Visual Simulations for Key Observation Point (KOP)

Cumulative Impact

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

Atlantic Shores Offshore Wind Final Environmental Impact Study (FEIS), Appendix H (Visual Simulations)

Cumulative Impact of all Planned Offshore Wind Projects as of September 2024

Each circle in this image represents where the turbines will be visible for each offshore wind turbine development project. The circles are color coded to match the project names in the legend and development project colors on the map. There are 6 projects that will be visible from the Brigantine Natural Area (North Beach Area).

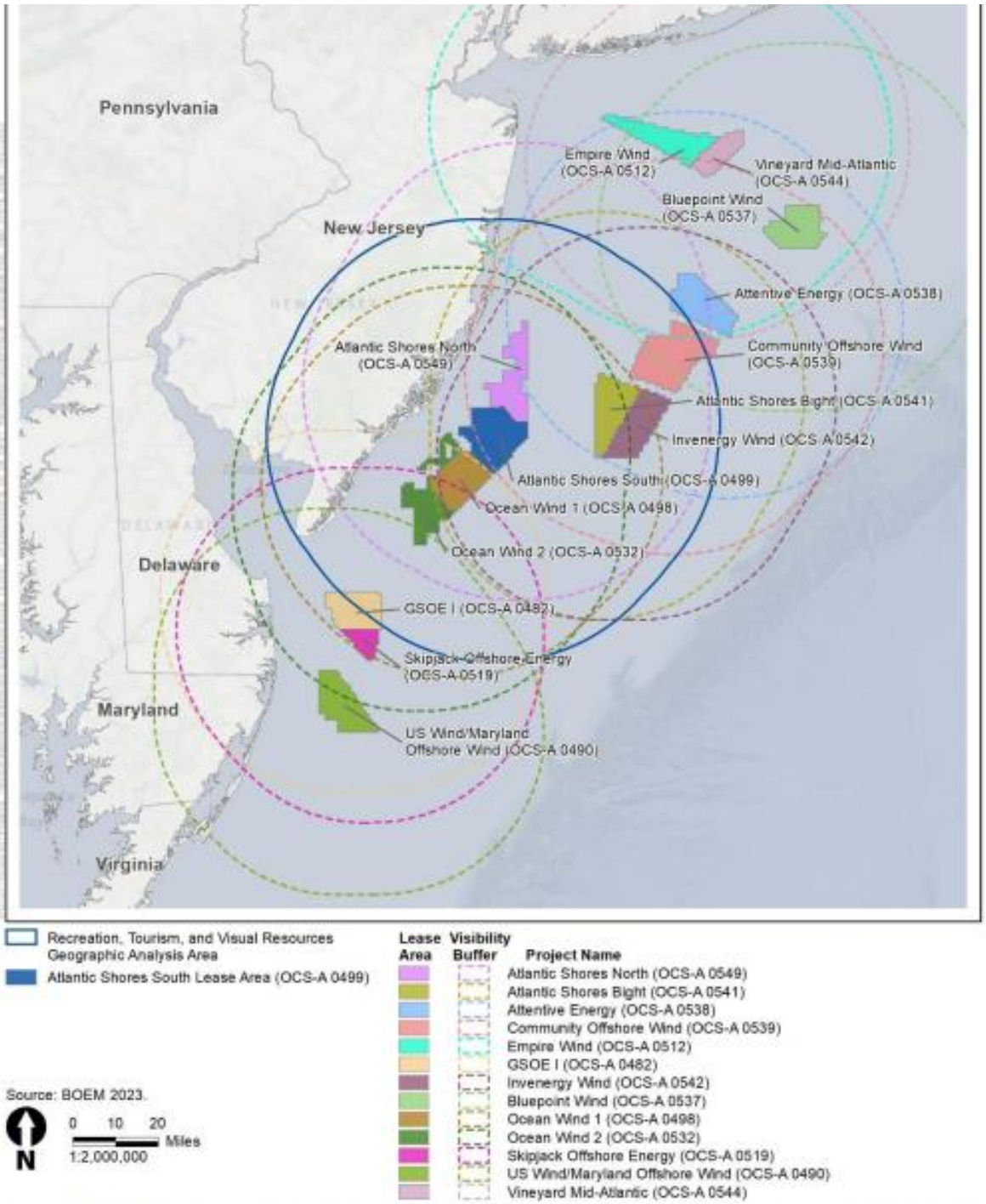


Figure 3.6.9-1. Scenic and Visual Resources geographic analysis area and lease visibility buffers

[Atlantic Shores South Final EIS: Appendix H Seascape, Landscape, and Visual Impact Assessment (boem.gov)](#)

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 1	Ocean Wind (OCS-A 0498)	2023-2025	906	111	111	15.7	28.1
Scenario 1	Empire Wind (OCS-A 0512)	2024-2025	951	0	72	Not Visible	Not Visible
Scenario 1	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
Scenario 3	Garden State (OCS-A 0482)	2023-2030	853	0	80	Not Visible	Not Visible
Scenario 3	US Wind (OCS-A 0489 and 0490)	2024	938	0	101	Not Visible	Not Visible
Scenario 3	Atlantic Shores Offshore Wind North (OCS-A 0549)	2025-2030	1,047	164	164	11.3	27.2
Scenario 3	Ocean Wind II (OCS-A 0532)	2026-2030	906	111	111	11.1	36.3
Scenario 3	Mid-Atlantic Offshore Wind (OCS-A 0544)	by 2030	853	0	104	Not Visible	Not Visible
Scenario 3	Ocean Wind East (OCS-A 0537)	by 2030	853	0	82	Not Visible	Not Visible
Scenario 4 / Scenario 3	Attentive Energy (OCS-A 0538)	by 2030	853	0	101	Not Visible	Not Visible
Scenario 4 / Scenario 3	Bight Wind Holdings (OCS-A 0539)	by 2030	853	0	148	Not Visible	Not Visible
Scenario 4 / Scenario 3	Atlantic Shores Offshore Wind Bight (OCS-A 0541)	by 2030	853	71	95	37.5	43.0
Scenario 4 / Scenario 3	Invenergy Wind Offshore (OCS-A 0542)	by 2030	853	4	99	41.6	43.0
				666			

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

3

Scenario 3 (turquoise shaded horizontal band on left side of table) has turbines for all projects (see table above) on pdf page 105. There are a total of 666 turbines visible from this KOP (North End Beaches) in Brigantine.

Atlantic Shores chose the North Brigantine Natural Area as the Key Observation Point (KOP) in Brigantine. The KOP is the location in which the simulation of the visual impact of seeing the offshore wind turbines is taken. The visual impact of the turbines will be similar throughout Brigantine. The two photos in Atlantic Shores' visual impact studies are referred to as Panorama 1 and Panorama 2 of Scenario 3. Scenario 3 is the label used for the cumulative impact of ALL offshore wind PROJECTS. The two photo simulations represent the cumulative impact of all projects for Brigantine. But do they? Read the presentation below of how Atlantic Shores makes it impossible to see the cumulative impact in their photos.

Atlantic Shores designated additional KOPs up and down the NJ coast. Their simulations of the visual impact are also included in Appendix H. The instructions for reviewing the images of the wind turbines from each KOP will be the same as Brigantine's KOP. The impossibility of seeing a true representation of the visual impact of the wind turbines will be the same as well. The order of the presentation below is Panorama 2 followed by Panorama 1.

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)

Atlantic Shores South Final EIS: Appendix H Seascape, Landscape, and Visual Impact Assessment (boem.gov) Pdf page 116

ATLANTIC SHORES
offshore wind

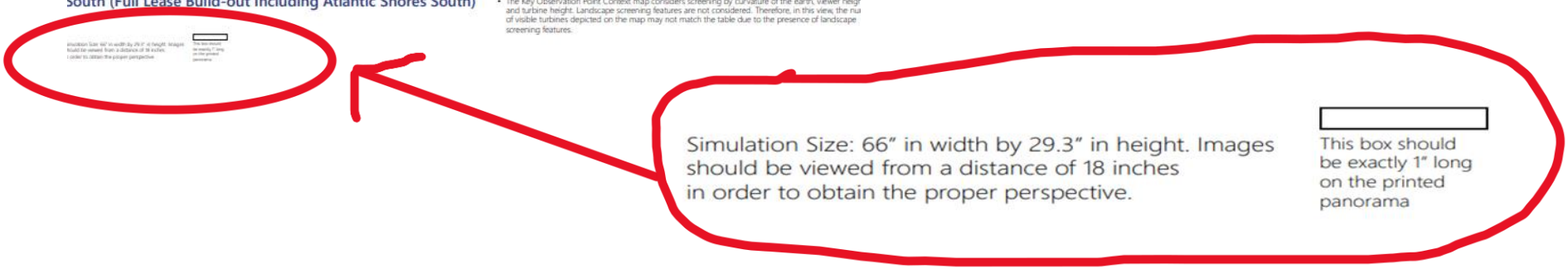
Appendix A: Atlantic Shores Offshore Wind Cumulative Photosimulations

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)

Notes:

- Photosimulation Size: 66" in width by 29.3" in height. Images should be viewed from 18 inches in orc 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 dat Projects for which this data is not currently available, WTGs are used for all foundation positions. OS 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 viewshe 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 platf 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, structure curvature of the earth and refraction. This count may vary from the actual number of WTGs visible i 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 co assumed the WTG blades are in the upright position whereas the photosimulations assume a randor rotation pattern. Considering the largest WTG in the cumulative array, this could account for up to 2 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 exte 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 the need for high resolution to see distant project components. Similarly to human vision, very dista 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 heigh and turbine height. Landscape screening features are not considered. Therefore, in this view, the nu of visible turbines depicted on the map may not match the table due to the presence of landscape screening features.



VIEWING IMAGE ON YOUR COMPUTER SCREEN

The most important part of the simulations is CIRCLED IN RED BELOW which is barely visible at the bottom left side of the page when viewing from your computer screen. See instructions written in bullet 1 in the NOTES by Atlantic Shores on next page. The instructions are telling the viewer to increase the size of the image until the "box" is 1 inch in length.

Atlantic Shores South Final EIS: Appendix H Seascape, Landscape, and Visual Impact Assessment (boem.gov) Pdf page 116

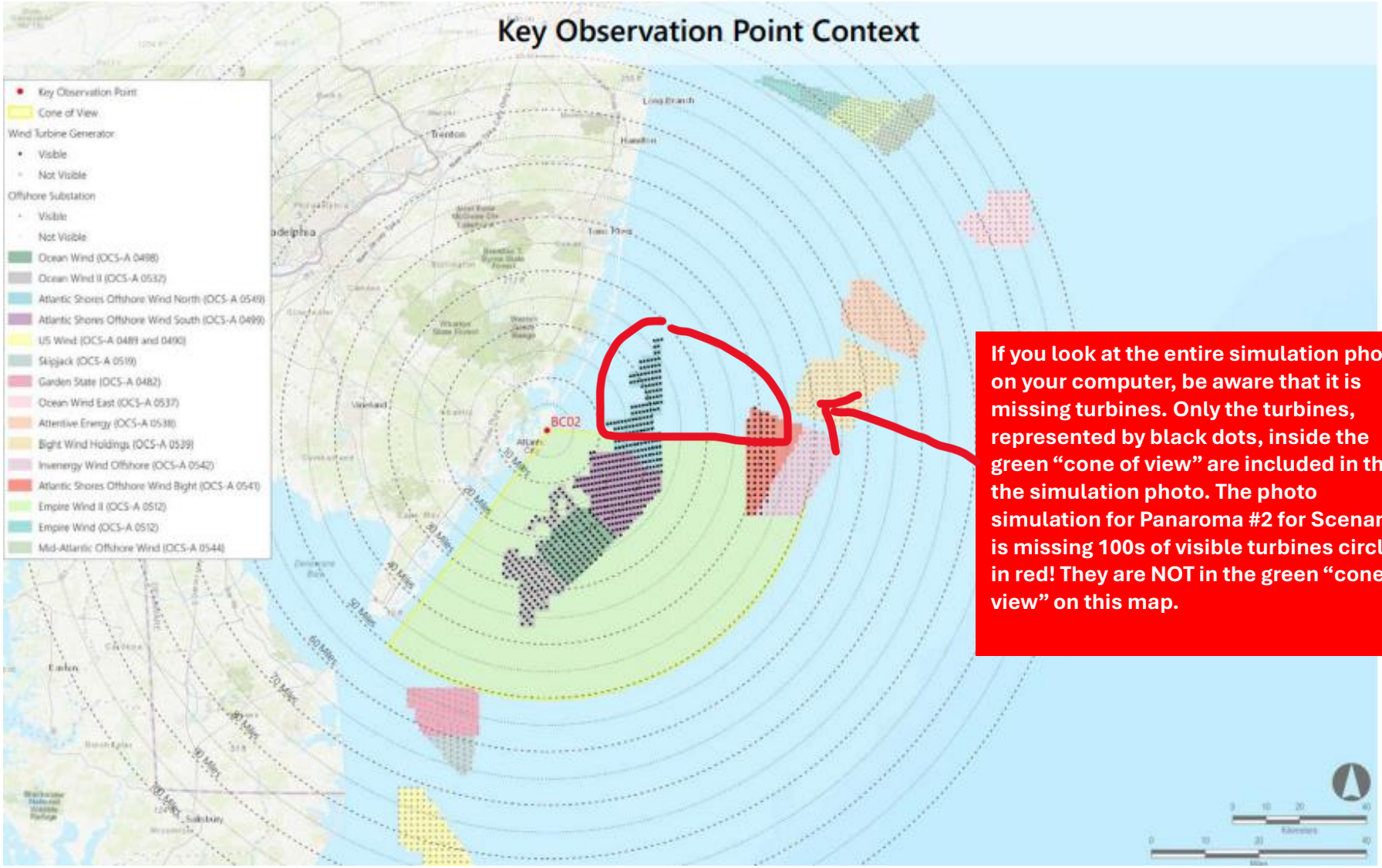
The notes below could also result in distortions of the images presented. (see PDF page 117)

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.

This is Panorama #2 of Scenario 3 visualization of the turbines for all projects after enlarging the image to achieve the 1-inch measurement per the instructions on the visualization. Only a portion of the picture from the Atlantic Shores Document fits on this page, and the turbines images are fuzzy from enlarging the image to achieve the 1 inch measurement legend. This WORD document is at 100%. Atlantic Shores breaks up the Panoramas (called 1 and 2) to either minimize the impact of the viewer experience or because they can't reproduce the entire view on a piece of paper. (see PDF page 116).

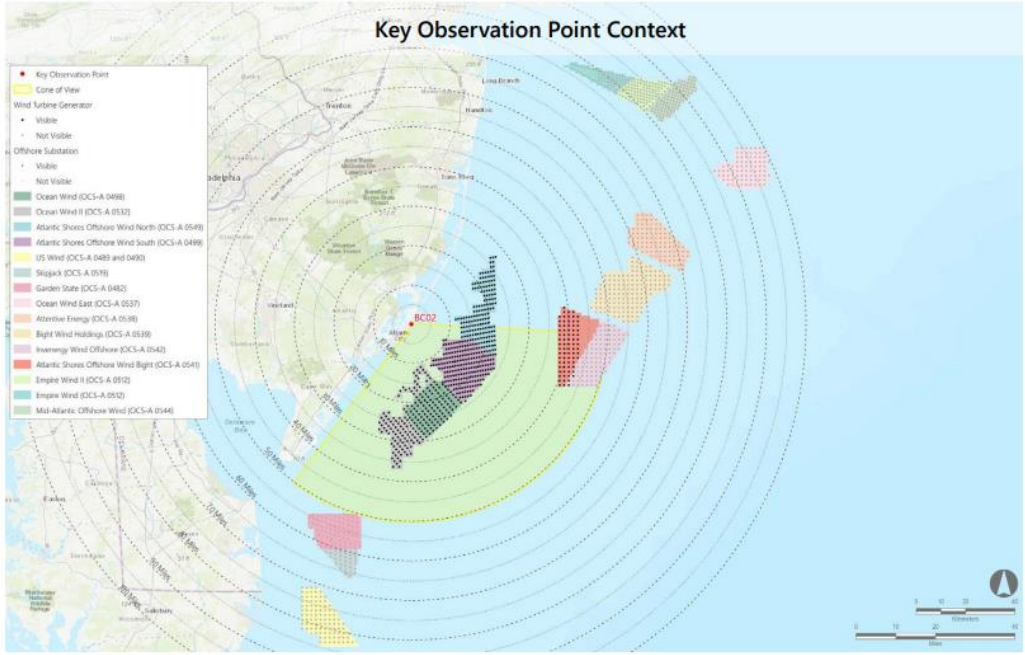
Atlantic Shores South Final EIS: Appendix H Seascape, Landscape, and Visual Impact Assessment (boem.gov)



Panaroma #2 for Scenario 3
Cone of View is in the green part of the image (south portion of turbines).
(see PDF page 116).
[Atlantic Shores South Final EIS: Appendix H Seascape, Landscape, and Visual Impact Assessment (boem.gov)]

Below is the Cone of View (shaded green) along with the Table of visible wind turbines from all projects for Scenario 3, Panorama 2.

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



The table for the Panorama 2, Scenario 3 photo lists 666 visible turbines even though the photo is missing 100s of visible turbines!

(see PDF page 116).
Atlantic Shores South Final EIS: Appendix H Seascape, Landscape, and Visual Impact Assessment (boem.gov)

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)

Atlantic Shores South Final EIS: Appendix H Seascape, Landscape, and Visual Impact Assessment (boem.gov) PDF page 109

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)

Notes:
- Photosimulation Size: 66" in width by 29.3" in height. Images should be v to obtain the proper perspective. For on-screen viewing, user should zoo equals exactly one inch when measured on the screen.
- Offshore Substation location and dimensions are based on preliminary p Projects for which this data is not currently available, WTGs are used for positions and dimensions considered in this photosimulation are subject
- WTG positions in the photosimulations are based on a refraction value o 0.14 coefficient derived from observations of the constructed Block Islanc coefficient may yield more conservative visibility results (i.e. greater turbi analysis results which use a refraction coefficient of 0.13.
- WTG tower, blades, and nacelle use the BOEM and FAA required color R use RAL 1023 in accordance with USCG regulations.
- *The number of WTGs visible from the KOP was determined by human v counts performed in the 3D camera views considering screening resultin curvature of the earth and refraction. This count may vary from the actu the respective views due to masking completed during post processing waves, boats, or other minor obstructions that appear in the photograph assumed the WTG blades are in the upright position whereas the photos rotation pattern. Considering the largest WTG in the cumulative array, th ft. (72 m) in lost maximum height depending on the rotation position.
- The cone of view indicated on the Key Observation Point Context map ir view only and does not indicate the extent of WTG visibility.
- The resolution of the cumulative photosimulations balances the size and the need for high resolution to see distant project components. Similarly turbines may appear blurry or difficult to decipher due to resolution limit
- The Key Observation Point Context map considers screening by curvatu and turbine height. Landscape screening features are not considered. Th of visible turbines depicted on the map may not match the table due to screening features.

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.

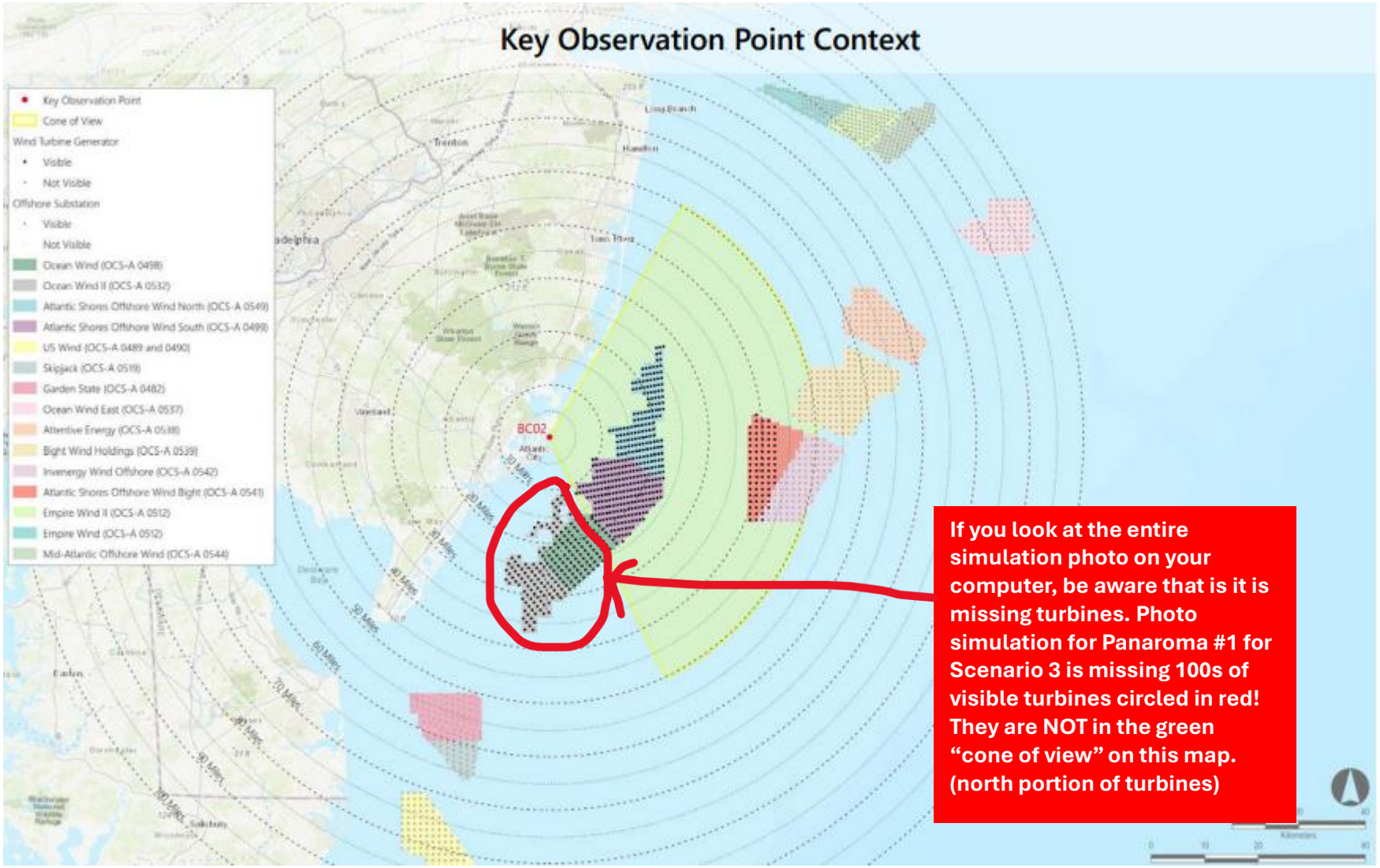
This box should be exactly 1" long on the printed panorama

VIEWING IMAGE ON YOUR COMPUTER SCREEN

The most important part of the simulations is CIRCLED IN RED BELOW which is barely visible at the bottom left side of the page. See instructions written in bullet 1 in the NOTES by Atlantic Shores on page 7. The instructions tell the viewer to enlarge the image until the "box" is 1 inch in length.

Atlantic Shores South Final EIS: Appendix H Seascape, Landscape, and Visual Impact Assessment (boem.gov) PDF page 109

This is Panorama #1 for Scenario 3 – this is only a portion of the picture in the Atlantic Shores document because the whole picture doesn't fit on the page when it's enlarged to fit the 1-inch measurement per the instructions on the visualizations. It's basically the same image as Panorama#2. You can see the substation in each.
Atlantic Shores South Final EIS: Appendix H Seascape, Landscape, and Visual Impact Assessment (boem.gov) PDF page 109



Panaroma #1 for Scenario 3

Cone of View is in the green part of the image (facing north)

Atlantic Shores South Final EIS: Appendix H Seascape, Landscape, and Visual Impact Assessment (boem.gov) PDF page 109

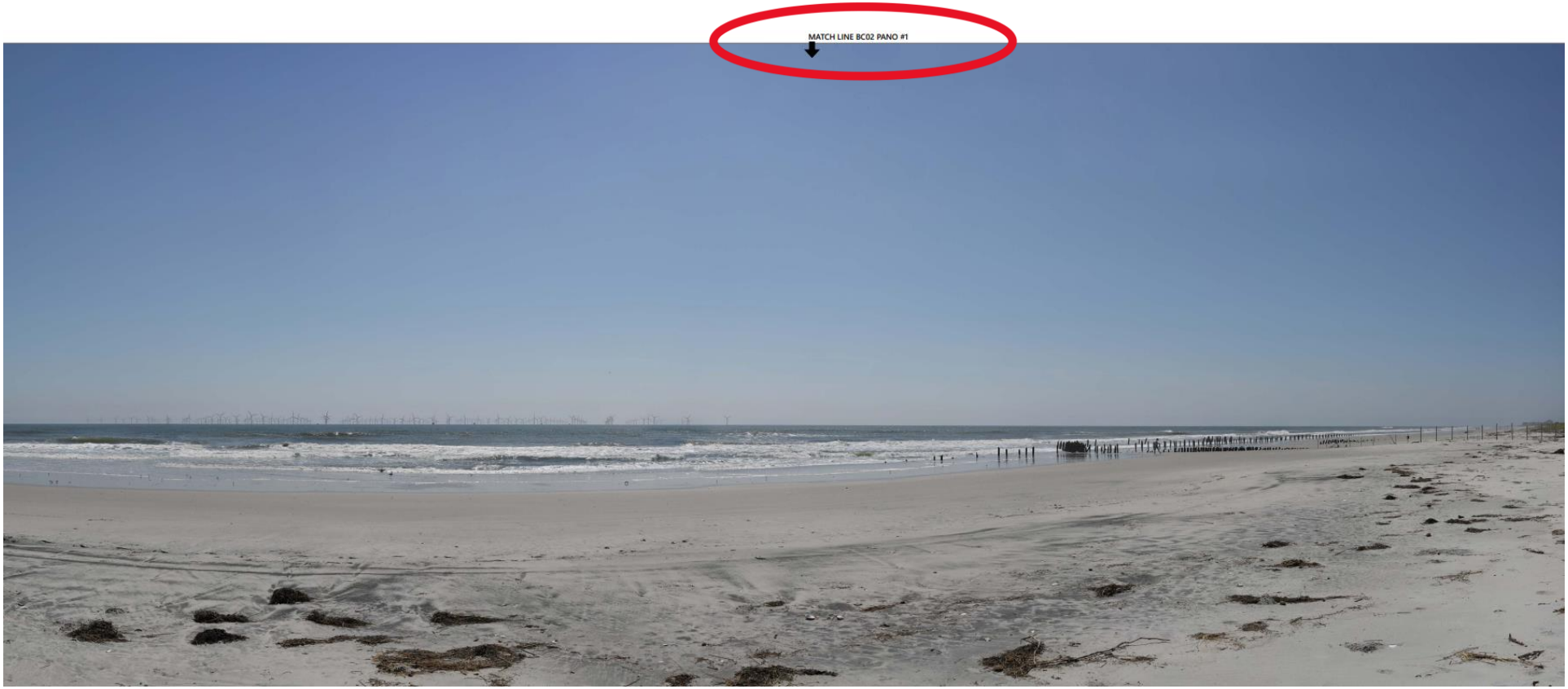
This is a picture of the cone of visibility (shaded in green) along with the list of turbines from all the projects in the green area.

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	918	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	86.3
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

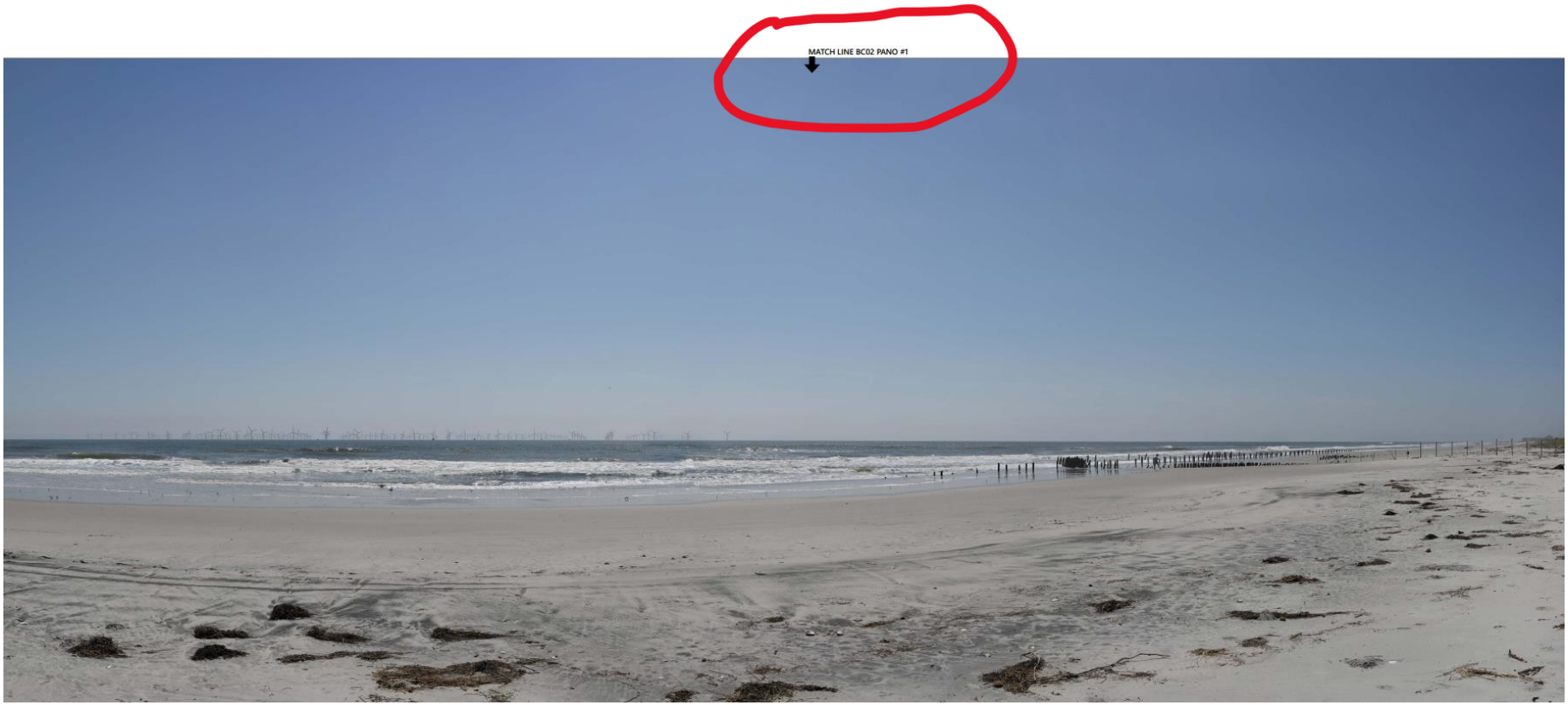
The table for the Panorama 1, Scenario 3 photo lists 666 visible turbines even though the photo is missing 100s of visible turbines!

Atlantic Shores South Final EIS: Appendix H Seascape, Landscape, and Visual Impact Assessment (boem.gov) PDF page 109

At the top of both Panorama 1 and 2 for Scenario 3 photo simulations, Instructions are to "MATCH LINE BC02 PANO #1/ PANO#2. Does this mean that the pictures should be combined at this area to get an accurate simulation necessary to see the cumulative impact of all turbines? How is this even accomplished?



Atlantic Shores South Final EIS: Appendix H Seascape, Landscape, and Visual Impact Assessment (boem.gov) PDF page 109



[Atlantic Shores South Final EIS: Appendix H Seascape, Landscape, and Visual Impact Assessment (boem.gov)]

Pdf page 116