

Maryland Offshore Wind Project

Visual Impact Assessment Process

Resource	Objective
Visual Impact Analysis (VIA)	The objective of this VIA is to identify potential visibility of the Project and objectively determine the difference in landscape quality with and without the Project in place. Focus is on the visual impacts of the <i>proposed project</i> .
Visual Simulations	The purpose of the visual simulations is to characterize the potential onshore visibility of offshore wind turbines from locations along the coast under different seasons, times of day and weather condition.
Historic Resources Visual Effects Analysis	The Historic Resources Visual Effects Analysis (HRVEA) is performed to assist BOEM and the State Historic Preservation Offices ("SHPOs"), in their responsibilities in reviewing the Project under Section 106 of the National Historic Preservation Act and the National Environmental Policy Act. Focus is on the visual impacts of the <i>proposed project</i> on Historic Properties.



Project Viewshed with Locations of Simulations

Visual Impact Simulation - Page 1 of 5



Regional Map



Viewpoint & Project Data

Date	March 23, 2016
Time	0900 Hrs
Camera Coordinates	UTM Z18 Meters
Northing	4265354.32
Easting	495288.37
Height to Lens	5.1 Feet
Ground Elevation	11.5 Feet
Camera Make	Nikon
Camera Model	D810
Focal Length	50 mm
Field of View (FOV)	4.0° x 24°
Project Area FOV	32°
Distance to Closest WTG	12.4 Statute Mi.
Temperature	68° F
Weather Conditions	Partly Cloudy
Humidity	86%
Visibility	10 Statute Mi.
Wave Height	1-2 Feet
Lighting Conditions	Lit from SE
Number of Turbines	125
MW Capacity of Turbines	18
Turbine Height to Top of Blade	938 Feet
Direction of View	South East
Wind Direction From	310° (NW)
Feet (%) Visible Nearest WTG	906.5 Feet (97%)




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Bethany Beach Boardwalk, Bethany Beach, Delaware
 Detail of Proposed Morning View With Maximum Turbine Visibility (COP Layout With Nacelles Perpendicular to Beach)


This figure is designed to be printed as an 11" x 17" landscape layout. Atmospheric conditions based on the National Weather Service (NWS) Daily Summaries which are available at www.weatherunderground.com. Please note, the NWS records visibility to a maximum of 10 miles, actual visibility may be further. Paint color will be determined in consultation with BOEM, the FAA, and USCG. The simulations conservatively use RAL 9010 "Pure White". This simulation represents the field of view taken by a single-exposure camera using a 50 mm lens. Ambient lighting in the photograph has been simulated.

Bethany Beach Morning Shore Facing Single Frame Detail
 (Note: these images are single frame detail and not representative of a human field of view)

Visual Impact Simulation - Page 2 of 5




Regional Map



Viewpoint & Project Data

Date	March 22, 2016
Time	0821 Hrs
Camera Coordinates	UTM Z18 Meters
Northing	4242173.87
Easting	492579.84
Height to Lens	5.1 Feet
Ground Elevation	14.6 Feet
Camera Make	Nikon
Camera Model	D810
Focal Length	50 mm
Field of View (FOV)	40° x 24°
Project Area FOV	51°
Distance to Closest WTG	12.5 Statute Mi.
Temperature	53° F
Weather Conditions	Partly Cloudy
Humidity	92%
Visibility	10 Statute Mi.
Wave Height	1-2 Feet
Lighting Conditions	Lit from SE
Number of Turbines	125
MW Capacity of Turbines	18
Turbine Height to Top of Blade	938 Feet
Direction of View	East
Wind Direction From	267° (SW)
Feet (%) Visible Nearest WTG	.910 Feet (97%)



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Ocean City Pier, Ocean City Maryland
 Detail of Proposed Morning View With Maximum Turbine Visibility (COP Layout With Nacelles Perpendicular to Beach)

This figure is designed to be printed as an 11" x 17" landscape layout. Atmospheric conditions based on the National Weather Service (NWS) Daily Summaries which are available at www.weatherunderground.com. Please note, the NWS records visibility to a maximum of 10 miles, actual visibility may be further. Paint color will be determined in consultation with BOEM, the FAA, and USCG. The simulations conservatively use RAL 9010 "Pure White". This simulation represents the field of view taken by a single-exposure camera using a 50 mm lens.

Ocean City Morning Shore Facing Single Frame Detail
 (Note: these images are single frame detail and not representative of a human field of view)

Visual Impact Simulation - Page 3 of 5



Regional Map



Viewpoint & Project Data

Date	March 22, 2016
Time	1200 Hrs
Camera Coordinates	UTM Z18 Meters
Northing	4242173.87
Easting	492579.84
Height to Lens	5.1 Feet
Ground Elevation	14.6 Feet
Camera Make	Nikon
Camera Model	D810
Focal Length	50 mm
Field of View (FOV)	40° x 24°
Project Area FOV	51°
Distance to Closest WTG	12.5 Statute Mi.
Temperature	53° F
Weather Conditions	Partly Cloudy
Humidity	92%
Visibility	10 Statute Mi.
Wave Height	1-2 Feet
Lighting Conditions	Lit from S
Number of Turbines	125
MW Capacity of Turbines	18
Turbine Height to Top of Blade	938 Feet
Direction of View	East
Wind Direction From	267° (SW)
Feet (%) Visible Nearest WTG	910 Feet (97%)



Ocean City Pier, Ocean City Maryland
 Detail of Proposed View at Noon With Maximum Turbine Visibility (COP Layout With Nacelles Perpendicular to Beach)

This figure is designed to be printed as an 11" x 17" landscape layout. Atmospheric conditions based on the National Weather Service (NWS) Daily Summaries which are available at www.weatherunderground.com. Please note, the NWS records visibility to a maximum of 10 miles, actual visibility may be further. Paint color will be determined in consultation with BOEM, the FAA, and USCG. The simulations conservatively use RAL 9010 "Pure White". This simulation represents the field of view taken by a single-exposure camera using a 50 mm lens. Ambient lighting in the photograph has been simulated.

Ocean City Mid-Afternoon Shore Facing Single Frame Detail
 (Note: these images are single frame detail and not representative of a human field of view)

Visual Impact Simulation - Page 4 of 5



Regional Map



Viewpoint & Project Data

Date	March 22, 2016
Time	1700 Hrs
Camera Coordinates	UTM Z18 Meters
Northing	4242173.87
Easting	492579.84
Height to Lens	5.1 Feet
Ground Elevation	14.6 Feet
Camera Make	Nikon
Camera Model	D810
Focal Length	50 mm
Field of View (FOV)	40° x 24°
Project Area FOV	51°
Distance to Closest WTG	12.5 Statute Mi.
Temperature	53° F
Weather Conditions	Partly Cloudy
Humidity	92%
Visibility	10 Statute Mi.
Wave Height	1-2 Feet
Lighting Conditions	Lit from SW
Number of Turbines	125
MW Capacity of Turbines	18
Turbine Height to Top of Blade	938 Feet
Direction of View	East
Wind Direction From	267° (SW)
Feet (%) Visible Nearest WTG	.910 Feet (97%)



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Ocean City Pier, Ocean City Maryland
 Detail of Proposed Late Afternoon View With Maximum Turbine Visibility (COP Layout With Nacelles Perpendicular to Beach)

This figure is designed to be printed as an 11" x 17" landscape layout. Atmospheric conditions based on the National Weather Service (NWS) Daily Summaries which are available at www.weatherunderground.com. Please note, the NWS records visibility to a maximum of 10 miles, actual visibility may be further. Paint color will be determined in consultation with BOEM, the FAA, and USCG. The simulations conservatively use RAL 9010 "Pure White". This simulation represents the field of view taken by a single-exposure camera using a 50 mm lens. Ambient lighting in the photograph has been simulated.

Ocean City Late Afternoon Shore Facing Single Frame Detail
 (Note: these images are single frame detail and not representative of a human field of view)

Visual Impact Simulation - Page 5 of 5



Regional Map



Viewpoint & Project Data

Date	March 22, 2016
Time	1700 Hrs
Camera Coordinates	UTM Z18 Meters
Northing	4227155.15
Easting	486315.24
Height to Lens	5.1 Feet
Ground Elevation	13.3 Feet
Camera Make	Nikon
Camera Model	D810
Focal Length	50 mm
Field of View (FOV)	40° x 24°
Project Area FOV	42°
Distance to Closest WTG	16.4 Statute Mi.
Temperature	53° F
Weather Conditions	Mostly Clear
Humidity	92%
Visibility	10 Statute Mi.
Wave Height	1-2 Feet
Lighting Conditions	Lit from SW
Number of Turbines	125
MW Capacity of Turbines	18
Turbine Height to Top of Blade	938 Feet
Direction of View	East
Wind Direction From	251° (SW)
Feet (%) Visible Nearest WTG	867 Feet (92%)



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Assateague State Park and National Seashore, Berlin, Maryland

Detail of Proposed Late Afternoon View With Maximum Turbine Visibility (COP Layout With Nacelles Perpendicular to Beach)

This figure is designed to be printed as an 11" x 17" landscape layout.* Atmospheric conditions based on the National Weather Service (NWS) Daily Summaries which are available at www.weatherunderground.com. Please note, the NWS records visibility to a maximum of 10 miles, actual visibility may be further. Paint color will be determined in consultation with BOEM, the FAA, and USCG. The simulations conservatively use RAL 9010 "Pure White". This simulation represents the field of view taken by a single-exposure camera using a 50 mm lens. Ambient lighting in the photograph has been simulated.

Assateague Late Afternoon Shore Facing Single Frame Detail
(Note: these images are single frame detail and not representative of a human field of view)