Chesapeake BAY CROSSING STUDY
TIER 2 NEPA

SOCIOECONOMICS & LAND USE TECHNICAL REPORT

APPENDIX E

VISUAL AND AESTHETIC RESOURCES

Maryland Transportation Authority
MDTA

JANUARY 2026

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ABBREVIATIONS AND ACRONYMS

ALCS	Automated Lane Closure System
AVE	Area of Visual Effect
FHWA	Federal Highway Administration
NEPA	National Environmental Policy Act
FHWA	Federal Highway Administration

1 REGULATORY CONTEXT

Section 101 [42 U.S.C. § 4331] of the National Environmental Policy Act (NEPA) was established in part to "assure for all Americans safe, healthful, productive, and aesthetically and culturally pleasing surroundings." Thus, NEPA directs federal agencies to thoroughly assess the environmental impacts of federal actions to the surrounding environment, including visual resources and aesthetics that may be impacted by a project.

The Federal Highway Administration (FHWA) developed *Guidelines for Visual Impact Assessment of Highway Projects* (2015) to provide guidance on best practices for preparing a Visual Impact Assessment (VIA). This evaluation has been prepared in accordance with the FHWA guidelines.

As described in the guidelines, the context of a VIA within a transportation study is:

> *A VIA is part of a larger environmental review process, which in turn is part of a still larger highway project development process. As part of this process, the VIA is intended to provide decision makers with information on the adverse and beneficial impacts on visual quality that can influence the selection of a preferred project alternative. The VIA provides designers with the information they need to most effectively mitigate adverse impacts on visual quality while implementing concepts to enhance existing visual quality.*

In accordance with the FHWA guidelines, the existing visual character and quality of the affected environment, as well as the viewer response to the resources, provide the framework for assessing the change to the visual resources and aesthetics that would occur with a project's proposed improvements.

Other relevant federal laws include Section 106 of the National Historic Preservation Act of 1966 and Section 4(f) of the Department of Transportation Act of 1966. Per Section 106, examples of adverse effects include, "Introduction of visual…elements that diminish the integrity of the property's significant historic features." Where visual impacts on historic properties are an issue, those impacts are assessed as part of the Section 106 consultation. As part of the Draft Section 4(f) Evaluation, visual impacts were considered when determining constructive use of 4(f) properties. It is anticipated that there would be no potential constructive use incurred by the ARDS to any of the Section 4(f) properties within the study corridor. Potential visual impacts from the Proposed Action are not anticipated to substantially diminish the protected activities, features, or attributes covered under Section 4(f). Based on these laws, visual impacts of the proposed action to historic properties, parks, and wildlife refuges are considered within this evaluation. Mitigation efforts related to Section 106 and Section 4(f) impacts can be found in their respective documents.

2 METHODOLOGY

Visual resources are the physical features of an area that comprise the visual landscape. These include natural features, including land, water, and vegetation; the cultural environmental, including as man-made elements like buildings and infrastructure; and the project environment, which is the associated transportation infrastructure. These elements are the stimuli upon which a person's visual experience is based. Changes to the visual landscape are considered environmental impacts. Potential sensitive visual receptors include areas or users affected by changes in the visual and aesthetic environment.

2.1 Area of Visual Effect (AVE) and Landscape Units

The area of visual effect (AVE) is the area in which visual impacts could occur. The AVE is determined by the physical constraints of the environment and the limitations of human sight. While the study area topography is flat and generally does not vary on the land portions of U.S. 50/301, vegetation around the corridor allows for a blend of screened and clear views of the highway and its surroundings. The William Preston Lane Jr. Memorial (Bay) Bridge has clear expansive views of the Chesapeake Bay and shorelines.

Landscape units, or geographic units on which impacts to visual quality are assessed, are defined as being generally visually homogenous areas that have one viewshed and one landscape type. Landscape units can correspond with land use types or reflect common elements of transportation infrastructure such as the number of lanes, the width of the corridor, the presence of medians, and interchanges. Per FHWA guidelines, landscape units are determined by focusing on where substantial changes to visual resources, viewers, or the visual quality of landscape units are so visually unique that a separate analysis is necessary. Where the visual character and visual impacts on several viewsheds are similar, they are grouped into a single landscape unit.

Landscape units for this analysis include the Western Shore, Chesapeake Bay, and Eastern Shore. Viewsheds on U.S. 50/301 are generally homogenous on the Eastern and Western Shores. The Bay Bridge has a substantially different viewshed at the Chesapeake Bay and thus is described and evaluated in its own landscape unit. Descriptions of each landscape unit include views along the roadway and beyond to adjacent land uses as well as visibility of the roadway from adjacent properties.

2.2 Visual Character

The visual character of each landscape unit is described for each landscape unit. Visual character describes the physical attributes of the study area, including the attributes of the highway, bridge, major structures, and other associated design elements, as well as the natural and cultural features that contribute to the visual landscape. These include the area's landform or topography, the vegetation that covers the land surface, the water surfaces that contrast with the land, and the manmade development that define much of the suburban landscape of the study area. The viewsheds of the study area vary greatly, from limited suburban type views along U.S. 50/301 to large expansive views of the Chesapeake Bay and Bay Bridge.

2.3 Viewer Groups and Key Views

Distinct viewer groups with varying degrees of sensitivity to visual and aesthetic changes to the environment are located in each landscape unit. These include regular motorists; occasional motorists/tourists; community residents; business owners, employees, and customers; and park/recreation area visitors.

- Regular Motorists: Included in this viewer group are commuters and local residents/workers who frequently travel within the study area. These viewers are aware of any changes to the visual environment because of their repeated exposure. They have a moderate level of concern for changes in the visual environment.

- Occasional Motorists/Tourists: These viewers include tourists and regional residents from outside the immediate area who infrequently travel the area. These viewers generally have a low exposure and awareness of changes to the visual environment, thus a low level of concern for changes in the visual environment.

- Community Residents: Residents are expected to have the highest awareness of visual changes of any groups, since the study area is located within their immediate environment or surroundings. Residents have a high level of concern for changes in the visual environment.

- Business Owners, Employees, and Customers: This viewer group is associated with existing offices and businesses within the study area adjacent to the U.S. 50/301 corridor and shorelines of the Bay. Generally, these viewers are assumed to have a low level of concern regarding the changes to the visual environment, as their principal concern is more likely to be the effect of alternatives on business activities. However, businesses that rely on tourism and their viewshed for business activities would be likely to have a higher concern for changes in their visual environment.

- Park/Recreation Area Visitors: These viewers include visitors to the many parks and recreational facilities in the area. While these viewers may have infrequent exposure to the corridor, they are likely to be more aware of the visual environment due to their regard for the natural environment in park/recreation areas. Park/recreation area visitors have a high level of concern for changes in the visual environment.

2.4 Visual Quality

Visual quality, as defined in the FHWA VIA Guidelines, is the interactive experience between viewers and their environment. Visual quality considers landform, landcover, types of viewers, and the proximity of the viewer to the proposed action. A description of visual quality is provided for each of the landscape units.

FHWA guidance recognizes three types of visual perception that influence visual quality: natural harmony, cultural order, and project coherence. Natural harmony is evaluated when people view the natural environment and feel a sense of harmony, or lack thereof. The perception of the natural visual resources being harmonious or inharmonious change is based on the viewers expectations of what constitutes natural harmony. Natural visual resources include land, water, vegetation, animals, and atmospheric conditions. Cultural order is evaluated when people view the cultural environment and have a sense of cultural order. The visual character of the cultural environment can be seen in buildings, infrastructure, structures, and art within the landscape unit. Project coherence is evaluated when people view the existing constructed elements of the viewshed as coherent or incoherent. Existing constructed elements of a viewshed that determine project coherence include highway geometrics, grading, constructed elements, vegetative cover, and traffic control devices.

2.5 Evaluate Impacts of Visual Quality and Assess the Degree of Impact

Visual impacts are any changes to the environment or to the viewer's visual landscape. Per FHWA Guidelines, the compatibility of the impact and the viewer's sensitivity to the impact is measured and analyzed to determine the degree of the impact.

Compatibility measures whether the alternative and the existing conditions have compatible visual character, which allows the alternative to be integrated into the existing environment without visual disruption. Compatibility is measured as either compatible or incompatible with the natural, cultural, and project environments. This is based on the project's scale, form, and materials contrasting or not contrasting with the existing visual character.

Sensitivity measures the viewer awareness and vulnerability to the changes of the visual resources and is measured as either sensitive or insensitive. Viewer sensitivity is evaluated by viewer exposure or viewer awareness. Viewer exposure can be assessed by the proximity to the impacts, extent of the number of viewers, and duration the viewer sees the landscape. Viewer awareness is measured by the viewer's attention, focus, and protection of the visual resource.

Degree of visual impact is measured as either a beneficial, adverse, or neutral change to the visual quality. A proposed project may benefit visual quality by either enhancing the existing visual character or by creating better views of those resources. Benefits to visual character improve the experience of visual quality by the viewers. Similarly, an impact may adversely affect visual quality by degrading visual resources. An adverse change to visual quality may also result from obstructing or altering desired views for a viewer.

Compatibility, sensitivity, and degree of impact has been assessed for the Tier 2 Study Alternatives Retained for Detailed Study (ARDS). These visual impacts are documented for each landscape unit. The visual impact of the ARDS have been determined by assessing the visual changes resulting from each alternative and predicting viewer response to that change. The viewer response to changes is the sum of the viewer exposure and sensitivity to the alternative. Mitigation options may be considered to alleviate certain visual impacts.

2.6 Lighting

The Bay Bridge requires effective lighting to ensure driver safety while preserving the region's dark skies. The design of the bridge's lighting system will comply with Maryland Transportation Authority (MDTA) guidelines and consider DarkSky International's Five Principles for Responsible Outdoor Lighting: Useful, Targeted, Low Level, Controlled, and Warm-Colored[1]. These principles can minimize light pollution, protect wildlife habitats, and reduce energy costs. Implementation involves assessment, design, installation, and monitoring, yielding benefits such as 30-50% energy savings and enhanced nocturnal ecosystems. Legacy lighting systems contribute to light trespass into the bay, exacerbating light pollution in this ecologically sensitive area. Artificial Light At Night (ALAN) is a growing ecological concern that can affect human health, wildlife and ecology, energy waste, and safety and security. Lighting design of the Bay Bridge will emphasize responsible lighting to combat these effects along with skyglow, glare, and light clutter. Best practices will align with MDTA's 2019 Lighting Guidelines, which prioritize uniform illumination for bridge approaches while minimizing spill light. This methodology includes considering a DarkSky lighting design to balance safety, sustainability, and environmental stewardship.

[1] https://darksky.org/resources/guides-and-how-tos/lighting-principles/

The bridge's structure consists of a continuous over-water steel truss design, with main spans elevated 186 feet above the water for navigational clearance. The bridge is currently not lit with decorative or architectural lighting that would be widely visible to the viewsheds. The bridge does, however, have functional roadway lighting necessary for safety which is not designed to illuminate the structure itself. Navigational lighting includes fixed red (port) and green (starboard) lights visible for 3-5 miles, mounted on fenders and piers. Light pollution from unshielded fixtures can affect migratory birds, sea turtles, and local fisheries in the Chesapeake Bay watershed. A 2023 MDOT SHA audit noted excessive upward light from existing HPS lamps (4000K color temperature), contributing to regional skyglow. DarkSky International practices could address these issues without compromising the bridge's AASHTO safety ratings.

Artificial lighting from structures like the Bay Bridge could have substantial impacts on the Chesapeake Bay ecosystem. Unshielded, high-intensity lights, particularly those with blue-rich spectra (e.g., 4000K high-pressure sodium), contribute to skyglow and light trespass, disrupting nocturnal species. Migratory birds could face disorientation, leading to collisions and energy depletion. Sea turtles nesting on beaches experience reduced hatching success due to hatchlings moving toward artificial lights instead of the sea. Aquatic species, including diadromous fish like striped bass, suffer from altered feeding and migration patterns caused by light penetration into the bay, with blue light suppressing melatonin and disrupting circadian rhythms. These effects degrade the bay's biodiversity.

DarkSky's Five Principles:

- Useful: Light only for safety-critical purposes, such as roadway visibility and navigation, eliminating non-essential fixtures.
- Targeted: Use full-cutoff fixtures to direct light downward, preventing spill into the bay or sky.
- Low Level: Maintain illuminance at 0.3-0.6 fc for bridge decks, sufficient for safety on 12-foot lanes.
- Controlled: Implement timers, photocells, and motion sensors to activate lights only when needed (e.g., dusk, fog).
- Warm-Colored: Use LEDs with 2200-3000K correlated color temperature (CCT) to minimize blue light's ecological impact.

These align with MDTA's 2019 Lighting Guidelines[2], emphasizing uniform illumination and minimal environmental impact.

[2] https://mdta.maryland.gov/sites/default/files/Files/Business/2019-05-16_MDTA_Lighting_Guidelines_Signed.pdf

3 POTENTIAL VISUAL IMPACTS

Visual and aesthetic resources encompass both natural and built features that contribute to the visual landscape. Specific visual features create the visual environment of the study area. These include the area's landform or topography, the vegetation that covers the land surface, the water surfaces that contrast with the land, and the manmade development that defines much of the suburban landscape of the study area. The viewsheds of the study area vary greatly, from limited suburban type views with U.S. 50/301 visible to large expansive views of the Chesapeake Bay and Bay Bridge.

Construction of a new Bay Bridge associated with the ARDS could result in both short-term and long-term visual impacts. Short-term impacts include disruptions during construction while long-term impacts are the result of permanent alterations. Short-term impacts could include an increase in roadway congestion, the presence of large equipment, dust from construction, and general disruption to the surrounding neighborhoods and business. These short-term impacts would have a temporary visual effect to the community. Long-term impacts could include changes to the surrounding landscape through modifications to existing overpasses, retaining walls, noise barriers, roadway barriers, medians, roadway grade, number of lanes, and bridge type; and new retaining walls and noise barriers. Visual impacts are determined by assessing changes to the visual resources and predicting viewer response to those changes. These impacts can be beneficial or adverse. Cumulative impacts and temporary impacts due to the contractor's operations are also considered. Impacts and changes are determined for each alternative at each landscape unit. See Table 3-1 for a summary of potential visual impacts of the alternatives.

Table 3-1: Potential Visual Impacts of Alternatives

Alternative	Lane Configuration	Visual Change	Potential Impacts
A	No Build	No Change	None
B	6-8-6	-Increased number of lanes -New span north of existing spans -New span between existing spans -Increased bridge height -Changes to substructure -Widening of U.S. 50/301	-U.S. 50/301 more visible from surroundings -Altered viewshed -Altered views -Increased prominence of the bridge in skyline -Temporary impacts due to construction -Altered views from Sandy Point State Park

Alternative	Lane Configuration	Visual Change	Potential Impacts
C	6-8-6	-Increased number of lanes -New span south of existing spans -New span between existing spans -Increased bridge height -Changes to substructure -Widening of U.S. 50/301	-U.S. 50/301 more visible from surroundings -Altered viewshed -Altered views -Increased prominence of the bridge in skyline -Temporary impacts due to construction -Altered views from locations south of bridge
D	8-8-8	-Increased number of lanes -New span north of existing spans -New span between existing spans -Increased bridge height -Changes to substructure -Widening of U.S. 50/301	-U.S. 50/301 more visible from surroundings -Altered viewshed -Altered views -Increased prominence of the bridge in skyline -Temporary impacts due to construction -Altered views from Sandy Point State Park
E	8-8-8	-Increased number of lanes -New span south of existing spans -New span between existing spans -Increased bridge height -Changes to substructure -Widening of U.S. 50/301	-U.S. 50/301 more visible from surroundings -Altered viewshed -Altered views -Increased prominence of the bridge in skyline -Temporary impacts due to construction -Altered views from locations south of bridge
F	8-10-8	-Increased number of lanes -New span north of existing spans -New span between existing spans -Increased bridge height -Changes to substructure -Widening of U.S. 50/301	-U.S. 50/301 more visible from surroundings -Altered viewshed -Altered views -Increased prominence of the bridge in skyline -Temporary impacts due to construction -Altered views from Sandy Point State Park

Alternative	Lane Configuration	Visual Change	Potential Impacts
G	8-10-8	-Increased number of lanes -New span south of existing spans -New span between existing spans -Increased bridge height -Changes to substructure -Widening of U.S. 50/301	-U.S. 50/301 more visible from surroundings -Altered viewshed -Altered views -Increased prominence of the bridge in skyline -Temporary impacts due to construction -Altered views from locations south of bridge

Following completion of the Tier 2 Study, the design phase may consider different bridge types than the original Chesapeake Bay Bridge to support the increased vertical clearance of the main channel with the build alternatives. For the purposes of this analysis in order to identify planning-level environmental impacts, a cable-stayed or suspension bridge type was assumed. This assumption of a cable-stayed or suspension bridge was based on the design of the Francis Scott Key Bridge Rebuild. A cable-stayed or suspension bridge was chosen for the increased vertical clearance, cost-effectiveness, construction efficiency, and adaptability to long spans. A bridge that accommodates the increased vertical clearance and main span length could be as tall as 610 feet at the main towers based on engineering assumptions. The final bridge structure type will be determined during final design following the NEPA study.

3.1 Western Shore Landscape Unit Visual Impact Analysis

3.1.1 Existing Conditions

3.1.1.1 Visual Character

The Western Shore landscape unit includes the portion of the study area located in Anne Arundel County on the Western Shore. It follows U.S. 50/301 from the MD 2/MD 450 interchange to the Chesapeake Bay Bridge tie-ins on the Western Shore. U.S. 50/301 is a well-traveled highway with six lanes of traffic on the western shore, with three lanes in each direction. Eastbound and westbound traffic on U.S. 50/301 is separated by a median with metal guardrail, with the eastern section being separated by concrete median barrier. For most of the highway within this landscape unit, U.S. 50/301 also has metal guardrail as a barrier to the north and south of the highway. In some instances where businesses are located directly adjacent to U.S. 50/301, the highway has a concrete barrier, however, in some areas no barrier is present. Large streetlights are present north and south of the roadway within interchange areas. Several overpasses carry roads over U.S. 50/301 within this landscape unit, including at Bay Dale Drive, MD 179, and Oceanic Drive. The overpasses are all concrete and steel structures with chain link fencing along the crossroad bridge.

The viewshed, as experienced by travelers of U.S. 50/301, includes the manmade elements of the roadway, including the six lanes of travel and opposing traffic, shoulders, median, and guardrail, as well as adjacent vegetation that limits the view of the roadway. Motorists also experience views of the surrounding land uses, including businesses, commercial areas, and residences. **Figure 3-1** shows the existing viewshed of motorists traveling eastbound on U.S. 50/301, east of the MD 2/MD 450 interchange.

Figure 3-1: Motorists View of U.S. 50/301 on the Western Shore (Traveling Eastbound)



Generally, the Western Shore landscape unit is defined by dense vegetation and deciduous trees, as well as commercial areas and businesses adjacent to U.S. 50/301. Areas near commercial development are primarily surrounded by grass and planted vegetation. Commercial areas and businesses located directly adjacent to U.S. 50/301 include storage centers, car dealerships, office buildings, gas stations and convenience stores, restaurants, and commercial centers. Parking lots for many commercial centers are visible from the highway. Commercial areas and businesses are often accessed by service roads located parallel to the highway. Residential neighborhoods in the vicinity of U.S. 50/301 are generally located north and south of the highway, however they are often separated from U.S. 50/301 by commercial areas or wooded buffers and not fully visible from the highway. Residential properties visible from the highway are usually smaller, single-family homes. Above-ground utility lines and many of the residential buildings are visible from the highway. See **Section 7** of the *Socioeconomic & Land Use Technical Report* for a full description of commercial areas, businesses, and residential areas located adjacent to U.S. 50/301 on the Western Shore.

Near Exit 32 the Bay Bridge Automated Lane Closure System (ALCS) begins. The system was constructed for opening and closing lanes for two-way traffic on the westbound bridge. The system includes overhead lane-use control signals to notify motorists if the contraflow lane on the westbound bridge is in use or not in use. The signals use an 'X' and downward arrow symbols over each lane to indicate the status, a green downward arrow indicating the lane is open, a yellow 'X' indicating to vacate the lane and move to a lane with a green downward arrow, and a red 'X' indicating the lane is closed. The overhead lane-use control signals are pictured in **Figure 3-2**. Approaching the bridge, horizontal swing gates block or allow traffic through the contraflow lane on the westbound bridge. Some cones and barrels are present on the approaches as part of the ALCS. Traveling westbound on the Bay Bridge, the three lanes of traffic include a reversible lane

that allows traffic to travel in the opposite direction during contraflow operations, as pictured in **Figure 3-3**.

Figure 3-2: Motorists View of Overhead Lane-Use Control Signals (Traveling East)



Figure 3-3: Motorists View of the ALCS Heading Eastbound



Near Exit 32, eastbound and westbound traffic are separated by a concrete barrier. Streetlights are also located in the median along the contraflow lane. A large, paved area, formerly part of the Bay Bridge toll plaza, is located adjacent to the eastbound side of the highway near the Bay Bridge. Additionally, the MDTA police station, administration building, and truck weigh stations are adjacent to and visible from U.S. 50/301.

Nearing the Bay Bridge, water resources become visible from the roadway. Westinghouse Bay to the south of U.S. 50/301 is visible, however dense vegetation largely obscures the viewshed from the roadway. To the north of U.S. 50/301, Mezick Pond is visible from the roadway. Sandy Point State Park's wooded areas are also visible.

Section 4(f) park/recreation area properties adjacent to U.S. 50/301 on the Western Shore include the Broadneck Peninsula Trail, Sandy Point State Park, and Holly Beach Farm. One Section 4(f) historic site, the Dutch Mill Farm Restaurant, which currently operates as the Red Hot & Blue, is located within the Western Shore landscape unit.

3.1.1.2 Viewer Groups and Key Views

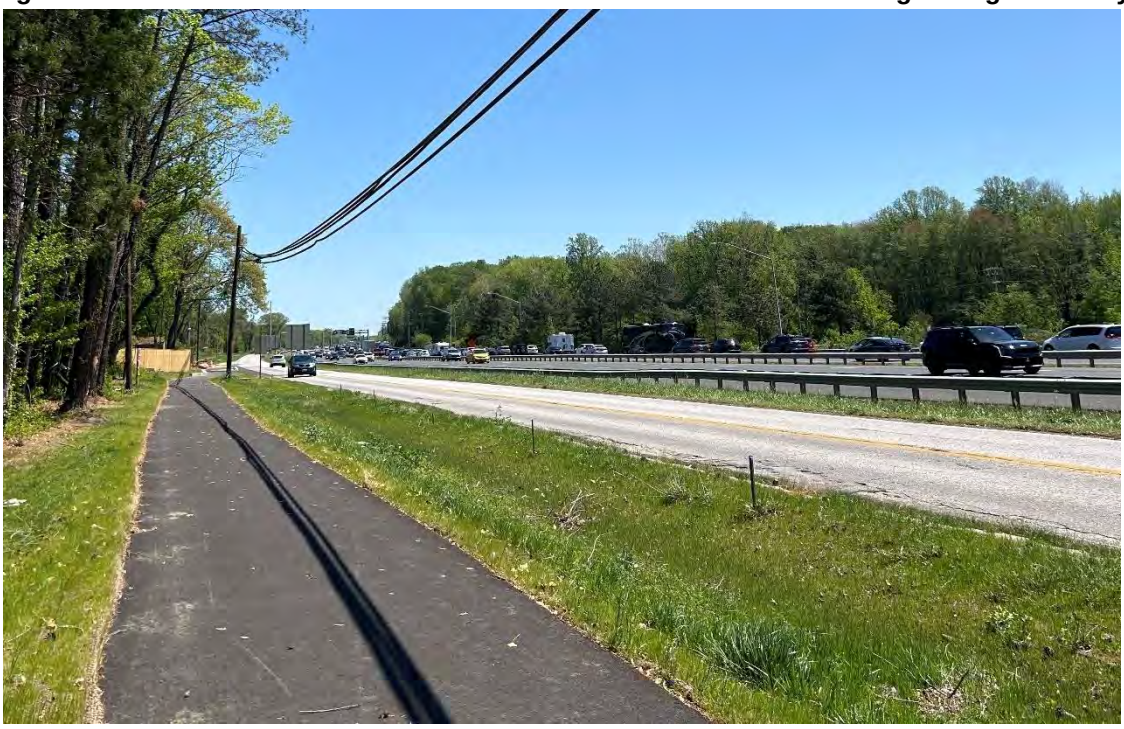
Viewers in the Western Shore landscape unit include:

- Regular motorists: motorists that frequently travel on U.S. 50/301 and adjacent service roads from which the corridor is visible
- Occasional motorists/tourists: motorists that infrequently travel on U.S. 50/301 and adjacent service roads from which the corridor is visible
- Community residents: properties adjacent to U.S. 50/301 with views of the corridor
- Businesses owners, employees, and customers: offices, businesses, and commercial centers with views of the corridor
- Park/recreation area visitors: visitors of Sandy Point State Park, Holly Beach Farm, and the Broadneck Peninsula Trail

Users of the Broadneck Peninsula Trail may be sensitive to changes in the visible environment. The recreation trail is approximately 8-miles and extends along the College Parkway corridor across the northern half of the Broadneck Peninsula. The trail has approximately 3.2 miles of completed segments, and an approximate additional 4.8 miles of segments that are planned for future completion or currently under construction. These segments begin at East College Parkway and Peregoy Park Place, follow U.S. 50/301 adjacently along the right-of-way of College Parkway and terminate along Log Inn Road and with a spur into Sandy Point State Park. Pictured in **Figure 3-4** is a segment along College Parkway that is part of the trail. Once complete, pedestrians and bicyclists using the Broadneck Peninsula Trail will have views of the U.S. 50/301 roadway. While the view of U.S. 50/301 from the trail may be less scenic, visitors to this recreation space are likely to have a high level of concern regarding changes in the visual environment due to their strong appreciation for the natural surroundings, the desire to preserve the integrity of park/recreation areas, and the overall experience of outdoor recreation. These users are typically engaged with the landscape and are more likely to be sensitive to visual disturbances that could detract from their outdoor experience. Increasing the number of spans is projected to reduce congestion and improve travel reliability along the corridor, making the Western Shore more accessible for park visitors. Easier access may increase visitor numbers to recreational areas like

Sandy Point State Park. Improved access might attract more day-trippers from urban areas and beaches and parks near the bridge may see increased use due to improved access but could lose appeal if the bridge's expanded footprint or construction visually intrudes on the landscape.

Figure 3-4: View of U.S. 50/301 from the Broadneck Peninsula Trail along College Parkway



The Dutch Mill Farm Restaurant is a Section 4(f) historic site. Originally built in the 1950s, the site was purchased in 1989, and the name was changed to Red Hot and Blue. Customers visiting Red Hot and Blue have views of the U.S. 50/301 roadway from the side of the restaurant, which is located directly adjacent to the roadway. While the restaurant is primarily a commercial space, its location near U.S. 50/301 means that visitors are exposed to views of the roadway. Although the primary focus for visitors is the dining experience, customers may still be sensitive to the visual presence of the road and any changes. The concern for these viewers is relatively low in comparison to recreation users or park visitors.

Views from Sandy Point State Park and Holly Beach Farm are mostly focused on the Bay Bridge, as described in the Chesapeake Bay landscape unit. However, views of U.S. 50/301 from these park properties are mostly obstructed by dense vegetation. The limited exposure to the U.S. 50/301 roadway means that viewers are less likely to be directly impacted by changes in the visual environment related to the roadway. Nevertheless, alterations that might affect the overall natural setting could be of concern to those with a strong regard for the preservation of the visual character of these open spaces. They are likely to be sensitive to changes that could affect the aesthetic quality of the views they enjoy.

3.1.1.3 Visual Quality

Viewsheds from U.S. 50/301 on the Western Shore are dominated by the manmade elements of the roadway, including the six lanes of travel, shoulders, median, and guardrail, as well as surrounding vegetation cover that limits the view of the roadway. U.S. 50/301 has project coherence, as the existing constructed elements are consistent with what a viewer may expect to see on the highway. However, in the Western Shore landscape unit, views along U.S 50/301 are

inconsistent in breaks in the vegetated cover where businesses, commercial centers, and service roads are located directly adjacent to the roadway. Visually, the businesses and commercial centers lack uniformity, and thus cultural order, along the roadway. Closer to the Bay Bridge, the viewshed is focused on the natural visual resources adjacent to the roadway, including Sandy Point State Park to the north of U.S. 50/301, and Westinghouse Bay to the south. However, the landscape unit has little natural harmony due to the limited views of natural elements throughout the corridor other than vegetative cover that buffers the roadway from other land uses. While certain viewer groups will have medium to high concern for visual change in this landscape unit, including motorists and commuters that frequent U.S. 50/301 and residents, the overall visual quality of the landscape unit is low due to the lack of cultural order and natural harmony.

3.1.2 Visual Change

Visual change is determined for the Western Shore Landscape Unit based on visual compatibility and visual contrast descriptions, in accordance with **Table 3-2**.

Table 3-2: Descriptive Values of Visual Change

Visual Contrast		Visual Compatibility						
		Beneficial			None	Adverse		
		Highly	Moderately	Slightly	No Effect	Slightly	Moderately	Highly
Beneficial	Highly	Highly	Highly	Moderately	Moderately	Slightly	Slightly	None
	Moderately	Highly	Moderately	Moderately	Slightly	Slightly	None	Slightly
	Slightly	Moderately	Moderately	Slightly	Slightly	None	Slightly	Slightly
None	No Effect	Moderately	Slightly	Slightly	None	Slightly	Slightly	Moderately
Adverse	Slightly	Slightly	Slightly	None	Slightly	Slightly	Moderately	Moderately
	Moderately	Slightly	None	Slightly	Slightly	Moderately	Moderately	Highly
	Highly	None	Slightly	Slightly	Moderately	Moderately	Highly	Highly

Visual changes from the alternatives for the Western Shore landscape unit are described in the following sections.

3.1.2.1 Alternative A - No Build Alternative

Under the No Build Alternative, the Bay Bridge would be maintained in its existing configuration, the U.S. 50/301 alignment and the existing number of lanes would not change and would continue to be used by commuters, recreation traffic, and commercial trucks. This alternative, however, does not preclude the construction of future improvements. The visual character and quality of the project site and vicinity would remain the same as the existing conditions in the Western Shore Landscape Unit described in **Section 3.1.1** and as such there would be no visual changes with a No Build Alternative.

3.1.2.2 Alternatives B and C

Alternatives B and C both include a 6-8-6 lane configuration with six lanes along U.S. 50/301 on the Western Shore, eight lanes across the Chesapeake Bay on two new bridge spans, and six lanes along U.S. 50/301 on the Eastern Shore. Alternative B would have one new bridge span just north of the existing bridge spans and one new bridge span in-between the existing bridge spans. Alternative C would have one new bridge span just south of the existing bridge and one new bridge span in-between the existing bridge spans. These alternatives would include a different bridge type than the original Bay Bridge to support the increased main span length. A bridge that accommodates the increased vertical clearance and main span length could be as tall as 610 feet at the main towers. The new bridge spans could be cable-stayed or suspension bridges and include larger shoulders and higher railings. The visual change from the Western Shore Landscape Unit is expected to be similar for Alternatives B and C. In addition to the increase in lanes, it is reasonable to assume that there would be visible changes to the superstructure and substructure of the bridge under these alternatives. It is anticipated that proposed changes identified under Alternatives B and C would be visible in the Western Shore Landscape Unit.

3.1.2.3 Alternatives D, E, F, and G

Alternatives D and E include an 8-8-8 lane configuration with eight lanes along U.S. 50/301 on the Western Shore, eight lanes across the Chesapeake Bay, and eight lanes along U.S. 50/301 on the Eastern Shore. For alternatives D, E, F, and G there will be widening of U.S. 50/301 on the Western Shore of the project area. Alternative D would have one new bridge span just north of the existing bridge spans and one new bridge span in-between the existing bridge spans. Alternative E would have one new bridge span just south of the existing bridge and one new

bridge span in-between the existing bridge spans. Alternatives F and G include an 8-10-8 lane configuration with eight lanes along U.S. 50/301 on the Western Shore, ten lanes across the Chesapeake Bay, and eight lanes along U.S. 50/301 on the Eastern Shore. Alternative F would have one new bridge span just north of the existing bridge spans and one new bridge span in-between the existing bridge spans. Alternative G would have one new bridge span just south of the existing bridge and one new bridge span in-between the existing bridge spans. These alternatives would include a different bridge type than the original Bay Bridge to support the increased main span length. A bridge that accommodates the increased vertical clearance and main span length could be as tall as 610 feet at the main towers. The new bridge spans could be cable-stayed or suspension bridges and include larger shoulders and higher railings. The visual change from the Western Shore Landscape Unit is expected to be similar for Alternatives D, E, F, and G since all four alternatives have eight lanes along the western shore. In addition to the increase in lanes, it is reasonable to assume that there will be visible changes to the superstructure and substructure of the bridge under these alternatives. It is anticipated that proposed changes identified under Alternatives D, E, F, and G would be visible in the Western Shore Landscape Unit.

3.1.3 Visual Impact

Visual impacts are determined by assessing changes to the visual resources and predicting viewer response to those changes. The impacts can be beneficial or adverse. Cumulative impacts and temporary impacts due to construction operations should also be considered. After analysis of visual change and visual sensitivity for each key view, the visual impact is determined for each key view based on their visual change and visual sensitivity descriptions, in accordance with **Table 3-3.**

Table 3-31: Level of Visual Impact Based on Visual Change and Visual Sensitivity

Visual Change	Visual Sensitivity			
	None	**Low**	**Moderate**	**High**
Highly Beneficial	None	Low Beneficial	Moderately High Beneficial	Extremely High Beneficial
Moderately Beneficial	None	Very Low Beneficial	Moderately Low Beneficial	Moderately High Beneficial
Slightly Beneficial	None	Extremely Low Beneficial	Very Low Beneficial	Low Beneficial
No Effect	None	None	None	None
Slightly Adverse	None	Extremely Low Adverse	Very Low Adverse	Low Adverse
Moderately Adverse	None	Very Low Adverse	Moderately Low Adverse	Moderately High Adverse
Highly Adverse	None	Low Adverse	Moderately High Adverse	Extremely High Adverse

With an increase in travel lanes proposed in Alternatives B, C, D, E, F, and G, the visual impacts on the Western Shore would be noticeable by viewers. Widening of U.S. 50/301 associated with

the alternatives may result in the clearing of vegetation along the roadway, which in turn may make the road more visible from surrounding land uses. Additionally, the widening may result in impacts to adjacent properties, as well as residential or business displacements, as discussed in **Section 7** of the *Socioeconomics and Land Use Technical Report*. This may alter the viewshed of U.S. 50/301, however changes would be mostly consistent with the existing conditions of today's roadway.

The expanded bridge would likely dominate the skyline even more prominently, altering the current scenic views of the bay and surrounding areas. The increased width and additional infrastructure could lead to a more industrial appearance, potentially affecting the aesthetic qualities of the region. The optional SUP would have minimal additional visual impact since it would be constructed on the new bridge structure.

The south and north bridge alignments would have noticeably different impacts at the bridge tie-ins on the Western Shore. The northern bridge alignment would be closer to Sandy Point State Park, impacting the viewshed from the park to a greater degree than the southern alignment. With the northern alignment, piers would be located closer to Sandy Point State Park, the Mezick Pond entrance, and the fishing pier at this location. It is likely the northern bridge alignment would affect a greater number of sensitive viewers, such as park visitors and recreational users. This proximity could heighten the perceived visual intrusion for these observers, though the overall magnitude of impact across the broader viewshed remains comparable between the two alignments. Determining the overall visual impact on the Western Shore landscape unit of expanding the Bay Bridge involves a comprehensive analysis of various factors. The primary consideration is how the increased width and additional infrastructure would alter the visual landscape, particularly from key viewpoints along the Western Shore.

The most notable visual change would be the increased prominence of the bridge in the skyline given the increased height of the bridge. This change would be most noticeable from key vantage points such as Sandy Point State Park and residential areas along the shore. Additionally, the northern bridge alignment would have a larger visual change to Sandy Point State Park, with bridge piers and travel lanes located closer to the park property. While the existing Bay Bridge is already a pronounced disruption of the Bay, the bridge itself is an iconic and recognizable landmark. A new Bay Bridge would likely have a similar visual appeal against the backdrop of Chesapeake Bay. However, the expanded bridge would likely create a more imposing visual presence.

The Severn River is outside the study limits just west of MD 2/MD 450 and is designated as a State Scenic River. While outside the study limits, the increased height of a new bridge may be visible from the Severn River, particularly at the mouth of the river. Coordination with MDNR and the Severn River Commission as design progresses will be required regarding potential effects to the scenic river.

The visual impact would not be uniform across all areas. While some key views might experience substantial changes, these effects could be limited to specific locations where the bridge is most visible. In other areas, the impact might be less pronounced, especially where natural or built features partially obscure the bridge.

The construction process itself would also temporarily affect the visual landscape, with cranes, barges, scaffolding, and other equipment altering the view. Once completed, the new bridge

could incorporate modern design elements that might mitigate some of the visual impacts, blending functionality with aesthetic considerations.

The expansion of the Bay Bridge proposed in the alternatives could impact tourism in the area. The bridge's more imposing presence might alter the scenic views that attract visitors to the Western Shore. The construction process itself could temporarily disrupt the landscape, potentially deterring tourists during that period. However, the expanded bridge could also improve accessibility, making it easier for tourists to travel between the Western Shore and other parts of Maryland. This enhanced connectivity might boost tourism in the long run, as visitors find it more convenient to explore the region's natural beauty, rich history, and cultural attractions. Overall, while there may be some visual impacts, the improved infrastructure could ultimately benefit tourism by facilitating easier travel and potentially attracting more visitors.

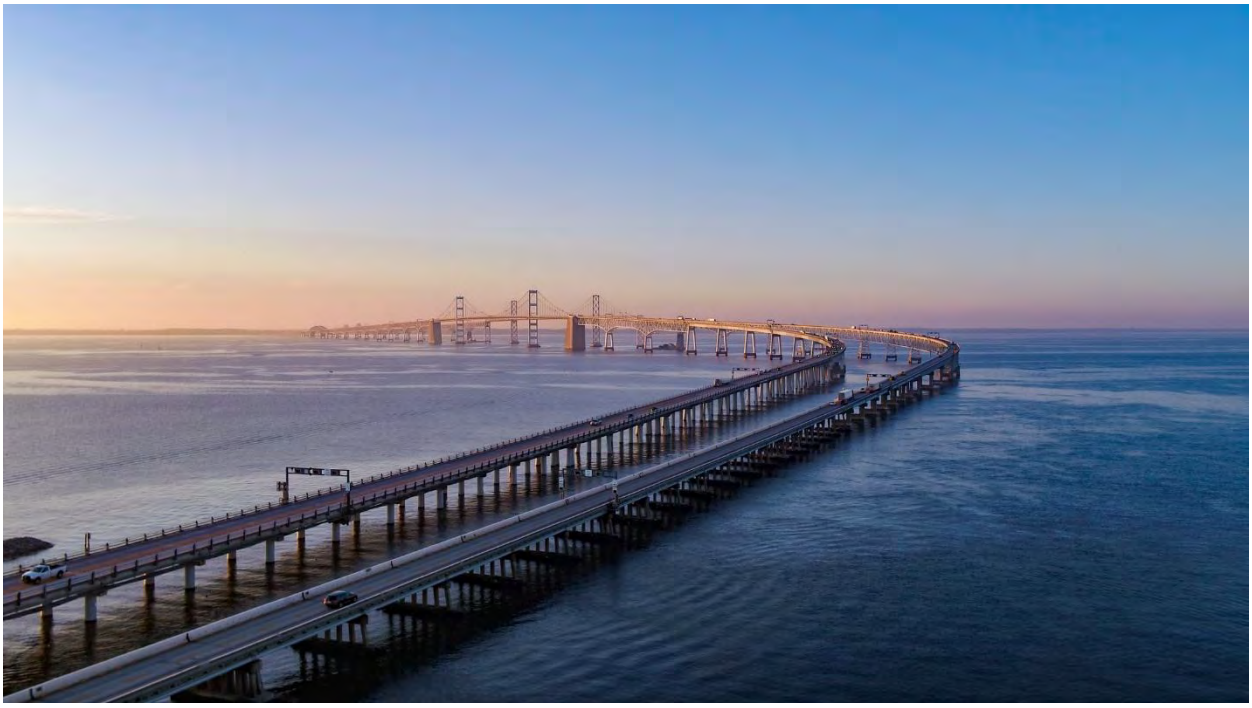
3.2 Chesapeake Bay Landscape Unit Visual Impact Analysis

3.2.1 Existing Conditions

3.2.1.1 Visual Character

The Chesapeake Bay landscape unit encompasses the Chesapeake Bay and the Bay Bridge, including the shorelines on the Western Shore and Eastern Shore. The Bay Bridge consists of two parallel bridge spans carrying U.S. 50/301 over the Chesapeake Bay, connecting Anne Arundel County on the Western Shore to Queen Anne's County on the Eastern Shore. The bridge spans 4.3 miles across the Bay. When the original span was built, it was the world's longest continuous over-water steel structure and, at the time, the third longest bridge in the world (**Figure 3-5**).

Figure 3-5: Aerial Photo of the Bay Bridge (Facing East)



The Chesapeake Bay is the most prominent and valued visual resource in the corridor. As the largest estuary in the United States, the Bay features 64,000-square-miles of watershed that includes 150 major rivers and over 100,000 tributaries. The Bay is one of Maryland's most

important scenic, natural, economic, and cultural resources that has historically shaped the region's identity, culture, and traditions.

The Bay Bridge is itself a historic property under Section 4(f). The views of the bridge are considered sensitive. The Bay Bridge's wide viewshed includes picturesque views east-west across the Bay, as well as north-south along the Bay. When first entering onto the Bay Bridge, viewers can just make out the opposite shorelines on the horizon across the Bay. Looking in the north and south directions, up and down the Bay, viewers experience the large expanse of the Bay and panoramic views of the water.

The Chesapeake Bay is a significant marine gateway due to its strategic location. The Bay is used by a wide variety of maritime vessels including skiffs, sailboats, fishing boats, research vessels, schooners and other pleasure watercraft. Additionally, it serves as a significant maritime transportation route for cargo and cruise ships accessing Maryland's Port of Baltimore. Often, large vessels and smaller sailboats and pleasure watercraft can be seen on the Bay from the Bay Bridge.

Views of the Bay are only interrupted by the Bay Bridge, as it is Maryland's only crossing of the Bay. While the Bay Bridge is a pronounced disruption of the Bay, the bridge itself is one of Maryland's most iconic and recognizable landmarks. The bridge also allows people to experience the Bay in a way they would not be able to otherwise, allowing for a birds-eye view of the Bay and shorelines from the bridge.

Eastbound Bridge

The eastbound bridge is the older of the two Bay Bridge spans, with construction completed in 1952. The eastbound bridge is the southernmost of the two bridges and has two lanes of traffic with minimal shoulders, as pictured in **Figure 3-6** and **Figure 3-7**. Structurally, the bridge is comprised of 123 spans with the span types varying throughout the length of the bridge. West of the main navigational channel, there are beam spans, deck girder spans, deck truss spans (simply supported Warren trusses), and deck cantilever spans (suspension arm – Warren truss; cantilever/anchor arms – Pratt truss). The spans over the main navigational channel are suspension spans. Between the main navigational channel and the secondary navigational channel, there are deck cantilever spans (suspension arm – Warren truss; cantilever/anchor arms – Pratt truss). The spans over the secondary navigational channel are through cantilever spans (suspension arm – Warren truss; cantilever/anchor arms – Petit truss). East of the secondary navigational channel, there are deck girder spans and beam spans. The span over the main navigational channel is 1,600 feet long and supported by suspension towers that reach 354 feet above the water, making it one of the tallest structures in Maryland. Steel rope cables hang from the towers to support the stiffening truss. The bridge is 186 feet above water at its highest point above the main navigational channel.

The bridge uses high-visibility overhead lane-use control signals to indicate which lanes are open to traffic and which are closed to traffic. The signals use an 'X' or a downward arrow symbol over each lane to indicate the status. A green downward arrow indicates the lane is open and a red 'X' indicates the lane is closed. The lane-use control signals are periodically located along the bridge above the roadway on gantries, as pictured in **Figure 3-6.**

Figure 3-6: Eastbound Bay Bridge Motorist View



Figure 3-7: Eastbound Bay Bridge Motorist View



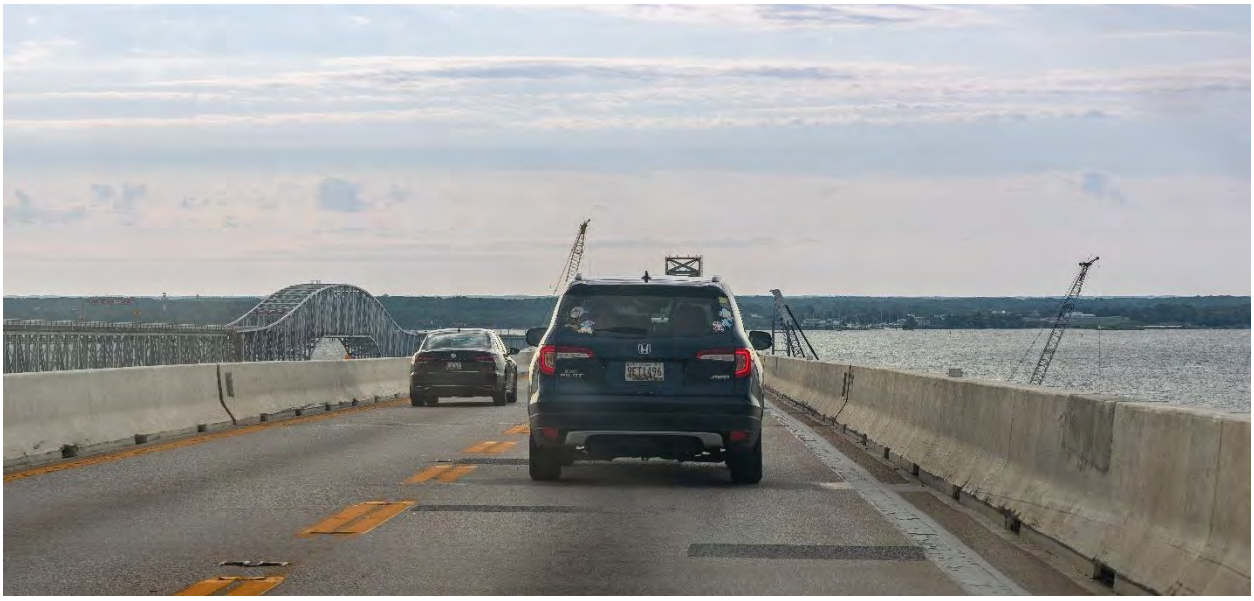
The dynamic viewshed, as experienced by travelers of U.S. 50/301 traveling east on the eastbound bridge, includes views of the structural elements of the eastbound bridge itself, views of the Chesapeake Bay and the parallel westbound bridge, as well as views of the Eastern Shore as motorists approach land. Extending from the Western Shore, the Bay Bridge has a curve

before straightening to allow the Bay Bridge to cross the shipping channels at a 90-degree angle. This curve is pictured in **Figure 3-5**. Heading eastbound, this curve allows travelers to view the extent of the Bay Bridge ahead, providing a unique perspective of the spans as they extend across the Bay. As motorists continue to drive across the bridge, they are met with extensive views of the Bay to the north and south. Often, this includes views of vessels in the Bay waiting to access the Port of Baltimore, as well as other sailboats and pleasure craft. Sweeping views of the Bay from the bridge are only interrupted by views of the parallel westbound bridge to the north. As motorists near the main suspension span, views of the suspension towers rise above the bridge, drawing the viewers eye up towards the sky. As described, the secondary channel crossing features through cantilever spans (suspension arm – Warren truss; cantilever/anchor arms – Petit truss), as pictured in **Figure 3-7**. Driving through the truss allows motorists to see the repeating patterns of triangles, creating a rhythmic visual effect. Driving through the truss gives motorists the impression they are driving through a tunnel, yet the open framework allows for views of the surroundings and the landscape beyond.

In addition to views from the bridge, there are two National Historic Trails that pass under the bridge on the water. The Captain John Smith National Historic Trail is a national historic water trail, approximately 3,000 miles in length, that follows the route of Captain John Smith as he explored the Chesapeake Bay and Susquehanna River between 1607 and 1609. The trail follows the coastline of the Chesapeake Bay and its major tributaries, and a portion of the trail is mapped beneath the Bay Bridge. As the first national water trail in the U.S., it highlights the bay's natural history, Native cultures, and early English settlement. The trail connects parks, museums, wildlife refuges, and water access points, offering opportunities for paddling, hiking, biking, and cultural education. Also passing under the bridge is the Star-Spangled Banner National Historic Trail (STSP). STSP is a 560-mile land and water trail that commemorates the Chesapeake Campaign of the War of 1812, particularly events leading to the writing of the U.S. national anthem, "The Star-Spangled Banner." A segment of the water-based portion of the trail is mapped beneath the Bay Bridge and through the study area. This trail is used for various recreational activities, including driving, biking, and paddling and connects users to historic sites within the Chesapeake Bay region.

Nearing the Eastern Shore, views of the shoreline on Kent Island become more visible, as pictured in **Figure 3-8**. Views of the Eastern Shore include Terrapin Nature Park to the north of U.S. 50/301, including views of forested area and beaches. To the south of U.S. 50/301 on the Eastern Shore shoreline, motorists can see a restaurant, marina, and beach club. From the bridge, masts of sailboats docked at the marina are visible as they extend from the horizon. Further south, residences located on the Bay and Matapeake Park are visible.

Figure 3-8: Eastbound Bay Bridge Motorist View of Eastern Shore



Westbound Bridge

The westbound bridge, completed in 1973, lies parallel to the eastbound bridge to the north. The westbound bridge has three lanes with minimal shoulders, as pictured in **Figure 3-9**. The westbound bridge is comprised of a main cable suspension span carrying a deck truss. Structurally, the bridge is comprised of 122 spans with the span types varying throughout the length of the bridge. West of the main navigational channel, there are prestressed concrete beam spans, continuous welded girder spans, and deck cantilever truss spans (suspension arm – Warren truss; cantilever/anchor arms – Pratt truss). The spans over the main navigational channel are suspension spans. Between the main navigational channel and the secondary navigational channel, there are deck cantilever truss spans (suspension arm – Warren truss; cantilever/anchor arms – Pratt truss). The spans over the secondary navigational channel are through cantilever truss spans (suspension arm – Warren truss; cantilever/anchor arms – Pratt truss). East of the secondary navigational channel, there are continuous welded girder spans and prestressed concrete beam spans. The span over the main navigational channel is 1,600 feet long and supported by suspension towers that reach 379 feet above the water, making it 25 feet taller than the eastbound span. Steel rope cables hang from the towers to support the stiffening truss. The bridge is 186 feet above water at its highest point above the main navigational channel.

Similar to the eastbound bridge, the westbound bridge uses overhead lane-use control signals to indicate which lanes are open to traffic and which are closed. The lane-use control signals are periodically located along the bridge above the roadway on gantries. Contraflow operates on the westbound span when traffic and weather conditions allow. This allows for one of the lanes on the westbound bridge to travel eastbound, helping alleviate delays. Lane striping on the westbound bridge helps to visually separate the contraflow lane, with solid lane markings separating the contraflow lane from the regular traffic.

Figure 3-9: Westbound Bay Bridge Motorist View



The dynamic viewshed, as experienced by travelers of U.S. 50/301 on the westbound bridge, includes views of the structural elements of the bridge itself, views of the Chesapeake Bay and the parallel eastbound bridge, and the Western Shore. Similar to the eastbound bridge, as motorists drive across the westbound bridge, they are met with expansive views of the Bay to the north and south. This includes views of vessels in the Bay waiting to travel the navigational channel under the bridge, as well as other sailboats and pleasure craft. Sweeping views of the Bay from the bridge are interrupted by views of the parallel eastbound bridge to the south, as pictured in **Figure 3-10**. Similar to the perspective on the eastbound structure, as motorists near the main suspension span, views of the suspension towers rise above the westbound bridge, drawing viewers eyes towards the sky and the magnitude of the bridge structure.

Figure 3-10: Figure X-10: Views from the Westbound Bay Bridge

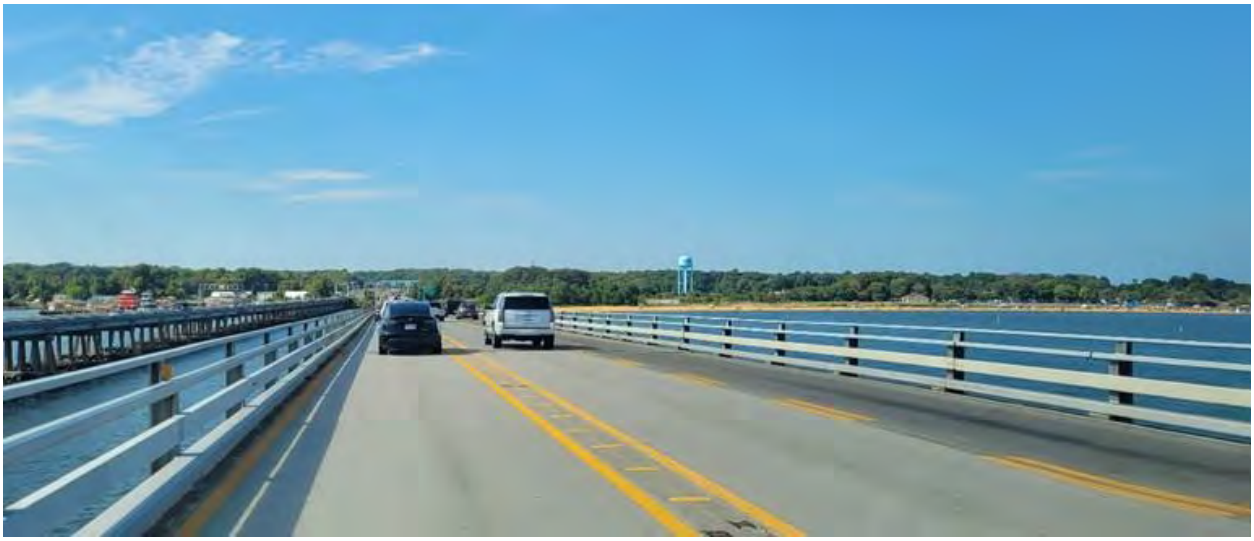


As motorists near the Western Shore, views of the shoreline become a prominent feature in the horizon. Views include Sandy Point State Park to the north of U.S. 50/301. As pictured in **Figure**

3-11, the beaches of Sandy Point State Park are a key feature of the viewshed. The blue water tower disrupts the view of the sandy beach and forested area, capturing the eye's attention. A rock jetty to the north of the eastbound bridge extends from Sandy Point State Park and runs parallel to the bridge into the Bay. While the topography of the Western Shore is flat with few tall structures, on very clear days the Baltimore skyline is distantly visible to the northeast.

To the south of U.S. 50/301 on the shoreline, views include the MDTA maintenance building and old ferry terminal. The MDTA facilities are currently used to maintain the MDTA's vehicles; they include a parking area, maintenance building and office building, which can be seen from the bridge approaching the shore. Vehicles and trucks can be seen parked at the site in the distance of **Figure 3-11**. The old ferry terminal is also visible. Further south along the shoreline is a commercial office building that is located on the Bay. To the south of the office building, views of Holly Beach Farm are visible from the bridge. Holly Beach Farm is a waterfront park property located south of U.S. 50/301 and Sandy Point State Park, and west of the Bay Bridge. From the bridge motorists can view the park's saltwater shorelines, Chesapeake marshes and coves, and coastal woodlands. Additionally, further to the southwest, the US Navy's Naval Communications Station towers are visible. The three towers, standing at 600-feet tall, are located near the tip of Greenbury Point.

Figure 3-11: Westbound Bay Bridge Bay Bridge Motorist View of Western Shore



The viewshed of the tallest point of the Bay Bridge, the 379-foot-tall tower on the westbound bridge, is shown in **Figure 3-12**. This viewshed was determined using LiDAR data, a collection of 3D points that represent the surface of the Earth. The areas identified in the map are the points from which the top of the tower is visible. Note that this viewshed analysis does not take into account elevation of forested areas or atmospheric conditions that may affect the visibility of the viewshed. Changing atmospheric conditions, such as cloud cover and fog, may alter the viewshed of the Bay Bridge and obstruct views. The map below shows the wide views of the Bay Bridge, under clear atmospheric conditions, up and down the Chesapeake Bay shorelines in Anne Arundel, Queen Anne's, Kent and Talbot counties. Views of the tower from the shorelines extend as far north as Rock Hall, and as far south as St. Michaels. The viewshed from the tower itself is pictured in **Figure 3-13**.

Figure 3-12: Viewshed of the Bay Bridge

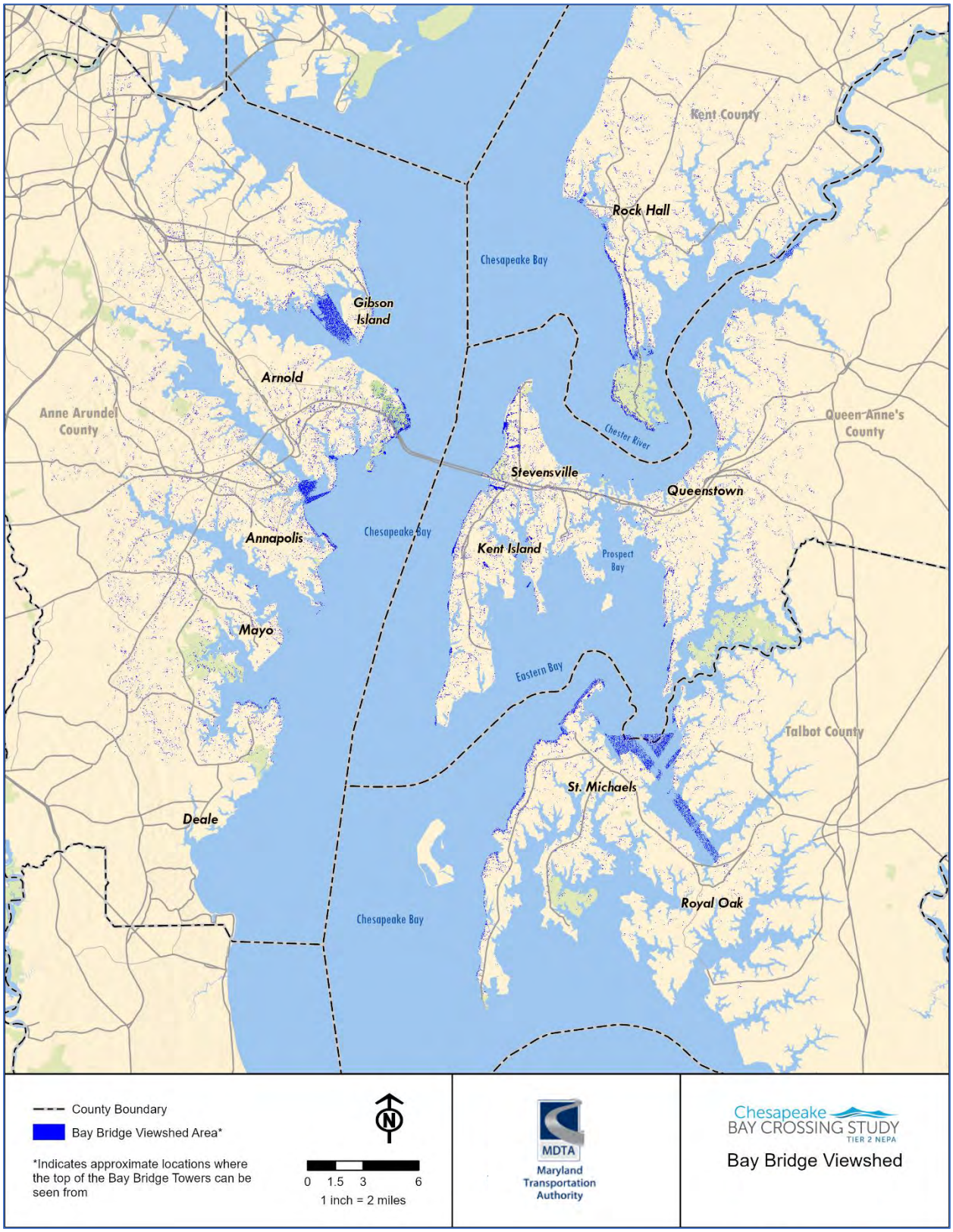
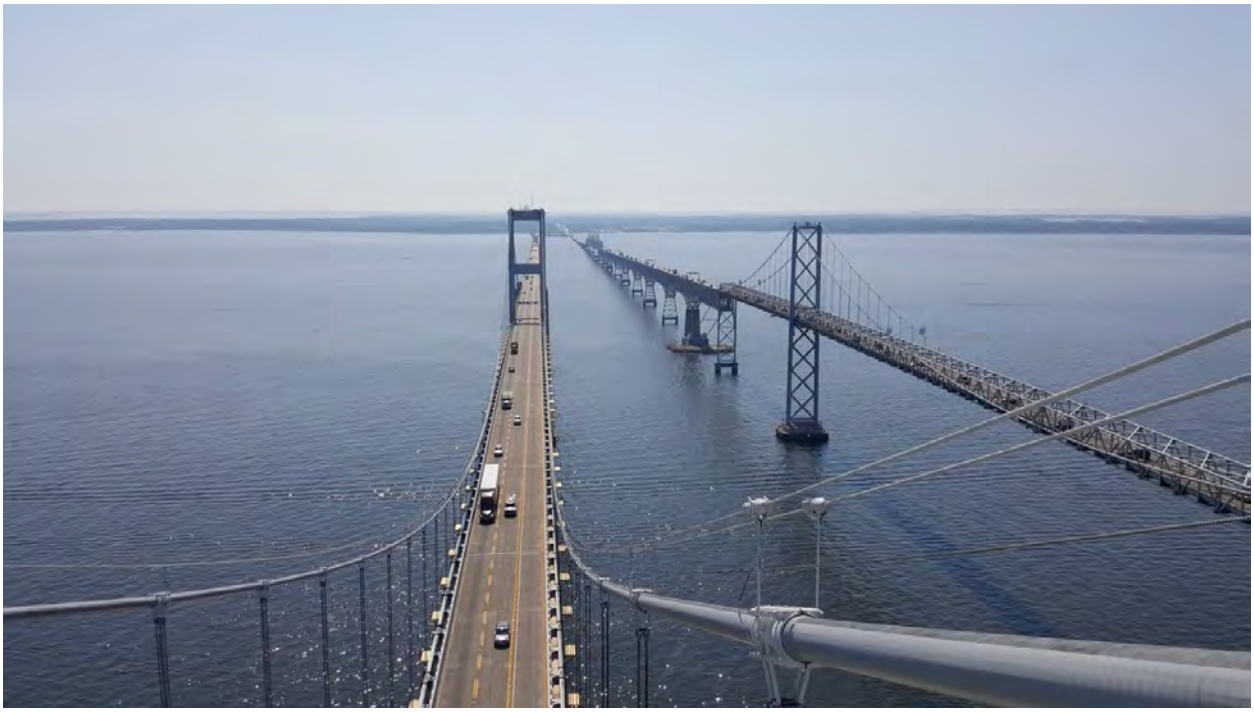


Figure 3-13: Views West from Westbound Bay Bridge Tower



3.2.1.2 Viewer Groups and Key Views

Viewer groups in the Chesapeake Bay landscape unit include:

- Regular motorists: motorists that frequently travel on U.S. 50/301 over the Bay Bridge
- Occasional motorists/tourists: motorists that infrequently travel on U.S. 50/301 over the Bay Bridge
- Community residents: properties located on the Bay shorelines
- Businesses owners, employees, and customers: commercial vessels, fisherman, as well commercial/tourist boating activities in the Bay
- Park/ recreation area visitors: visitors of Sandy Point State Park, Holly Beach Farm, Terrapin Nature Park, Matapeake Park, as well as boaters on the Chesapeake Bay, such as sailboats and pleasure watercraft

Sandy Point State Park is likely to be sensitive to visual changes in the study area, due to its key views of the Bay Bridge and high visitation. Sandy Point State Park is a 786-acre public park located north of U.S. 50/301 near the western end of the Bay Bridge. The southeast and east property boundary of the state park is shoreline along the Chesapeake Bay. The park provides various recreational opportunities including access to the waters of the Chesapeake Bay. In addition to the swimming beach, trails, and other recreational facilities, the park also has a marina with launching ramps for fishing and boating activities. Sandy Point State Park is one of the most popular state parks in Maryland and with key views of the Bay Bridge. Sandy Point State Park holds historical significance tied to its strategic location and varied uses over time. Used by Native Americans for fishing, it later supported colonial trade and maritime activities. Tied to the War of 1812 and the Star-Spangled Banner National Historic Trail, it was near British campaign routes.

The Sandy Point Shoal Lighthouse (1883) aided navigation, and the site served as a WWII military defense post. Acquired by Maryland in 1948, it became a public park, reflecting its role in regional history, including the 1952 Bay Bridge opening. It also connects to the Captain John Smith Chesapeake National Historic Trail, embodying Native, colonial, maritime, and modern heritage.

As seen in **Figure 3-14**, views from the park will likely be sensitive to changes in the visual environment from the alternatives.

Figure 3-14: View of the Bay Bridge from Sandy Point State Park



Holly Beach Farm is also likely to be sensitive to visual changes due to its views of the Bay Bridge, however the property has limited public recreational accesses. Holly Beach Farm is a 293-acre waterfront park property located south of U.S. 50/301 and Sandy Point State Park, and west of the Bay Bridge. Holly Beach Farm is publicly owned parkland with open fields, recreation trails, saltwater shorelines, freshwater ponds, Chesapeake marshes and coves, coastal woodlands, and wide Bay views. Holly Beach Farm has historical significance tied to its evolution. Originally used by Native Americans and part of colonial estates, it became a dairy farm in the 1910s, supplying milk for the greater Baltimore area. Horse breeding and training on the property began in the 1920s. The 1952 Bay Bridge construction disrupted operations, leading to land sales. Preserved in 2001 by the Conservation Fund, it was donated to Maryland's DNR in 2024 for public access as a Natural Resources Management Area. Linked to the Captain John Smith and Star-Spangled Banner National Historic Trails, it reflects Native, colonial, maritime, and conservation history.

The property is accessed on Holly Beach Farm Road from Skidmore Drive, the frontage road that runs parallel to U.S. 50/301 between Whitehall Road to Oceanic Drive. It is anticipated that MDNR may eventually develop the property as a natural resource management area that also allows for limited public recreational access and hunting activities. As the property is not heavily trafficked, only a small group of visitors, including those engaged in outdoor activities, would likely be directly impacted by any visual changes. These viewers are likely to have a heightened sensitivity to alterations that could affect the natural environment and the scenic views. If MDNR

does eventually develop the property, it is likely that a build alternative could result in a more significant visual effect, especially with the southern alignment alternatives.

Under the Land and Water Conservation Fund Project Agreement for Holly Beach Farm, the project scope was described as “Purchase of an interest in real property consisting of a conservation easement for the preservation of over 300 acres of open space to complement Sandy Point State Park and the scenic vista of the Chesapeake Bay Bridge.” While Holly Beach Farm will likely be sensitive to changes in the visual environment, this sensitivity is primarily driven by the property’s function as a preserved natural area and its role in enhancing the surrounding scenic and recreation value. However, the property has limited public recreational access, which reduces the direct exposure of most visitors to potential visual changes. Furthermore, the lower levels of public awareness and the relatively infrequent visitation to Holly Beach Farm by the general public mean that viewers from the bridge or those located on the property would likely have minimal interactions with any visual modifications. The primary concern lies in the preservation of the scenic views enjoyed by those crossing the Bay Bridge, where changes could impact the aesthetic value of the farm and the surrounding natural landscape, potentially altering the experience of both distant viewers on the bridge and those engaged in recreational activities nearby.

Terrapin Nature Park will also likely be sensitive to changes in the visual environment. The park is a 276-acre public, waterfront park property on the Eastern Shore, bounded by U.S. 50/301 to the south, the Chesapeake Bay to the east, commercial properties to the north and east. The park includes a 3.25-mile walking trail that meanders through the park, including to a sandy shoreline overlooking the Chesapeake Bay. Views of the Bay Bridge from this shoreline are shown in **Figure 3-15**. While the view of the Bay Bridge from the shoreline is distant, the visitors of the park will likely be sensitive to changes in the visual environment due to regard for the natural environment and coherence.

Figure 3-15: View of the Bay Bridge from Terrapin Nature Park



Figure 3-16 depicts views of the Bay Bridge from the Chesapeake Bay, as would be experienced by boaters, which may be impacted. From here, the bridge stands as a prominent and striking feature, creating a dramatic visual focal point against the background of the Bay waters and shoreline. Boaters, who are often more attuned to the natural environment, are likely to be

especially sensitive to any changes in this view, as it is central to their recreational experience and the enjoyment of the surrounding environment. Any altercations to the visual environment in this area could impact the perceived beauty of this key view and the overall experience of those transversing the bay.

Figure 3-16: Views of the Bay Bridge from the Chesapeake Bay



The Chesapeake Bay is a hub for boating, sailing, and fishing, with the bridge serving as a scenic backdrop. A new span could alter the visual experience for boaters, potentially reducing the aesthetic appeal of certain areas. Construction activities, including barges and cranes for deck replacement, may temporarily affect recreational boating. Kayaking and paddleboarding are also popular activities in the calmer waters near the parks but could see reduced appeal if the visual landscape changes due to a larger bridge structure or construction equipment. However, increased access might also draw more participants to these activities on the Chesapeake Bay.

Many local businesses have a key view of the Bay Bridge and may be concerned about the effects of the alternatives on their business activities, rather than the visual environment. Libbey's Coastal Kitchen and the Chesapeake Bay Beach Club rely on tourism and aesthetic views of the Chesapeake Bay and the Bay Bridge, which can be seen from their locations. For example, the Bay Bridge serves as a backdrop for the Chesapeake Bay Beach Club events and weddings. The bridge is often pictured in their outdoor event space. These views draw customers and visitors to their businesses; thus they are likely to be sensitive to changes in their viewshed.

Residents on Kent Island along the shoreline have views of the Chesapeake Bay and the Bay Bridge from their homes. Residents are expected to have the highest awareness to changes in their visual environment, as they view the Chesapeake Bay and Bay Bridge from their homes every day. This viewer group will be sensitive to visual changes in their viewshed.

3.2.1.3 Visual Quality

Within this landscape unit, there is natural harmony, cultural order, and project coherence amongst the existing constructed elements in the area. First, the expansive and sweeping views of the Chesapeake Bay and shorelines provide a sense of natural harmony. These natural visual resources are highly regarded by the viewer groups. While the Bay Bridge is a pronounced visual intervention in the context of the Chesapeake Bay; the eastbound bridge has been a part of the view for the past 73 years, and the westbound the past 51 years. The Bay Bridge has since become a key feature of the view versus a disruption and has enhanced the visual quality of the area by providing a key point of visual interest in the viewshed.

The landscape unit also has cultural order and coherence amongst constructed elements. The main structure in this landscape unit is the Bay Bridge itself. The eastbound and westbound spans, while slightly different in structure, are overall consistent with one another and cohesive. The eastbound and westbound bridge spans are similar in aesthetics and architecture and create a sense of cultural order and project coherence. These elements are highly regarded by viewers of the bridge. The Bay Bridge is an iconic landmark within the built environment and has become one of Maryland's most recognizable landmarks. Images of the Bay Bridge are used by countless businesses and organizations for marketing, symbolize Maryland's identity, and is even featured on Maryland's Chesapeake Bay license plate design, signifying the structure's cultural significance.

The juxtaposition of the steel bridge against the waters of the Chesapeake Bay makes the bridge distinctive and a beacon for tourists and photographers. The bridge's massive structure and length across the Bay and tall suspension towers make the Bay Bridge highly visible from many destinations up and down the Chesapeake Bay. Overall, the Bay Bridge length, height, aesthetic and visibility provides a gateway experience to the Eastern Shore from the west; to Annapolis and central Maryland from the east; to the Port of Baltimore for mariners traveling north on the Chesapeake Bay; and airborne travelers coming to Maryland via Baltimore-Washington International Thurgood Marshall Airport or the nearby Bay Bridge Airport. While the Bay Bridge is a striking visual intervention in the natural environmental context of the Chesapeake Bay, it has become a feature of the views and has since enhanced the socioeconomic environmental context of the regional viewshed by creating substantial visual interest and cultural pride.

The viewer groups in this landscape unit have a high regard for the visual environmental and would likely be sensitive to changes in the visual environment. Overall, this landscape unit has a high visual quality due to visual character of the Chesapeake Bay and Bay Bridge, the expansive views in the landscape unit, the sensitivity of the viewer groups, and the landscape unit's natural harmony, cultural order, and constructed coherence.

3.2.2 Visual Change

Visual change is determined for the Chesapeake Bay Landscape Unit based on visual compatibility and visual contrast descriptions, in accordance with **Table 3-2** above. Visual changes from the alternatives for the Chesapeake Bay Landscape Unit are described below:

3.2.2.1 Alternative A - No Build Alternative

See **Section 3.2.2.1** for a description of Alternative A. The visual character and quality of the project site and vicinity would remain the same as the existing conditions in the Chesapeake Bay Landscape Unit described in **Section 3.2.1** and as such there would be no visual changes with a No Build Alternative.

3.2.2.2 Alternatives B and C

See **Section 3.1.2.2** for a description of Alternatives B and C.

The visual change from the Chesapeake Bay Landscape Unit is expected to be similar for Alternatives B and C. In addition to the increase in lanes, it is reasonable to assume that there will be visible changes to the superstructure and substructure of the bridge under these alternatives. It is anticipated that proposed changes identified under Alternatives B and C would be visible in the Chesapeake Bay Landscape Unit.

3.2.2.3 Alternatives D, E, F, and G

See **Section 3.1.2.3** for a description of Alternatives D, E, F, and G. The visual change from the Chesapeake Bay Landscape Unit is expected to be similar for Alternatives D, E, F, and G since all four alternatives have eight lanes across the Chesapeake Bay. In addition to the increase in lanes, it is reasonable to assume that there will be visible changes to the superstructure and substructure of the bridge under these alternatives. It is anticipated that proposed changes identified under Alternatives D, E, F, and G would be visible in the Chesapeake Bay Landscape Unit.

3.2.3 Visual Impact

The stunning views of the Chesapeake Bay are only interrupted by the Bay Bridge, Maryland's sole crossing of this vast body of water. Although the Bay Bridge disrupts the Bay's natural expanse, it stands as one of Maryland's most iconic and recognizable landmarks. This remarkable structure offers a unique opportunity for people to experience the Bay in a way that would be impossible from the shore, providing a spectacular birds-eye view of the Bay and its picturesque shorelines. Travelers on U.S. 50/301 enjoy this dynamic and captivating viewshed as they cross the Chesapeake Bay, as detailed in **Section 3.2.1.**

The visual impacts of Alternatives B-G on the Chesapeake Bay Landscape Unit could include:

1. **Increased Structural Presence**: The larger bridge may appear more massive and imposing, with increased height and width. Figure **3-17** shows the proposed height and profile of what a new bridge would look like against the existing Bay Bridge. **Figures 3-18** and **3-19** show the proposed height of a new bridge as it ties into the existing roadway. The bridge itself would be higher to accommodate the increased navigational clearance and it's towers would be taller to support the larger bridge structure. The increased height in the bridge and it's towers is shown to display to magnitude of difference between the existing and proposed bridge. The increased height of the structure would make the bridge more prominent across the Bay and in the viewshed from the Eastern Shore and Western Shore. While an expanded bridge would have a larger visual presence across the Chesapeake Bay, it would have a similar visual appeal as the existing Bay Bridge, as it is an iconic and recognizable landmark.

2. **Altered Views**: As discussed, a cable-stayed or suspension bridge type was assumed for this analysis, based on the design of the Francis Scott Key Bridge. A cable-stay or suspension bridge would alter the viewshed of motorists traveling across the bridge. The bridge could have a more open feel as motorists travel across without the presence of trusses. Additionally, the presence of the cables would be a visual change from the existing bridges. While the structural elements of a different bridge structure type would alter the views, these elements would not obstruct the panoramic views of the Bay and

its shorelines, and this would not adversely alter the visual appeal for those crossing the bridge.

The optional SUP would be a visual change from the existing structure; however, it would have minimal additional visual impact since it would be constructed on the new bridge structure. The optional SUP would be most noticeable for motorists driving on the span with the facility. Pedestrians and bicyclists are not currently permitted on the Bay Bridge, and the use of the recreational facility would be a visual change. Additionally, the optional SUP would require additional lighting features that would be a visual change.

3. **Optional SUP Pedestrian/Bicyclist Viewer Access**: Pedestrians and bicyclists are not currently permitted on the Bay Bridge. If the optional SUP is implemented, it would provide views of the Chesapeake Bay and nearby shorelines from the new bridge for the users of the facility.
4. **Enhanced Traffic Visibility**: The increased number of lanes would likely lead to more visible traffic, which could detract from the scenic experience. The sight of more vehicles and the associated movement might make the crossing feel busier and less serene.
5. **Lighting and Signage**: To accommodate the additional lanes, there would likely be more lighting and signage. While necessary for safety, these elements could further alter the visual landscape, making the bridge appear more cluttered and less harmonious with the natural beauty of the Bay.

Figure 3-17: Existing Bay Bridge and Proposed Bridge Profile (from Sandy Point State Park)

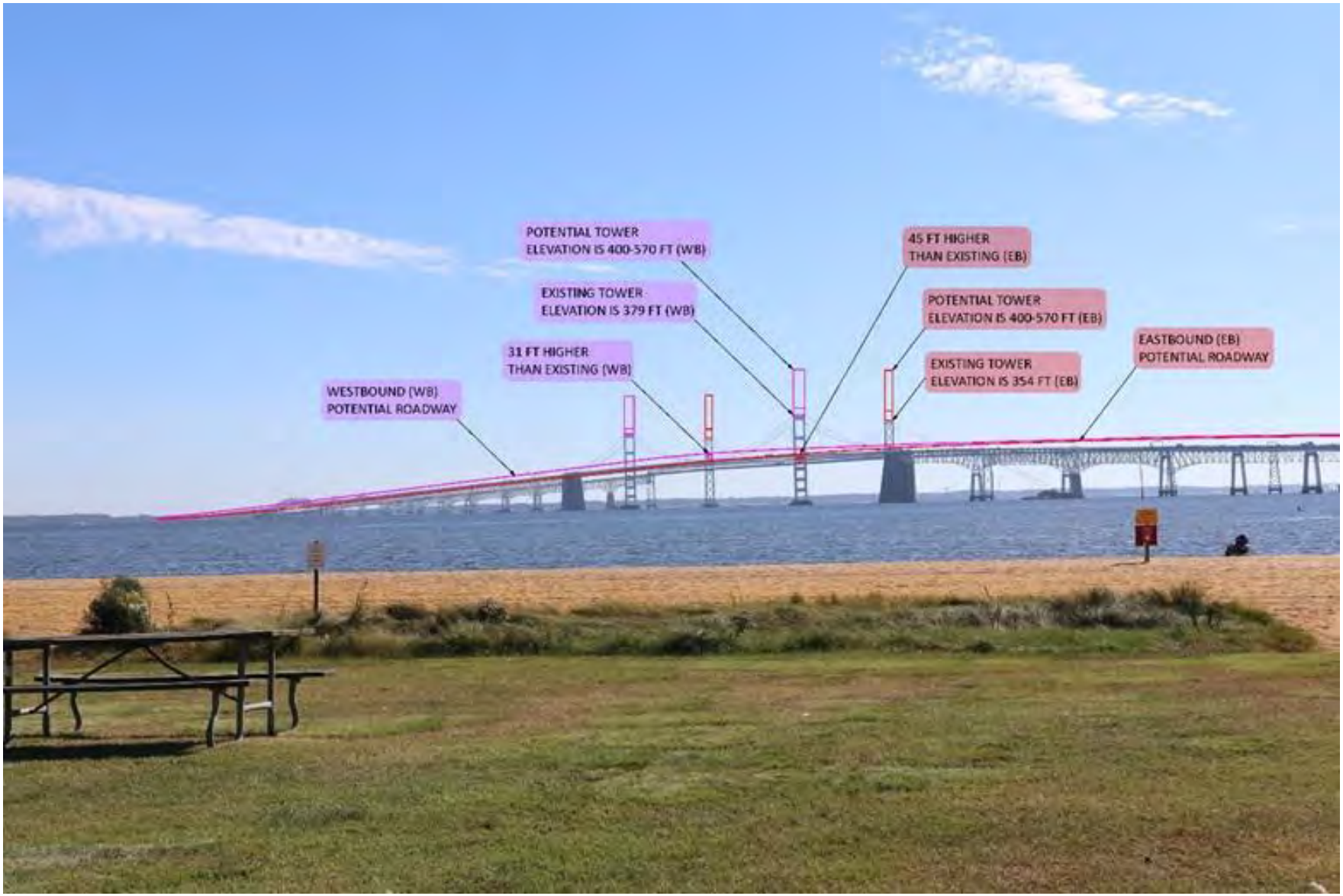


Figure 3-18: Existing Bay Bridge and Proposed Bridge Tie-In (Westbound Bridge)



Figure 3-19: Existing Bay Bridge and Proposed Bridge Tie-In (Eastbound Bridge)



The current Bay Bridge is not lit, except for overhead gantry systems, as well as necessary lighting for navigation and aviation. The Bay Bridge does not have roadway lighting or aesthetic lighting on the structural elements of the bridge. As Maryland's only crossing of the Chesapeake Bay, the Bay Bridge is also the only source of lighting in the Bay. The minimal lighting currently on the Bay Bridge does not significantly disturb the view at night over the Bay.

The lighting of a proposed new bridge may have a visual impact if it includes more lighting than what is currently present on the Bay Bridge. While a lighting system for the Bay Bridge will not be determined until final design, if there is additional lighting than what is currently on the Bay Bridge, such as roadway and aesthetic lighting, there would be a visual impact to the Bay. Additional lighting would be more visible at night, especially since it is the only source of lighting across the Bay. The lighting design may have potential environmental impacts, including energy consumption, visual aesthetics, and ecological effects. Artificial lighting can disrupt nocturnal wildlife, including migratory birds, sea turtles, and aquatic species by altering behavior, disorienting navigation, or affecting reproductive cycles.

Measures to ensure safety, navigational compliance, and minimize impacts on the environment and natural species, particularly within the ecologically sensitive Chesapeake Bay region, may be considered in the lighting design. These considerations may include the use of energy-efficient lighting systems installed along the main span, approaches, and support piers to provide uniform illumination for vehicular traffic, maintenance operations, and emergency access. Mitigation measures could include full-cutoff luminaires to prevent light spill into adjacent habitat, as well as consideration of DarkSky International guidelines to protect nocturnal species[3]. Navigational lighting, as required by the USCG, may utilize shielded, downward-directed fixtures to reduce glare and light trespass into the Chesapeake Bay's sensitive aquatic and avian habitats. Aesthetic lighting may be considered for the bridge towers, with the option of employing programmable low-intensity lighting to adhere to dark-sky principles to minimize impacts on migratory birds and the scenic viewsheds of the Chesapeake Bay. Full-cutoff fixtures with warm-toned wavelengths (below 3000 Kelvin) to reduce skyglow and light trespass into critical habitats, such as adjacent wetlands and spawning grounds, may be considered. Additionally, adaptive controls can dim lights during low-traffic periods to minimize energy consumption and ecological disturbance.

Overall, the build alternatives could have a considerable impact on visual aesthetics in the Chesapeake Bay landscape unit. A new bridge would be larger and may be a different structure type than the existing bridge. However, the existing bridge itself is an iconic and recognizable landmark to the region, and a new Bay Bridge would likely have a similar visual appeal. Public and agency comments on visual resources will continue to be considered during the Tier 2 Study. Thus far, public comments received have noted a desire for an aesthetically pleasing bridge that enhanced lighting on a new bridge.

3.3 Eastern Shore Landscape Unit Visual Impact Analysis

3.3.1 Existing Conditions

3.3.1.1 Visual Character

The Eastern Shore landscape unit includes the portion of the study area located in Queen Annes County. It follows U.S. 50/301 from the eastern end of the Bay Bridge to the U.S. 50/301 split in

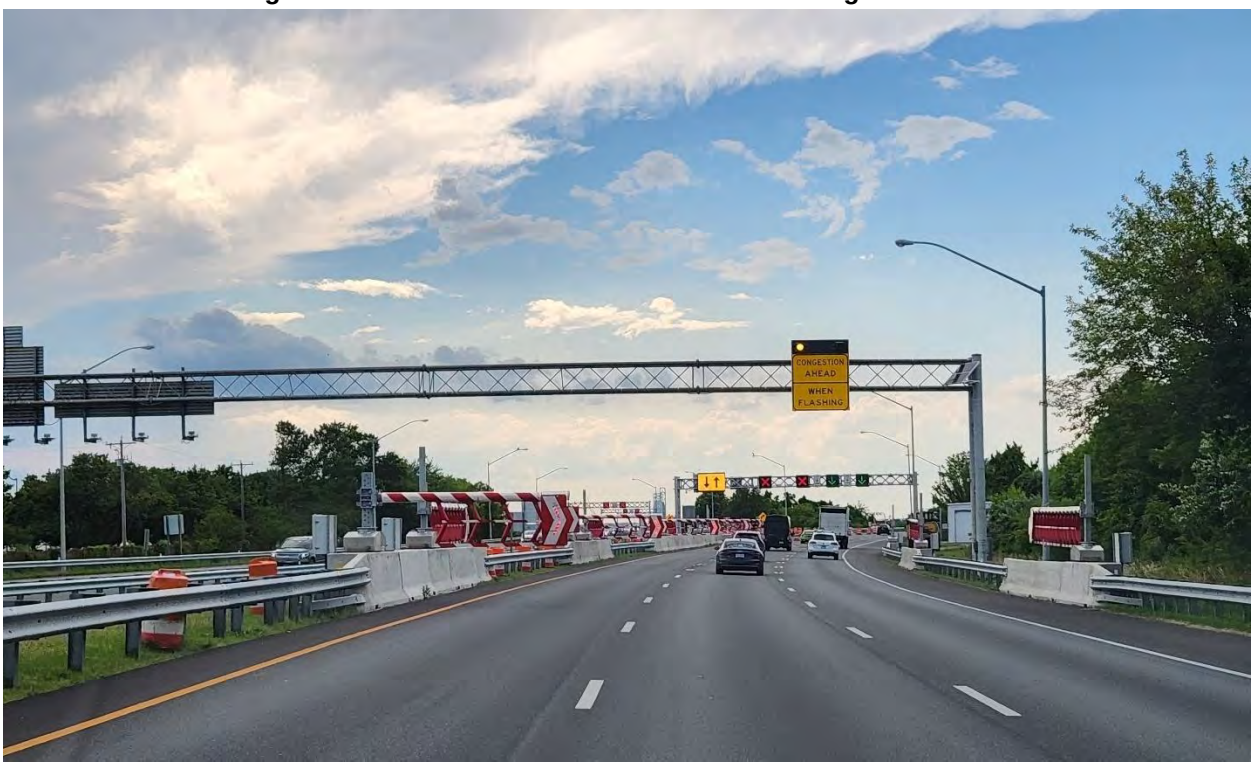
[3] https://darksky.org/resources/guides-and-how-tos/lighting-principles/

Queen Annes County. Similar to the Western Shore, U.S. 50/301 on the Eastern Shore is a highly-traveled roadway with six lanes of traffic. For most of the corridor, eastbound and westbound traffic on U.S. 50/301 are separated by a median with metal guardrail. Guardrail is also located along much of U.S. 50/301 throughout this landscape unit. In some instances where businesses are located directly adjacent to U.S. 50/301, the highway has a concrete barrier. Several overpasses carry roads over U.S. 50/301, including MD 8 (Romancoke Road), MD 18 (Main Street), Chester River Beach Road, and Nesbit Road. The overpasses are all concrete and steel structures with chain link fencing.

The viewshed, as experienced by travelers of U.S. 50/501, includes the manmade elements of the roadway, including the six lanes of travel and opposing traffic, shoulders, median, and guardrail, as well as surrounding vegetation cover that limits the view of the roadway. Motorists traveling in either direction also experience views of the surrounding land uses, including businesses, commercial areas, and residences.

Similar to the Western Shore, the Eastern Shore Bay Bridge approaches have the ALCS, pictured below in **Figure 3-20.** The system was constructed for opening and closing lanes for two-way traffic on the westbound bridge and includes overhead lane-use control signals and horizontal swing gates to block or allow traffic.

Figure 3-20: Motorists View of the ALCS Heading Westbound



Adjacent to U.S. 50/301 are commercial areas and businesses, often accessed by service roads parallel to the highway. Commercial areas and businesses in this landscape unit are most concentrated on Kent Island, where businesses are located directly adjacent to U.S. 50/301 for much of the roadway. **Figure 3-21** shows U.S. 50/301 on the Eastern Shore, heading west towards the Bay Bridge. Commercial businesses located to the north of the roadway are located directly adjacent to U.S. 50/301. Businesses include offices, restaurants, boat dealerships, grocery stores, gyms, pharmacies and doctors' offices, gas stations and convenience stores, auto

shops, and commercial centers. Businesses and commercial centers are also located on U.S. 50/301 beyond Kent Island but are less concentrated to the east. U.S. 50/301 becomes more surrounded by dense vegetation near the Chester River Beach Road overpass, with few commercial centers or businesses located adjacent to the roadway. See **Section 7** of the *Socioeconomic & Land Use Technical Report* for a full description of commercial areas, businesses, and residential areas located adjacent to U.S. 50/301 on the Eastern Shore. In addition, the Stevensville Park and Ride lot is located along U.S. 50/301 and visible from the roadway.

Kent Narrows is a narrow waterway that separates Kent Island from the Maryland mainland, acting as a vital connection between the Chesapeake Bay and the Eastern Shore of Maryland. The area is known for its scenic views, recreational opportunities and as a hub for boating and fishing. The Kent Narrows Bridge, which spans this waterway, provides an important transportation link for travelers headed to and from the Eastern Shore. The bridge offers sweeping views of the surrounding waters, including the Chesapeake Bay.

Figure 3-21: Motorists View U.S. 50/301 on the Eastern Shore



Several residential neighborhoods are located adjacent to U.S. 50/301 within this landscape unit; however, their view is often obscured by dense vegetation. East of Cox Creek, Sherman Drive runs parallel to U.S. 50/301, lined with residences. Creaks in vegetative cover between Sherman Drive and U.S. 50/301 allows for glimpses into the neighborhood from the roadway. As U.S. 50/301 travels over Kent Narrows, the higher elevations allow for views of residences to the north of U.S. 50/301 along Narrows Point Drive and the Wells Cove Marina Townhomes to the south. East of Kent Narrows, neighborhoods located off of Main Street and Long Point Road are visible from U.S. 50/301 where there are breaks in the vegetative buffer.

While the viewshed in the Eastern Shore landscape unit is largely commercial centers, businesses, and vegetation, water resources are also visible from U.S. 50/301. The roadway travels over Cox Creek, offering views of the creek to the north and south of the roadway. Farther

east on U.S. 50/301, Piney Creek is visible from the roadway. To the south of U.S. 50/301 are marinas and a yacht club. Several hotels and their marinas are also visible from the bridge, south of U.S. 50/301. To the north of U.S. 50/301, several restaurants and marinas are visible, including large indoor boat storage buildings. East of Kent Narrows, several wetland areas are visible from U.S. 50/301, as well as Winchester Creek.

The U.S. 50/301 bridge over Kent Narrows also offers picturesque views of Kent Narrow's salt marshes, the Chester River and Eastern Neck to the north, and Prospect Bay to the south. Pleasure watercraft can be seen in the surrounding waters from the bridge. Also visible from the bridge are the many marinas and their docked sailboats and pleasure watercrafts.

East of Kent Narrows, U.S. 50/301 is more homogenous in views. The viewshed is dominated by dense vegetation to the north and south of the roadway, with more infrequent businesses located adjacent to U.S. 50/301. This view is continuous until the study limits at the U.S. 50/301 split.

Section 4(f) park/recreation area properties adjacent to U.S. 50/301 on the Eastern Shore include the Terrapin Nature Park, Eisinger Property, Stevensville Middle School, the Cross Island Trail, Piney Creek Nature Area, and Kent Narrows Landing. Section 4(f) historic sites located adjacent to U.S. 50/301 include the Kent Narrows Bridge. These Section 4(f) properties and sites are considered sensitive visual resources in the landscape unit.

3.3.1.2 Viewer Groups and Key Views

Viewer groups in the Eastern Shore landscape unit include:

- Regular motorists: motorists that frequently travel on U.S. 50/301 and adjacent service roads from which the corridor is visible
- Occasional motorists/tourists: motorists that infrequently travel on U.S. 50/301 and adjacent service roads from which the corridor is visible
- Community residents: properties adjacent to U.S. 50/301 with views of the corridor
- Businesses owners, employees, and customers: offices, businesses, and commercial centers with views of the corridor
- Park/recreation area visitors: visitors of Terrapin Nature Park, Cross Island Trail, Piney Creek Nature Park, and Kent Narrows Landing

Visitors to Terrapin Nature Park, the Cross Island Trail, and nearby recreational areas are likely to have a high level of concern for changes in the visual environment given their regard for the natural environment and the recreational value of these areas. Views from Sandy Point State Park and Holly Beach Farm are mostly focused on the Bay Bridge. Views from Terrapin Nature Park and mostly focus on the Bay Bridge and Chesapeake Bay, as described in the Chesapeake Bay landscape unit. Terrapin Nature Park is mostly obscured from U.S. 50/301 by dense vegetation. The Cross Island Trail is a 6.5-mile-long trail that runs east-west, extending from Terrapin Nature Park to the Chesapeake Heritage and Visitor Center at Kent Narrows. The trail is unpaved and paved in many locations and boardwalks connect trail segments over wetlands, including where it runs parallel to U.S. 50/301, at Piney Creek Road in Chester. The trail travels for approximately two more miles adjacently north of U.S. 50/301 until reaching Kent Narrows.

The trail then passes under the Kent Narrows Bridge and crosses back under U.S. 50/301 along Kent Narrows Road to closely follow the north side of U.S. 50/301 for a remaining two miles until near Long Point Park. Visitors of these areas are likely to be sensitivity to changes in the visual environment, due to their regard for the natural environment and preservation in park/recreation areas, and for the use of these areas for recreation.

The Eastern Shore's marshy, low-lying areas are ideal for birdwatching and nature trails. A new bridge's visual impact could detract from the natural scenery, particularly if it requires additional impervious surfaces or land disturbance. Beaches near the bridge may see increased use due to improved access but could lose some appeal if the bridge's expanded footprint or construction visually intrudes on the landscape.

3.3.1.3 Visual Quality

Viewsheds from U.S. 50/301 on the Eastern Shore are dominated by the manmade elements of the roadway, including the six lanes of travel, shoulders, median, and guardrails, as well as surrounding vegetation cover that limits the view of the roadway. U.S. 50/301 has project coherence, as the existing constructed elements of U.S. 50/301 are consistent with what a viewer may expect to see on the highway. However, in the views along U.S. 50/301 are inconsistent in breaks in the vegetated cover where businesses, commercial centers, and service roads are located directly adjacent to the roadway. Visually, the businesses and commercial centers lack uniformity, and thus cultural order, along the roadway. Views in this landscape unit have a heightened awareness of the natural environment. Natural resources visible from U.S. 50/301 include the Terrapin Nature Park, Kent Island Narrows, Prospect Bay, Chester River, creeks, bays, and wetlands. Views of these resources have a high visual quality and give viewers a sense of natural harmony. Overall, this landscape unit has project coherence and some natural harmony, however it lacks cultural order. Thus, the Western Shore landscape unit has moderate visual quality.

3.3.2 Visual Change

Visual change is determined for the Eastern Shore Landscape Unit based on visual compatibility and visual contrast descriptions, in accordance with **Table 3-2** above. Visual changes from the alternatives for the Eastern Shore Landscape Unit are described below:

3.3.2.1 Alternative A - No Build Alternative

See **Section 3.2.2.1** for a description of Alternative A. The visual character and quality of the project site and vicinity would remain the same as the existing conditions in the Eastern Shore Landscape Unit described in **Section 3.3.1** and as such there would be no visual changes with a No Build Alternative.

3.3.2.2 Alternatives B and C

See **Section 3.1.2.2** for a description of Alternatives B and C. The visual change from the Eastern Shore Landscape Unit is expected to be similar for Alternatives B and C. In addition to the increase in lanes, it is reasonable to assume that there will be visible changes to the superstructure and substructure of the bridge under these alternatives. It is anticipated that proposed changes identified under Alternatives B and C would be visible in the Eastern Shore Landscape Unit.

3.3.2.3 Alternatives D, E, F, and G

See **Section 3.1.2.3** for a description of Alternatives D, E, F, and G. The visual change from the Eastern Shore Landscape Unit is expected to be similar for Alternatives D, E, F, and G since all four alternatives have eight lanes along the Eastern shore. In addition to the increase in lanes, it is reasonable to assume that there will be visible changes to the superstructure and substructure of the bridge under these alternatives. It is anticipated that proposed changes identified under Alternatives D, E, F, and G would be visible in the Eastern Shore Landscape Unit.

3.3.3 Visual Impact

With an increase in travel lanes proposed in Alternatives B, C, D, E, F, and G, the visual impacts on the Eastern Shore would be noticeable by viewers. Widening of U.S. 50/301 associated with the alternatives may result in the clearing of vegetation along the roadway, which in turn may make the road more visible from surrounding land uses. Additionally, the widening may result in impacts to adjacent properties, as well as residential or business displacements, as discussed in Section 7 of the Socioeconomics and Land Use Technical Report. This may alter the viewshed of U.S. 50/301, however changes would be mostly consistent with the existing conditions of todays roadway.

With the increase in height and number of lanes of the proposed alternatives for the Bay Bridge, the visual impact on the Eastern Shore of Maryland would be substantial. The bridge's towering height would make it a dominant feature in the landscape, noticeably altering the current scenic views of the bay and surrounding areas. The optional SUP would have minimal additional visual impact since it would be constructed on the new bridge structure.

From key vantage points such as Kent Island and nearby residential areas, the expanded bridge would create a more imposing presence. While the existing Bay Bridge is already a pronounced disruption of the Bay, the bridge itself is an iconic and recognizable landmark. A new Bay Bridge would likely have a similar visual appeal against the backdrop of Chesapeake Bay. However, the expanded bridge would likely create a more imposing visual presence.

While some areas might experience more noticeable changes in the viewshed, these effects could be limited to specific locations where the bridge is most visible. In other areas, the impact might be less pronounced, especially where natural or built features partially obscure the bridge. The construction process itself would also temporarily disrupt the landscape, with cranes, scaffolding, and other equipment altering the view.

The expansion of the Bay Bridge proposed in the alternatives could impact tourism in the area. The bridge's more imposing presence might alter the scenic views that attract visitors to the Eastern Shore. The construction process itself could temporarily disrupt the landscape, potentially deterring tourists during that period. However, the expanded bridge could also improve accessibility, making it easier for tourists to travel between the Eastern Shore and other parts of Maryland. This enhanced connectivity might boost tourism in the long run, as visitors find it more convenient to explore the region's natural beauty, rich history, and cultural attractions. Overall, while there may be some visual impacts, the improved infrastructure could ultimately benefit tourism by facilitating easier travel and potentially attracting more visitors.

4 MITIGATION MEASURES

The Bay Bridge, often hailed as a marvel of modern engineering, stands as an iconic symbol of connectivity and progress for the surrounding community. This awe-inspiring structure, with its breathtaking views and unparalleled design, serves as a vital lifeline for commuters, linking the Eastern Shore with the bustling metropolitan areas of Annapolis and beyond. For countless residents, the bridge is an indispensable route, dramatically reducing travel time and enhancing daily commutes. Its significance extends beyond mere transportation; it fosters economic growth, tourism, and a sense of unity among the communities it connects.

Visually, the bridge is a stunning landmark, offering panoramic vistas of the Chesapeake Bay that captivate both locals and visitors alike. Its elegant arches and sweeping spans create a picturesque silhouette against the horizon, making it not only a functional infrastructure but also a much-loved part of the local community. The existing Bay Bridge enhances the aesthetic quality of the region, providing a scenic backdrop that enriches the daily lives of those who traverse it. A new Bay Bridge associated with the build alternatives would also likely be a visually stunning landmark for viewers and provide a similar experience as the Bay Bridge does today. The Bay Bridge is a monumental testament to human ingenuity and an irreplaceable asset to the region. As such, it is important that the MDTA takes a qualitative and aesthetic approach to address any potential visual quality loss in the project area. The mitigation measures must facilitate avoidance, minimization, compensation, and enhancement measures that can lessen or compensate for a loss in visual quality.

4.1 Adverse Visual Effects

The recommended measures would reduce the project's visual impact as seen from the Bay Bridge and the surrounding communities. The intent of the mitigation measures would be to reduce adverse visual effects of the project caused primarily by the additional lanes, increased height of the bridge, reduction of highway landscaping, and the construction of noise barriers, and to provide design treatments that would reduce or enhance the aesthetic condition of the project.

Even with implementation of the mitigation measures, some visual impacts would remain, regardless of the project alternative. The mitigation measures, combined with proposed project features such as lighting and aesthetic treatments to walls, would lessen the negative visual change to the corridor. However, some of the detrimental visual impacts would remain because of the inherent alteration of scale, increased hard surface, and loss of vegetative character.

Each instance of adverse visual impact from the preferred alternative should be described and propose how it should be addressed.

4.2 Potential Mitigation Measures

Mitigation measures to lessen the visual impact of the improvements would be considered, as appropriate. Incorporating aesthetic elements into the project design can reduce visual impacts and enhance the viewer's experience and acceptance of the visual change. The MDTA will consider mitigation measures as part of the continued NEPA study and during final design. The following features and measures may be used to mitigate adverse visual impacts and can be integrated into the project during design and construction:

Landscaping Plan: Prior to the installation of the Landscape Enhancements, a Landscaping Plan may be submitted to MDTA to solicit input on a final plan. The

Landscaping Plan can identify the location and types of plants, trees, bushes, shrubbery, and other landscaping elements to be used for the project.

Landscaping Enhancements: Strategic planting of trees and shrubs to soften the visual impact and blend the bridge with its surroundings.

Architectural Design: Use of materials and colors that harmonize with the natural environment and maintain the historical significance of parks and trails in the area

Lighting: DarkSky initiative practices, reduction of glare, and preserving the natural light environment would be considered. Possible measures that can be taken for lighting mitigation are glare or backlight shielding, limiting light intensity, tailoring the spectrum to the local species and environment, and timing.

Impacts During Construction: Locate staging and laydown areas in areas where there is no vegetation and where it will have minimal impacts on park visitor access. Restore staging areas to preconstruction conditions or better and minimize fugitive light from portable sources used during construction.

Monitoring and Maintenance: Regular monitoring and maintenance to ensure the effectiveness of mitigation measures and address any emerging visual issues.

The design of the highway elements and the new Bay Bridge could also incorporate aesthetic architectural elements that enhance the visual appeal, blending functionality with beauty. The construction process itself would likely disrupt the visual quality of the landscape, however these impacts would be temporary in nature. Ultimately, a new Bay Bridge may offer a more streamlined and efficient structure that still respects the natural beauty of the Chesapeake Bay.