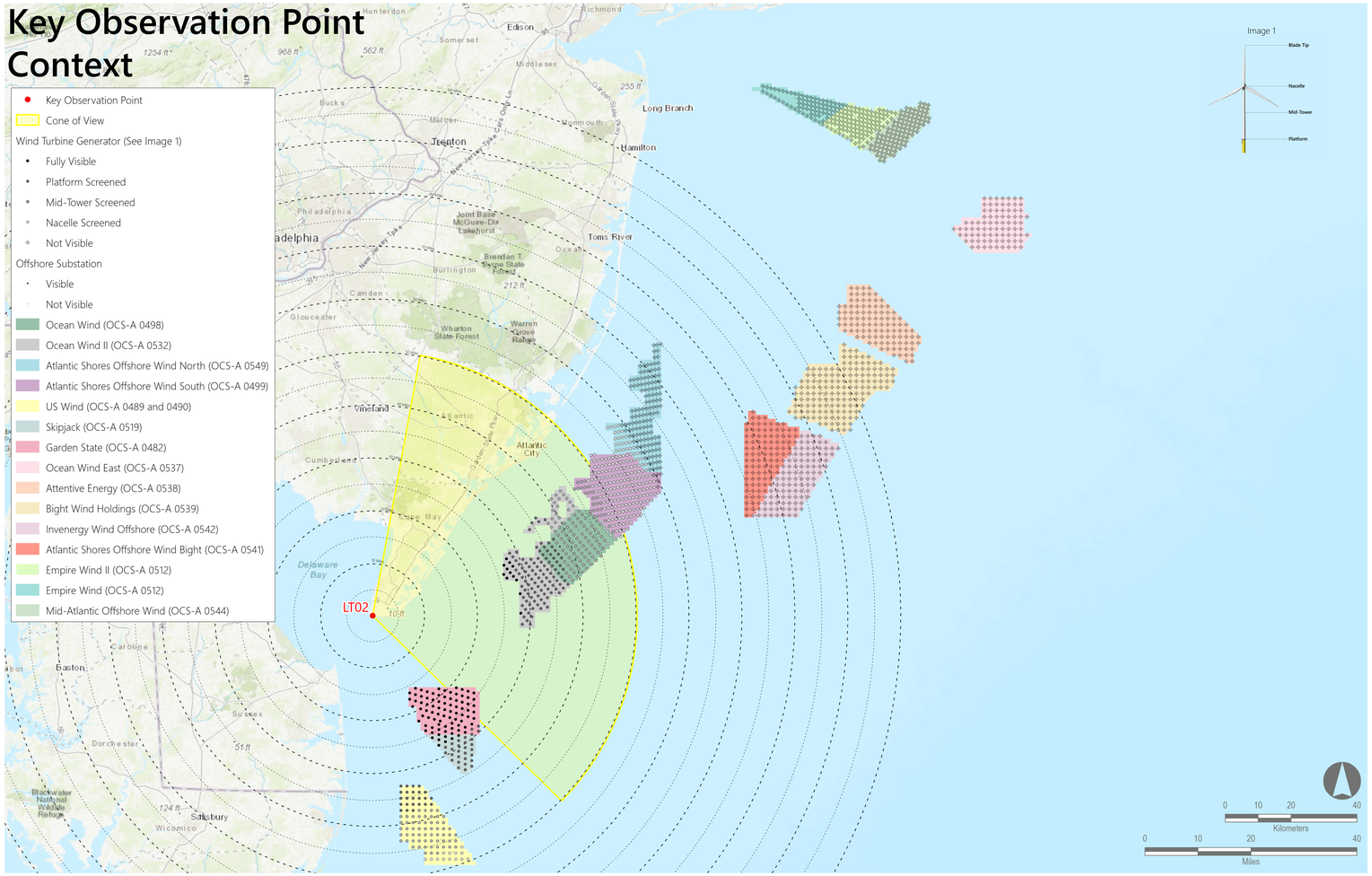
Camera Information
Camera: Canon EOS 5D Mark IV
Resolution: 30.4 Megapixels
Lens Focal Length: 50 mm
Camera Height: 150.10 feet AMSL

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 #3

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)

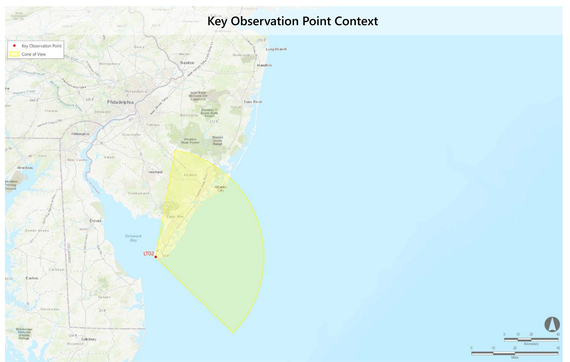
Notes:

- 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.

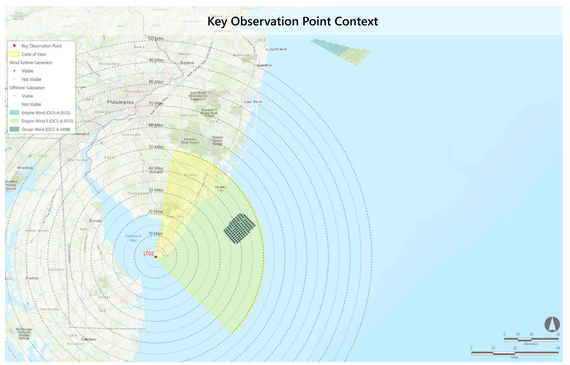
This box should be exactly 1" long on the printed panorama

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

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.

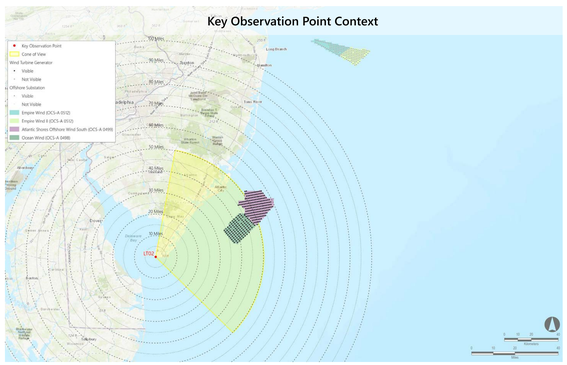
This box should be exactly 1" long on the printed panorama

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

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 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.

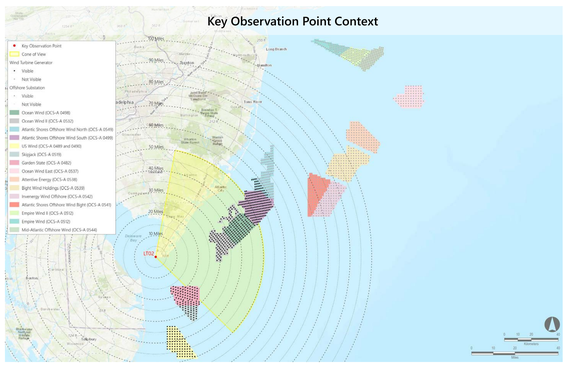
This box should be exactly 1" long on the printed panorama

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.

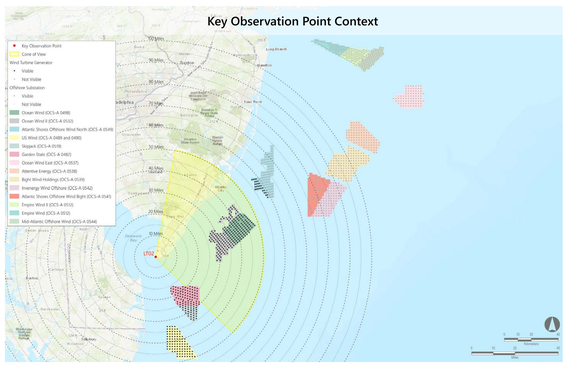
This box should be exactly 1" long on the printed panorama

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.

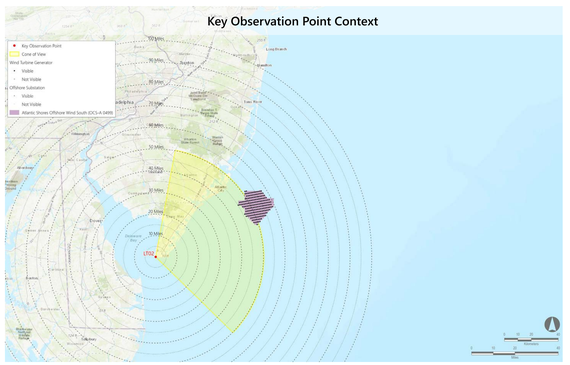
This box should be exactly 1" long on the printed panorama

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

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

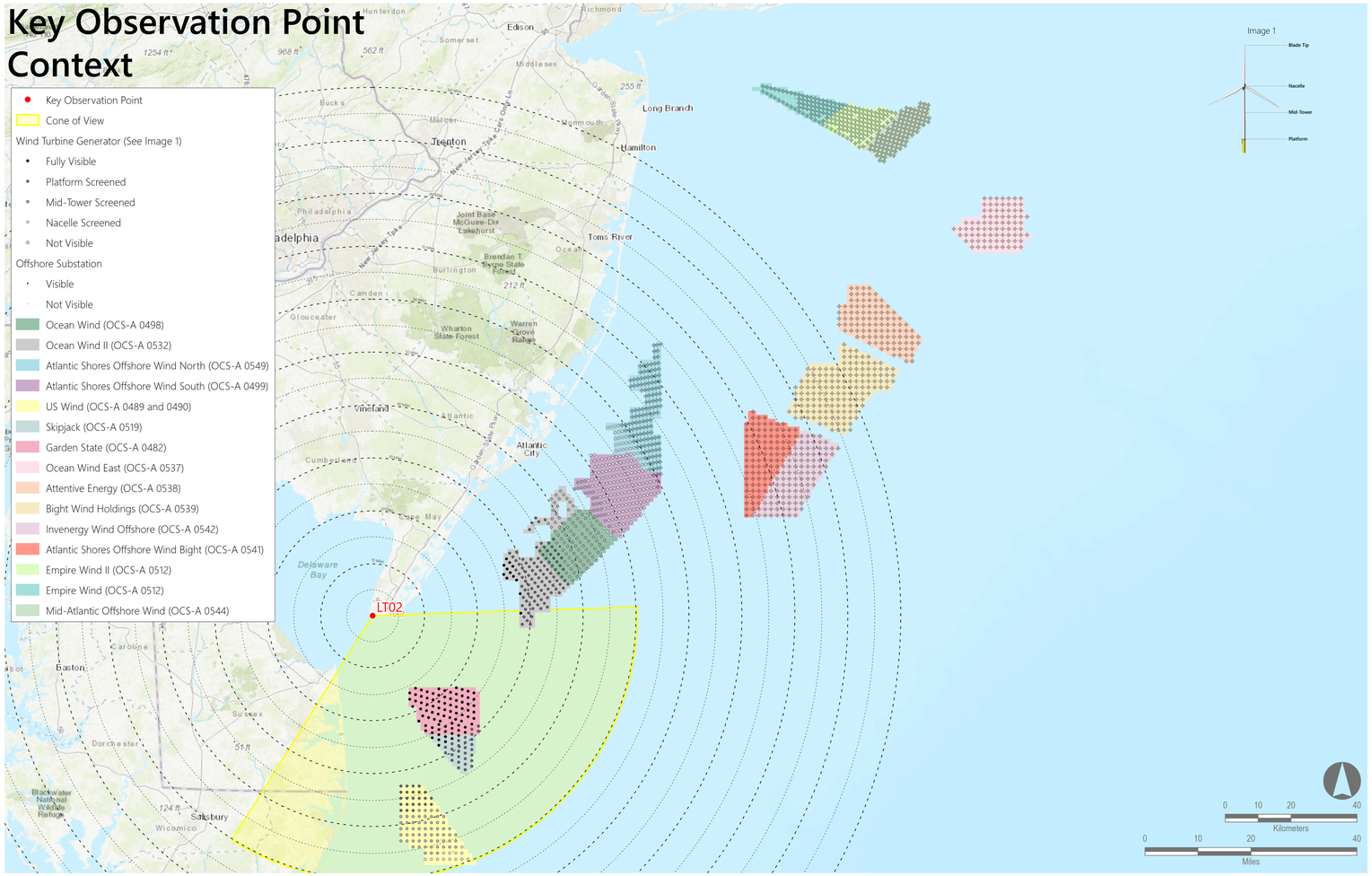
Camera Information
Camera: Canon EOS 5D Mark IV
Resolution: 30.4 Megapixels
Lens Focal Length: 50 mm
Camera Height: 150.10 feet AMSL

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

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)

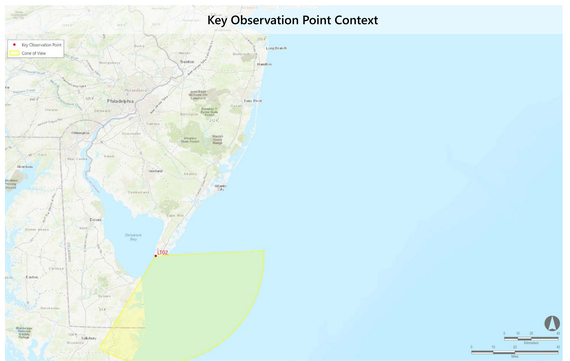
Notes:

- 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 #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.

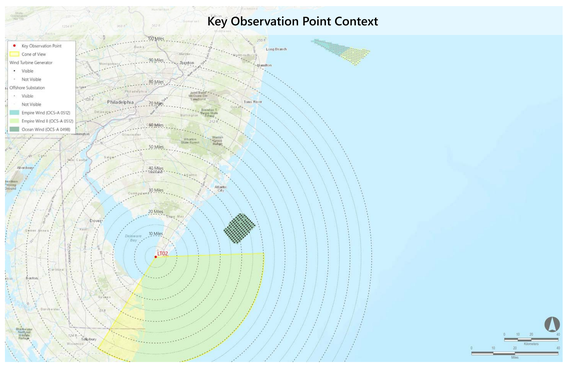
This box should be exactly 1" long on the printed panorama

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

Key Observation Point Context



Key Observation Point Location

MATCH LINE** LT02 PANO #1

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 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.

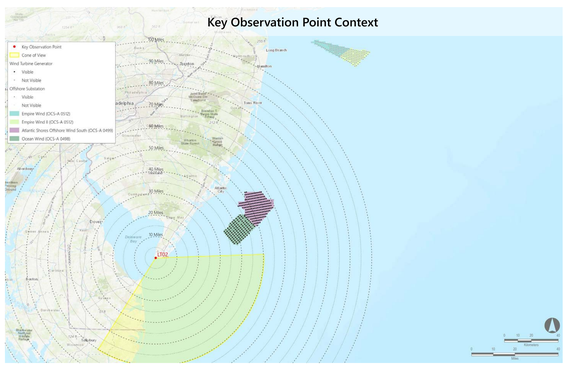
This box should be exactly 1" long on the printed panorama

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

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)

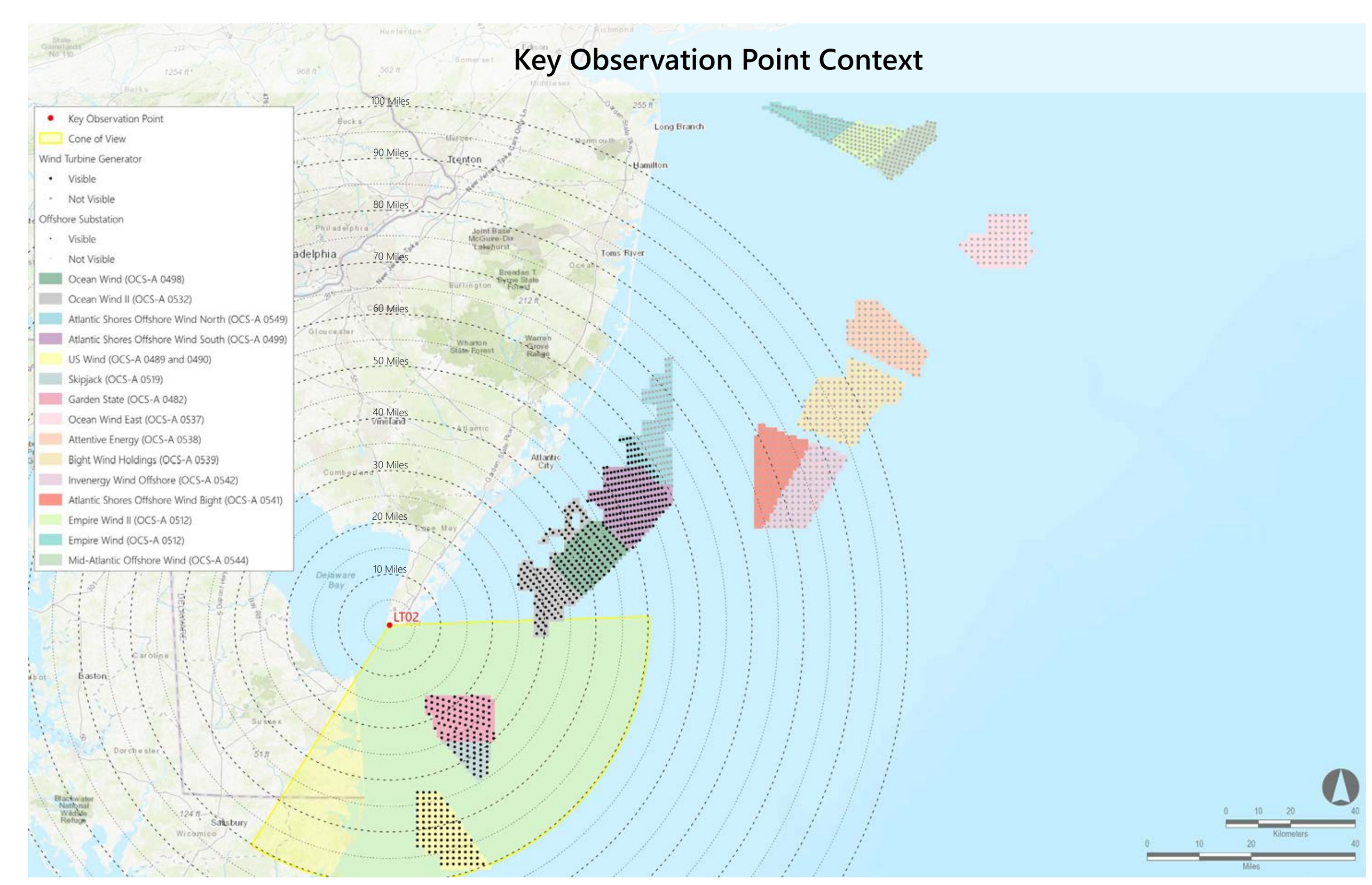
Simulation Size: 66" in width by 29.3" in height. Images should be viewed from a distance of 18 inches in order to obtain the proper perspective.

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

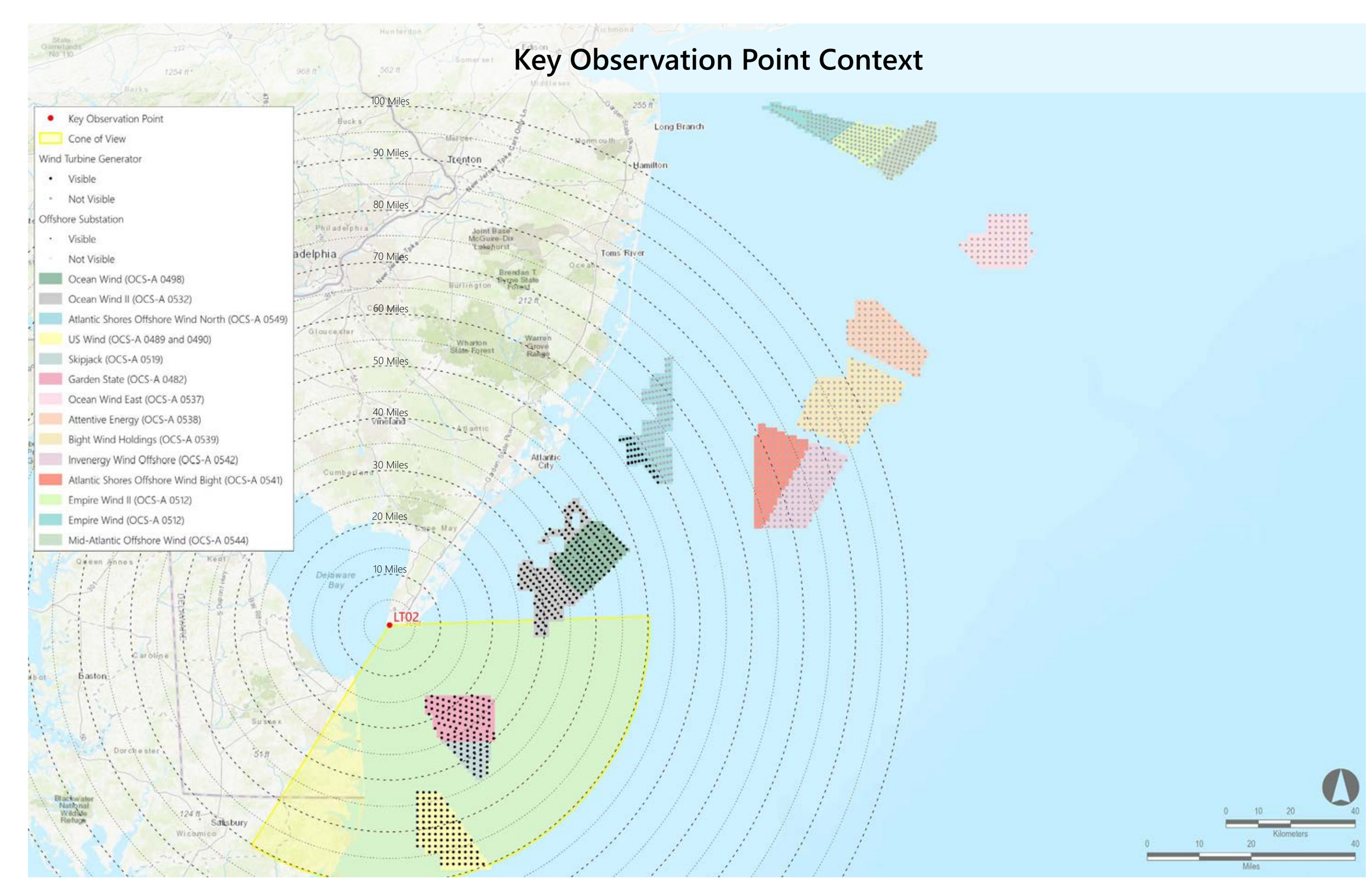
Simulation Size: 66" in width by 29.3" in height. Images should be viewed from a distance of 18 inches in order to obtain the proper perspective.

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

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.

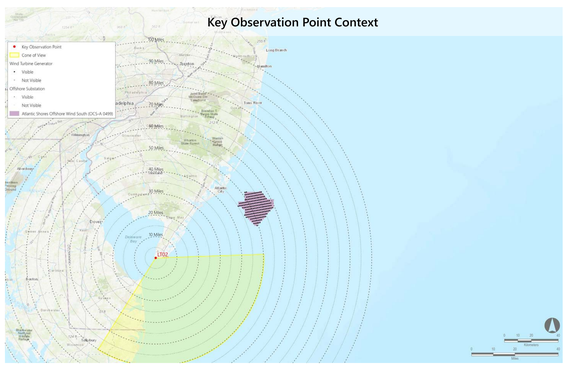
This box should be exactly 1" long on the printed panorama

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

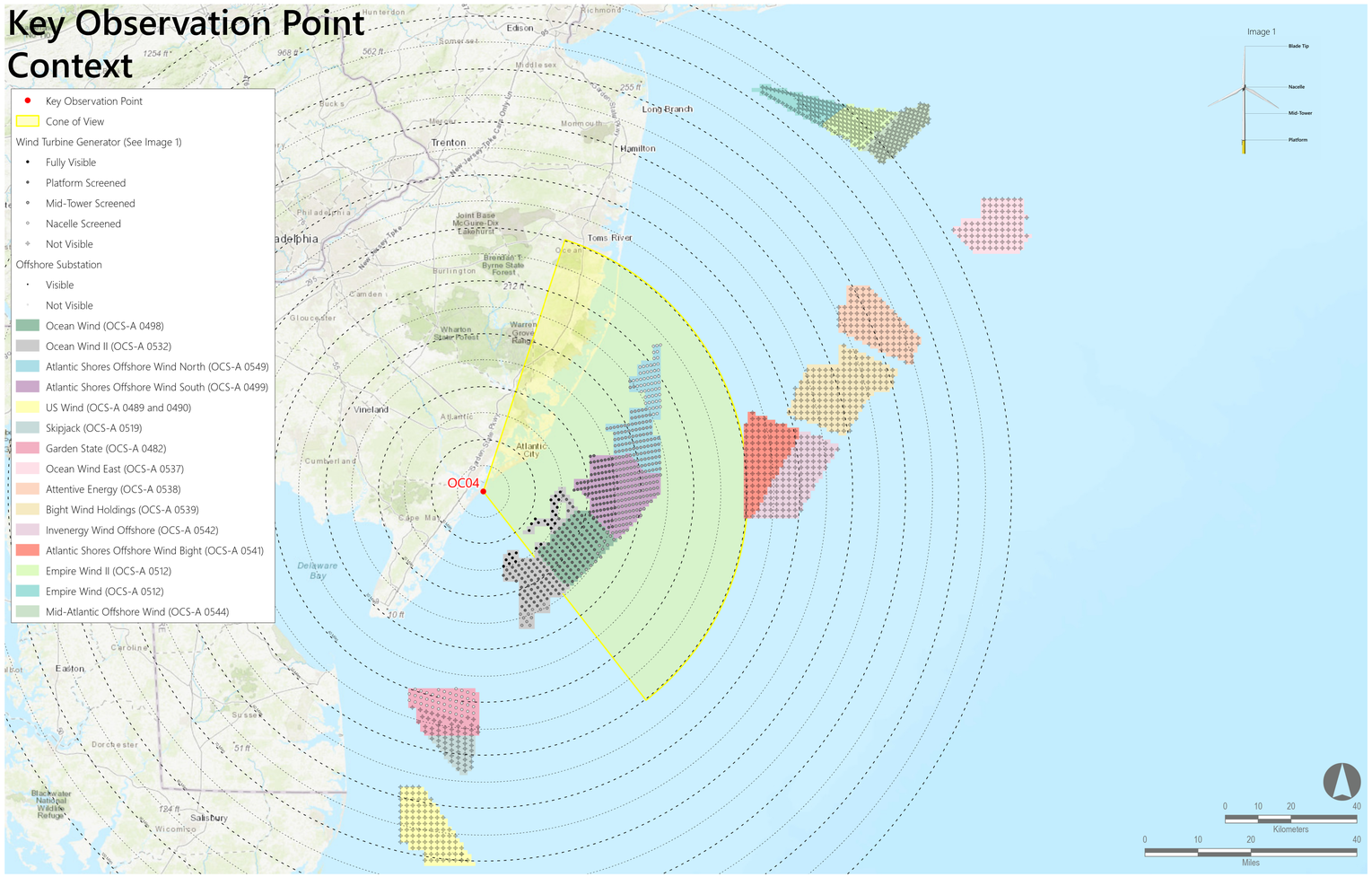
Camera Information
Camera: Canon EOS 5D Mark IV
Resolution: 30.4 Megapixels
Lens Focal Length: 50 mm
Camera Height: 5.10 feet AMSL

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

Appendix A: Atlantic Shores Offshore Wind Cumulative Photosimulations

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)

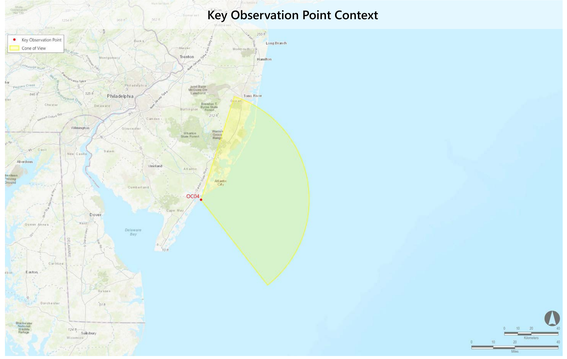
Notes:

- 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 7" long on the printed panorama

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)

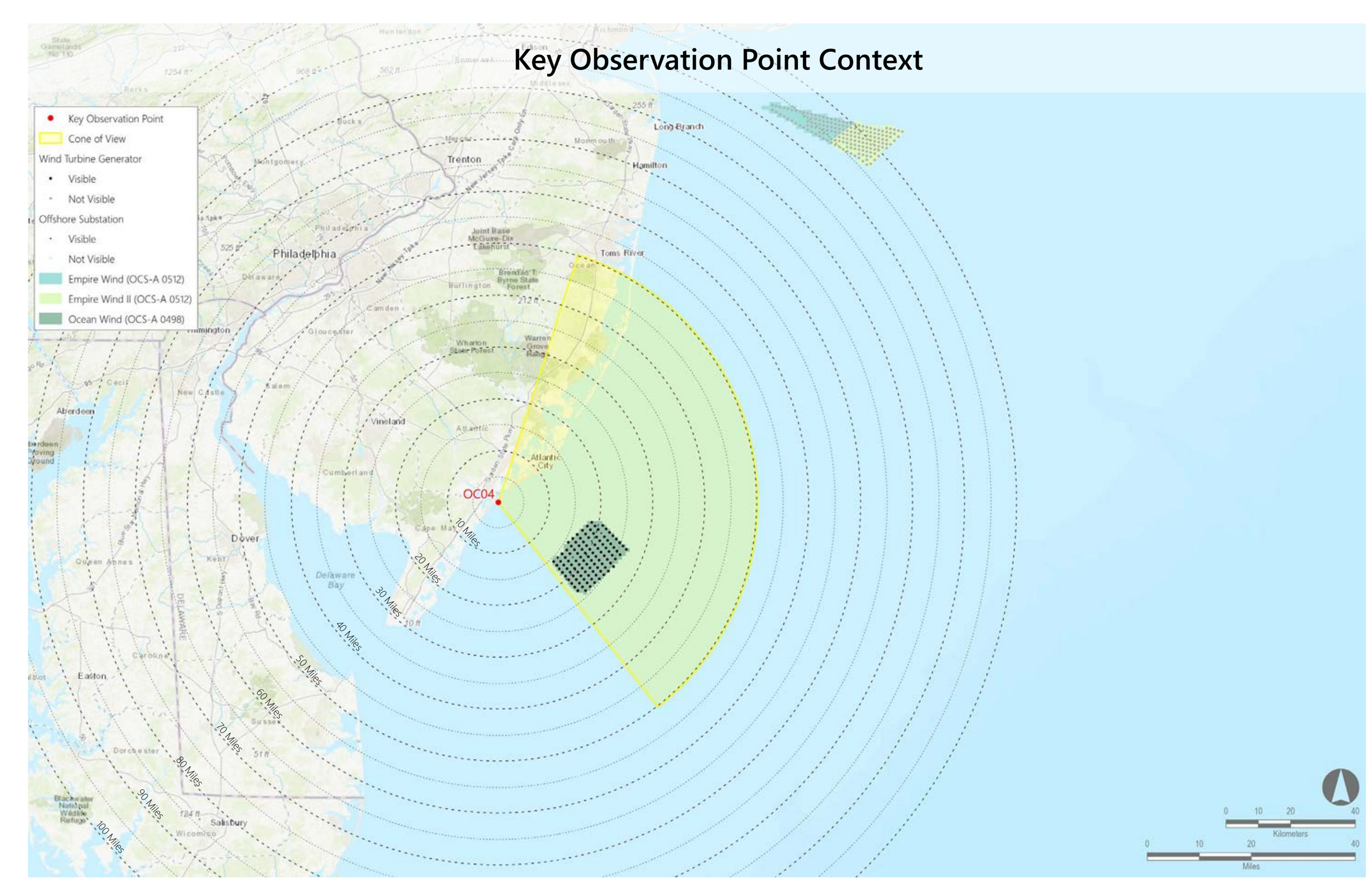
Simulation Size: 66” in width by 29.3” in height. Images should be viewed from a distance of 18 inches in order to obtain the proper perspective.

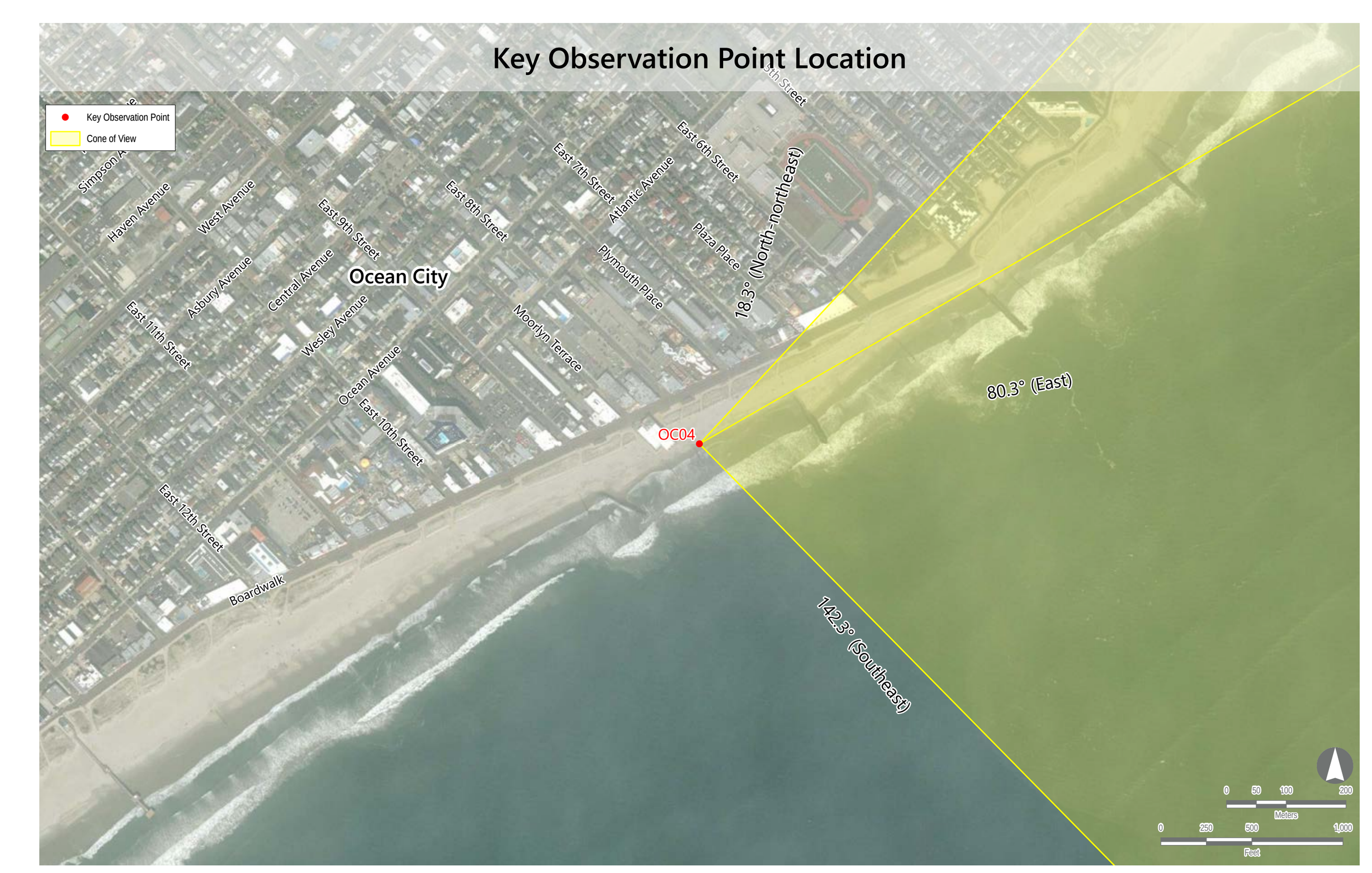
This box should be exactly 1” long on the printed panorama

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





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.

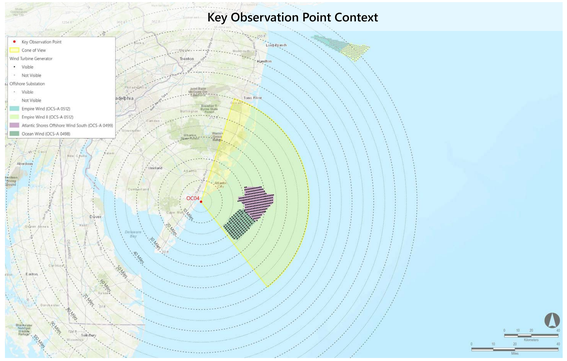
This box should be exactly 7" long on the printed panorama

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

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

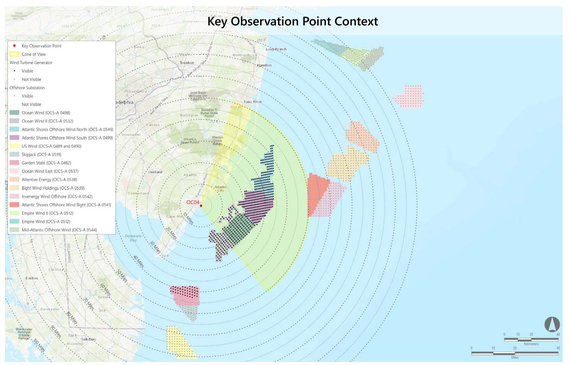
Simulation Size: 66" in width by 29.3" in height. Images should be viewed from a distance of 18 inches in order to obtain the proper perspective.

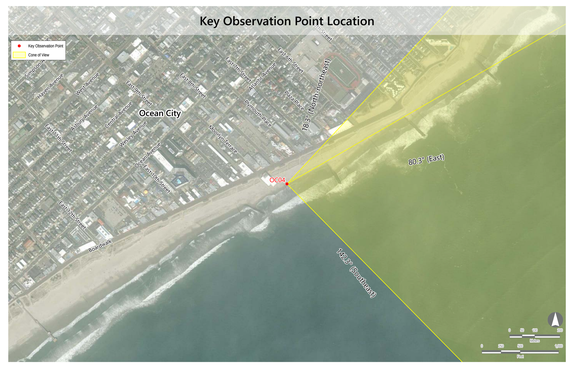
This box should be exactly 7" long on the printed panorama

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	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

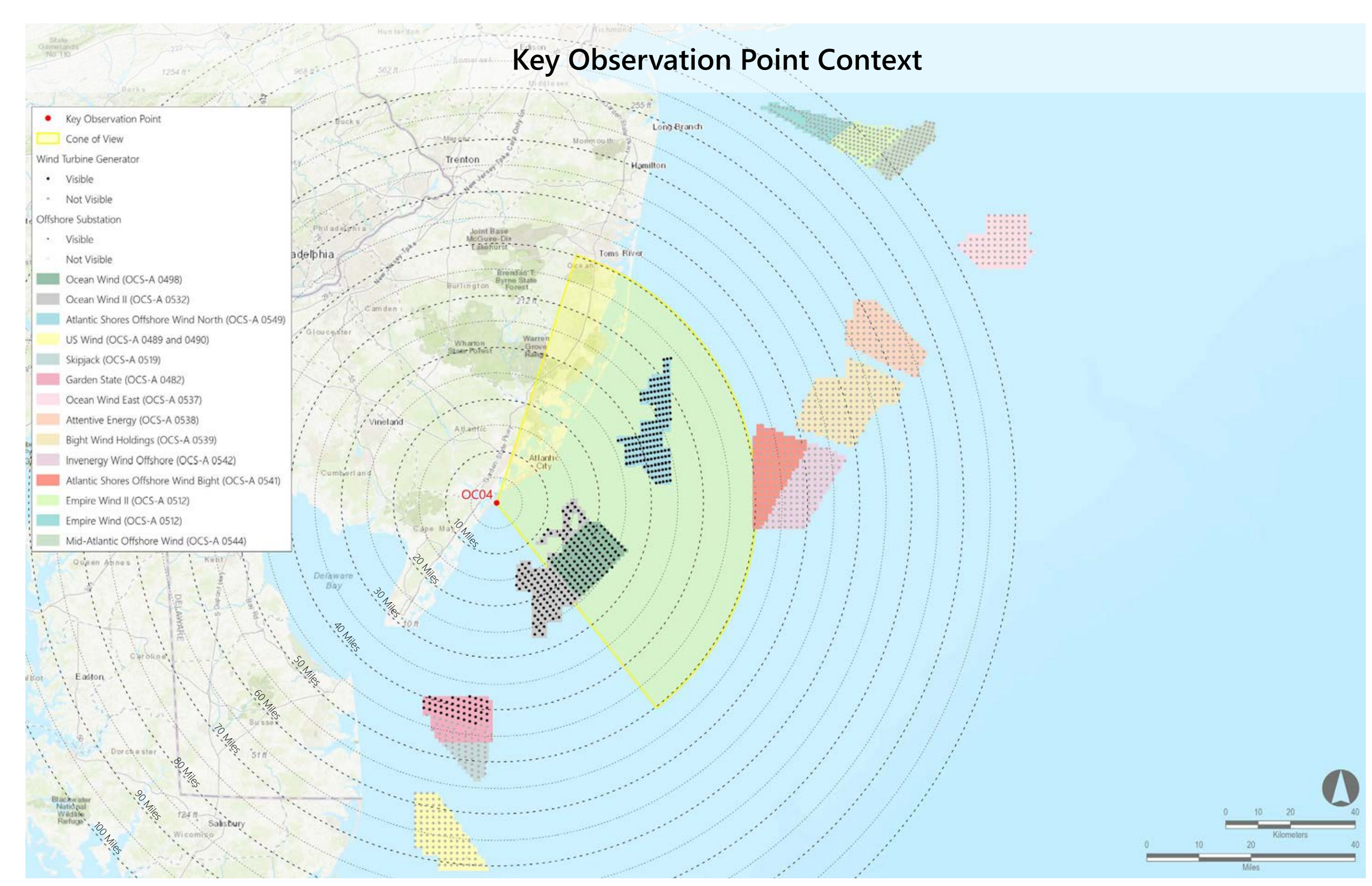
Simulation Size: 66" in width by 29.3" in height. Images should be viewed from a distance of 18 inches in order to obtain the proper perspective.

This box should be exactly 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 #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

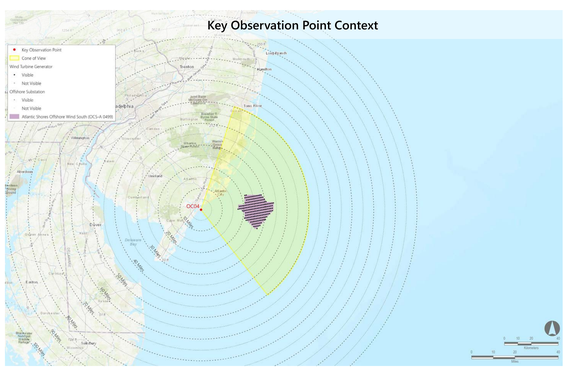
Simulation Size: 66" in width by 29.3" in height. Images should be viewed from a distance of 18 inches in order to obtain the proper perspective.

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



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

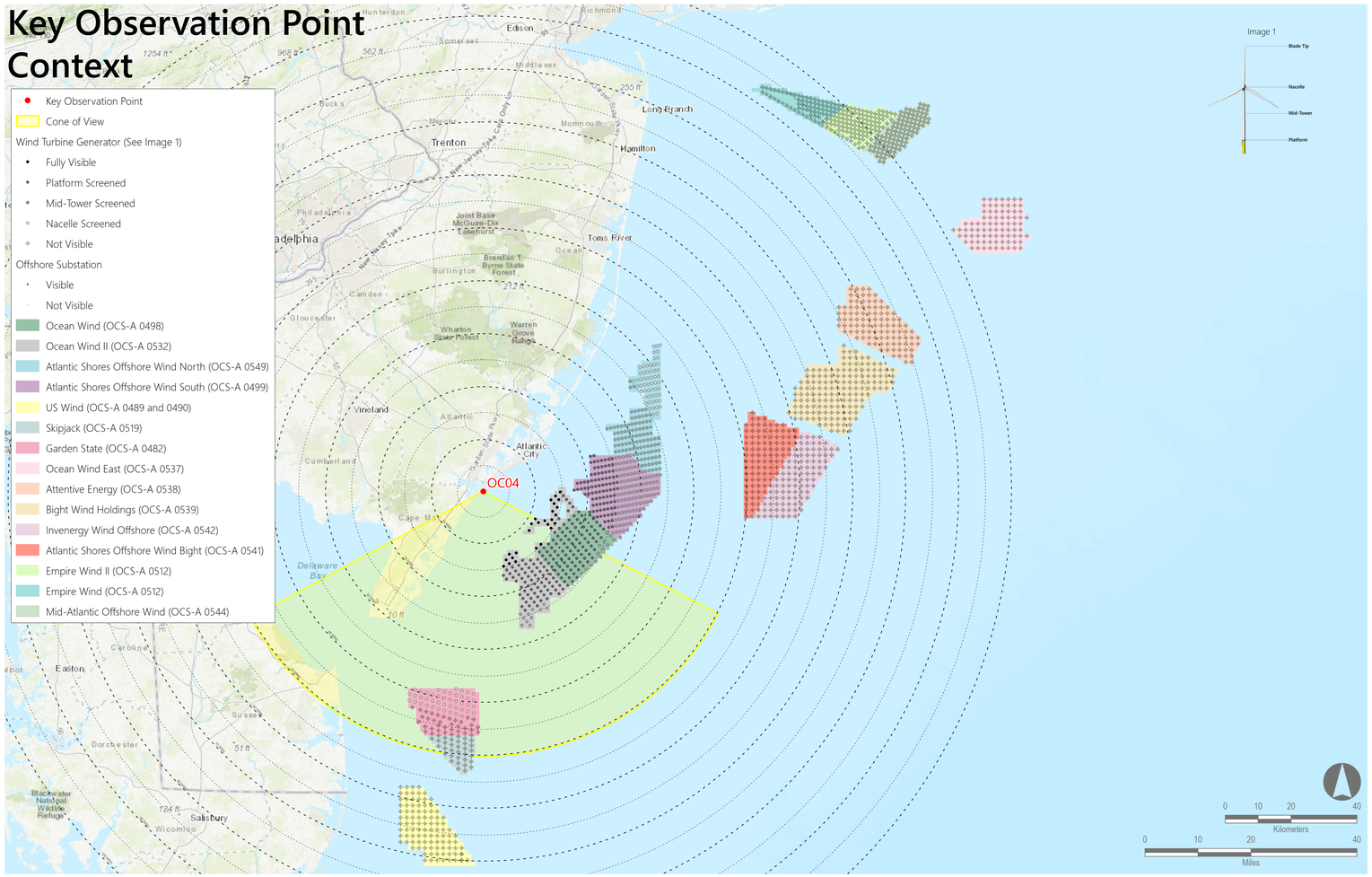
Camera Information
Camera: Canon EOS 5D Mark IV
Resolution: 30.4 Megapixels
Lens Focal Length: 50 mm
Camera Height: 5.10 feet AMSL

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 #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

Existing Conditions (Panorama 2)

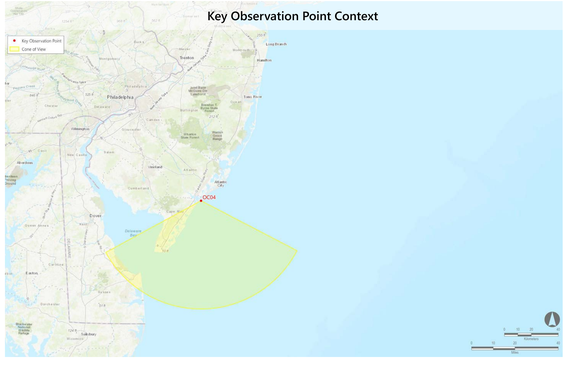
Simulation Size: 66" in width by 29.3" in height. Images should be viewed from a distance of 18 inches in order to obtain the proper perspective.

This box should be exactly 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)

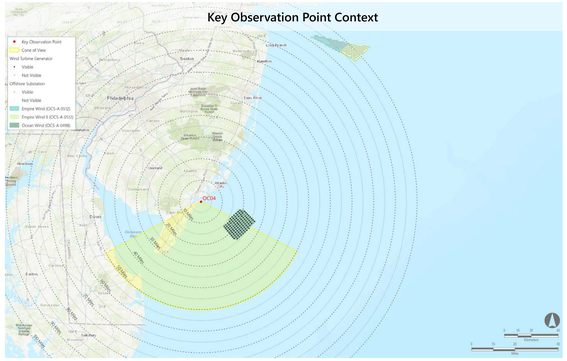
Simulation Size: 66″ in width by 29.3″ in height. Images
should be viewed from a distance of 18 inches
in order to obtain the proper perspective.

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

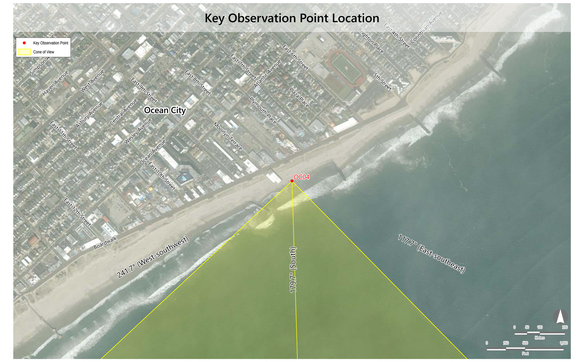
Notes:

- 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	15.6	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)

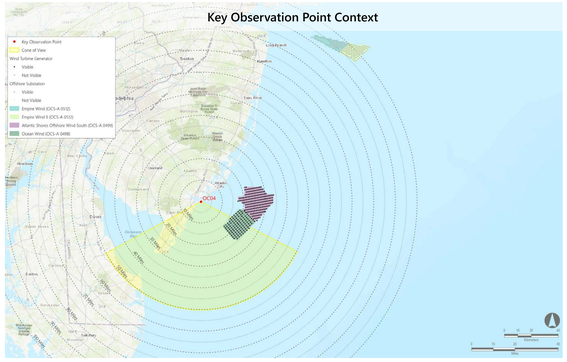
Simulation Size: 66" in width by 29.3" in height. Images should be viewed from a distance of 18 inches in order to obtain the proper perspective.

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



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.

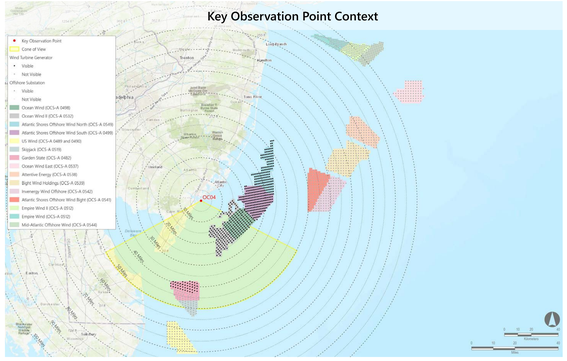
This box should be exactly 7" long on the printed panorama

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
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 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

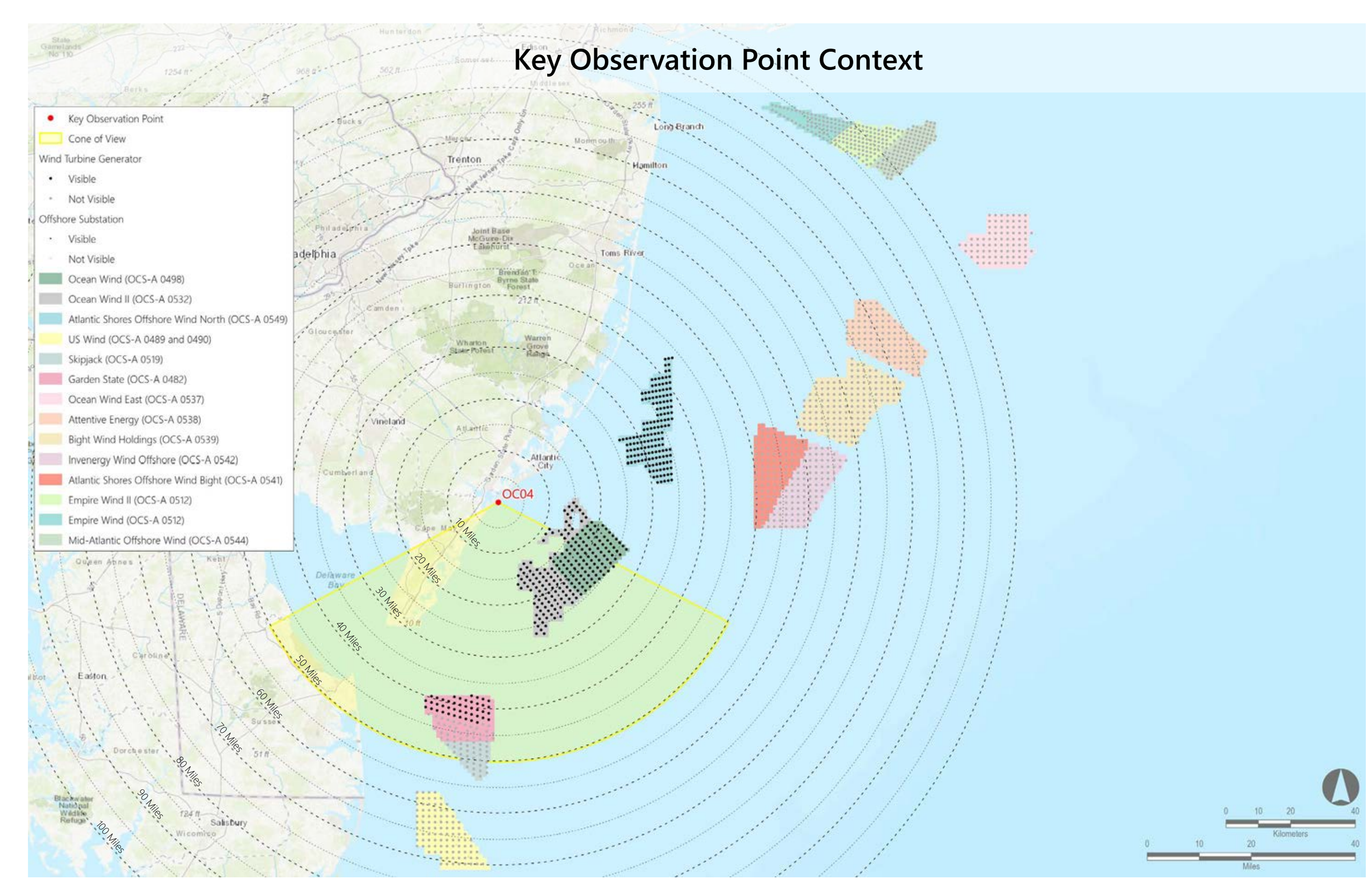
Photosimulation (Panorama 2): Scenario 4: Full buildout of all lease areas without Atlantic Shores South

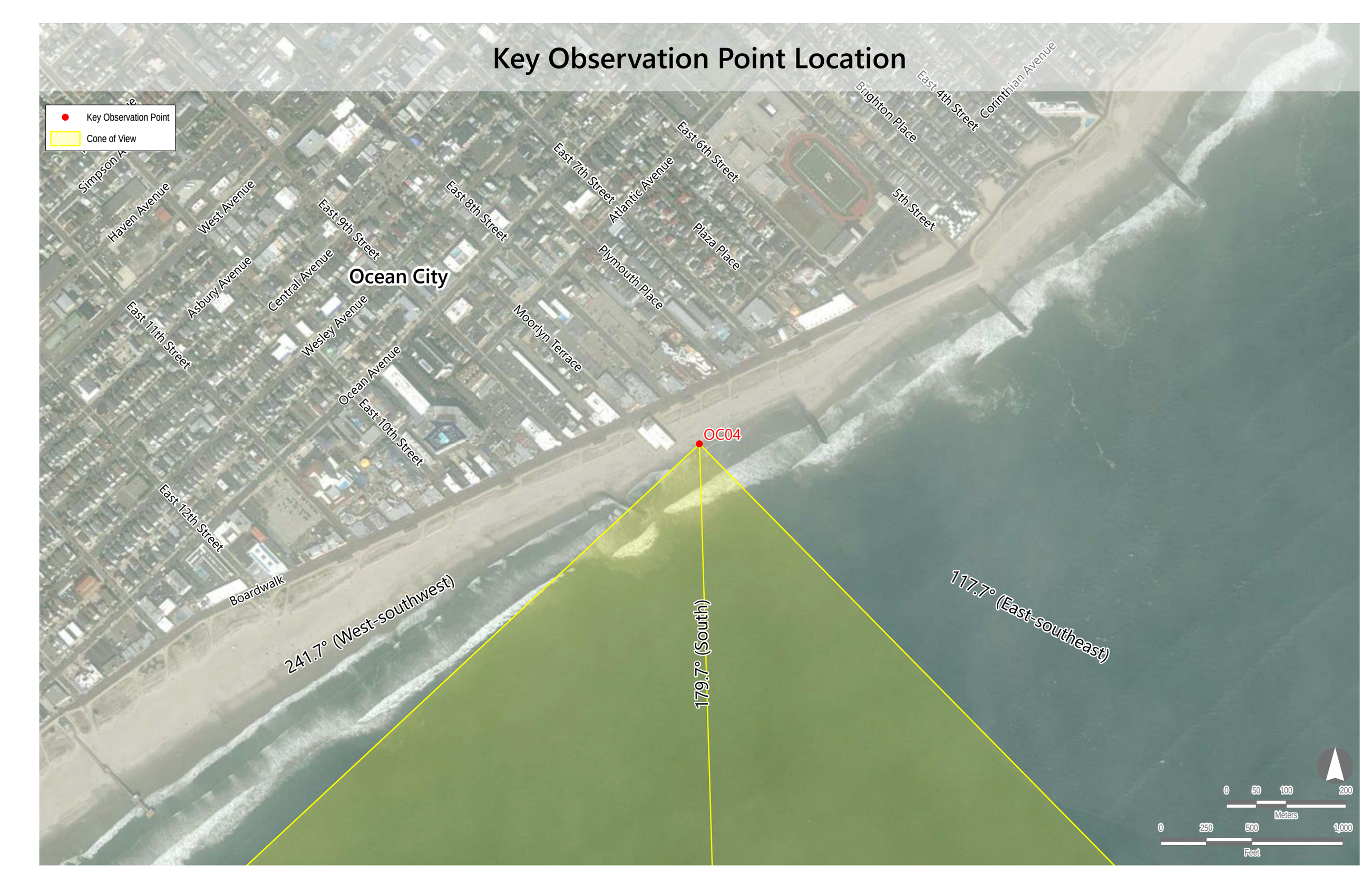
Simulation Size: 66" in width by 29.3" in height. Images should be viewed from a distance of 18 inches in order to obtain the proper perspective.

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	15.6	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.

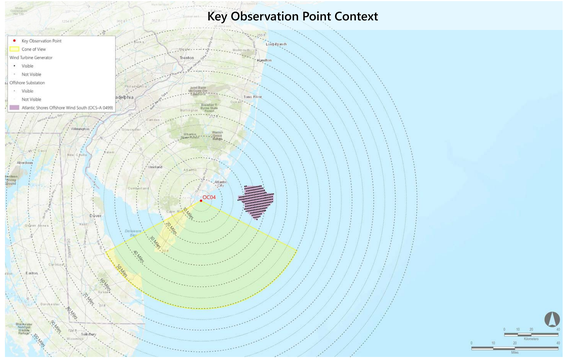
This box should be exactly 7" long on the printed panorama

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

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

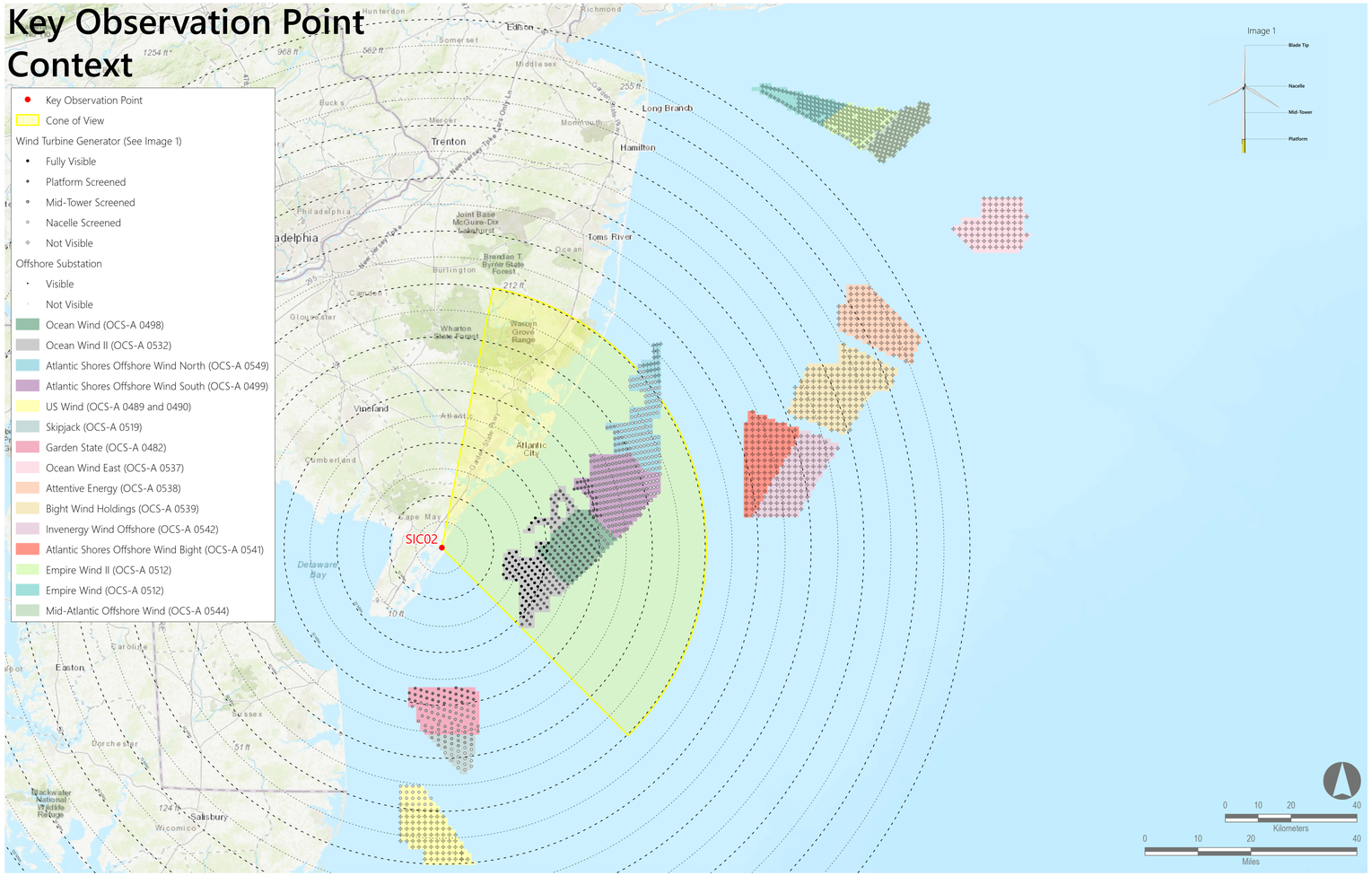
Camera Information
Camera: Canon EOS 5D Mark IV
Resolution: 30.4 Megapixels
Lens Focal Length: 50 mm
Camera Height: 40.18 feet AMSL

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

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)

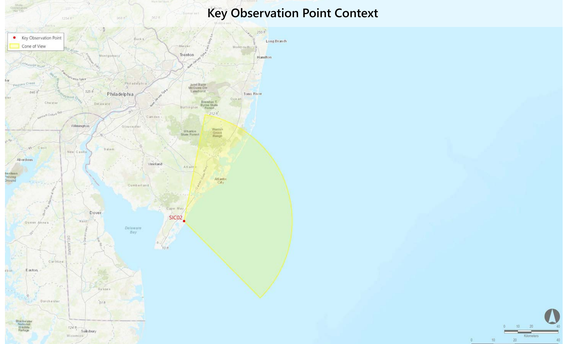
Notes:

- 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

Key Observation Point Context



Key Observation Point Location

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)

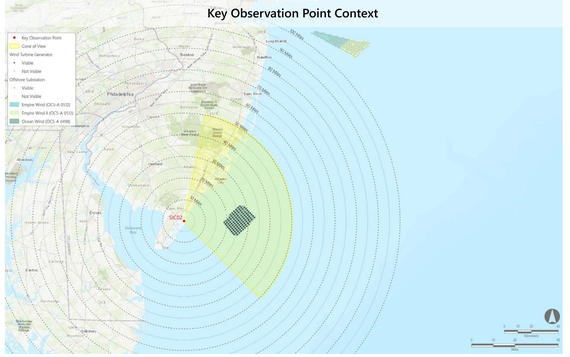
Simulation Size: 66" in width by 29.3" in height. Images should be viewed from a distance of 18 inches in order to obtain the proper perspective.

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



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 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.

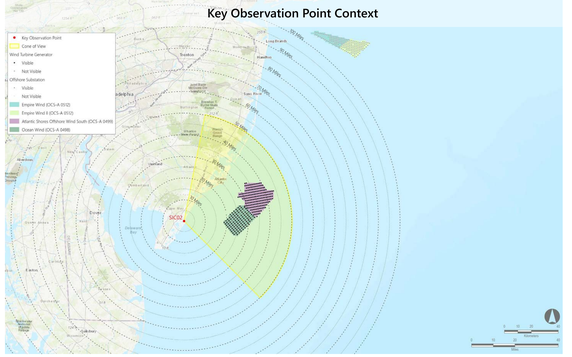
This box should be exactly 1" long on the printed panorama

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 #2

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)

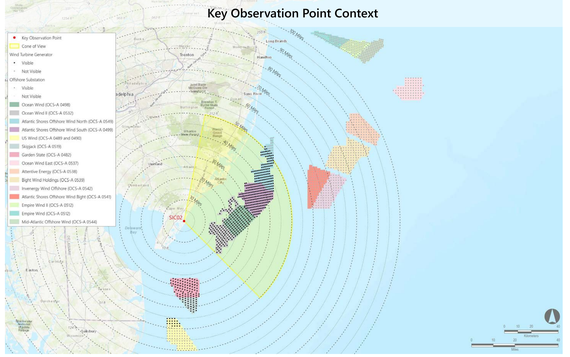
Simulation Size: 66" in width by 29.3" in height. Images should be viewed from a distance of 18 inches in order to obtain the proper perspective.

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

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

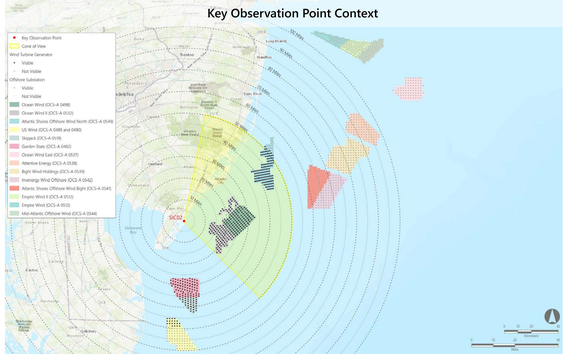
Simulation Size: 66" in width by 29.3" in height. Images should be viewed from a distance of 18 inches in order to obtain the proper perspective.

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.

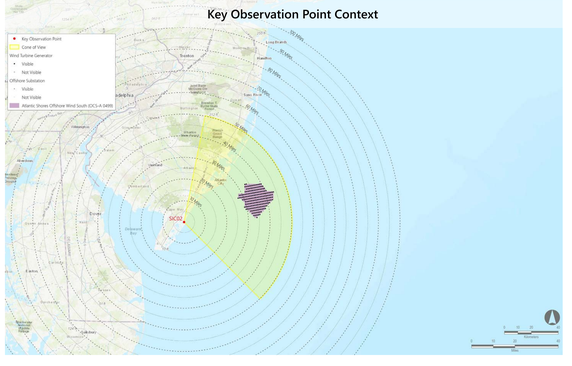
This box should be exactly 1" long on the printed panorama

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

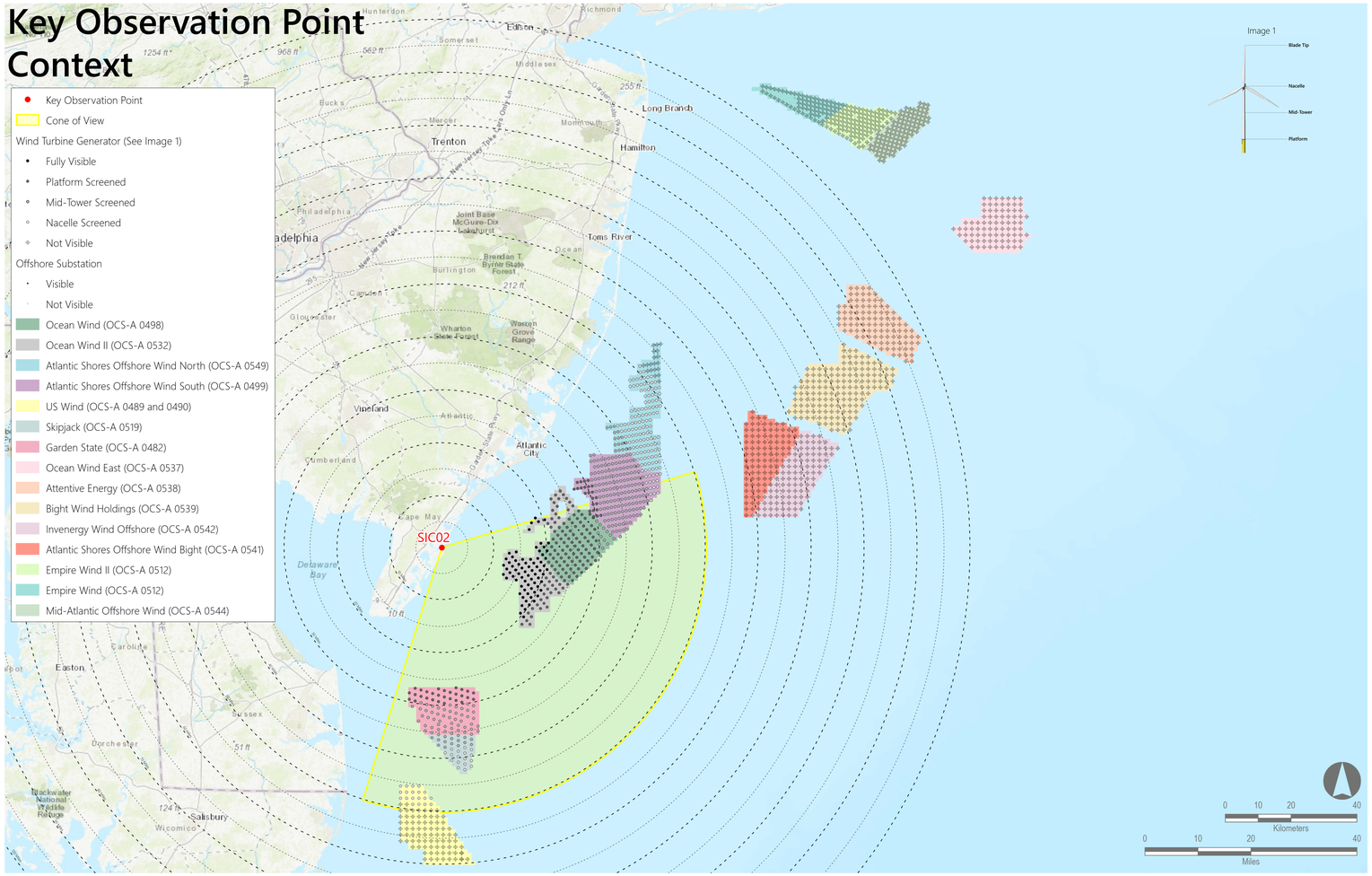
Camera Information
Camera: Canon EOS 5D Mark IV
Resolution: 30.4 Megapixels
Lens Focal Length: 50 mm
Camera Height: 40.18 feet AMSL

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

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)

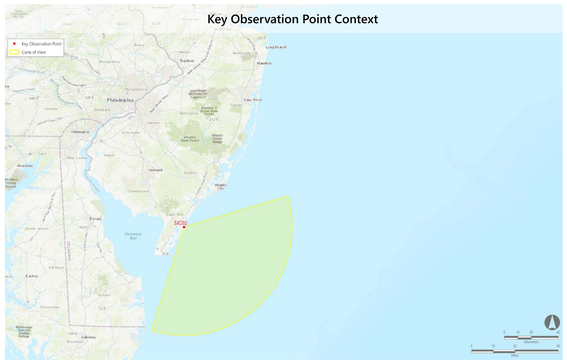
Simulation Size: 66" in width by 29.3" in height. Images should be viewed from a distance of 18 inches in order to obtain the proper perspective.

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

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 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.

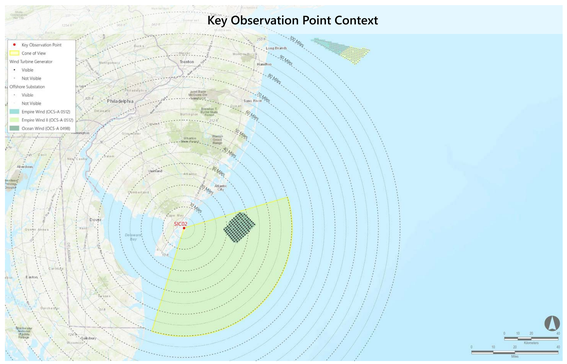
This box should be exactly 1" long on the printed panorama

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 #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 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.

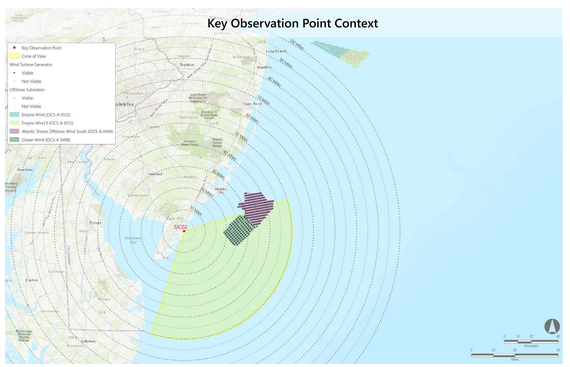
This box should be exactly 1" long on the printed panorama

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)

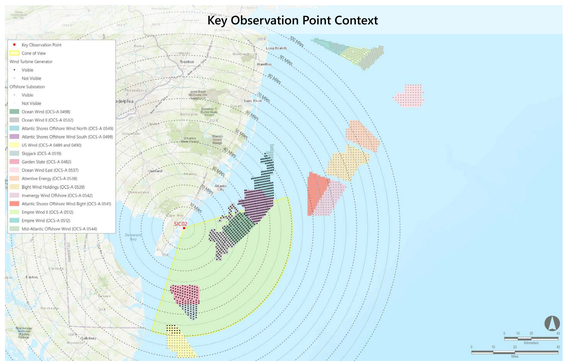
Simulation Size: 66" in width by 29.3" in height. Images should be viewed from a distance of 18 inches in order to obtain the proper perspective.

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



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.

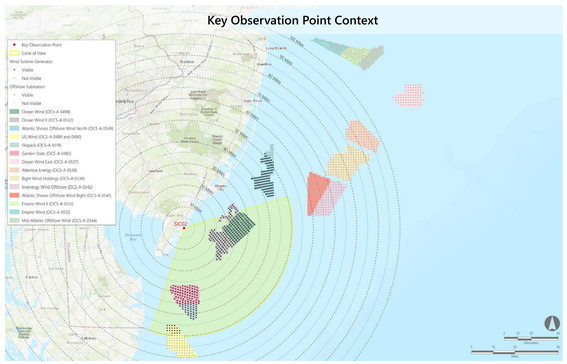
This box should be exactly 1" long on the printed panorama

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

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.

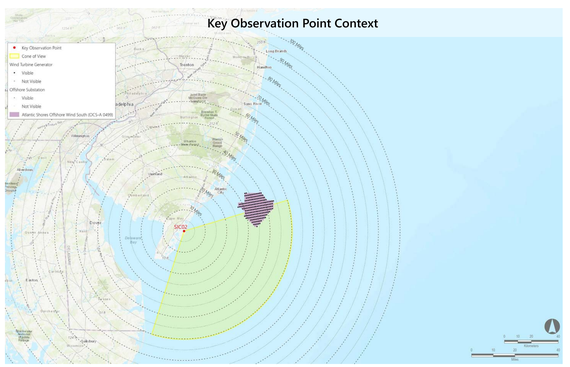
This box should be exactly 1" long on the printed panorama

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

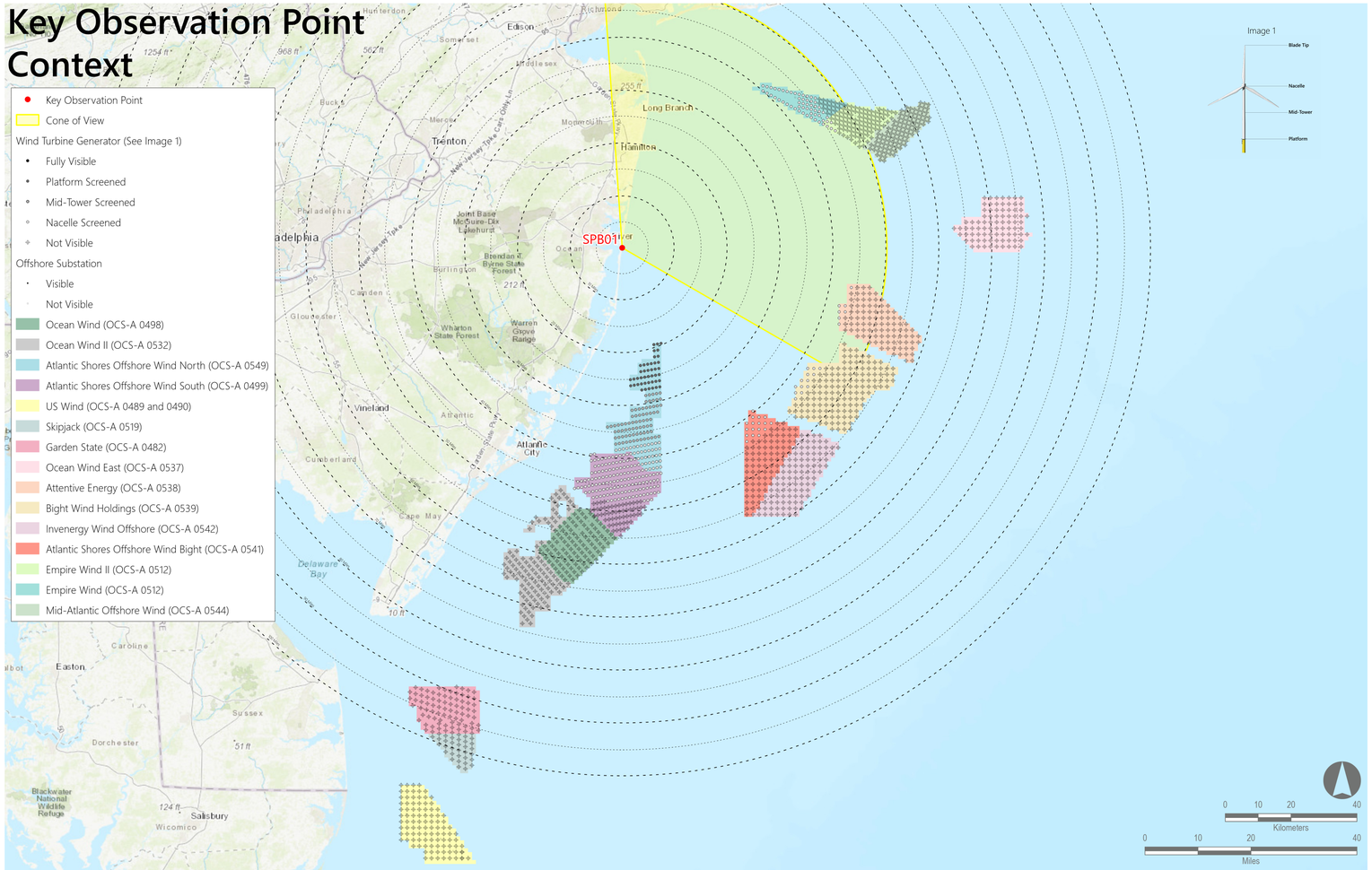
Camera Information
Camera: Canon EOS 5D Mark IV
Resolution: 30.4 Megapixels
Lens Focal Length: 50 mm
Camera Height: 16.23 feet AMSL

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)

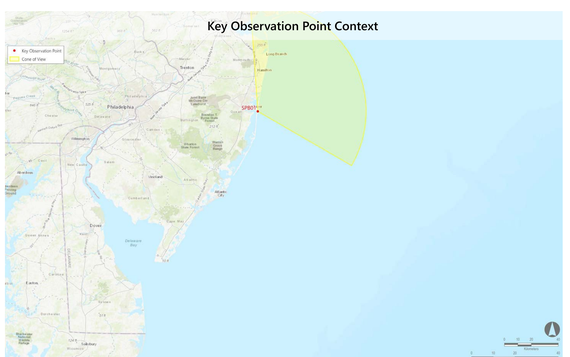
Simulation Size: 66" in width by 29.3" in height. Images should be viewed from a distance of 18 inches in order to obtain the proper perspective.

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 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 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.

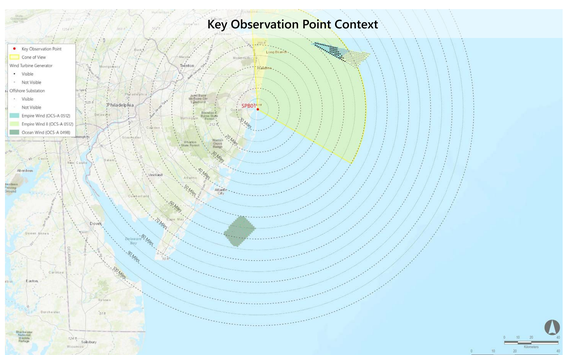
This box should be exactly 7" long on the printed panorama

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	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.

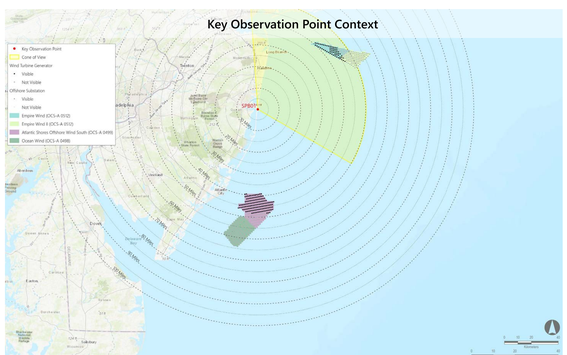
This box should be exactly 7" long on the printed panorama

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
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

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

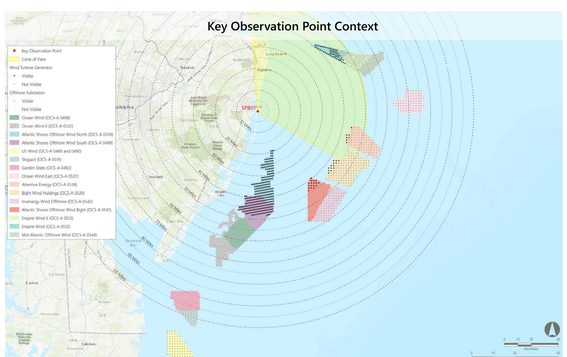
Simulation Size: 66° in width by 29.3° in height. Images should be viewed from a distance of 18 inches in order to obtain the proper perspective.

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	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

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 4: Full buildout of all lease areas without Atlantic Shores South

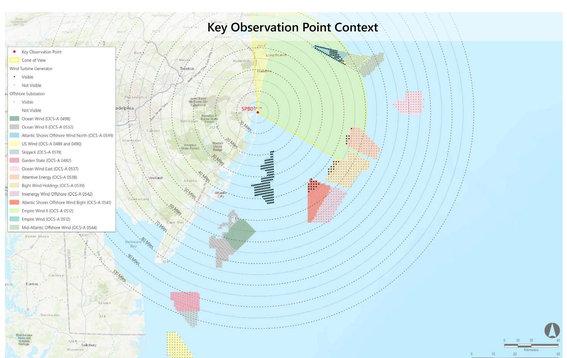
Simulation Size: 66" in width by 29.3" in height. Images should be viewed from a distance of 18 inches in order to obtain the proper perspective.

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	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 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.

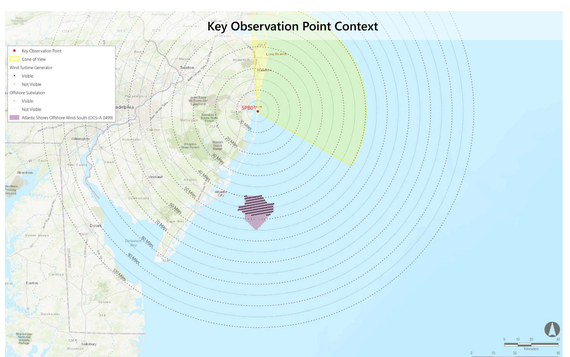
This box should be exactly 7" long on the printed panorama

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

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

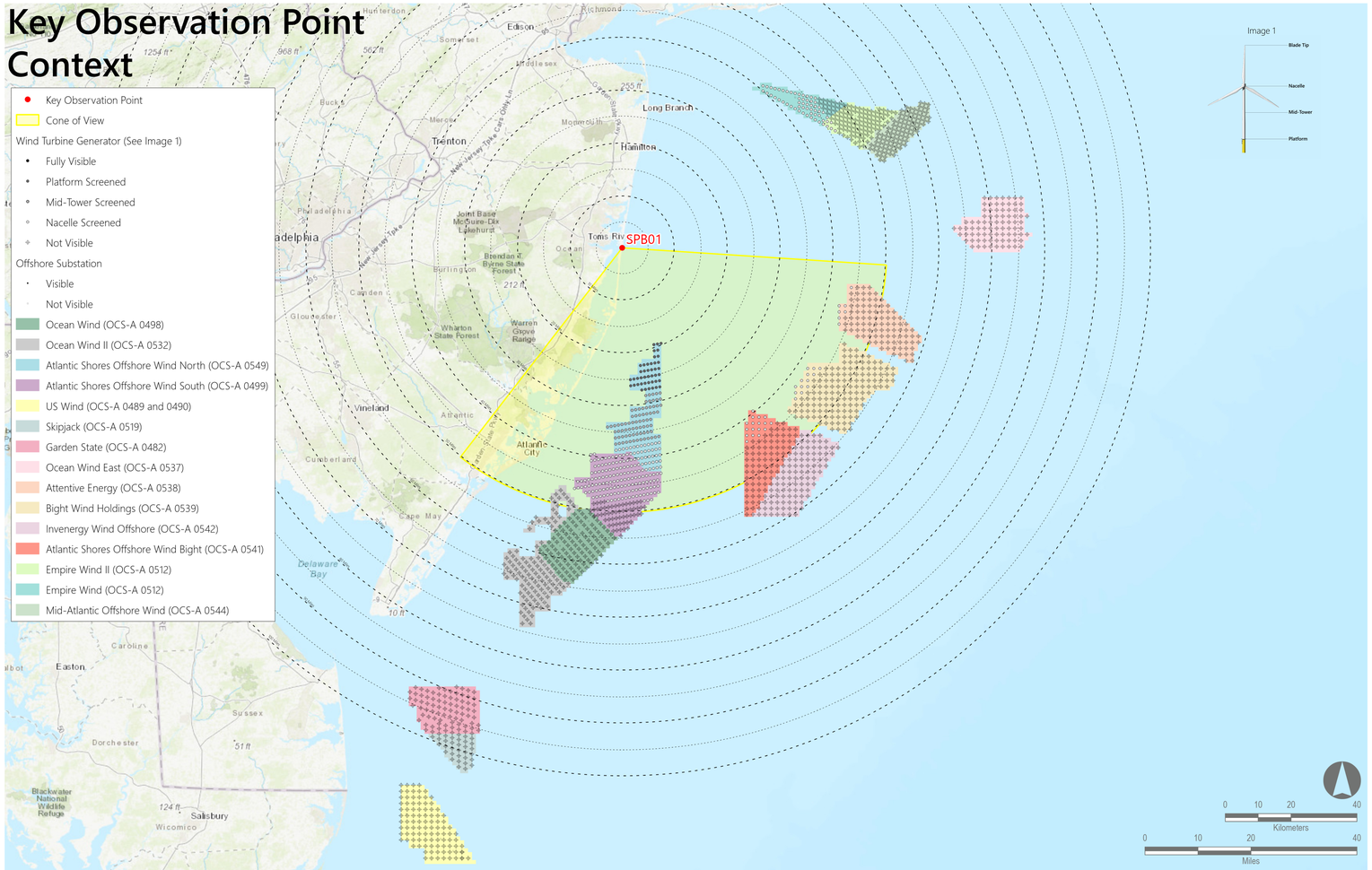
Camera Information
Camera: Canon EOS 5D Mark IV
Resolution: 30.4 Megapixels
Lens Focal Length: 50 mm
Camera Height: 16.23 feet AMSL

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 #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)

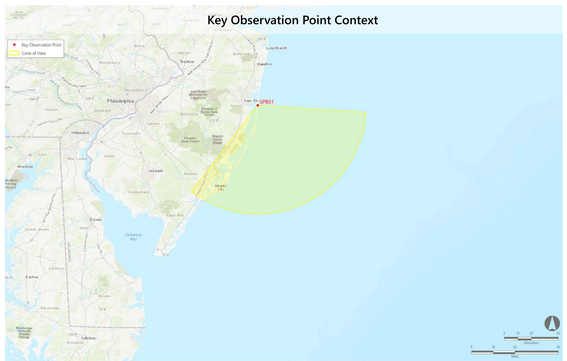
Notes:

- 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.

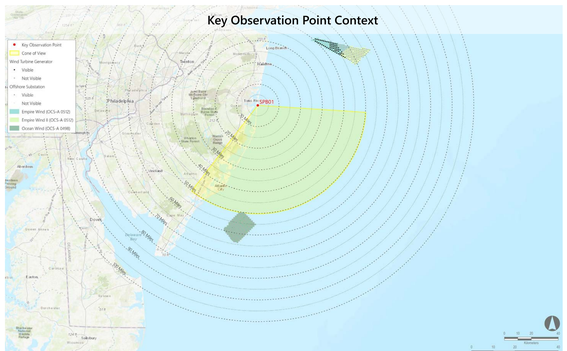
This box should be exactly 1" long on the printed panorama

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.

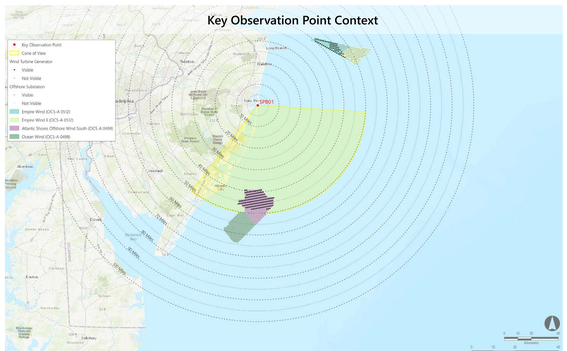
This box should be exactly 1" long on the printed panorama

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.

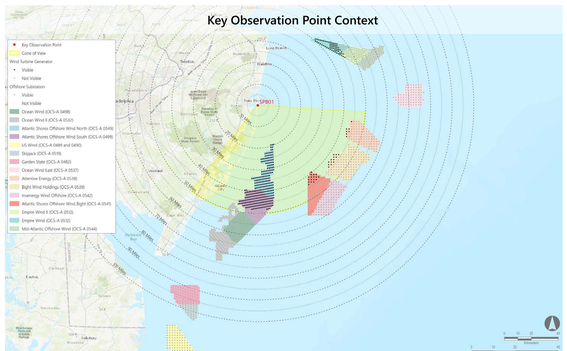
This box should be exactly 1" long on the printed panorama

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

Key Observation Point Context



Key Observation Point Location

MATCH LINE SPB01 PANO #1

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 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.

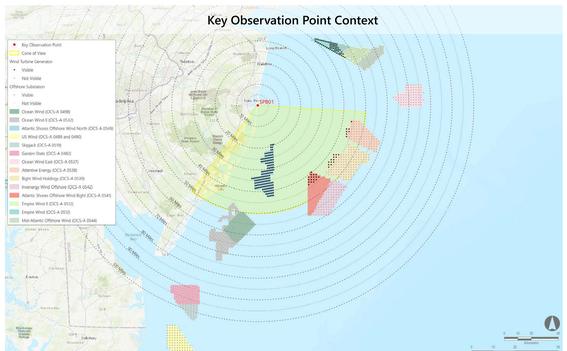
This box should be exactly 1" long on the printed panorama

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.

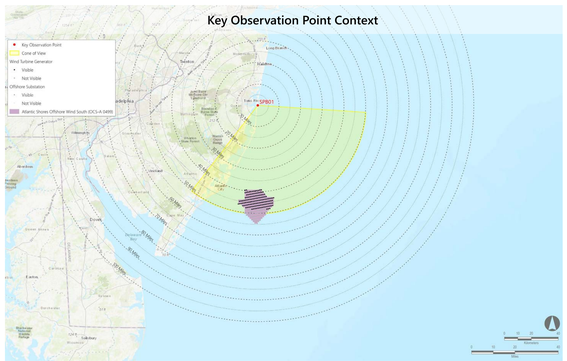
This box should be exactly 1" long on the printed panorama

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