Sunrise Wind - Appendix I: Seascape, Landscape, and Visual Impacts Assessment

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Appendix I: Seascape, Landscape and Visual Impact Assessment

1.1 Introduction

This appendix describes the Seascape, Landscape, and Visual Impacts (SLVIA) methodology and key findings that BOEM used to identify the potential impacts of offshore wind structures (WTGs and OSS) on scenic and visual resources within the geographic analysis area. The analysis of scenic and visual resources considers methodologies provided in the *Assessment of Seascape, Landscape, and Visual Impacts of Offshore Wind Developments on the Outer Continental Shelf of the United States* (BOEM 2021) and the *Guidelines for Landscape and Visual Impact Assessment* (3rd Edition) (Landscape Institute and Institute of Environmental Management and Assessment 2016).

Section 1.2, *Method of Analysis*, of this appendix describes the methodology used to apply the SLVIA methodology to the Sunrise Wind COP VIA (COP Appendix Q1, Sunrise Wind 2022), information, and Section 1.3, *Results*, summarizes the results of the assessment under the No-Action (Alternative A), Proposed Action (Alternative B), and Fisheries Habitat Alternative (Alternative C). The analysis of scenic and visual resources includes consideration of the Proposed Project's incremental contribution to cumulative impacts in combination with other planned offshore wind projects within the geographic analysis area. Attachments to this appendix provide additional supporting information for the analysis as provided in the Sunrise Wind COP (COP Appendix Q1, Sunrise Wind 2022), and supplemental information (EDR 2020). Attachment I-1 provides an overview map of the scenic resources within the visual study area (VSA). Attachment I-2 provides a summary of identified existing scenic and visually sensitive resources within the VSA. Attachment I-3 provides Key Observation Points visual simulations of the Proposed Action. Attachment I-4 provides supporting information pertaining to the Key Observation Points (KOP) information and assessments. Attachment I-5 provides selected Key Observation Points cumulative assessment visual simulations.

The COP provides information regarding the methods used to determine the VSA, the selection of the KOPs, and the methods applied to create the visual simulations (COP Appendix Q1, Sunrise Wind 2022). As described in the COP VIA (COP Appendix Q1, Sunrise Wind 2022), the Geographic Visual Analysis Study Area (VSA) for the Sunrise project encompasses a 40-mile (64.4 km) radius from the outside perimeter of the proposed action and estimates the radius as the maximum threshold of potential visibility based on human vision, size of the turbines, and curvature of the earth (Appendix D, Figure D-20)."The visual geographic analysis area includes approximately 6,854-sq-mi (17,751-sq.-km) of open ocean, 685-sq-mi (1774 sq. km) of land (including inland water bodies), and over 615 linear miles (990 linear km) of shoreline in Rhode Island, Massachusetts, Connecticut, and New York.

The COP further refines the VSA and potential areas of impact based on the assessment of the Zone of Visual Influence (ZVI)[1] which is defined as the potential visibility of the Project facilities within the viewshed based on a viewshed model that considered vegetation, buildings/structures, and the

[1] The COP VIA also refers to the ZVI as Project Area of Potential Affect (PAPE).

curvature of the earth in order to delineate those areas that may have potential views of the highest portions of the WTGs (i.e., blade tips in the upright position). The COP offshore VIA considered the Project Design Envelope (PDE) approach to Project facilities and activities with up to 122 WTGs, with a maximum potential height of 968 feet above mean sea level (AMSL) and 3 offshore platform locations[2].

1.2 Method of Analysis

The BOEM SLVIA (2021) describes the methodology for seascape, landscape, and visual impact assessment that BOEM applies to identify the potential impacts of offshore wind energy developments in federal waters on the OCS of the United States. The SLVIA has two parts, including the seascape and landscape impact assessment (SLIA) and visual impact assessment (VIA). The SLIA analyzes and evaluates impacts of the proposed Project on both the physical elements and distinctive features that make up a landscape or seascape character, and the aesthetic, perceptual, and experiential aspects of the landscape or seascape that make it distinctive. In the SLIA, the impact receptors are the seascape/open ocean/landscape areas and its components, both the physical features and distinctive characteristics. The VIA analyzes and evaluates the impacts from selected viewpoints (i.e., key observation points or KOPs) on people who are likely to be at that viewpoint (viewers) due to the change in the composition of the view as a result of the proposed Project. In the VIA the impact receptors are the people who are likely to be at that viewpoint who may be affected by the change to the view and the impact assessment evaluates the change to the composition of the view itself and impact on the viewer.

1.2.1 SLIA Impact Analysis Considerations

The SLIA analyzes and evaluates impacts of the proposed Project on both the physical elements and distinctive features that make up a landscape or seascape character, and the aesthetic, perceptual, and experiential aspects of the landscape or seascape that make it distinctive. The SLIA assesses the potential impacts of the proposed Project on the physical elements and features that make up a landscape or seascape character units, including the ocean character area (OCA), seascape character area (SCA) and landscape character area (LCA). The OCAs include the area within the Project viewshed but outside of the SCAs within the viewshed and includes the offshore components of the open ocean areas. The SCAs include the discrete areas of coastal landscape and adjoining areas of open water where there is a share intervisibility between the land and sea that includes an area of the sea, a length of coastline, and an area of land. The LCAs include the inland areas that may be affected by the proposed Project but do not include the coastline or sea components (BOEM 2021).

The impact assessment on the landscape, seascape, and ocean characteristic is based on the sensitivity of the receptor and the magnitude of the character changes from the Proposed Action (BOEM 2021). The sensitivity of the receptor is based on the susceptibility of the landscape to impact and its perceived value. The susceptibility of a seascape/landscape receptor to change is its ability to accommodate the impacts of the proposed project without substantial change to the basic existing characteristics of the seascape/landscape and can include the overall character of a particular seascape/landscape area, or an

[2] The VIA considered the original proposal of 122 WTGs and 3 offshore platforms. Subsequent to the COP Offshore Visual Impacts Assessment, Sunrise Wind has modified the proposed turbine array to include 94 WTGs with a maximum height of 787 feet (240 m) AMSL and one OCS-DC. The VIA states that the design changes are anticipated to result in the same or lower impacts than those presented in the VIA report.

individual aesthetic, experiential, and perceptual aspect that contributes to the character of the area. Perceived value is when the areas character is judged to be distinctive and where scenic quality, wildness or tranquility, and natural or cultural heritage features make a particular contribution to the seascape or landscape.

The magnitude of impact to the seascape, landscape, and ocean character is influenced by the size or scale of change, geographic extent, duration and reversibility of impacts. Changes in the scenic quality of the landscape, seascape, and ocean character can be indicated through the visual contrast and dominance of Project components and activities that are visible within the viewshed (BOEM 2021). SLIA analyzes and evaluates impacts on both the physical elements and features that make up a landscape, seascape, or open ocean, and the aesthetic, perceptual, and experiential aspects of the landscape, seascape or open ocean that make it distinctive. For each seascape, landscape, and ocean characteristic, the impacts are determined by identifying the interactions between the proposed project and the receptors and describing the changes to the elements, character, and key characteristics from the Proposed Action. Impact level for seascape, landscape, and open ocean areas are determined using a combination of the sensitivity of the receptors and the magnitude of impacts.

Table I - 1 provides summary of general landscape similarity zones (LSZ) and character units, and Table I - 3 provides a summary of general water, landforms, vegetation, and built structures categories. Table I - 3 provides a summary and Attachment I-1 figures provide the locations of the land cover categories identified in the COP based on the U.S. Geological Survey (USGS) National Land Cover Dataset (NLCD) and the associated LSZs and estimated acreages within the VSA and ZVI for the offshore components as provided in the COP VIA (COP Appendix Q1, Sunrise Wind 2022) and supplemental information (EDR 2022). Representative photographs and additional descriptions of the LSZs are provided in the COP VIA, Appendix Q1 (Sunrise Wind 2022). Attachment I-2 provides a summary of identified existing scenic and visually sensitive resources within the VSA.

Table I - 1 General Land and Water Areas and Landscape Similarity Zones

Land and Water Areas	Character Units	Landscape Similarity Zones/Character Units
Atlantic Ocean	OCA/SCA	Open Ocean
Shoreline	SCA/LCA	Jetty/Seawall, Beachfront, Coastal Dune, Boardwalk, Island Community
Marsh and Bay	SCA	Marshland, Bay/Shoreline, Ridges
Inland	LCA	Mainland

Source: BOEM Ocean Wind 2022

Table I - 2 General Landform Water, Vegetation and Structure Categories

Category	Landscape Features
Landform	Flat shorelines to gently sloping beaches, dunes, islands, and inland topography
Water	Ocean, bay, estuary, tidal river, river, and stream water patterns
Vegetation	Tidal salt marshes and estuarine biomes, beach grass, meadows, and maritime forests
Structures	Buildings, plazas, signage, walks, parking, roads, trails, seawalls, jetties, and infrastructure

Table I - 3 Physiographic Areas and Landscape Similarity Zones

Land Cover Category	Landscape Similarity Zones	Character Units	Acres within the VSA	Square Miles within the VSA	Acres within the ZVI	Square Miles within the ZVI	Percent of ZVI within the VSA
Open Water	Open Water/Ocean Zone	OCA	4,564,040	7,131	4,384,203	6,850	96.1
Open Water	Inland Lakes and Ponds	LCA	23,371	37	3,529	6	15.1
Agriculture/Open Developed	Agricultural, Maintained Recreation Area Highway Transportation, Rural Residential, Shoreline Residential	LCA/SCA	76,140	119	4,515	7	26.6
Developed	Highway Transportation, Rural Residential, Shoreline Residential, Suburban Residential, Developed Waterfront, Village Town Center, Commercial	LCA/SCA	70,130	110	1,964	3	8.6
Emergent Herbaceous Wetland	Salt Pond Tidal Marsh	LCA	14,814	23	1,541	2	10.4
Exposed Sand/Soil	Shoreline Beach, Coastal Dunes, Coastal Bluff	SCA	12,887	20	5,337	8	41.4
Forest/Scrub	Forest, Coastal Scrub Shrub	LCA/SCA	243,964	381	3,150	5	8.5
Total			**5,005,346**	**7,821**	**4,404,239**	**6,881**	**N/A**

Source: Request for Information Response; EDR, 2022

1.2.2 VIA Impact Analysis Considerations

The VIA analyzes and evaluates the impacts from selected viewpoints (i.e., key observation points or KOPs) on people who are likely to be at that viewpoint (viewers) due to the change in the composition of the view as a result of the proposed Project. The sensitivity and the degree of the potential scenic and visual impacts can be influenced by the viewer expectations, viewer activity, duration of the views, and viewing location and proximity to the Project features. Viewer activity within the VSA can range from local residents with views from residential, commercial, and shoreline areas; individuals traveling through the area via walking, vehicle, public transportation, or boat (offshore); individuals participating in recreational activities, including tourists and those on vacation; and fishing community engaging in both onshore and offshore commercial fishing activities. The viewer sensitivity can also be influenced by the proximity of the Project to the viewer, such as elevation and viewing angle of the viewer and distance from the viewer to the Project features. The potential scenic and visual impacts can also be influenced by the magnitude of the scale of the Project features relative to the viewer, such as distance to the nearest WTG and visibility threshold, and geographic extent, such as vertical and horizontal scale of the Project features in relation to the viewing location.

Generally, at distances of 15 miles or closer the WTGs and OSS may appear dominant in form and visual contrast. WTGs located within viewing distances from 0-15 miles would be within foreground level visual prominence, distances from 16-25 miles as middle-ground visual prominence, and greater than 25 miles would be considered extended background level visual prominence. The visibility and noticeability of Project features can be affected by factors such as time of day, view angle, sun angle, atmospheric conditions, elevation and viewing angle of the viewer, and distance from the viewer to the Project features. Visual contrast of WTGs and OCS-DC would vary throughout the day depending on whether the WTGs and OCS-DC are backlit, side-lit, or front-lit and based on the visual character and atmospheric conditions of the horizon backdrop. Variations of these factors throughout the course of the day would result in modification of the potential visual impacts ranging from periods of moderate to major visual effects, such as during sunset conditions with backlighting of Project features, while at other times of day would have minor or negligible effects, such as hazy atmospheric conditions and Project features within a background or extended background view.

For each KOP, various sensitivity and magnitude factors were considered in evaluating the potential visual impact of the WTGs based on assessment of the KOP visualizations (Attachment I-3) according to BOEM's methodology provided in "*Assessment of Seascape, Landscape, and Visual Impacts of Offshore Wind Developments on the Outer Continental Shelf of the United States (BOEM 2021). Sensitivity* Factors considered included: susceptibility and sensitivity of the landscape to change (i.e., distinctiveness, development patterns, landform, ocean view), and perceived value and user sensitivity associated with the KOP (i.e., anticipated visitor expectations, viewer elevation, duration of viewing experience, scenic resource value and use level). Magnitude Factors considered included: size and scale (i.e., distance to the nearest turbine, extent the WTG was viewable, and visibility threshold), geographic extent (i.e., vertical and horizontal scale of the WTGs in relation to the viewscape), and duration/reversibility (i.e., long term permanence of the WTG structures and ability to reverse or remove feature). Attachment I-4, Table I-4.3 provides a summary of the VIA KOP assessment parameters and considerations for the Sensitivity Factors and Magnitude Factors.

These evaluations were then collectively considered and assessed via BOEM's matrices for combining sensitivity components, magnitude components, and for identifying impact levels (BOEM 2021). Section 1.3 provides the results of this assessment and Attachment 1-4.1 provides summaries of key characteristics of the KOPs (location, view types, visually sensitive resources, KOP location landscape similarity zone), and Table I-4.2 provides a summary of additional KOP features, including distance from viewing location to nearest WTG, extent that WTG is visible (full tower, platform or partial), horizontal and vertical field of view, and rating factors (sensitivity, magnitude and visibility) for each KOP.

1.3 Results

The COP offshore VIA considered the Project Design Envelope (PDE) approach to Project facilities and activities with up to 122 WTGs, with a maximum potential height of 968 feet above mean sea level (AMSL) and 3 offshore platform locations. This EIS analyzes the maximum-case scenario Project Design Envelope (PDE) approach to Project facilities and activities with up to 122 WTGs, with a maximum potential height of 968 feet above mean sea level (AMSL) and 3 offshore platform locations. Any potential variances in the proposed Project build-out as defined in the PDE would result in impacts similar to or less than those proposed under the Proposed Action and other alternatives in this DEIS. The following proposed PDE parameters (Appendix C) would influence the magnitude of impacts on scenic and visual resources:

- The Project layout, including the number, size, and placement of the WTGs and OSS.
- The design of lighting systems for structures including the implementation of ADLS lighting systems.
- The number and type of vessels involved in construction, O&M, and decommissioning.
- The time of day and time of year that construction, O&M, and decommissioning occur.
- The onshore cable export route options.
- The size and location of onshore substations.

Variability of the proposed Project design exists as outlined in Appendix C. Below is a summary of potential variances in impacts:

- The number, size, location, and lighting of the WTGs. The visual impacts from onshore KOPs would increase with the presence of more WTGs and larger turbine size.
- The design and type of WTG lighting would affect nighttime visibility of WTGs from onshore and offshore viewing locations. Implementation of ADLS technology would reduce visual impacts.
- The time of day that construction, O&M, and decommissioning activities occur. Activities are anticipated to occur outside of the busy summer tourism season.
- The location and size of onshore Project components could have varying impacts depending on the current land use and zoning of the project facilities. If Project facilities are located in closer proximity to sensitive receptors, then they would have greater impacts.

This EIS uses a four-level classification to analyze potential impact levels for scenic and visual resources of the alternatives, including the proposed action. Table I - 4 lists the definitions for the potential

adverse impact levels for scenic and visual resources under the SLIA and the VIA. Table G-20 in Appendix G identifies potential IPFs, issues, and indicators to assess impacts to scenic and visual resources. Impacts are categorized as beneficial or adverse and may be short-term (temporary) or long-term in duration. Short-term impacts may occur over a period of less than five years. Long-term impacts may occur over a period ranging from 5 years to 30 years, and impacts that occur longer than 30 years are considered permanent. The analysis for scenic and visual resources helps to inform the impact assessment to recreation and tourism viewscape and settings, Section 3.6.8.

Table I - 4 Potential Adverse and Beneficial Impact Level Definitions

Impact Level	Definition of Potential Adverse Impact Levels	Definition of Potential Beneficial Impact Levels
SLIA		
Major	The project would introduce features that would have dominant levels of visual prominence within the geographic area of an ocean/seascape/landscape character unit. The project would introduce a visual character that is inconsistent with the character of the unit, which may have a major negative effect to the unit's features, elements, or key qualities. The concern for change (susceptibility/value) to the character unit is high.	N/A
Moderate	The project would introduce features that would have medium to large levels of visual prominence within the geographic area of an ocean/seascape/landscape character unit. The project would introduce a visual character that is inconsistent with the character of the unit, which may have a moderate negative effect to the unit's features, elements, or the key qualities. In areas affected by large magnitudes of change, the unit's features, elements or key qualities have low susceptibility and/ or value.	N/A
Minor	The project would introduce features that may have noticeable low to medium levels of visual prominence within the geographic area of an ocean/ seascape/ landscape character unit. The project features may introduce a visual character that is somewhat inconsistent with the character of the unit, which may have minor to medium negative effects to the unit's features, elements, or key qualities, but the unit's features, elements, or key qualities have low susceptibility or value.	N/A
Negligible	Very little or no effect on seascape/landscape unit character, features, elements, or key qualities because unit lacks distinctive character, features, elements, or key qualities; values for these are low; and/or Project visibility is minimal.	N/A
VIA		
Major	The visibility of the project would introduce a major level of character change to the view; would 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, and, then evaluate the nature of the sensitivity to determine if elevating the impact to major is justified. If the susceptibility and value at the KOP is low in an area where the magnitude of change is large, then evaluate the nature of the sensitivity to determine if lowering the impact to moderate is justified.	

Impact Level	Definition of Potential Adverse Impact Levels	Definition of Potential Beneficial Impact Levels
Moderate	The visibility of the project would introduce a moderate to large level of change to the view's character; may have a moderate to large levels of visual prominence that attracts and holds but may or may not dominate the viewer's attention; and has a moderate effect on the viewer's visual experience. The viewer receptor sensitivity/susceptibility/value is medium to low. Moderate impacts are typically associated with medium viewer receptor sensitivity (combination of susceptibility/value) in areas where the view's character has medium levels of change; or low viewer receptor sensitivity (combination of susceptibility/value) in areas where the view's character has large changes to the character. If the value, susceptibility, and viewer concern for change is high, then evaluate the nature of the sensitivity to determine if elevating the impact to the next level is justified.	
Minor	The visibility of the project would introduce a small but noticeable to medium level of change to the view's character; have a low to medium level of visual prominence that attracts but may or may not hold the viewer's attention; and have a small to medium effect on the viewer's experience. The viewer receptor sensitivity/susceptibility/value is low. If the value, susceptibility, and viewer concern for change is medium or high, then evaluate the nature of the sensitivity to determine if elevating the impact to the next level is justified. For instance, a KOP with a low magnitude of change, but has a high level of viewer concern (combination of susceptibility/value) may justify adjusting to a moderate level of impact.	
Negligible	Very little or no effect on viewers' visual experience because view value is low, viewers are relatively insensitive to view changes, or Project visibility is minimal.	

1.3.1 SLIA Impact Analysis

The seascape, open ocean, and landscape character units, and potential level of impact would be affected by sensitivity of the seascape, open ocean, and landscape and noticeable elements, distances, and contrasting elements of the Proposed Project. Table I - 5 and Table I - 6 considers the potential level of impact of the Proposed Project by seascape character unit, ocean character unit, and landscape character unit.

The sensitivity of the seascape, ocean, and landscape character is defined by its innate features, elements, and susceptibility to change, and its perceived value to residents and visitors. Table I-5 provides a summary of sensitivity rating criteria related to the seascape, ocean, and landscape character of high, medium, or low sensitivity. The sensitivity ratings within the geographic area of analysis are summarized in Table I-5. Based on assessment of potential sensitivity of the existing seascape, ocean, and landscape character within the geographic area of analysis, the sensitivity rating for all of the seascape and ocean settings would be high, and for the landscape settings would range from high to low sensitivity ratings. See Attachment I-2 for further information.

Table I - 5 Proposed Action Impact on Seascape Character, Ocean Character, Landscape Character (SLIA)

Level of Impact	Character Units	Characteristics
Major	OCA	Open ocean areas
	SCA	Ocean shoreline areas; seascapes with national, state, or local designations; beaches, seaward boardwalks, jetties, and piers
	LCA	Ocean shoreline areas, beaches, seaward boardwalks, jetties, and piers
Moderate	SCA	Beachfront andJetty/Seawall, Boardwalk, Coastal Dune, and Island Community
	LCA	Beachfront and Jetty/Seawall, Boardwalk, Coastal Dune, and Island Community
Minor	LCA	Bays, sounds, and adjoining estuaries and shores
Negligible	LCA	Inland areas beyond the viewsheds of the Project's offshore and onshore facilities

Table I - 6 Seascape, Ocean, and Landscape Sensitivity Rating Factors

Category	LSZs	Sensitivity Rating[1] Factor Description
Ocean Character Unit		
High	Open Water/Ocean Zone	Ocean character is highly vulnerable to the type of change proposed, distinctive, and highly valued by residents and visitors.
Medium		Ocean character is reasonably resilient to the type of change proposed, moderately distinctive,and moderately valued by residents and visitors.
Low		Ocean character is unlikely to be affected by the type of change proposed, common, andunimportant to residents and visitors.
Seascape Character Unit		
High	Shoreline Beach, Coastal Dunes, Coastal Bluff, Coastal Scrub Shrub, Shoreline Residential, Maintained Recreation Area, Developed Waterfront	Seascape character is highly vulnerable to the type of change proposed, distinctive, and highly valued by residents and visitors.
Medium		Seascape character is reasonably resilient to the type of change proposed, moderately distinctive, and moderately valued by residents and visitors.
Low		Seascape character is unlikely to be affected by the type of change proposed, common, and unimportant to residents and visitors.
Landscape Character Unit		
High	Agricultural, Maintained Recreation Area Highway Transportation, Rural Residential, Suburban Residential, Developed Waterfront, Village Town Center, Commercial, Forest	Landscape characteristics are highly vulnerable to the type of change proposed or within a designatedscenic or historic landscape.
Medium		Landscape characteristics are reasonably resilient to the type of change proposed, or within alandscape of locally valued scenic quality.
Low		Landscape characteristics are unlikely to be affected by the type of change proposed, or within alandscape of minimal scenic value.

Source: BOEM Ocean Wind 2022

[1] Sensitivity rating Includes consideration of both susceptibility and value factors per BOEM 2021.

1.3.2 VIA Impact Analysis

The COP VIA (Sunrise Wind 2022) identifies 40 representative KOPs within the VSA for assessment and evaluation, including development of computer simulations of representative conditions, such as daytime, nighttime, and sunset conditions. The KOPs provide representative viewing locations where individual or groups viewing experiences may be affected by the proposed Project WTGs and OCS-DC. Figures in Attachment I-1 provide the location of the KOPs identified in the COP VIA and Attachment I-3 provides the visual simulations of the existing and Proposed Action (PDE) for the identified KOPs as provided in the Sunrise Wind COP VIA (Sunrise Wind 2022).

The VIA considers the characteristics of the view receptor, characteristics of the view toward the Project facilities, and experiential impacts of the Project. Table I - 7 provides a summary of the estimated potential viewer experience impact (VIA) of the Proposed Action (PDE). Attachment I-4, Table I-4.1

through Table I-4.3 provide a summary of KOP characteristics and assessment parameters including viewer sensitivity, view receptor magnitude, visibility threshold, and anticipated impact levels of the offshore and onshore components of the Project (BOEM 2021).

Table I - 7 Proposed Action Summary of Potential Impact on Viewer Experience (VIA)

Level of Impact	KOP Information Attachment I-3 Page No. of KOP Cover Sheet	Key Observation Point ID and Name	Summary of Key Contributing Factors for Impact Level Characterization[1]			
			Sensitivity Factor Rating	Magnitude Factor Rating	Visibility Threshold	Description of Key Factors Considered
Major	41	MV05 Moshup Beach	High	Large	5	The visibility of the project would introduce a major level of character change to the view; would 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. Panoramic ocean views, scenic resource value, high resident/visitor use area, high viewer sensitivity, high visibility threshold range, high susceptibility to change, backlighting increases visibility particularly at sunrise/sunset conditions
	46	MV07 Aquinnah Overlook - day	High	Large	5	
	46	MV07-SS Aquinnah Overlook - sunset	High	Large	5	
	46	MV07-NI Aquinnah Overlook - night	High	Large	5	
	58	MV09-SS Gay Head Lighthouse - sunset	High	Large	5	
	119	BI04-SR Southeast Lighthouse - sunrise	High	Large	6	
Moderate	9	CI01 Cuttyhunk Island	Medium	Medium	4	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. Panoramic ocean views, moderate residential/visitor use, high to medium viewer
	28	MV02 Philbin Beach	Medium	Medium	4	
	35	MV03 Lucy Vincent Beach	Medium	Medium	4	
	35	MV03-SS Lucy Vincent Beach-sunset	Medium	Medium	5	
	58	MV09 Gay Head Lighthouse	Medium	Medium	3	

Level of Impact	KOP Information Attachment I-3 Page No. of KOP Cover Sheet	Key Observation Point ID and Name	Summary of Key Contributing Factors for Impact Level Characterization[1]			
			Sensitivity Factor Rating	Magnitude Factor Rating	Visibility Threshold	Description of Key Factors Considered
	70	MV12 Peaked Hill Reservation	Medium	Small	3	sensitivity, moderate visibility threshold range, area of natural or cultural significance, backlighting increases visibility particularly at sunrise/sunset conditions, nighttime lighting increases visibility
	70	MV12-SS Peaked Hill-sunset	Medium	Medium	4	
	76	MV13 Edwin D Vanderhoop	Medium	Medium	4	
	83	NL01 Nomans Land Island - sunset	Medium	Medium	4	
	119	BI04 Southeast Lighthouse - day	Medium	Medium	4	
	119	BI04-NI Southeast Lighthouse-night	Medium	Medium	4	
	125	BI06 New Shoreham Beach	Medium	Medium	4	
	131	BI12 Clayhead Trail	Medium	Medium	4	
	136	BI16 Mohegan Bluffs	Medium	Medium	4	
	150	RI03 Point Judith Lighthouse	Medium	Medium	4	
Minor	4	LI04 Montauk Point State Park	Medium	Small	2	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. Ocean views,
	4	LI04-N Montauk Point State Park - night	Medium	Small	3	
	14	MM01 Gooseberry Island	Medium	Small	2	

Level of Impact	KOP Information Attachment I-3 Page No. of KOP Cover Sheet	Key Observation Point ID and Name	Summary of Key Contributing Factors for Impact Level Characterization[1]			
			Sensitivity Factor Rating	Magnitude Factor Rating	Visibility Threshold	Description of Key Factors Considered
	64	MV10 South Beach State Park	Medium	Medium	3	residential/visitor use, high to medium viewer sensitivity, lower magnitude and visibility threshold, backlighting/lighting may increase visibility particularly at sunrise/sunset, nighttime lighting increases visibility.
	67	MV11 Wasque Point	Medium	Small	3	
	86	AI01-NI Brenton Point State Park - night	Medium	Small	2	
	93	AI03 Newport Cliff Walk	Medium	Small	2	
	98	AI05 Sachuest Point National Wildlife Refuge	Medium	Small	2	
	128	BI08 Fred Benson Beach	Medium	Small	3	
	155	RI04 South Shore Beach	Medium	Small	2	
	163	RI08 Scarborough Beach	Medium	Small	2	
	173	RI11 Matunuck Beach	Medium	Small	3	
Negligible	1	LI01 Camp Hero State Park Overlook	Medium	Small	2	Very little or no effect on viewers' visual experience because view value is low, viewers are relatively insensitive to view changes, or Project visibility is minimal. Medium viewer sensitivity, low magnitude and visibility threshold.
	19	MM04 Nobska Lighthouse	Medium	Small	1	
	22	MM06 Demarest Lloyd State Park	Medium	Small	2	
	46	MM07 Fort Taber District	Medium	Small	1	
	79	NI10 Madaket Beach	Medium	Small	1	

Level of Impact	KOP Information Attachment I-3 Page No. of KOP Cover Sheet	Key Observation Point ID and Name	Summary of Key Contributing Factors for Impact Level Characterization[1]			
			Sensitivity Factor Rating	Magnitude Factor Rating	Visibility Threshold	Description of Key Factors Considered
	79	NI10-CL Madaket Beach-clear	Medium	Small	1	
	86	AI01 Brenton Point State Park	Medium	Small	1	
	103	AI06 Sachuest Beach (Second)	Medium	Small	1	
	108	AI07 Hanging Rock	Medium	Small	2	
	113	AI09 Easton's Beach	Medium	Small	1	
	116	BI02 Great Salt Pond	Medium	Small	1	
	139	C01 Beavertail Lighthouse	Medium	Small	1	
	144	RI01 Watch Hill Lighthouse	Medium	Small	1	
	147	RI02 Weekapaug Breachway	Medium	Small	1	
	160	RI06 Trustom Pond NWR	Medium	Small	1	
	168	RI09 Narragansett Beach	Medium	Small	1	
	176	RI12 Ninigret National Wildlife Refuge	Medium	Small	1	

[1] Attachment I-4, Table I-4.1 through Table I-4.3 provide a summary of KOP characteristics and assessment parameters including viewer sensitivity, view receptor magnitude, visibility threshold, and anticipated impact levels of the offshore and onshore components of the Project (BOEM 2021).

1.3.3 Cumulative Impact Analysis

The cumulative impacts of the Proposed Action consider the impacts of the Proposed Action in combination with other ongoing and planned offshore wind activities and ongoing and planned non-offshore wind activities in the GAA. Visual simulations from ten KOPs associated with the SRWF were assessed to help illustrate potential cumulative visual impacts associated with other planned offshore wind Projects in the (EDR 2021), as summarized in Table I - 8 under five different scenarios represented in Table I - 9. With the Proposed Action, up to 1,388 WTGs would be present in the visual GAA, which would result in changes to the surrounding marine environment and the change of an undeveloped ocean character to an industrial wind farm environment. Reasonably foreseeable impacts can occur from individually minor but collectively significant actions that take place over time. Due to this Planned offshore wind and, planned non-offshore wind activities, described in Appendix E, have the potential to contribute to reasonably foreseeable impacts when combined with the Proposed Action and other alternatives over the specified spatial and temporal scales. Impacts to seascape, open ocean, landscape, and viewer experience would be short-term and long-term. This would result in major cumulative impacts on visual and scenic resources within the GAA due to the presence of new structures, nighttime lighting, land disturbance, and increased vessel traffic, port utilization, and accidental releases. Attachment I-5 provides selected Key Observation Points cumulative assessment visual simulations (EDR 2021, 2022).

Table I - 8 Key Observation Points and Conditions Represented in Cumulative Impact Analysis

State	KOP ID	Location	Conditions Represented		
			Daytime	Sunset	Nighttime
New York	LI04	Montauk Point State Park	X		X
Rhode Island	BI04	Southeast Lighthouse	X		X
	RI03	Point Judith Lighthouse	X		
	AI03	Newport Cliff Walk	X		
Massachusetts	CI01	Cuttyhunk Island	X		
	MV07	Aquinnah Overlook	X	X	X
	MV12a	Peaked Hill Open Field	X		
	MV12b	Peaked Hill Parking Area	X		
	MV11	Wasque Point	X		
	NL01	Nomans Land Island	X	X	
	NI10	Madaket Beach	X		

Table I - 9 Projects Illustrated in the Visual Simulations

Project	Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5
Vineyard Wind North	X	X	X	X	
South Fork Wind Farm	X	X	X	X	
Revolution Wind Project	X	X	X	X	
New England Wind Phase I	X	X	X	X	
New England Wind Phase II	X	X	X	X	
Sunrise Wind Farm		X	X		X
Mayflower Wind			X	X	
Liberty Wind			X	X	
Beacon Wind			X	X	
Bay State Wind			X	X	

1.4 References

Bureau of Ocean Energy Management (BOEM). 2021. *Assessment of Seascape, Landscape, and Visual Impacts of Offshore Wind Developments on the Outer Continental Shelf of the United States.* https://www.boem.gov/sites/default/files/documents/environment/environmental-studies/BOEM-2021-032.pdf.

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EDR. 2022. Response to BOEM Request for Information, dated February 2, 2022, and August 2022.

Sunrise Wind LLC (Sunrise Wind). 2022. Construction and operations plan Sunrise Wind Farm Project. Update 1: October 2021, Updated August 2022. Submitted to Bureau of Ocean Energy Management. Rochester (NY): Stantec.

Sullivan RG, Kirchler LB, Cothren J, Winters SL. 2013. Offshore wind turbine visibility and visual impact threshold distances. Environ Pract. 15(1):33–49.

ATTACHMENT I-1

Scenic Resources Overview Map

(Source: EDR 2022, Sunrise Wind 2022)

(included in a separate file)

ATTACHMENT I-2

Identified Existing Scenic and Visually Sensitive Resources within the Visual Study Area

(Source: EDR 2022, Sunrise Wind 2022)

(included in a separate file)

ATTACHMENT I-3

Key Observation Points Visual Simulations of Proposed Action - Project Design Envelope (PDE)

(Source: EDR 2022, Sunrise Wind 2022)

(included in a separate file)

ATTACHMENT I-3A

Key Observation Points Visual Simulations of Proposed Action - Project Design Envelope (PDE)

(Source: EDR 2022, Sunrise Wind 2022)

(included in a separate file)

ATTACHMENT I-3B

Key Observation Points Visual Simulations of Proposed Action - Project Design Envelope (PDE) Horizontal Occupation Assessment

(Source: EDR 2022, Sunrise Wind 2022)

(included in a separate file)

ATTACHMENT I-3C

Key Observation Points Visual Simulations of Proposed Action - Project Design Envelope (PDE) Panorama Visual Simulations

(Source: EDR 2022, Sunrise Wind 2022)

(included in a separate file)

ATTACHMENT I-4

Key Observation Points Information and Assessments

Table I-4.1 Summary of KOP Characteristics and Assessment Parameters (References: Sunrise Wind 2022 and BOEM 2021)

No.	VP ID	KOP Name	Location Town	Location County	Location State	Location Description	Viewer Type	Visually Sensitive Resource	KOP Location Landscape Similarity Zone	Character Unit
New York										
1	LI01	Camp Hero State Park Overlook	East Hampton	Suffolk	NY	Long Island	Resident, Tourist	State Park, State Area of Scenic Significance	Coastal Bluff	LCA/SCA
2.1	LI04	Montauk Point State Park	East Hampton	Suffolk	NY	Long Island	Local Residents, Tourists/Vacationers, Fishing Community	State Park, Lighthouse, State Scenic Area, State Area of Scenic Significance	Maintained Recreation Area	LCA/SCA
Massachusetts										
2.2	LI04-N	Montauk Point State Park - night	East Hampton	Suffolk	NY	Long Island	Local Residents, Tourists/Vacationers, Fishing Community	State Park, Lighthouse, State Scenic Area, State Area of Scenic Significance	Maintained Recreation Area	LCA/SCA
3	CI01	Cuttyhunk Island	Gosnold	Dukes	MA	Cuttyhunk Island	Local Residents, Tourists/Vacationers	State Scenic Area	Coastal Scrub/Shrub	LCA/SCA
4	MM01	Gooseberry Island	Westport	Bristol	MA	Gooseberry Island	Local Residents, Tourists/Vacationers	Multiple, Public beach, state reservation, state scenic area	Coastal Scrub/Shrub	LCA/SCA
5	MM04	Nobska Lighthouse	Falmouth	Barnstable	MA	Mainland	Local Residents, Tourists/Vacationers	Nobska Point Lighthouse	Maintained Recreation Area	LCA/SCA
6	MM06	Demarest Lloyd State Park	Dartmouth	Bristol	MA	Mainland	Local Residents, Tourists/Vacationers	Public beach, State Park, State Scenic Area	Shoreline Beach, Coastal Scrub/Shrub	LCA/SCA
7	MM07	Fort Taber District	New Bedford	Bristol	MA	Mainland	Local Residents, Tourists/Vacationers	Lighthouse, public beach	Maintained Recreation Area	LCA/SCA
8	MV02	Philbin Beach	Aquinnah	Dukes	MA	Martha's Vineyard	Local Residents, Tourists/Vacationers	Public beach, State Scenic Area	Shoreline Beach	LCA/SCA
9.1	MV03	Lucy Vincent Beach	Chilmark	Dukes	MA	Martha's Vineyard	Local Residents, Tourists/Vacationers	Public beach, State Scenic Area	Coastal Bluff	LCA/SCA
9.2	MV03-SS	Lucy Vincent Beach-sunset	Chilmark	Dukes	MA	Martha's Vineyard	Local Residents, Tourists/Vacationers	Public beach, State Scenic Area	Coastal Bluff	LCA/SCA
10	MV05	Moshup Beach	Aquinnah	Dukes	MA	Martha's Vineyard	Local Residents, Tourists/Vacationers	Public beaches, State Scenic Areas	Coastal Dunes	LCA/SCA

No.	VP ID	KOP Name	Location Town	Location County	Location State	Location Description	Viewer Type	Visually Sensitive Resource	KOP Location Landscape Similarity Zone	Character Unit
11.1	MV07	Aquinnah Overlook - day	Aquinnah	Dukes	MA	Martha's Vineyard	Local Residents, Tourists/Vacationers	National Natural Landmark, State Scenic Areas, Historic Site, Lighthouse, Public beaches	Coastal Bluff	LCA/SCA
11.2	MV07-SS	Aquinnah Overlook - Sunset	Aquinnah	Dukes	MA	Martha's Vineyard	Local Residents, Tourists/Vacationers	National Natural Landmark, State Scenic Areas, Historic Site, Lighthouse, Public beaches	Coastal Bluff	LCA/SCA
11.3	MV07-NI	Aquinnah Overlook - night	Aquinnah	Dukes	MA	Martha's Vineyard	Local Residents, Tourists/Vacationers	National Natural Landmark, State Scenic Areas, Historic Site, Lighthouse, Public beaches	Coastal Bluff	LCA/SCA
12.1	MV09	Gay Head Lighthouse	Aquinnah	Dukes	MA	Martha's Vineyard	Local Residents, Tourists/Vacationers	National Natural Landmark, State Scenic Areas, Historic Site, Lighthouse, Public beaches	Maintained Recreation Area	LCA/SCA
12.2	MV09-SS	Gay Head Lighthouse - sunset								LCA/SCA
13	MV10	South Beach State Park	Edgartown	Dukes	MA	Martha's Vineyard	Local Residents, Tourists/Vacationers	State Park	Shoreline Beach	SCA
14	MV11	Wasque Point	Edgartown	Dukes	MA	Martha's Vineyard	Local Residents, Tourists/Vacationers	Public beach	Shoreline Beach	SCA
15.1	MV12	Peaked Hill Reservation	Chilmark	Dukes	MA	Martha's Vineyard	Local Residents, Tourists/Vacationers	Tribal Significance	Forest	LCA
15.2	MV12-SS	Peaked Hill-sunset	Chilmark	Dukes	MA	Martha's Vineyard	Local Residents, Tourists/Vacationers	Tribal Significance	Forest	LCA
16	MV13	Edwin D Vanderhoop	Aquinnah	Dukes	MA	Martha's Vineyard	Local Residents, Tourists/Vacationers	National Natural Landmark, State Scenic Areas, Lighthouse	Coastal Bluff	LCA/SCA

No.	VP ID	KOP Name	Location Town	Location County	Location State	Location Description	Viewer Type	Visually Sensitive Resource	KOP Location Landscape Similarity Zone	Character Unit
17.1	NI10	Madaket Beach	Nantucket	Nantucket	MA	Nantucket	Local Residents, Tourists/Vacationers	Public beach, Historic District	Shoreline Beach	LCA/SCA
17.2	NI10-CL	Madaket Beach-clear	Nantucket	Nantucket	MA	Nantucket	Local Residents, Tourists/Vacationers	Public beach, Historic District	Shoreline Beach	LCA/SCA
18	NL01	Nomans Land Island - sunset	Chilmark	Dukes	MA	Nomans Land Island	No Access	National Wildlife Refuge	Coastal Bluff	LCA/SCA
Rhode Island										
19.1	AI01	Brenton Point State Park	Newport	Newport	RI	Aquidneck Island	Local Residents, Tourists/Vacationers, Fishing Community	State Park, State Scenic Area, Historic District, State boat access	Maintained Recreation Area	LCA
19.2	AI01-NI	Brenton Point State Park - night	Newport	Newport	RI	Aquidneck Island	Local Residents, Tourists/Vacationers, Fishing Community	State Park, State Scenic Area, Historic District, State boat access	Maintained Recreation Area	LCA/SCA
20	AI03	Newport Cliff Walk	Newport	Newport	RI	Aquidneck Island	Local Residents, Tourists/Vacationers	National Recreation Trail, State Scenic Area, Historic District	Shoreline Residential, Maintained Recreation Area	LCA/SCA
21	AI05	Sachuest Point National Wildlife Refuge	Middletown	Newport	RI	Aquidneck Island	Local Residents, Tourists/Vacationers	National Wildlife Refuge, Scenic Area	Coastal Scrub/Shrub	LCA/SCA
22	AI06	Sachuest Beach (Second)	Middletown	Newport	RI	Aquidneck Island	Local Residents, Tourists/Vacationers	Scenic Highway, public beach, bird sanctuary	Shoreline Beach	LCA/SCA
23	AI07	Hanging Rock	Middletown	Newport	RI	Aquidneck Island	Local Residents, Tourists/Vacationers	Scenic Highway, public beach, bird sanctuary	Coastal Scrub/Shrub	LCA/SCA
24	AI09	Easton's Beach	Newport	Newport	RI	Aquidneck Island	Local Residents, Tourists/Vacationers	National Recreation Trail, Historic District, public beach	Shoreline Beach	SCA
25	BI02	Great Salt Pond	New Shoreham	Washington	RI	Block Island	Local Residents, Tourists/Vacationers	National Wildlife Refuge, boat/fish access, public beach, State Scenic Area, ferry route	Commercial Waterfront	LCA/SCA

No.	VP ID	KOP Name	Location Town	Location County	Location State	Location Description	Viewer Type	Visually Sensitive Resource	KOP Location Landscape Similarity Zone	Character Unit
26.1	BI04	Southeast Lighthouse - day	New Shoreham	Washington	RI	Block Island	Local Residents, Tourists/Vacationers	Public beach, State Scenic area, National historic landmark	Maintained Recreation Area, Coastal Bluff	LCA/SCA
26.2	BI04-SR	Southeast Lighthouse - sunrise	New Shoreham	Washington	RI	Block Island	Local Residents, Tourists/Vacationers	Public beach, State Scenic area, National historic landmark	Maintained Recreation Area, Coastal Bluff	LCA/SCA
26.3	BI04-NI	Southeast Lighthouse-night	New Shoreham	Washington	RI	Block Island	Local Residents, Tourists/Vacationers	Public beach, State Scenic area, National historic landmark	Maintained Recreation Area, Coastal Bluff	LCA/SCA
27	BI06	New Shoreham Beach	New Shoreham	Washington	RI	Block Island	Local Residents, Tourists/Vacationers	Boat/fish access, lodges, and cottages	Shoreline Beach	SCA
28	BI08	Fred Benson Beach	New Shoreham	Washington	RI	Block Island	Local Residents, Tourists/Vacationers	State scenic areas, public beach, roadway	Shoreline Beach	SCA
29	BI12	Clayhead Trail	New Shoreham	Washington	RI	Block Island	Local Residents, Tourists/Vacationers	Trail, roadway	Coastal Bluff	LCA/SCA
30	BI16	Mohegan Bluffs	New Shoreham	Washington	RI	Block Island	Local Residents, Tourists/Vacationers	State Scenic Areas, Public beach, state recreation land, boat/fish access	Shoreline Beach, Coastal Bluff	LCA/SCA
31	C01	Beavertail Lighthouse	Jamestown	Newport	RI	Conanicut Island	Local Residents, Tourists/Vacationers	State Park, boat/fish access, Scenic Area, Lighthouse	Maintained Recreation Area	LCA/SCA
32	RI01	Watch Hill Lighthouse	Westerly	Washington	RI	Mainland	Local Residents, Tourists/Vacationers	State Scenic Area, Historic District, Lighthouse	Maintained Recreation Area, Shoreline Residential	LCA/SCA
33	RI02	Weekapaug Breachway	Westerly	Washington	RI	Mainland	Local Residents, Tourists/Vacationers	State Scenic area, State boat/fish access, National Wildlife Refuge, public beach	Shoreline Beach	SCA

No.	VP ID	KOP Name	Location Town	Location County	Location State	Location Description	Viewer Type	Visually Sensitive Resource	KOP Location Landscape Similarity Zone	Character Unit
34	RI03	Point Judith Lighthouse	Narragansett	Washington	RI	Mainland	Local Residents, Tourists/Vacationers	State Scenic Area, Wildlife Management Area, Lighthouse	Maintained Recreation Area	LCA/SCA
35	RI04	South Shore Beach	Little Compton	Newport	RI	Mainland	Local Residents, Tourists/Vacationers	State Scenic area, public beach	Shoreline Beach, Shoreline Residential	LCA/SCA
36	RI06	Trustom Pond NWR	South Kingstown	Washington	RI	Mainland	Local Residents, Tourists/Vacationers	National Wildlife Refuge, public beach, State Scenic Area	Salt Pond/Tidal Marsh	LCA/SCA
37	RI08	Scarborough Beach	Narragansett	Washington	RI	Mainland	Local Residents, Tourists/Vacationers	National Wildlife Refuge, public beach, State lands	Shoreline Beach	SCA
38	RI09	Narragansett Beach	Narragansett	Washington	RI	Mainland	Local Residents, Tourists/Vacationers	National Wildlife Refuge, public beach, State Scenic Area	Shoreline Beach	SCA
39	RI11	Matunuck Beach	South Kingstown	Washington	RI	Mainland	Local Residents, Tourists/Vacationers	National Wildlife Refuge, public beach	Developed Waterfront, Shoreline Beach	LCA/SCA
40	RI12	Ninigret National Wildlife Refuge	Charlestown	Washington	RI	Mainland	Local Residents, Tourists/Vacationers, Fishing community	National Wildlife Refuges, state lands	Shoreline Beach	SCA

Table I-4.2 Summary of KOP Characteristics and Assessment Parameters (References: Sunrise Wind 2022 and BOEM 2021)

No.	VP ID	KOP Name	Distance to nearest Turbine (miles)	Feet/ Percent of Turbine Visible	Blade Orientation View	Horizontal field-of-view occupied (degrees)	Horizontal field-of-view occupied (percent)	Vertical field of view occupied (degrees)	Vertical field of view occupied (percent)	Sensitivity Factor Rating[1]	Magnitude Factor Rating[2]	Visibility Threshold	Proposed Action and Alternatives Estimated Impact Level
1	LI01	Camp Hero State Park Overlook	31.2	Full tower and platforms	Front, slightly angled	15	12%	0.27	1.00%	Medium	Small	2	Negligible
2.1	LI04	Montauk Point State Park	30.6	Mid tower	Front, slightly angled	15	16%	0.25	0.90%	Medium	Small	2	Minor
2.2	LI04-N	Montauk Point State Park - night	30.6	Mid tower	Front, slightly angled	15	16%	0.25	0.90%	Medium	Small	3	Minor
3	CI01	Cuttyhunk Island	25.8	Full tower	Front	44	33%	0.39	1.50%	Medium	Medium	4	Moderate
4	MM01	Gooseberry Island	30.7	Mid tower	Front	40	43%	0.22	0.40%	Medium	Small	2	Minor
5	MM04	Nobska Lighthouse	34.7	Limited mid tower	Angled	29	7%	0.01	0.02%	Medium	Small	1	Negligible
6	MM06	Demarest Lloyd State Park	33.1	Limited mid tower	Front	37	100%	0.15	0.30%	Medium	Small	2	Negligible
7	MM07	Fort Taber District	37.8	Above Hub	Front	32	100%	0.09	0.20%	Medium	Small	1	Negligible
8	MV02	Philbin Beach	21.0	Tower /no platform	Angled	46	34%	0.41	0.70%	Medium	Medium	4	Moderate
9.1	MV03	Lucy Vincent Beach	22.0	Tower /no platform	Angled	39	16%	0.38	0.70%	Medium	Medium	4	Moderate
9.2	MV03-SS	Lucy Vincent Beach-sunset	22.0	Tower /no platform	Angled	39	16%	0.38	0.70%	Medium	Medium	5	Moderate

No.	VP ID	KOP Name	Distance to nearest Turbine (miles)	Feet/ Percent of Turbine Visible	Blade Orientation View	Horizontal field-of-view occupied (degrees)	Horizontal field-of-view occupied (percent)	Vertical field of view occupied (degrees)	Vertical field of view occupied (percent)	Sensitivity Factor Rating[1]	Magnitude Factor Rating[2]	Visibility Threshold	Proposed Action and Alternatives Estimated Impact Level
10	MV05	Moshup Beach	21.2	Tower /no platform	Angled	46	35%	0.43	0.80%	High	Large	5	Major
11.1	MV07	Aquinnah Overlook - day	21.5	Full tower and platforms	Slightly angled	46	36%	0.47	0.90%	High	Large	5	Moderate
11.2	MV07-SS	Aquinnah Overlook - Sunset	21.5	Full tower and platforms	Slightly angled	46	36%	0.47	0.90%	High	Large	5	Major
11.3	MV07-NI	Aquinnah Overlook - night	21.5	Full tower and platforms	Slightly angled	46	36%	0.47	0.90%	High	Large	5	Moderate
12.1	MV09	Gay Head Lighthouse	21.6	Full tower and platforms	Slightly angled	46	36%	0.47	0.90%	Medium	Medium	3	Moderate
12.2	MV09-SS	Gay Head Lighthouse - sunset		Full tower and platforms	Slightly angled	46	36%	0.47	0.90%	High	Large	5	Major
13	MV10	South Beach State Park	27.1	Mid tower	Angled	27	18%	0.26	0.50%	Medium	Medium	3	Minor
14	MV11	Wasque Point	29.4	Mid tower	Angled	20	14%	0.24	0.40%	Medium	Small	3	Minor
15.1	MV12	Peaked Hill Reservation	22.9	Full Tower and platform	Slightly Angled	39	29%	0.46	0.80%	Medium	Small	3	Moderate
15.2	MV12-SS	Peaked Hill-sunset	22.9	Full Tower	Slightly Angled	39	29%	0.46	0.80%	Medium	Medium	4	Moderate

No.	VP ID	KOP Name	Distance to nearest Turbine (miles)	Feet/ Percent of Turbine Visible	Blade Orientation View	Horizontal field-of-view occupied (degrees)	Horizontal field-of-view occupied (percent)	Vertical field of view occupied (degrees)	Vertical field of view occupied (percent)	Sensitivity Factor Rating[1]	Magnitude Factor Rating[2]	Visibility Threshold	Proposed Action and Alternatives Estimated Impact Level
				and platform									
16	MV13	Edwin D Vanderhoop	21.5	Full Tower and platform	Slightly Angled	46	49%	0.47	0.90%	Medium	Medium	4	Moderate
17.1	NI10	Madaket Beach	37	Above Hub	Angled	10	6%	0.10	0.20%	Medium	Small	1	Negligible
17.2	NI10-CL	Madaket Beach-clear	37	Above Hub	Angled	10	6%	0.10	0.20%	Medium	Small	1	Negligible
18	NL01	Nomans Land Island - sunset	15.6	Full Tower and platform	Slightly Angled	55	29%	0.66	1.20%	Medium	Medium	4	Moderate
19.1	AI01	Brenton Point State Park	28.9	Mid tower	Slightly Angled	36	29%	0.27	0.50%	Medium	Small	1	Negligible
19.2	AI01-NI	Brenton Point State Park - night	28.9	Mid tower	Slightly Angled	36	29%	0.27	0.50%	Medium	Small	2	Minor
20	AI03	Newport Cliff Walk	28.6	Mid tower	Slightly Angled	37	27%	0.23	0.40%	Medium	Small	2	Minor
21	AI05	Sachuest Point National Wildlife Refuge	29.8	Mid tower	Slightly Angled	38%	31%	0.23	0.40%	Medium	Small	2	Minor
22	AI06	Sachuest Beach (Second)	30.9	Mid tower	Slightly Angled	37	37%	0.20	0.40%	Medium	Small	1	Negligible
23	AI07	Hanging Rock	31.1	Mid tower	Slightly Angled	36	39%	0.21	0.40%	Medium	Small	2	Negligible

No.	VP ID	KOP Name	Distance to nearest Turbine (miles)	Feet/ Percent of Turbine Visible	Blade Orientation View	Horizontal field-of-view occupied (degrees)	Horizontal field-of-view occupied (percent)	Vertical field of view occupied (degrees)	Vertical field of view occupied (percent)	Sensitivity Factor Rating[1]	Magnitude Factor Rating[2]	Visibility Threshold	Proposed Action and Alternatives Estimated Impact Level
24	AI09	Easton's Beach	30.9	Mid tower	Slightly Angled	36	55%	0.21	0.40%	Medium	Small	1	Negligible
25	BI02	Great Salt Pond	20.1	Full tower and platform	Angled	29	0%	0.44	0.80%	Medium	Small	1	Negligible
26.1	BI04	Southeast Lighthouse - day	16.9	Full tower and platform	Angled	30	15%	0.61	1.10%	Medium	Medium	4	Moderate
26.2	BI04-SR	Southeast Lighthouse - sunrise	16.9	Full tower and platform	Angled	30	15%	0.61	1.10%	High	Large	6	Major
26.3	BI04-NI	Southeast Lighthouse-night	16.9	Full tower and platform	Angled	30	15%	0.61	1.10%	Medium	Medium	4	Moderate
27	BI06	New Shoreham Beach	17.8	Full tower and platform	Angled	28	19%	0.52	0.90%	Medium	Medium	4	Moderate
28	BI08	Fred Benson Beach	19.0	Full tower, minimal platform	Angled	31	26%	0.53	1.00%	Medium	Small	3	Minor
29	BI12	Clayhead Trail	19.5	Full tower and platform	Angled	32	23%	0.5	0.90%	Medium	Medium	4	Moderate
30	BI16	Mohegan Bluffs	17.2	Full tower	Angled	30	18%	0.56	1.00%	Medium	Medium	4	Moderate

No.	VP ID	KOP Name	Distance to nearest Turbine (miles)	Feet/ Percent of Turbine Visible	Blade Orientation View	Horizontal field-of-view occupied (degrees)	Horizontal field-of-view occupied (percent)	Vertical field of view occupied (degrees)	Vertical field of view occupied (percent)	Sensitivity Factor Rating[1]	Magnitude Factor Rating[2]	Visibility Threshold	Proposed Action and Alternatives Estimated Impact Level
				and platform									
31	C01	Beavertail Lighthouse	29.5	Mid tower	Slightly Angled	35	30%	0.24	0.40%	Medium	Small	1	Negligible
32	RI01	Watch Hill Lighthouse	36.0	Minimal mid tower, above hub	Angled	13	0%	0.05	0.90%	Medium	Small	1	Negligible
33	RI02	Weekapaug Breachway	33.0	Mid tower	Angled	17	6%	0.16	0.30%	Medium	Small	1	Negligible
34	RI03	Point Judith Lighthouse	25.7	Full tower	Slightly Angled	35	20%	0.29	0.50%	Medium	Medium	4	Moderate
35	RI04	South Shore Beach	31.6	Mid tower	Front	39	52%	18	0.30%	Medium	Small	2	Minor
36	RI06	Trustom Pond NWR	29.0	Mid tower	Slightly angled	27	26%	0.2	0.40%	Medium	Small	1	Negligible
37	RI08	Scarborough Beach	27.1	Mid tower	Slightly angled	34	29%	0.27	0.50%	Medium	Small	2	Minor
38	RI09	Narragansett Beach	29.7	Mid tower	Slightly angled	33	34%	0.22	0.40%	Medium	Small	1	Negligible
39	RI11	Matunuck Beach	28.0	Mid tower	Slightly angled	31	25%	0.27	0.50%	Medium	Small	3	Minor
40	RI12	Ninigret National Wildlife Refuge	30.5	Mid tower	Angled	21	0%	0.13	0.20%	Medium	Small	1	Negligible

[1] Per BOEM 2021, sensitivity factors consider susceptibility to change, and value and user sensitivity, see Table 1-4.3.

[2] Per BOEM 2021, magnitude factors consider size, scale, geographic extent, and duration/reversibility, see Table 1-4.3.

Table I-4.3 Summary of VIA KOP Assessment Parameters

	Moderate/Negligible Impact	Moderate Impact	Major Impact
Sensitivity Factor	Rating - landscape susceptibility to change - low with most capacity, high with least capacity		
Susceptibility to Change	**Low**	**Medium**	**High**
Shoreline/Landform	Highly complex shoreline or landform.	Coastline or landform of moderate complexity	Simple/Straight Shoreline
Ocean View/Vistas	Little or no view of the ocean or little or no vista.	Moderate views of the ocean or vista.	Panoramic/expansive views of the ocean, greater than 180-degree vista.
Distinctiveness/Focal Points	Focal points or features in the viewshed that are either natural or man-made and are Absent or very common, of little or no significance, and do not contribute to the character of the seascape or may detract from it.	Focal points or features in the viewshed that are either natural or man-made and are: Somewhat commonly found, of local importance/value, or make a minor contribution to the character of the seascape.	Features/focal points are very unusual, unique or very rare, of national or statewide importance/value, or are key character defining features or very distinctive.
Natural/Development Patterns	Few or absence of natural areas. Heavily developed areas. Man-made structures very dominant in the view.	Moderately sized natural area of regional significance. May include beach and dunes. Moderate scale buildings and infrastructure visible but not dominant in the view.	Remote or isolated natural area of national/statewide significance. Man-made structures or features inconspicuous or absent. Can contain high quality-built environment, include historic properties or districts on the NRHP.

Table I-4.3 Summary of VIA KOP Assessment Parameters *(continued)*

	Minor/Negligible Impact	Moderate Impact	Major Impact
	Rating - user sensitivity - low least sensitive to high most sensitive		
Value/User Sensitivity	**Low**	**Medium**	**High**
Scenic Resource Value	No formal recognition or designation as a scenic resource. No public amenity or recreational resource.	Site with local or regional recognition/ownership. Such as local park, central downtown, community resource venue, local historic site, local conservation land.	Site with national recognition / ownership: e.g., National Park, National Wildlife Refuge. Sites on the NHRP that derive significance from landscape setting.
Primary Use/Use Level	Very low resident, visitor and/or recreational usage. Heavy commercial or industrial use.	Moderate resident, visitor and/or recreational usage or some commercial usage.	Very high resident, visitor and/or recreational usage.
Visitor Expectations	Crowded with people, noisy, busy with continuous distractions, many lights.	Other people are noticeably present, some noise, distractions are present.	Minimal presence of other people or infrastructure, very quiet, little distraction, night sky visible.
Value of Ocean View	No ocean view due to site location or intervening structures or vegetation.	Users are in the vicinity of the beachfront, but the ocean view may be an enhancement but not essential to the activity. May include shoppers, amusement park goers, golfers	Uses are dependent on ocean or strongly enhanced by water view. May include beachcombing, bird watching, boating, surfing, swimming, sightseeing.
Duration of View	At viewpoint for a few seconds. May include brief glimpse of the viewpoint from car or boat.	At viewpoint for 30 minutes to 2 hours. May include fishing, restaurant dining, boardwalk activities, walking, or biking.	At viewpoint for >4 hours. May include beach going, recreational fishing.

Table I-4.3 Summary of VIA KOP Assessment Parameters *(continued)*

	Minor/Negligible Impact	Moderate Impact	Major Impact
Magnitude Factor	Rating - size/scale - small least impact to large most impact		
Rating	**Small**	**Medium**	**Large**
Distance to Nearest Turbine	25+ miles from observer	Over 15 to 25 miles from observer	0 to 15 miles from observer
Turbine Extent Viewable	None or just tip of blades	Mid-tower hub/nacelle viewable	Full Turbine
Visibility Threshold	Visibility Rating 1-2	Visibility Rating 3-4	Visibility Rating 5-6
Geographic Extent	Rating - geographic extent small least impact to large greatest impact		
Rating	**Small**	**Medium**	**Large**
Vertical Scale	Closest turbines appear to be less than 1/4 inch above the horizon.	Closest turbines appear to be approximately 1/4 inch but less than 1/2 inch above the horizon.	Closest turbines appear to be 1/2 of an inch or greater above the horizon.
Horizontal Scale	Visible turbines are seen over less than 10% of the available ocean horizon.	Visible turbines are seen over 10% to <50% of the available ocean horizon.	Visible turbines are seen over greater than 50% of the available ocean horizon.
Duration/Reversibility	Rating - duration/reversibility - good least impact to poor greatest impact		
Rating	**Good**	**Fair**	**Poor**
Duration	Short-duration - less than 5 years	Long term - 5 to 30 years	Permanent
Reversibility	Fully reversible	Partially reversible	Non- reversible

References:

BOEM 2021-032 Assessment of Seascape, Landscape, and Visual Impacts of Offshore Wind Energy Developments on the Outer Continental Shelf of the United States.

Sullivan, et al. 2013 Offshore Wind Turbine Visibility and Visual Impact Threshold Distances.

Cape Cod Commission. 2012 Technical Bulletin #12-001 Visual Impact Assessment Methodology for Offshore Development.

TJD&A 2021 Ocean Wind Visual Impact Assessment COP Appendix L.

Visibility Threshold Rating Description

Source: Sullivan, et al. 2013. Offshore Wind Turbine Visibility and Visual Impact Threshold Distances.

Visibility level 1. Visible only after extended, close viewing; otherwise invisible. An object/phenomenon that is near the extreme limit of visibility. It could not be seen by a person who was unaware of it in advance and looking for it. Even under those circumstances, the object can be seen only after looking at it closely for an extended period.

Visibility level 2. Visible when scanning in the general direction of the study subject; otherwise, likely to be missed by casual observers. An object/phenomenon that is very small and/or faint, but when the observer is scanning the horizon or looking more closely at an area, can be detected without extended viewing. It could sometimes be noticed by casual observers; however, most people would not notice it without some active looking.

Visibility level 3. Visible after a brief glance in the general direction of the study subject and unlikely to be missed by casual observers. An object/phenomenon that can be easily detected after a brief look and would be visible to most casual observers, but without sufficient size or contrast to compete with major landscape/seascape elements.

Visibility level 4. Plainly visible, so could not be missed by casual observers, but does not strongly attract visual attention or dominate the view because of its apparent size, for views in the general direction of the study subject. An object/phenomenon that is obvious and with sufficient size or contrast to compete with other landscape/seascape elements, but with insufficient visual contrast to strongly attract visual attention and insufficient size to occupy most of an observer's visual field.

Visibility level 5. Strongly attracts the visual attention of views in the general direction of the study subject. Attention may be drawn by the strong contrast in form, line, color, or texture, luminance, or motion. An object/phenomenon that is not large but contrasts with the surrounding landscape elements so strongly that it is a major focus of visual attention, drawing viewer attention immediately and tending to hold that attention. In addition to strong contrasts in form, line, color, and texture, bright light sources ~such as lighting and reflections! and moving objects associated with the study subject may contribute substantially to drawing viewer attention. The visual prominence of the study subject interferes noticeably with views of nearby landscape/seascape elements.

Visibility level 6. Dominates the view because the study subject fills most of the visual field for views in its general direction. Strong contrasts in form, line, color, texture, luminance, or motion may contribute to view dominance. An object/phenomenon with strong visual contrasts that is so large that it occupies most of the visual field, and views of it cannot be avoided except by turning one's head more than 458 from a direct view of the object. The object/phenomenon is the major focus of visual attention, and its large ap- parent size is a major factor in its view dominance. In addition to size, contrasts in form, line, color, and texture, bright light sources and moving objects associated with the study subject may contribute substantially to drawing viewer attention. The visual prominence of the study subject de- tracts noticeably from views of other landscape/seascape elements.

ATTACHMENT I-5

Selected Key Observation Points
Cumulative Assessment
Visual Simulations

(Source: EDR 2022, Sunrise Wind 2022)

(included in a separate file)