



TRANSPORTATION EQUITY ANALYSIS

JANUARY 2026



Maryland
Transportation
Authority

**TRANSPORTATION EQUITY ANALYSIS
of the
CHESAPEAKE BAY CROSSING STUDY
ALTERNATIVES RETAINED for DETAILED STUDY**



JANUARY 2026

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ABBREVIATIONS AND ACRONYMS

ACS	American Community Survey
ADA	Americans with Disabilities Act
ARDS	Alternatives Retained for Detailed Study
BMC	Baltimore Metropolitan Council
BRTB	Baltimore Regional Transportation Board
CDC	Center for Disease Control
CDP	Census Designated Place
CEJST	Climate and Economic Justice Screening Tool
CFR	Code of Federal Regulations
COMAR	Code of Maryland Regulations
DEIS	Draft Environmental Impact Statement
EAG	Equity Advisory Group
EIS	Environmental Impact Statement
EJ	Environmental Justice
EPA	Environmental Protection Agency
ETC (Explorer)	USDOT Equitable Transportation Community Explorer
FHWA	Federal Highway Administration
GIS	Geographic Information Systems
HHS	U.S. Department of Health and Human Services
HUD	U.S. Department of Housing and Urban Development
LEP	Limited English Proficiency
LOD	Limit of Disturbance
MDE	Maryland Department of the Environment
MDNR	Maryland Department of Natural Resources
MDOT	Maryland Department of Transportation
MDP	Maryland Department of Planning
MDTA	Maryland Transportation Authority
MEPA	Maryland Environmental Policy Act
MTA	Maryland Transit Administration
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NRHP	National Register of Historic Places
NSA	Noise Sensitive Area
PTSU	Part Time Shoulder Use
SHA	State Highway Administration
STEAP	Screening Tool for Equity Analysis of Projects
SUP	Shared-Use Path
SWM	Stormwater management
TDM	Transportation Demand Management
TSM	Transportation Systems Management
TWIS	Truck Weigh and Inspection Station
USDOT	U.S. Department of Transportation
VOICE	Valuing Opportunity, Inclusion and Community Equity

1 INTRODUCTION

The Chesapeake Bay Crossing Study (Bay Crossing Study, or Study) is an engineering and environmental study being advanced by the Maryland Transportation Authority (MDTA) to address existing and future transportation issues at the William Preston Lane, Jr. Memorial Bridge (Bay Bridge) and its approaches along U.S. 50/301. Tier 2 of the Study includes engineering and analysis to describe potential significant environmental effects and inform the evaluation of alternatives. Study limits for the Tier 2 Study analysis are defined in **Section 2.2**.

The Maryland Environmental Policy Act (MEPA) states that “The protection, preservation, and enhancement of the State’s diverse environment is necessary for the maintenance of the public health and welfare and the continued viability of the economy of the State and is a matter of the highest public priority [MD Code, Natural Resources § 1-103.1(b)].” Implementation of the MEPA requires State agencies to evaluate proposed actions that may impact the environment, giving “thoughtful consideration of the environmental effects of their proposed actions, including ecological, socio-economic, developmental, recreational, historic, architectural, aesthetic, and other values (COMAR 11.01.08.01).”

Maryland Executive Order 01.01.2025.17, Valuing Opportunity, Inclusion and Community Equity (VOICE), enacted July 17, 2025, directs State agencies to “take additional actions to embed explicit analysis of equity considerations in policies and practices, including by analyzing demographic and geographic gaps in outcomes and access to funding and services, and reviewing community engagement strategies with a focus on Marylanders who reside in communities that have historically been overburdened and marginalized including coastal, rural, tribal and urban populations.”

Transportation equity considers the unique circumstances impacting overall community mobility and connectivity needs and uses this information to determine potential benefits and burdens of a proposed transportation project, so that decisions on changes to the transportation network provide equitable and fair outcomes for all members of a community.

This Transportation Equity Analysis of the Tier 2 Study Alternatives Retained for Detailed Study (ARDS) is being completed in consideration of MEPA requirements, the Maryland VOICE executive order, as well as general public and state agency comments received during the Bay Crossing Study. This analysis serves as a separate review of ARDS based on the MEPA framework and is not included as part of the Tier 2 Study Environmental Impact Statement (EIS) prepared pursuant to the National Environmental Policy Act (NEPA)¹.

The incorporation of transportation equity considerations and practices into the State-level decision making process for this significant and vital infrastructure project is a core commitment of the Maryland Department of Transportation (MDOT) and the MDTA.

¹ Recent Federal regulatory changes (*Executive Order 14148 Initial Rescissions of Harmful Executive Orders and Actions, January 20, 2025*, and *Executive Order 14173 Ending Illegal Discrimination and Restoring Merit-Based Opportunity, January 21, 2025*) have removed considerations of environmental justice and equity from the FHWA transportation project development procedures and are, therefore, not part of the Tier 2 Study elements required as part of the federal NEPA compliance process.

The MDOT 2050 Transportation Plan recognizes the historical inequities in transportation access and outcomes, striving to ensure that all communities, particularly those that have been historically marginalized or underserved, have equitable access to safe, reliable, and efficient transportation options. By prioritizing equity, MDOT aims to reduce disparities, improve accessibility, and enhance the overall quality of life for all Marylanders. Equity considerations are one of the guiding principles of the MDOT 2050 Transportation Plan, emphasizing the consideration of equity in all aspects of transportation planning, programming, and operational processes (MDOT, 2024).

The MDTA is dedicated to advancing MDOT's commitment to working in partnership with the communities it serves and promoting equity, environmental protection, and sustainable communities, while connecting people to the places where they live, work and play (MDTA, 2024).

This analysis considers equity through two distinct lenses:

- **Tier 2 Study process equity:** Encouraging active, wide-ranging, and meaningful engagement with the community, including individuals and groups historically excluded from consideration in decision making.
- **Tier 2 Study outcomes equity:** Ensuring the needs and concerns of affected individuals and communities, especially those that are viewed as underserved or overburdened, are understood, considered, and incorporated into the Tier 2 Study.

Together, process and outcomes equity considerations contribute to identifying and addressing beneficial and potentially harmful impacts to all community members. To address transportation equity for the Tier 2 Study ARDS, the MDTA is:

- Determining needs and concerns of vulnerable communities and stakeholders through meaningful engagement;
- Incorporating available state, local, and regional equity-related goals and policies into the transportation planning and decision-making processes and Tier 2 Study development;
- Recognizing vulnerable populations, communities, and stakeholders within the study area, as well as users of the Bay Bridge, which may be affected by the Tier 2 Study ARDS or that have been affected by existing transportation conditions; and
- Identifying potential benefits and burdens caused by the Tier 2 Study on vulnerable populations, communities and stakeholders, and opportunities to minimize burdens and maximize benefits by incorporating equitable options into the Tier 2 Study.

Meaningful participation from vulnerable individuals and historically marginalized communities² has been and will continue to be encouraged. The MDTA will ensure the needs and concerns of individuals and communities, in addition to those of State agencies, are considered throughout the planning process to establish a fair and equitable transportation decision serving Maryland citizens and communities.

² "**Historically Marginalized Communities**", for the purpose of this analysis, are defined as a community or population group that has historically been denied equal access to public or private economic benefits and/or exclusion from full participation in education, employment, healthcare, housing, and governmental programs.

This Transportation Equity Analysis of the Tier 2 Study ARDS utilizes data collected in the development of other technical analyses associated with the Tier 2 Study, and feedback received through engagement efforts. The analysis presents the existing conditions and an assessment of the potential benefits and burdens of the ARDS on vulnerable populations. The analysis begins with a description of the study background in **Section 2**, including the analysis area and objectives. **Section 3** details the alternatives evaluated. **Section 4** provides an overview of the state framework related to equity considerations, and **Section 5** details the methodology used in support of the equity analysis. **Section 6** presents characterization of the communities in the analysis area and a summary of benefits and burdens related to implementation of the ARDS. Public outreach and engagement conducted that includes vulnerable populations is summarized in **Section 7**.

2 BACKGROUND

2.1 Bay Crossing Study Area

The Chesapeake Bay is one of Maryland's most important natural, economic, and cultural resources and is the largest estuary in the United States. The Bay Bridge is a two-span structure that crosses the Chesapeake Bay from Anne Arundel County on the Western Shore to Queen Anne's County on the Eastern Shore. The original span was built in 1952, and a parallel span directly north of the original Bay Bridge was opened in 1973. Today, the two-lane original span typically carries eastbound traffic, and the three-lane second span typically carries westbound traffic. However, lanes on the bridge can be reversed to accommodate periods of heavy traffic. The approaches along U.S. 50/301 on each shore include six lanes (three lanes for each travel direction).

2.2 Study Limits

The MDTA analyzed traffic volumes along U.S. 50/301 and its interchanges to determine appropriate limits for the Tier 2 Study. Based on traffic analyses along the Western Shore and Eastern Shore of the Chesapeake Bay, the western Tier 2 Study Limit was identified as the MD 2/MD 450 interchange just east of the Severn River Bridge, and the eastern Tier 2 Study Limit was identified as the U.S. 50/301 split near Queenstown.

2.3 Study Objectives

The Bay Crossing Study is moving forward to address transportation needs across the Chesapeake Bay region, while considering both environmental and financial responsibility, recognizing the importance of these issues given the sensitivity of the Chesapeake Bay as an environmental resource, and the need to make responsible budgetary decisions regarding a costly proposed action. The needs include:

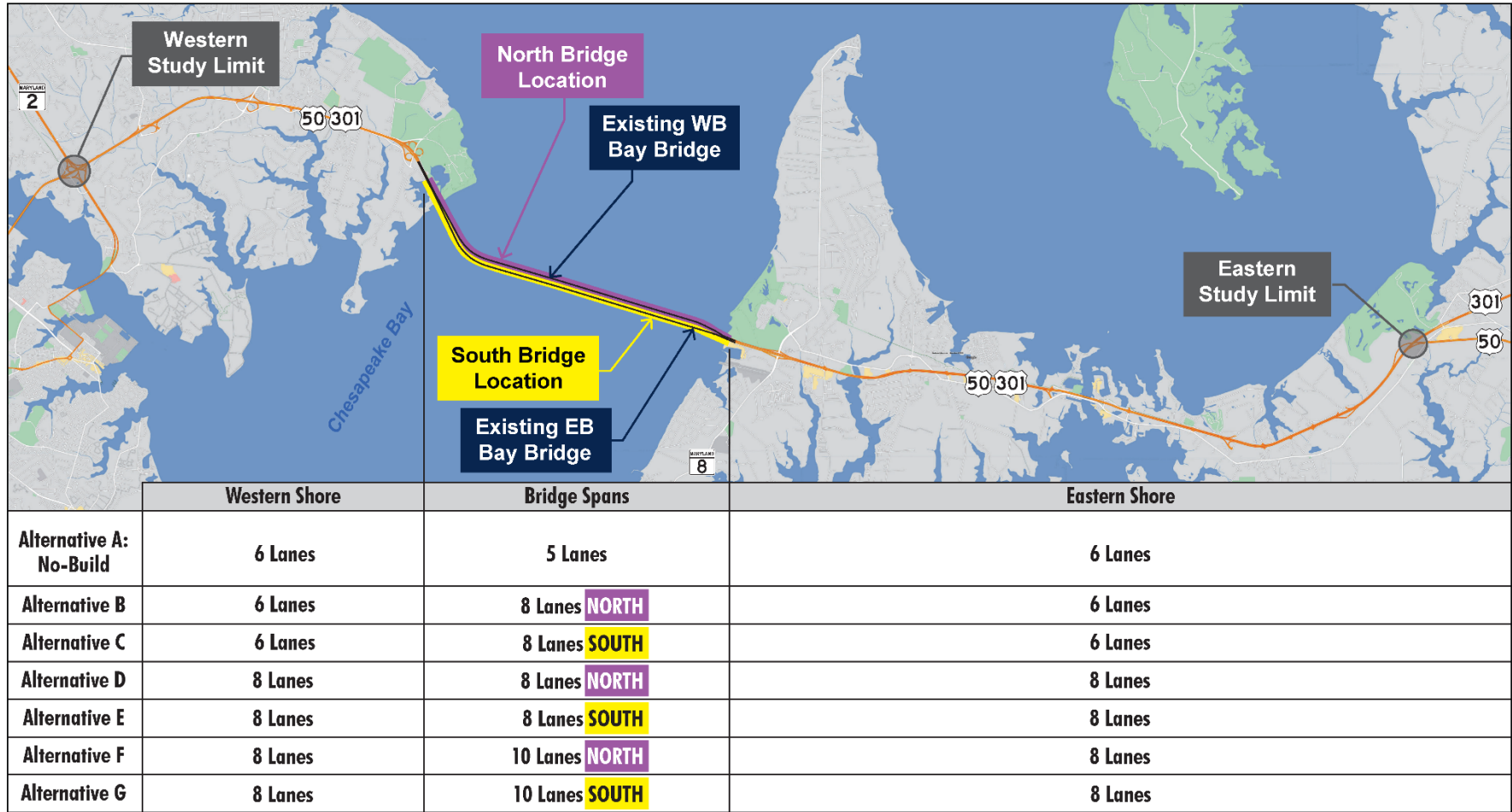
- adequate capacity and reliable travel times,
- mobility,
- roadway deficiencies,
- existing and future maintenance needs, and
- navigation.

3 ALTERNATIVES

The MDTA identified the ARDS, which are the range of reasonable alternatives for evaluation in the Tier 2 Study. The ARDS include the No-Build Alternative and six build alternatives (**Figure 3-1**). Each build alternative includes removing the existing eastbound and westbound Bay Bridge spans and replacing them with two new bridge spans constructed near the location of the existing Bay Bridge. The ARDS are differentiated by the number of lanes provided across the new bridge and on the approaches as well as the bridge location and consist of:

- **Alternative A - No-Build:** retains the existing Bay Bridge, the U.S. 50/301 alignment, and the existing number of lanes: 6 lanes along U.S. 50/301 on the Western Shore, 5 lanes across the Chesapeake Bay on the existing Bay Bridge, and 6 lanes along U.S. 50/301 on the Eastern Shore;
- **Alternative B - 6-8-6 North:** 6 lanes along U.S. 50/301 on the Western Shore, 8 lanes across the Chesapeake Bay on a new bridge with one span to the north of the existing spans and one span in-between the existing spans, and 6 lanes along U.S. 50/301 on the Eastern Shore;
- **Alternative C - 6-8-6 South:** 6 lanes along U.S. 50/301 on the Western Shore, 8 lanes across the Chesapeake Bay on a new bridge with one span to the south of the existing spans and one span in-between the existing spans, and 6 lanes along U.S. 50/301 on the Eastern Shore;
- **Alternative D - 8-8-8 North:** 8 lanes along U.S. 50/301 on the Western Shore, 8 lanes across the Chesapeake Bay on a new bridge with one span to the north of the existing spans and one span in-between the existing spans, 8 lanes along U.S. 50/301 on the Eastern Shore;
- **Alternative E - 8-8-8 South:** 8 lanes along U.S. 50/301 on the Western Shore, 8 lanes across the Chesapeake Bay on a new bridge with one span to the south of the existing spans and one span in-between the existing spans, 8 lanes along U.S. 50/301 on the Eastern Shore;
- **Alternative F - 8-10-8 North:** 8 lanes along U.S. 50/301 on the Western Shore, 10 lanes across the Chesapeake Bay on a new bridge with one span to the north of the existing spans and one span in-between the existing spans, 8 lanes along U.S. 50/301 on the Eastern Shore and
- **Alternative G - 8-10-8 South:** 8 lanes along U.S. 50/301 on the Western Shore, 10 lanes across the Chesapeake Bay on a new bridge with one span to the south of the existing spans and one span in-between the existing spans, 8 lanes along U.S. 50/301 on the Eastern Shore.

Figure 3-1: Alternatives Summary



Each of the build alternatives will also include an optional pedestrian/bicycle shared-use path (SUP), tolling, transit-related improvements, Transportation Systems Management (TSM)/Transportation Demand Management (TDM), stormwater management, utilities, and truck weigh and inspection stations. These common items, in addition to the improvements associated with each build alternative, informed the development of the limit of disturbance (LOD) for each build alternative. Additional detail on the ARDS can be found in the Tier 2 Study DEIS.

3.1 Alternative A: No-Build

Alternative A (6-5-6), the No-Build Alternative, would retain the existing Bay Bridge spans, the U.S. 50/301 alignment, and the existing number of lanes. This alternative would retain six lanes on the approaches on the Eastern and Western Shores and five lanes on the two-span Bay Bridge. The No-Build Alternative will include regular maintenance of the Bay Bridge and U.S. 50/301, but no capital improvements other than currently planned and programmed projects.

3.2 Alternative B: 6-8-6 North

Alternative B (6-8-6 North) would replace the existing Bay Bridge spans with two new bridge spans and would consist of six lanes along U.S. 50/301 on the Western Shore (three per direction), eight lanes on a new bridge (four per direction), and six lanes along U.S. 50/301 on the Eastern Shore (three per direction). The two new bridge spans would consist of one span to the north and one span in between the existing bridge spans. The approach roadways would remain on the existing roadway alignment, except where necessary to connect to the new bridge spans. Thus, with Alternative B, the five existing bridge lanes would be increased to eight bridge lanes; however, the number of lanes on the Western Shore and Eastern Shore would not change and would remain at six total travel lanes beyond the immediate tie-ins to the new bridge spans.

3.3 Alternative C: 6-8-6 South

Alternative C (6-8-6 South) would replace the existing Bay Bridge spans with two new bridge spans and would consist of six lanes along U.S. 50/301 on the Western Shore (three per direction), eight lanes on a new bridge (four per direction), and six lanes along U.S. 50/301 on the Eastern Shore (three per direction). The two new bridge spans would include one span to the south and one span in between the existing bridge spans. The approach roadways would remain on the existing roadway alignment, except where necessary to connect to the new bridge spans. Thus, with Alternative C, the five existing bridge lanes would be increased to eight bridge lanes; however, the number of lanes on the Western Shore and Eastern Shore would not change and would remain at six total travel lanes beyond the immediate tie-ins to the new bridge spans.

3.4 Alternative D: 8-8-8 North

Alternative D (8-8-8 North) would replace the existing Bay Bridge spans with two new bridge spans and would consist of eight lanes along U.S. 50/301 on the Western Shore (four per direction), eight lanes on a new bridge (four per direction), and eight lanes along U.S. 50/301 on the Eastern Shore (four per direction). The two new bridge spans would include one span to the north and one span in between the existing bridge spans. Alternative D would increase the number of lanes along the U.S. 50/301 approaches to eight lanes from the MD 2/MD 450 interchange on the Western Shore to the U.S. 50/301 split on the Eastern Shore and would generally remain on the existing roadway alignment except where necessary to connect to the new bridge spans. Thus, with Alternative D, the five existing bridge lanes would be increased to eight bridge lanes and the number of lanes on the Western Shore and Eastern Shore would increase from six total travel lanes to eight total travel lanes.

3.5 Alternative E: 8-8-8 South

Alternative E (8-8-8 South) would replace the existing Bay Bridge spans with two new bridge spans and would consist of eight lanes along U.S. 50/301 on the Western Shore (four per direction), eight lanes on a new bridge (four per direction), and eight lanes along U.S. 50/301 on the Eastern Shore (four per direction). The two new bridge spans would include one span to the south and one span in between the location of the existing bridge spans. Alternative E would increase the number of lanes along the U.S. 50/301 roadway approaches to eight lanes from the MD 2/MD 450 interchange on the Western Shore to the U.S. 50/301 split on the Eastern Shore and would generally remain on the existing roadway alignment except where necessary to connect to the new bridge spans. Thus, with Alternative E, the five existing bridge lanes would be increased to eight bridge lanes and the number of lanes on the Western Shore and Eastern Shore would increase from six total travel lanes to eight total travel lanes.

3.6 Alternative F: 8-10-8 North

Alternative F (8-10-8 North) would replace the existing Bay Bridge spans with two new bridge spans and would consist of eight lanes along U.S. 50/301 on the Western Shore (four per direction), ten lanes on a new bridge (five per direction), and eight lanes along U.S. 50/301 on the Eastern Shore (four per direction). The two new bridge spans would include one span to the north and one span in between the location of the existing bridge spans. Alternative F would increase the number of lanes along the U.S. 50/301 approach roadway to eight lanes from the MD 2/MD 450 interchange on the Western Shore to the U.S. 50/301 split on the Eastern Shore and would generally remain on the existing roadway alignment except where necessary to connect to the new bridge spans. Thus, with Alternative F, the five existing bridge lanes would be increased to ten bridge lanes and the number of lanes on the Western Shore and Eastern Shore would increase from six total travel lanes to eight total travel lanes.

3.7 Alternative G: 8-10-8 South

Alternative G (8-10-8 South) would replace the existing Bay Bridge spans with two new bridge spans and would consist of eight lanes along U.S. 50/301 on the Western Shore (four per direction), ten lanes on a new bridge (five per direction), and eight lanes along U.S. 50/301 on the Eastern Shore (four per direction). The two new bridge spans would include one span to the south and one span in between the location of the existing bridge spans. Alternative G would increase the number of lanes along the U.S. 50/301 approach roadway to eight lanes from the MD 2/MD 450 interchange on the Western Shore to the U.S. 50/301 split on the Eastern Shore and would generally remain on the existing roadway alignment except where necessary to connect to the new bridge spans. Thus, with Alternative G, the five existing bridge lanes would be increased to ten bridge lanes and the number of lanes on the Western Shore and Eastern Shore would increase from six total travel lanes to eight total travel lanes.

3.8 Other Components of the Build Alternatives

3.8.1 Optional Pedestrian / Bicycle Shared-Use Path

All proposed build alternatives include the option for the safe inclusion of a pedestrian/bicycle SUP along a new bridge. The MDTA has identified connections to existing and proposed trails and recreational facilities on the Eastern Shore and Western Shore.

3.8.2 Tolling

The MDTA owns and operates the Bay Bridge and uses tolls from its eight facilities to maintain and operate all their facilities. The Bay Bridge will continue to be a tolled facility and the MDTA will continue to manage it and the toll to address the current and future traffic and the associated congestion.

3.8.3 Transit-Related Improvements

Transit-related improvements would be made through a financial commitment from the MDTA that would focus on providing a one-time investment for local transit agencies near the Bay Bridge. The same commitment would be made for all alternatives and would not be used to differentiate between alternatives.

All transit-related opportunities would be determined in the future, closer to the time of construction. The MDTA would coordinate with the Maryland Transit Administration (MTA), local governments, and local transit agencies to help determine the opportunities. However, these agencies would determine the transit-related improvements that would be most beneficial for them at that time and they would be separate and distinct projects from the Bay Crossing.

3.8.4 TSM/TDM Considerations

Two TSM/TDM considerations were considered with the retained build alternatives for potential implementation: congestion pricing and part-time shoulder use (PTSU) lanes.

The Bay Bridge will continue to be a tolled facility. If a build alternative is selected, congestion pricing could be used in the future to provide flexibility for toll management strategies that the MDTA could use to further reduce congestion and achieve transportation goals.

The shoulders on the bridge would be full width (12 feet wide) to accommodate future maintenance needs and incident management; therefore, they would also be wide enough to accommodate a PTSU lane. Although the build alternatives have been developed to accommodate a PTSU lane, the operation of PTSU lanes is not being included as part of the alternatives. Future implementation of PTSU is not precluded.

3.8.5 Stormwater Management

A planning-level, conceptual Stormwater Management (SWM) analysis was completed that identified the stormwater needs and potential treatment locations throughout the study area for each build alternative.

3.8.6 Utilities

The study area along U.S. 50/301 contains public utilities including: potable water, sanitary sewer, natural gas, electric power/distribution, communications, and cable television. The build alternatives would impact some of these utilities that are in close proximity to U.S. 50/301, and the impacts to these utilities and associated replacements have been included in the build alternatives.

3.8.7 Truck Weigh and Inspection Station

There are two existing Truck Weigh and Inspection Stations (TWIS) along U.S. 50/301 between Oceanic Drive and the Bay Bridge, one in each direction. As part of the build alternatives, these facilities would be upgraded and relocated, where necessary.

3.8.8 Limit of Disturbance (LOD)

The LOD is the proposed boundary that would include all construction, erosion and sediment control, SWM, and right-of-way offsets. The LODs for the alternatives were developed from the proposed horizontal and vertical geometry, typical sections, roadside design, and proposed interchange modifications. For Alternatives B and C, the number of lanes on the Western Shore and Eastern Shore would not change and would remain at six total travel lanes beyond the immediate tie-ins to the new bridge spans. This would mean the limits of roadway improvements associated with Alternatives B and C would end at the immediate tie-ins to the new bridge spans, compared with the limits of roadway improvements for Alternatives D through G, which would end at the study limits (MD 2/MD 450 and the U.S. 50/301 Split). Due to the shorter distance of proposed roadway modifications associated with Alternatives B and C, the LODs associated with these two build alternatives are smaller than the LODs associated with the other build alternatives.

4 STATE POLICY FRAMEWORK

Completion of this analysis is in keeping with the declared intent of State, regional, and local policies, goals, and principles as affirmed in Maryland law and applicable comprehensive and transportation plans. A summary of relevant State, regional, and local policies is provided in **Appendix A**.

This analysis is responsive to State, regional and local policies, goals and principles including the following:

4.1 Maryland State Laws and Orders:

- **MD Code, Natural Resources § 1-302** sets out foundational policies of MEPA, which mandates that State agencies, in balancing economic development and environmental quality, “engage in thoughtful consideration of the environmental effects of their proposed actions, including: ecological, socioeconomic, developmental, recreational, historic, architectural, aesthetic, and other values”.
- **Maryland Executive Order 01.01.2025.17, Valuing Opportunity, Inclusion and Community Equity (VOICE)**, directs State agencies to “take additional actions to embed explicit analysis of equity considerations in policies and practices ... with a focus on Marylanders who reside in communities that have historically been overburdened and marginalized.”
- **MD Code, Transportation § 2-103.1(d)(2)** states that beginning with the 2045 Maryland Transportation Plan, MDOT “shall consider ways to achieve equity in the transportation sector when developing the State transportation goals”.
- **MD Code, Transportation § 2-103.1(h)(3)** requires that State Transportation Plans recommend measurable transportation indicators that can be evaluated for racial, disability, ethnic, and low-income disparities based on available sources or information.
- **MD Code, Transportation § 2-103.1(j)(1) and (j)(5)(viii)** establishes the Transportation Advisory Committee and requires the Transportation Advisory Committee and MDOT to consider the impact of transportation investment on Environmental Justice (EJ) and underserved communities.
- **MD Code, Transportation § 7-715** states that the MDTA shall develop transit equity analysis policies and guidelines.
- **MD Code, Transportation § 7-716** states that major service changes require transit equity and cost-benefit analysis and consultation with members and leaders of affected communities.
- **MD Code, Transportation § 7-717** states that reduction or cancellation of a capital expansion project requires transit equity and cost-benefit analysis and consultation with members and leaders of affected communities.
- **MD Code, Environment § 1-701(a)** provides State definitions of EJ, Overburdened Community and Underserved Community.
- **MD Code, Environment § 1-701(h)** establishes the duties of the Commission on EJ and Sustainable Communities.
- **MD Code, State Finance and Procurement §5–7A–02 (a)** codifies the Maryland Economic Growth, Resource Protection, and Planning Act requiring state major transportation and capital project to be consistent with eight sustainable planning principles, including Equity.

4.2 Maryland Department of Transportation:

- **Code of Maryland Regulations (COMAR), 11.01.08**, governs implementation of the MEPA. Section 11.01.08.01 reaffirms MDOT’s commitment to compliance with the MEPA and environmental considerations in decision making.
- **The Playbook (2050 Maryland Transportation Plan)** establishes equity as a guiding principle throughout MDOT, its five modal administrations, and the MDTA. The plan requires MDOT to “integrate equity considerations in all aspects of transportation planning, programming, and operational processes.”

4.3 Regional and Local Policy and Planning Documents

- **The Baltimore Regional Transportation Board (BRTB), Baltimore Metropolitan Council (BMC) Resilience 2050 Regional Long-Range Transportation Plan** establishes regional transportation goals and strategies which support multimodal options and systems that promote equity.
- **The BRTB, BMC Equity Scan** presents a prioritized list of recommendations and supporting information BMC can use to advance equity through the four key BRTB planning processes.
- **The BRTB, BMC Promoting Inclusiveness and Cooperation** describes BRTB’s commitment to promoting inclusiveness through its principles on public involvement and education, with additional emphasis placed on involving underrepresented populations.
- **Anne Arundel County Executive Order 50** acknowledges Anne Arundel County’s commitment to promoting equity, diversity and inclusion.
- **Anne Arundel County General Development Plan (Plan2040)** presents a consistent theme of being inclusive to all residents, prioritizing investment in historically underserved and under-resourced communities, and removing barriers that limit people’s opportunities.
- **2022 Queen Anne’s County Comprehensive Plan (PlanQAC 2022)** states that the County strives to provide a safe, efficient, and equitable transportation system, including the provision of safe and easily accessible pedestrian and bicycle accommodations for residents with considerations of accessibility and equity.

5 METHODOLOGY

5.1 Tier 2 Study Process Equity

To promote study outcomes equity, the MDTA endeavors to meaningfully consider the context and distribution of community benefits and burdens to strive for balanced and equitable project implementation. The first step in addressing equity for this study was to establish an equitable study development process. This was accomplished through the creation of an Equity Advisory Group (EAG) at the beginning of the study, and the incorporation of strategies for the equitable engagement of vulnerable populations.

5.1.1 Equity Advisory Group

To ensure successful delivery of an equitable transportation decision, an EAG was initiated at the beginning of the study to guide the inclusion of equity in creating the study development process. The EAG was a diverse team of technical experts, including engineers and planners engaged in the Tier 2 Study, charged with providing input and recommendations on aspects of engagement and study development, to ensure public involvement is inclusive and that the transportation outcomes for the Tier 2 Study considers the fair distribution of both benefits and burdens. The EAG provided feedback on transportation equity methodology and the equity engagement survey described in **Section 7.1**.

5.1.2 Equity Engagement

This analysis considers the results of the MDTA's engagement efforts, including the views of vulnerable populations on the Tier 2 Study, and its potential benefits and burdens. In 2023, the study team issued an Equity Engagement Survey to help identify vulnerable populations, their study-related needs and concerns and how to best engage to meet the population's needs. The findings of the survey were carried forward in the engagement of communities within the analysis area, including vulnerable populations, including meetings, events and Open Houses to ensure equitable opportunities to participate in the decision-making process. Practices utilized throughout the Tier 2 Study include the use of non-technical plain language, when possible, throughout community outreach efforts to gain higher quality input from all members of the communities potentially affected by the proposed action.

Information on where to find upcoming engagement opportunities and Open House³ events has been made available on the study website. The study website also provides information shared at past Open House and Public Hearing events. Additional advertising was completed for Open Houses, including press releases, digital ads, news articles, mailings, email notification and other advertisements in multiple sources including non-English publications such as *El Tiempo*.

Grassroots outreach to advertise the study and 2023/2024 Open Houses included flyers at local community centers, local government assistance offices, grocery stores, places of worship; bus and transit advertisements; sending information to local government offices for distribution to constituents; informational materials/stands at farmers' markets, local festivals; informational materials at other MDOT project event tables/booths; and the posting of yard signs. Informational materials and yard signs were produced in both English and Spanish.

³ Open Houses are public information sessions that provide an opportunity for the public to gain information about a project and provide feedback that helps inform decision-making.

5.2 Equity Analysis Area and Communities

The first step of this analysis was to establish the Equity Analysis Area (analysis area). The analysis area is the geographic area where the benefits and burdens generated through implementation of the build alternatives on vulnerable populations, as well as the environment in which those community members live, work, and play are analyzed. The analysis area considers communities that may experience benefits and burdens by the build alternatives. This includes communities that are immediately adjacent to the proposed improvements as well as communities that are farther removed from the study limits but are still dependent on U.S. 50/301 to access workplaces, goods, and services. The analysis area for the Transportation Equity Analysis is identical to the analysis area utilized in the Tier 2 Study *Socioeconomic and Land Use Technical Report (Section 5.1)*.

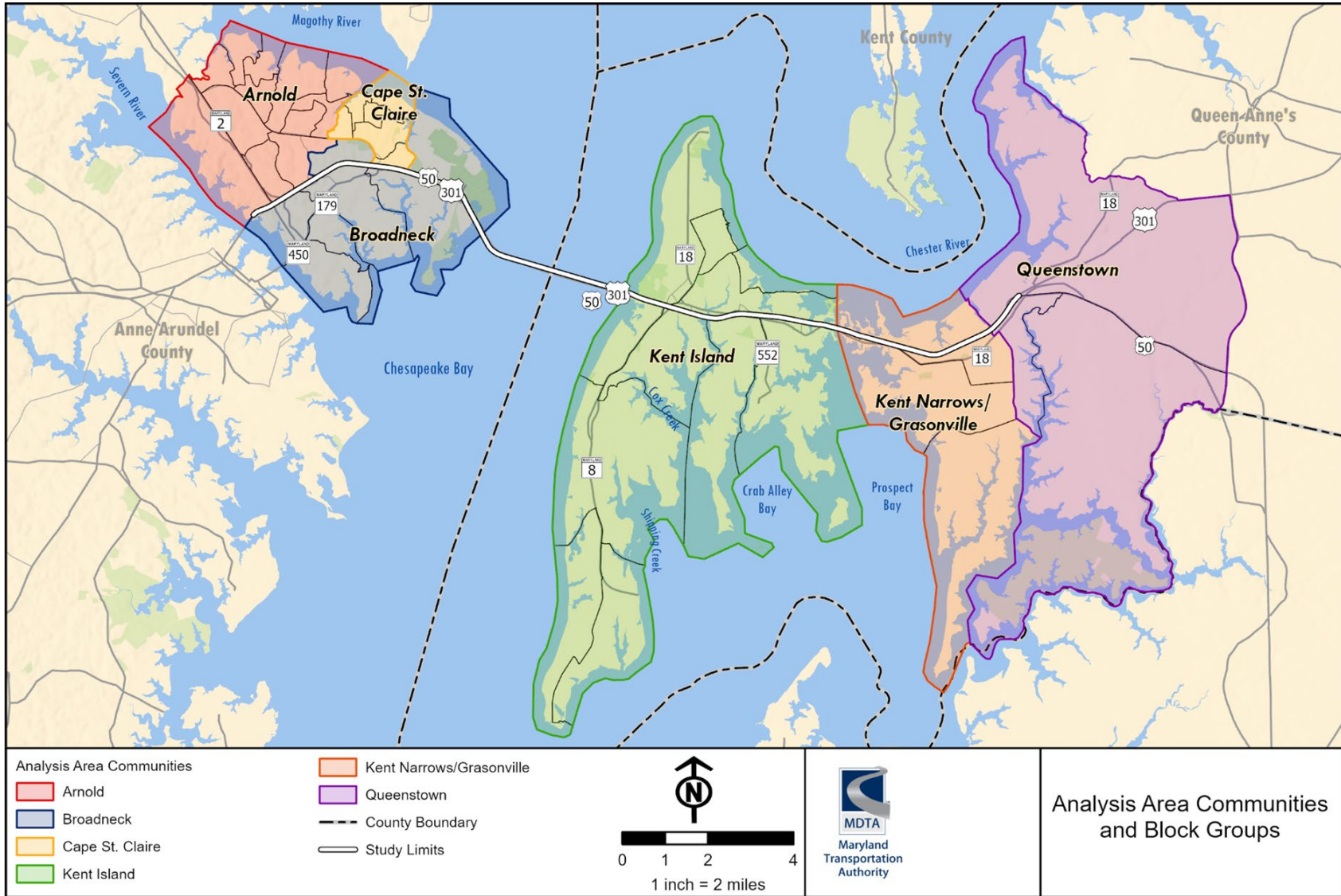
The analysis area was developed based on the U.S. Census Block Groups (2020) representing the Tier 2 study limits, which extend along U.S. 50/301 from east of the Severn River in Anne Arundel County eastward across the Chesapeake Bay and Kent Island in Queen Anne's County, ending at the U.S. 50/301 split near Queenstown. A one-quarter mile buffer was applied to the linear study limits to generate a basic geographic area for the analysis. All block groups falling within or intersecting the study limits buffer comprise the basis of the analysis area. Block groups within Queen Anne's County are generally larger in size than those in Anne Arundel County due to the presence of rural land uses. The analysis area was expanded further to include block groups geographically isolated on peninsulas in Queen Anne's and Anne Arundel counties, creating an analysis area that extends beyond the immediate study limits. A map of the analysis area is shown in **Figure 5-1**.

In addition to establishing the general analysis area described above, individual communities within the analysis area were identified to ensure a comprehensive analysis of potential benefits and burdens to local residents. To identify analysis area communities, the 42 block groups located within the analysis area were overlaid with the municipality, census designated place (CDP), or community planning area in which they are primarily located to define the individual communities that may be affected by the build alternatives. Block groups were grouped into communities identified through review of relevant local county plans, local service districts, Maryland Department of Planning (MDP), and county geographic information system (GIS) data, as well as local knowledge and field reconnaissance. Those communities are Arnold, Broadneck, Cape St. Claire, Kent Island, Kent Narrows/Grasonville and Queenstown. **Table 5-1** identifies the block groups within the analysis area communities. **Section 5.3** describes the process used to identify community-level vulnerable populations.

Table 5-1: Analysis Area Communities and Block Groups

Analysis Area Community	Block Groups	
Arnold	<ul style="list-style-type: none"> • 7308 - 1 • 7311.03 - 1 • 7311.03 - 2 • 7311.03 - 3 • 7311.04 - 1 • 7311.04 - 2 	<ul style="list-style-type: none"> • 7311.05 - 1 • 7311.05 - 2 • 7311.06 - 1 • 7311.06 - 2 • 7311.07 - 1 • 7311.07 - 2
Broadneck	<ul style="list-style-type: none"> • 7309.01 - 1 • 7309.01 - 2 • 7309.01 - 3 	<ul style="list-style-type: none"> • 7309.02 - 1 • 7309.02 - 2 • 7310.02 - 2
Cape St. Claire	<ul style="list-style-type: none"> • 7310.02 - 1 • 7310.03 - 1 • 7310.03 - 2 	<ul style="list-style-type: none"> • 7310.04 - 1 • 7310.04 - 2 • 7310.04 - 3
Kent Island	<ul style="list-style-type: none"> • 8108 - 1 • 8108 - 2 • 8108 - 3 • 8108 - 4 • 8109.01 - 1 • 8109.01 - 2 	<ul style="list-style-type: none"> • 8109.01 - 3 • 8109.02 - 1 • 8109.02 - 2 • 8110 - 1 • 8110 - 2
Kent Narrows / Grasonville	<ul style="list-style-type: none"> • 8106 - 3 • 8107 - 1 	<ul style="list-style-type: none"> • 8107 - 2 • 8107 - 3
Queenstown	<ul style="list-style-type: none"> • 8106 - 1 • 8106 - 2 	<ul style="list-style-type: none"> • 8106 - 4

Figure 5-1: Equity Analysis Area



5.3 Identification of Vulnerable Populations

Methods for identification of vulnerable populations for this analysis were developed in coordination with the EAG, using information and approaches available from State legislation and related State, regional, and local policies and goals as described in **Section 4**. Identification of vulnerable population types present within the analysis area communities were informed by analysis of primary and secondary demographic indicator data, online screening tools developed by governmental agencies and public interest organizations, and stakeholder and public engagement feedback.

The following definitions were applied to this analysis for the development of existing conditions and impacts analysis at a project-level. **“Vulnerable Populations”** are populations identified in this analysis that 1) have been traditionally under-informed or under-represented in the project development process, and/or 2) those populations with increased sensitivity to study-imposed burdens or potentially reduced capacity to capitalize or experience project benefits due to one or more specific community characteristics. Vulnerable populations, such as minorities, persons with disabilities, persons living in rural areas, persons otherwise affected by persistent poverty or inequality, and sensitive age cohorts, are identified by the presence of primary and secondary indicators, described below. For this analysis, the definition of vulnerable populations is inclusive of the following population groups as identified by State policies and guidance.

- **“Underserved Communities”** are defined by the State of Maryland as “any census tract in which, according to the most recent U.S. Census Bureau Survey, (i) At least 25% of the residents qualify as low-income; (ii) At least 50% of the residents identify as nonwhite; or (iii) At least 15% of the residents have limited English proficiency (LEP)”. Env’t Code § 1-701(a)(8).
- **“Overburdened Communities”** as defined by the State of Maryland are “any census tract for which 3 or more of 21 environmental health indicators are above the statewide 75th percentile”. Env’t Code § 1-701(a)(7).
- **“Historically Marginalized Communities”** are defined as a community or population group that has historically been denied equal access to public or private economic benefits and/or exclusion from full participation in education, employment, healthcare, housing, and governmental programs.

5.3.1 Primary Indicators

Six demographic characteristics were selected as primary indicators of the presence of vulnerable populations. The following demographic data from the U.S. Census ACS 5-Year Data (2018-2022) was summarized from block groups that comprise the six analysis area communities to identify vulnerable populations present in each of the communities:

- | | |
|--|-----------------------------------|
| • Minority race and ethnicity ⁴ ; | • Population Age 17 and Under; |
| • Median household income; | • Population Age 65 and Over; and |
| • Households with disability; | • Population density |

⁴ This analysis defines minority race and ethnicity populations as all non-white populations, consistent with the [MDEnviroScreen](#) methodology.

These demographic characteristics were selected as primary indicators because they were used in web-based screening tools such as U.S. Environmental Protection Agency (EPA) EJScreen, Maryland Department of the Environment (MDE) MDEnviroScreen, USDOT Equitable Transportation Community (ETC) Explorer, FHWA Screening Tool for Equity Analysis of Projects (STEAP) and the Council on Environmental Quality (CEQ) Climate and Economic Justice Screening Tool (CEJST) that were developed to support previous Federal and current state regulations (**Section 4**)⁵. While some tools are no longer published by their originating agency, this information was used to inform this project level analysis as the data, and their findings, remain valid. The primary online tools used for this study are further described in **Section 5.3.3**.

Vulnerable population indicator data are identified at the community and analysis area level to understand the makeup of the communities in comparison to the larger geographic area, identify burdens and benefits, and recommend community enhancement measures. County and state data were also obtained to provide comparative statistics See **Appendix B: Indicators and Web tools** for additional information.

5.3.2 Secondary Indicators

Secondary qualitative and quantitative indicator data were consulted to (1) confirm data findings from the analysis of primary indicators and (2) aid in ensuring that no vulnerable population characteristics have been overlooked or mischaracterized.

Data sources used to identify secondary indicators include community feedback obtained through public engagement, additional U.S. Census ACS 5-Year Data (2018-2022), data from the Maryland State Department of Education, MD iMap, Google Earth, Google Maps, Queen Anne's County and Anne Arundel County websites, other Tier 2 Study analysis, and field reconnaissance.

Secondary indicators included:

- Zero-vehicle households;
- Free or reduced school lunch enrollment;
- Population born outside of the United States;
- Unemployed persons;
- Persons living below poverty level;
- Descendant community populations⁶;
- LEP households
- Households using cash public assistance or food stamps/SNAP
- Households reliant on cell provider or non-subscription internet services;
- Land Use;
- Households without internet, and
- Presence of community facilities that support vulnerable populations (Healthcare facilities, Senior facilities, Homeless shelters, Subsidized or Section 8 housing, International grocery stores or markets)

⁵ Data from the web-based screening tools was accessed between September and November 2024, prior to the inactivation of Federal government managed tools and data sources in January-February 2025. The MDEnviroScreen Tool was accessed in July 2025.

⁶ A “descendant community” is a group of people whose ancestors were enslaved at a particular site, but it can transcend that limited definition to include those whose ancestors were enslaved throughout the surrounding region, reflecting the fact that family ties often crossed plantation boundaries. National Trust for Historic Preservation *“Engaging Descendant Communities in the Interpretation of Slavery at Museums and Historic Sites*, 2018. https://montpelierdescendants.org/wp-content/uploads/2024/07/Interpreting-Slavery-10_19_18.pdf

In the same manner as the primary indicator data, secondary indicators which use census data are identified at the community and analysis area level, with County and State data presented in **Appendix B**. Descriptions of secondary data and high-level summaries of on-line screening tools is provided.

The presence of descendant communities in Anne Arundel County is noted based on information from the cultural resources identification and evaluation analysis for the Tier 2 Study. African American communities on the Broadneck Peninsula once extended as far west as Arnold. Mid-twentieth century development and the construction of U.S. 50/301 in the early 1940s physically divided descendant communities on the peninsula. Within the Arnold community north of U.S. 50/301, descendant communities included Shirleyville, Shot Town, and Middletown. To the east and south within the Broadneck community, descendant communities included Skidmore, Clay Hill, Brown's Woods and Mulberry Hill.

The combined findings of the primary and secondary indicator data were used to identify vulnerable population types. A summary of data used to identify vulnerable population types, and the sensitivity of those groups to potential Tier 2 Study effects can be found in **Table 5-2**. Note that some secondary indicators are used to identify more than one population type.

Table 5-2: Vulnerable Populations

Vulnerable Populations	Primary Indicators	Secondary Indicators	Population Sensitivity
Minority populations	<ul style="list-style-type: none"> Minority race and ethnicity (non-white population) 	<ul style="list-style-type: none"> LEP households Presence of International grocery stores or markets Descendant community populations 	<ul style="list-style-type: none"> Change in access to services and jobs Change in community cohesion Change in mobility, including transit Barriers to participation in decision making processes
Persons with disabilities	<ul style="list-style-type: none"> Households with disability 	<ul style="list-style-type: none"> Zero-vehicle households Subsidized or Section 8 housing Households using cash public assistance or food stamps/SNAP Presence of healthcare facilities 	<ul style="list-style-type: none"> Change in access to services and jobs Change in mobility, including transit Change in physical infrastructure (access, signage) Barriers to participation in decision making processes
Persons living in rural areas	<ul style="list-style-type: none"> Population density 	<ul style="list-style-type: none"> Zero-vehicle households Households reliant on cell provider or non-subscription internet services Presence and types of community facilities Land Use 	<ul style="list-style-type: none"> Change in access to services and jobs Change in mobility, including transit Change in land use and development Barriers to participation in decision making processes
Persons otherwise adversely affected by persistent poverty or inequality	<ul style="list-style-type: none"> Median household income 	<ul style="list-style-type: none"> Population Born Outside of the United States Unemployed persons Zero-vehicle households LEP Persons living below poverty level Presence of homeless shelters Subsidized or Section 8 housing Free/reduced lunch enrollment Households using cash public assistance or food stamps/SNAP Households without internet access Households reliant on cell provider or non-subscription internet services Descendant community populations 	<ul style="list-style-type: none"> Change in access to services and jobs Change in mobility, including transit Change in community cohesion Change in cost factors, including tolling Barriers to participation in decision making processes
Sensitive age cohorts	<ul style="list-style-type: none"> Populations under 17 years old Populations over 65 years old 	<ul style="list-style-type: none"> Presence of retirement communities, senior centers and other services Presence of elementary/secondary schools Free/reduced lunch enrollment 	<ul style="list-style-type: none"> Change in access to services and jobs Change in mobility, including transit Environmental changes that increase health risks Barriers to participation in decision making processes

Adapted from Equitable Transportation Community (ETC) Explorer and FHWA Screening Tool for Equity Analysis of Projects (STEAP – no longer active)

5.3.3 Online Screening Tools

The MDTA reviewed EPA EJScreen and USDOT ETC (prior to these Federal tools being deactivated in February 2025) and MDE MDEnviroScreen and BMC Vulnerable Population Index to further inform this project level analysis and identify any gaps in the identification of vulnerable populations within the analysis area communities.

5.3.3.1 MDE MDEnviroScreen

Launched in June 2025, MDEnviroScreen was developed to “provides users with data to inform their decisions on siting, permitting, enforcement, and infrastructure improvements.” Scores are calculated at the Census Tract level based on three indicators:

- Pollution burden exposure: generally defined as the level of air quality risk factors, such as elevated particulate matter, ozone, diesel emissions and other air toxics, to which communities may be susceptible.
- Pollution burden environmental effects: generally defined as the level of pollution risk to which communities may be susceptible based on location, such as hazardous waste sites, wastewater discharges, power plants, concentrated animal feeding operations, and mining enterprises.
- Sensitive populations: generally defined as at-risk communities based on health indicators, including low birth-weight infants, asthma emergency room discharges, and lack of access to information (i.e., Broadband internet availability). The sensitive populations calculation also considers socioeconomic/demographic indicators including low-income.

The MDEnviroScreen tool defines “overburdened populations” based on a composite of the pollution burden exposure, pollution burden environmental effects, and sensitive populations indicators. “Underserved populations” are defined using the socioeconomic/demographic indicator data. EJ scores are presented as a percentile. A 75th percentile score indicates that the census tract is at or above 75 percent of census tracts within the state for a particular indicator or EJ Score. Through this analysis, census tracts with a 75th statewide percentile or greater are considered by MDE as potentially overburdened or underserved.

5.3.3.2 Baltimore Metropolitan Council (BMC) Vulnerable Population Index

The BMC developed their Vulnerable Population Index in response to prior federal regulations associated with transportation planning focusing on the following vulnerable and underserved groups within the BMC region: poverty, non-Hispanic/non-white, Hispanic, populations with LEP, populations with disabilities, elderly, and carless. The BMC includes the following municipalities in defining their regional area: Anne Arundel County, Baltimore City, Baltimore County, Carroll County, Harford County, Howard County, and Queen Anne’s County. Census tracts showing characteristics above the region mean were considered by BMC’s index as vulnerable populations.

5.3.3.3 EPA EJ Screen (2.2)

EJ Screen was a mapping and screening tool developed by the EPA that utilized national datasets to provide high-level insight on potential for EJ populations by census tract or block group. The tool compiled environmental and socioeconomic data to establish 13 indices for different environmental factors, allowing for comparisons to be made at the state and national levels. EPA identified that any areas with an index at or above the 80th percentile nationally should be

considered for further review. An 80th percentile ranking indicates that only 20% of block groups in the applicable geographic area have a higher indicator value.

5.3.3.4 USDOT Equitable Transportation Community (ETC) Explorer

The ETC Explorer was an interactive web application developed by the USDOT that assessed vulnerable populations and transportation disadvantages using five components: Climate Disaster and Risk Burden, Environmental Burden, Health Vulnerability, Social Vulnerability, and Transportation Insecurity. Each component has an individual index score which is summed to create a final index score. An individual index score at or above the 65th percentile identifies vulnerable populations based on the individual component the index score measures, and a final index score at or above the 65th percentile identifies the Census Tract as a disadvantaged community.

5.4 Impact Assessment Method

The next step in addressing transportation equity for this analysis is to characterize vulnerable populations within the analysis area communities and evaluate the context and distribution of community benefits and burdens on such populations. The benefits and burdens identified for each community are described in relation to the characteristics that the vulnerable populations present.

This analysis includes qualitative and quantitative assessments of burdens and benefits to vulnerable populations within the analysis area communities and considers temporary or permanent changes that could potentially result from implementation of a build alternative if a build alternative is selected.

The analysis focuses on the temporary or permanent changes that may constitute a more substantial burden on or benefit to specific vulnerable populations identified within each community. For instance, if a population is identified as a vulnerable population based on the presence of low-income and zero-vehicle households, changes in access to public transportation or job centers, changes in cost of travel, and changes in travel options (e.g., more pedestrian options) could have a more substantial burden or benefit on the community.

Tolling considerations are not included in this study, as toll rate changes are considered separate from capital projects and maintenance. Any future tolling rate changes related to the Bay Bridge will include an analysis and public comment period independent of the Bay Crossing Study.

The criteria shown in **Table 5-3** were used to consider potential benefits and burdens on each community and the identified vulnerable populations present.

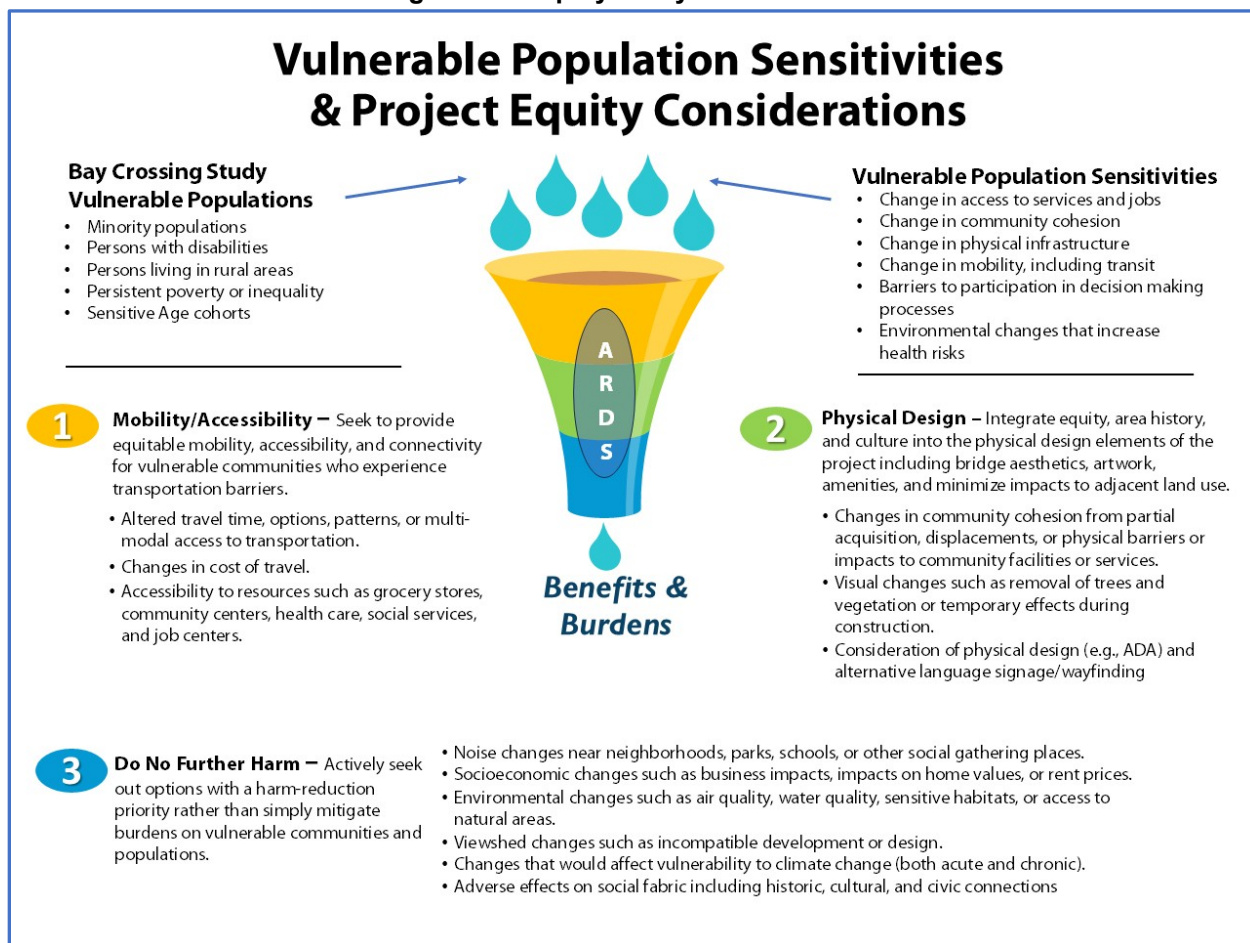
Table 5-3: Equity Analysis Framework

Transportation Equity Analysis Criteria	Description	Benefit and Burden Considerations
Mobility and Accessibility	Seek to provide equitable mobility, accessibility, and connectivity for vulnerable populations that experience transportation barriers.	<ul style="list-style-type: none"> • Altered travel time, options, patterns, or multi-modal access to transportation. • Changes in cost of travel. • Accessibility to resources such as grocery stores, community centers, health care, social services, and job centers.
Physical Design	Integrate equity, area history, and culture into the physical design elements of the build alternatives including roadway and bridge aesthetics, artwork, amenities, and impacts to adjacent land uses.	<ul style="list-style-type: none"> • Changes in community cohesion from partial acquisition, displacements, or physical barriers or impacts to community facilities or services. • Changes to landscape features (trees and vegetation) and temporary physical construction effects and restoration. • Consideration of physical design (e.g., ADA) and alternative language signage/wayfinding.
Avoid further harm	Actively seek out options with a harm-reduction priority rather than simply mitigate burdens on vulnerable communities and populations.	<ul style="list-style-type: none"> • Noise changes near neighborhoods, parks, schools, or other social gathering places. • Socioeconomic changes such as business impacts, impacts on home values, or rent prices. • Environmental effects on air and water quality, habitats, or access to natural areas. • Visual changes including incompatible development or design. • Changes that would affect vulnerability to climate change (both acute and chronic). • Adverse effects on social fabric including historic, cultural, and civic connections.

Adapted from Washington DOT/Oregon DOT Interstate Bridge Replacement Program, Equity Framework, May 2022

The equity analysis considers the specific factors that identify vulnerable populations within the analysis area and is supplemented with the results of public outreach and engagement efforts to better understand the specific factors and targeted needs and concerns of the community. This information, specific to the individual community or group, helps frame criteria through which a qualitative analysis of burdens and benefits is conducted. The analysis considers potential benefits to these communities resulting from the alternatives that may offset potential adverse effects that could not be avoided or otherwise mitigated (**Figure 5-2**).

Figure 5-2: Equity Analysis Framework



MDTA, 2025

Additional, specific Tier 2 Study impacts anticipated from the build alternatives include:

- **Property impacts** are based on the LOD and proposed right-of-way limits of the build alternatives and their potential to impact properties. Property impacts can include partial acquisitions and displacements. A partial acquisition is one that does not cause a business or residential displacement and does not impact property access. A displacement has been assumed when a principal building is anticipated to be impacted based on conceptual engineering. Specific avoidance measures will continue to be explored in coordination with property owners to avoid or minimize impacts to the extent practicable.
- **Community facility impacts** are based on the LOD and proposed right-of-way limits of the build alternatives. Facilities include, but are not limited to, educational facilities, places of worship, religious institutions, cemeteries, health care facilities, park and recreation areas, trails, public institutions, emergency services, law enforcement, correctional facilities, transportation (e.g., park & rides, boat ramps, marinas, etc.), public utility facilities, and other community or social services. Similar to property impacts, community facility impacts can include partial acquisition, changes in physical access, and changes in traffic volumes and patterns around facilities.

- **Traffic impacts** are based on existing and projected traffic volumes and operating conditions. Traffic metrics were projected for the year 2045 for the build alternatives. Detailed traffic analysis and results are included in the *Traffic Analysis Technical Report*.
- **Noise impacts** (i.e., an increase in traffic noise) may occur in communities adjacent to U.S. 50/301 within the study area due to roadway widening and associated capacity/traffic volume increases. A noise impact analysis, described in the *Noise Technical Report*, was conducted to identify noise sensitive areas (NSAs) that may be impacted by the build alternatives. NSAs are a group or grouping of similar noise-sensitive land uses into common areas subject to noise influences throughout the study limits. The study limits were divided into 156 NSAs and 95 non-NSAs. Noise impacts exist where build traffic noise levels approach or exceed levels for the defined land use within an NSA, or where there are substantial increases (10 dB(A) or more⁷) over peak ambient noise levels. The build alternatives will not result in substantial increases in any community. Noise abatement was investigated where there are noise impacts. Noise abatement (e.g., noise barriers) were evaluated for feasibility and reasonableness as described in SHA's Noise Policy and the *Noise Technical Report*. The feasibility and reasonableness criteria were applied uniformly and consistently throughout the study area.
- **Visual and aesthetic resource impacts** as characterized in the Tier 2 Study *Socioeconomic and Land Use Technical Report* include potential temporary or permanent changes to the existing visual character or setting. Permanent visual changes could occur to the skyline due to the increased bridge height. Other visual changes could include vegetation removal and installation of noise barriers. Temporary effects could occur to the visual landscape during construction due to cranes, barges, scaffolding, and other equipment.
- **Community cohesion impacts** include potential division or isolation of properties, persons or groups that could affect community connectivity.
- **Quality of life impacts** include social or health impacts that could affect the quality of life of analysis area communities, such as restricting or changing access to community facilities, and increased exposure to noise or pollution. The Tier 2 Study could also improve quality of life by reducing congestion, improving trip reliability, and providing non-motorized travel options.
- **Construction impacts** include temporary impacts during construction, such as right-of-way acquisition of temporary easements for access, equipment, staging, and stockpiling; impacts to residents, businesses, and communities due to construction traffic; and exposure to construction noise, dust and mobile source emissions, and fugitive dust. Temporary increases in employment due to construction job creation would also be expected, as well as economic benefits due to increased sale of construction supplies, materials, equipment, and fuel from local and regional sources, as well as increased revenue for businesses providing services to construction crews.

⁷ https://www.roads.maryland.gov/OHD2/SHA_Noise_Policy.pdf

6 COMMUNITY CHARACTERISTICS AND EQUITY CONSIDERATIONS

6.1 Community Overview

Vulnerable populations within the analysis area communities are identified by evaluating a combination of primary and secondary indicators as described in **Section 5.3**, and information gained through public engagement efforts described in **Section 7**. The following overview summaries provide characterization of vulnerable populations within each analysis area community and a comparison with composite information from the analysis area. Potential community-specific benefits and burdens from the build alternatives are noted based on the noted sensitivities of community vulnerable populations and equity considerations from the analysis framework (**Figure 5-2**). A complete summary of the evaluation of primary and secondary indicators and online screening tools can be found in **Appendix B**.

No-Build Alternative (Alternative A)

There would be no study-related construction impacts or study-related changes in land use, visual and aesthetic resources, air quality or noise, natural resources, or climate change and resiliency. Avoiding impacts to sensitive resources and properties could be considered a benefit for analysis area communities. However, as described below, the No-Build Alternative would not include any mobility improvements, which could be considered a burden for analysis area communities.

Mobility: Traffic congestion would continue to increase, which would impact local mobility, including an increase in travel times for emergency responders and for residents to access community facilities and services. Maintenance and rehabilitation activities required under the No-Build Alternative, in addition to incident management, would further exacerbate congestion as these activities typically require lane closure(s), thereby reducing roadway capacity. The No-Build Alternative does not consider active transportation modes including walking and bicycling or improvements to other mobility options including transit within the analysis area.

ROW Acquisition/Displacements: There would be no study-related property impacts, including displacements.

Noise: There would be no study-related construction impacts or study-related changes to the noise environment.

Build Alternatives (Alternatives B through G)

The build alternatives would provide varying degrees of improvement to address the Tier 2 Study needs and objectives outlined in **Section 2.3**. The impacts described to vulnerable populations within analysis area communities in the subsequent sections are identified based on available data and engineering.

Effects of the build alternatives on mobility, demographics, air quality, safety, natural resources, climate change and resiliency, were considered by the study team, which determined that there would be burdens and benefits to vulnerable populations present within the analysis area. Additional information related to these topics can be found in technical analyses associated with the Tier 2 Study.

For each community, benefits and burdens resulting from the build alternatives to which the vulnerable populations within that community may be more sensitive are presented below.

6.2 Arnold

The Arnold community is in Anne Arundel County in the northwest portion of the analysis area. Characteristics of vulnerable populations in the Arnold community are summarized below in **Table 6-1**.

Table 6-1: Arnold Vulnerable Population Characteristics

Indicator Type	Vulnerable Population Characteristics	Arnold Community	Comparative Data for the composite Analysis Area
Primary Indicator	Percent Minority Race and Ethnicity population	25%	20%
	Percent Households with 1 or more persons with a Disability	20%	21%
	Population Density (per square mile)	2,287	658
	Median Household Income	\$136,251	\$129,121
	Population under 17 years old	26%	24%
	Population over 65 Years Old	15%	18%
Secondary Indicator	Percent Households with LEP	<1%	1%
	Percent of Zero Vehicle Households	1%	2%
	Percent of Persons Living Below Poverty Level	3%	5%
	Percent of Households using cash public assistance or food stamps/SNAP	4%	6%
	Population Born Outside of the United States	8%	6%
	Unemployment Rate	3%	4%
	Free/Reduced Lunch Enrollment ¹	18%	23%
	Households Reliant on Cell Provider / non-subscription internet services	5%	9%
Households without internet access	1%	3%	

Sources: ACS Five-Year Estimates (2018-2022); ¹MD Department of Education (2022-2023)

The primary and secondary indicator data show that the Arnold community contains all vulnerable population types. Arnold is predominantly low and low-medium density residential land use, with a population density of 2,287 people per square mile. Community facilities are largely clustered around the MD 2 corridor and include healthcare and senior facilities. There are no homeless shelters, subsidized or Section 8 housing or international grocery stores. There are five schools within Arnold that participate in the free and reduced school lunch program. While descendant communities were identified within the greater Arnold community, no direct physical impacts would occur within the vicinity of these areas from implementation of a build alternative.

Online screening tools, such as MDE MDEnviroScreen and the BMC Vulnerability Index, indicate that the Arnold community contains underserved, elderly, Hispanic or Latino, and disabled populations. According to USDOT ETC, there is transportation insecurity within the Arnold community.

6.2.1 Burdens and Benefits

Equity-related benefits and burdens of the build alternatives to vulnerable populations in the Arnold community are summarized in **Table 6-2**.

Table 6-2: Summary of Equity Benefits and Burdens of the Build Alternatives within the Arnold Community

Transportation Equity Objective	Arnold Potential Benefits	Arnold Potential Burdens
Mobility and Accessibility	<ul style="list-style-type: none"> Improved travel time to parks, trails and recreation areas on the Eastern Shore during non-summer weekdays If a SUP is included, travelers will have a non-motorized option to cross the Bay and access community facilities, trails and parks 	<ul style="list-style-type: none"> Temporary access changes during construction to U.S. 50/301 to/from local routes
Physical Design	<ul style="list-style-type: none"> SUP design could consider ADA amenities and alternative wayfinding signage to support disabled populations and sensitive age cohorts 	<ul style="list-style-type: none"> Minor visual change along U.S. 50/301 within the study limits and MD 2/450 interchange Visual changes such as removal of trees and vegetation or temporary effects during construction
Avoid further harm	<ul style="list-style-type: none"> If SUP is included, design could include artwork and informational signage or historical markers to promote area history and culture Potential social and health benefits if SUP is included and connected to existing bicycle/pedestrian network 	<ul style="list-style-type: none"> Decreased distance of the Sturbridge neighborhood from travel lanes (noise, visual, air quality) Reduced property values due to decreased lot sizes resulting from partial property acquisition¹

¹ Property owners affected by right-of-way acquisition would be compensated and paid fair market value for the affected property in accordance with the Uniform Relocation and Real Property Acquisition Policies Act of 1970 and USDOT implementing regulations (49 CFR Part 24).

Mobility: Vulnerable populations in Arnold would experience changes in mobility on and around the study limits under all build alternatives. On non-summer weekdays, queuing and congestion are anticipated on westbound U.S. 50/301 at the Bay Dale Drive ramps under Alternatives B and C and at MD 2/MD 450 under Alternatives D, E, F, and G. Bottlenecks and queuing would occur at either the western Tier 2 Study limit or Bay Dale Drive on eastbound and westbound U.S. 50/301 in Arnold during summer weekends under all build alternatives. Queuing and bottlenecks could impact travel times to facilities used by sensitive age cohorts and persons with disabilities at Bay Dale Drive, including schools, an assisted living facility, and a medical facility. No queuing or bottlenecks are anticipated on U.S. 50/301 eastbound within the study limits on non-summer weekdays for all build alternatives which may improve access to recreational facilities east of Arnold. Eastbound U.S. 50/301 traffic on summer weekends will experience metered flow from the bottleneck west of the study limit, near the MD 2 ramp. The addition of a SUP would not have any physical impacts to the Arnold community, but could increase non-motorized access to recreational, commercial and cultural facilities on the Eastern Shore should there be additional expansion of the existing bicycle and pedestrian network in Arnold, Cape St. Claire, and Broadneck.

ROW Acquisition: The Arnold community would not experience partial property acquisitions under Alternatives B or C because the limits of those alternatives do not extend to the Arnold community. Alternatives D, E, F, and G would require partial acquisitions from three residential properties, eleven businesses, and one community facility property. The community facility property affected houses the Mid-Atlantic Health Institute and the Annapolis Dermatology Center. The acquisitions are primarily limited to sliver impacts along property lines and would not result in displacements or changes in property access, function, or community cohesion. Partial property acquisition may reduce property values due to decreased lot sizes, which could impact persons otherwise affected by persistent poverty.

Displacements: No displacements would occur within the Arnold community under any of the build alternatives.

Noise: Two NSAs are anticipated to experience noise impacts within the Arnold community under the build alternatives. One of the impacted NSAs is protected by an existing noise barrier, located east of the Severn River along westbound U.S. 50/301. The existing noise barrier will remain in place, and an extension to protect additional impacted residences will be evaluated during final design. The other NSA consists of single-family residences and noise abatement is not reasonable as defined in the SHA Noise Policy because there are less than three impacted residences. Impacted areas include single-family residences, the High Tides Offices of Annapolis building, and the Village Inn Motel. The High Tides Offices and Village Inn Motel are abandoned with no areas of frequent human use.

6.3 Cape St. Claire

Cape St. Claire is located between the Arnold and Broadneck communities in Anne Arundel County. Characteristics of vulnerable populations in the Cape St. Claire community are summarized below in **Table 6-3**.

Table 6-3: Cape St. Claire Vulnerable Population Characteristics

Indicator Type	Vulnerable Population Characteristics	Cape St. Claire Community	Comparative Data for the composite Analysis Area
Primary Indicator	Percent Minority Race and Ethnicity population	22%	20%
	Percent Households with 1 or more persons with a Disability	26%	21%
	Population Density (per square mile)	5,119	658
	Median Household Income	\$127,337	\$129,121
	Population under 17 years old	27%	24%
	Population over 65 Years Old	16%	18%
Secondary Indicator	Percent Households with LEP	<1%	1%
	Percent of Zero Vehicle Households	1%	2%
	Percent of Persons Living Below Poverty Level	3%	5%
	Percent of Households using cash public assistance or food stamps/SNAP	5%	6%
	Population Born Outside of the United States	7%	6%
	Unemployment Rate	5%	4%
	Free/Reduced Lunch Enrollment ¹	18%	23%
	Households Reliant on Cell Provider / non-subscription internet services	7%	9%
	Households without internet access	2%	3%

Sources: ACS Five-Year Estimates (2018-2022); ¹MD Department of Education (2022-2023)

The primary and secondary indicator data show that the Cape St. Claire community contains all vulnerable population types. Cape St. Claire is almost entirely low-medium density residential land use and has a population density of 5,119 people per square mile. Community facilities present within Cape St. Claire include a primary care facility and subsidized housing facility; there are no senior facilities, homeless shelters or international grocery stores and overall limited commercial development within the community. Two schools within Cape St. Claire participate in the free and reduced school lunch program.

Online screening tools, such as the BMC Vulnerability Index, also indicate that the Cape St. Claire community contains Hispanic or Latino populations. According to USDOT ETC, there is also transportation insecurity within the Cape St. Claire community.

6.3.1 Burdens and Benefits

Equity-related benefits and burdens of the build alternatives to vulnerable populations in the Cape St. Claire community are summarized in **Table 6-4**.

Table 6-4: Summary of Equity Benefits and Burdens of the Build Alternatives within the Cape St. Claire Community

Transportation Equity Objective	Cape St. Claire Potential Benefits	Cape St. Claire Potential Burdens
<p>Mobility and Accessibility</p>	<ul style="list-style-type: none"> Improved travel time to parks, trails and recreation areas on the Eastern Shore If a SUP is included, travelers will have a non-motorized option to cross the Bay and access trails and parks 	<ul style="list-style-type: none"> Diversions to East College Parkway due to queuing on U.S. 50/301 could affect access/travel patterns Temporary access changes during construction to U.S. 50/301 to/from local routes
<p>Physical Design</p>	<ul style="list-style-type: none"> Potential benefit if aesthetics, artwork, and improved landscaping are considered in roadway and noise barrier design SUP design could consider ADA amenities and alternative wayfinding signage to support disabled populations and sensitive age cohorts 	<ul style="list-style-type: none"> Minor visual change along U.S. 50/301 within the study limits and Saint Margarets Road interchange under Alternatives D, E, F, and G Increased traffic noise and visual changes associated with relocated or larger noise barrier
<p>Avoid further harm</p>	<ul style="list-style-type: none"> If SUP is included, design could include artwork and informational signage or historical markers to promote area history and culture Potential social and health benefits if SUP is included 	<ul style="list-style-type: none"> Decreased distance of the Revel Downs neighborhood from travel lanes (noise, visual, air quality) under Alternatives D, E, F and G Potential burden if impacts to Broadneck Peninsula Trail are not avoided under Alternatives D, E, F, and G, and SUP is not implemented Displacement of four business properties¹ and associated revenue and employment opportunities under Alternatives D, E, F and G Reduced property values due to decreased lot sizes resulting from partial property acquisition¹

¹ Property owners affected by right-of-way acquisition would be compensated and paid fair market value for the affected property in accordance with the Uniform Relocation and Real Property Acquisition Policies Act of 1970 and USDOT implementing regulations (49 CFR Part 24).

Mobility: Cape St. Claire’s vulnerable populations would experience changes in access and mobility to properties and facilities accessed by U.S. 50/301 under all build alternatives. On summer weekends under all alternatives, the nearest accesses to westbound U.S. 50/301 from Cape St. Claire (MD 179 and Bay Dale Drive) would experience queueing, which could impact access to services, jobs and facilities in Annapolis. Eastbound U.S. 50/301 traffic on summer weekends under all alternatives will experience metered flow from the bottleneck west of the study limit, near the MD 2 ramp. Vulnerable populations may access facilities in Arnold via East College Parkway to avoid conditions on U.S. 50/301. Consideration of the SUP would not result in any physical impacts to Cape St. Claire but may increase non-vehicular access to social, religious,

cultural and recreational facilities outside of Cape St. Claire if connections are made with the existing and programmed bicycle and pedestrian network to the SUP.

ROW Acquisition: The Cape St. Claire community would not be directly affected by Alternatives B or C because the limits of those alternatives do not extend to the community. Alternatives D, E, F, and G would require partial acquisition from seven residential and three business properties. The partial acquisitions are primarily limited to sliver impacts along property lines and would not result in displacements or changes in property access or function.

Alternatives D, E, F, and G would require partial acquisition from one community facility identified as a Section 4(f) property, the Broadneck Trail, which is located along East College Parkway in Cape St. Claire and is currently under construction. The trail is a ten-foot-wide asphalt trail and provides both recreational and transportation benefits to the community. Access to and connectivity of the trail is anticipated to be maintained during construction, with potential for detours or brief closures during certain construction periods. Any area of the trail impacted by a build alternative is anticipated to be reconstructed in-kind adjacent to the impacted area. Potential access issues, detours, and notification to trail users would be coordinated with Anne Arundel County. Impacts to this facility are anticipated to be minimal and not affect vulnerable populations who utilize the trail. Please refer to the *Draft Section 4(f) Evaluation* for additional details related to this facility.

Displacements: Alternatives D, E, F, and G would also result in the displacement of four businesses in Cape St. Claire, encompassing four business office buildings between Stacy Lane and East College Parkway. Businesses affected include Brown Contracting, Inc., Kelly Insurance and Investments, Hague Quality Water of Maryland, and Creative Spaces Remodeling. None of these businesses are considered to be vital services in support of vulnerable populations and their displacement would not raise equity concerns.

Noise: Five NSAs are anticipated to experience noise impacts within the Cape St. Claire community under the build alternatives. Three barrier systems were evaluated to potentially address noise increases within Cape St. Claire. Barrier Systems West-4 and West-5 (protecting four of the five impacted NSAs) are considered feasible and reasonable and will be further evaluated during final design. The new noise barriers may potentially reduce noise levels between 5-10 dB(A) within the adjacent NSAs. A third barrier, Barrier System West-2, does not meet the SHA cost-reasonableness threshold and no further evaluation is anticipated.

Proposed noise abatement associated with Barrier System West-4 and West-5 may require acquisition of right-of-way from properties within the Cape St. Claire community, which could affect property values. Noise abatement (i.e., noise walls) may also affect the viewshed of certain properties. However, the overall benefit of noise abatement would be expected to offset potential imposed burdens. Additionally, aesthetics could be considered during final design to minimize viewshed impacts.

6.4 Broadneck

Broadneck makes up the southeastern portion of the analysis area in Anne Arundel County. Characteristics of vulnerable populations in the Broadneck community are summarized below in **Table 6-5**.

Table 6-5: Broadneck Vulnerable Population Characteristics

Indicator Type	Vulnerable Population Characteristics	Broadneck Community	Comparative Data for the composite Analysis Area
Primary Indicator	Percent Minority Race and Ethnicity population	17%	20%
	Percent Households with 1 or more persons with a Disability	17%	21%
	Population Density (per square mile)	473	658
	Median Household Income	\$180,607	\$129,121
	Population under 17 years old	26%	24%
	Population over 65 Years Old	23%	18%
Secondary Indicator	Percent Households with LEP	<1%	1%
	Percent of Zero Vehicle Households	4%	2%
	Percent of Persons Living Below Poverty Level	2%	5%
	Percent of Households using cash public assistance or food stamps/SNAP	2%	6%
	Population Born Outside of the United States	7%	6%
	Unemployment Rate	2%	4%
	Free/Reduced Lunch Enrollment ¹	30%	23%
	Households Reliant on Cell Provider / non-subscription internet services	10%	9%
	Households without internet access	<1%	3%

Sources: ACS Five-Year Estimates (2018-2022); ¹MD Department of Education (2022-2023)

The primary and secondary indicator data show that the Broadneck community contains all vulnerable population types. Broadneck is made up of primarily rural and low-density residential land uses, and the population density is 473 people per square mile. The only major healthcare facility identified in the Broadneck community, the Naval Health Clinic, is only accessible to persons on the Naval Support Activity Annapolis base. Additional facilities include senior facilities such as assisted living, nursing homes and senior housing complexes. There are no homeless shelters, subsidized or Section 8 housing or international grocery stores. There is one school that participates in the free and reduced school lunch program.

Skidmore⁸, located in the Broadneck community, is identified as a descendant community. Skidmore was founded by free African Americans, emancipated former enslaved persons, and their descendants. The Skidmore neighborhood is in the eastern portion of the Broadneck community and consists of two smaller areas, divided by U.S. 50/301. Skidmore, as well as the larger Broadneck Peninsula African American community, was fragmented when U.S. 50/301 was constructed in the late 1940s, which contributed to a loss of community institutions and cohesion. Construction of the Chesapeake Bay Bridge brought new commercial development to the U.S. 50/301 corridor and increased suburbanization further adversely affecting Skidmore and other African American communities. An at-grade crossing of U.S. 50/301 between the north and south areas of Skidmore was removed in the early 1970s with the construction of the Oceanic Boulevard interchange, further dividing the historic bounds of the community.

⁸ Additional information regarding Skidmore is found in the Skidmore NRHP Determination of Eligibility form, located in the Tier 2 Study *Cultural Resources Technical Report Volume 3: Appendix C*.

Online screening tools, such as MDE MDEnviroscreen and the BMC Vulnerability Index, also indicate that the Broadneck community contains underserved, elderly, and Hispanic or Latino populations. The Broadneck community also faces exposure to ozone (EPA EJ Screen) and transportation insecurity (USDOT ETC).

6.4.1 Burdens and Benefits

Equity-related benefits and burdens of the build alternatives on the Broadneck community are summarized in **Table 6-6**.

Table 6-6: Summary of Equity Benefits and Burdens of the Build Alternatives within the Broadneck Community

Transportation Equity Objective	Broadneck Potential Benefits	Broadneck Potential Burdens
Mobility and Accessibility	<ul style="list-style-type: none"> Improved travel time to parks, trails and recreation areas on the Eastern Shore Reduced congestion eastbound toward Bay Bridge, when compared to Alternative A If a SUP is included, travelers will have a non-motorized option to cross the Bay and access trails and parks 	<ul style="list-style-type: none"> Diversions to East College Parkway due to queuing on U.S. 50/301 could affect access/travel patterns Temporary access changes during construction to U.S. 50/301 to/from local routes
Physical Design	<ul style="list-style-type: none"> Potential benefit if aesthetics, artwork, and improved landscaping are considered in roadway and noise barrier design SUP design could consider ADA amenities and alternative wayfinding signage to support disabled populations and sensitive age cohorts If SUP is included it will not result in any additional impacts to residential or business property 	<ul style="list-style-type: none"> Minor visual change along U.S. 50/301 within the study limits Visual changes such as removal of trees and vegetation or temporary effects during construction Increased traffic noise and visual changes associated with relocated or larger noise barrier Displacement of up to three business properties¹ and associated revenue and employment opportunities under build alternatives Displacement of one residential property¹ under Alternatives F and G
Avoid further harm	<ul style="list-style-type: none"> If SUP is included, design could include artwork and informational signage or historical markers to promote area history and culture Potential benefit if consideration of development of historic context and informational signage to document historic Skidmore descendant community heritage is implemented Potential social and health benefits if SUP is included 	<ul style="list-style-type: none"> Change in viewshed from Sandy Point State Park, however design is considered compatible Further division of historic Skidmore neighborhood, due to partial acquisitions and displacements Reduced property values due to decreased lot sizes resulting from partial property acquisition¹

¹ Property owners affected by right-of-way acquisition would be compensated and paid fair market value for the affected property in accordance with the Uniform Relocation and Real Property Acquisition Policies Act of 1970 and USDOT implementing regulations (49 CFR Part 24).

Mobility: Vulnerable populations within Broadneck will see changes in access and mobility under the build alternatives. Motorists traveling on U.S. 50/301 accessing Broadneck via MD 179 and Oceanic Drive will have increased mobility along eastbound and westbound U.S. 50/301 on non-summer weekdays except for queuing on westbound U.S. 50/301 at Bay Dale Drive under Alternatives B and C, and at MD 2/MD 450 under Alternatives D, E, F and G, increasing access to jobs and facilities which serve vulnerable populations within and around the community. On summer weekends, vehicles traveling westbound will experience a bottleneck west of MD 179, and queuing will extend back from the bottleneck. This queuing could reduce mobility to facilities, jobs and services accessed by U.S. 50/301 and may divert traffic to local roads in Broadneck. Eastbound U.S. 50/301 traffic on summer weekends will not see bottlenecks around Broadneck under most build alternatives but under all alternatives will experience metered flow from the bottleneck west of the study limit, near the MD 2 ramp. Under Alternatives D and E, a bottleneck will occur eastbound on U.S. 50/301 approaching the bridge that will affect mobility within Broadneck.

Should the SUP be included in the design of the preferred alternative, Broadneck residents will receive a direct non-motorized connection to the Eastern Shore, benefiting those without vehicle access and providing recreational opportunities for all age cohorts.

ROW Acquisitions: All build alternatives would require right-of-way acquisition within Broadneck. Under Alternatives B and C, partial acquisitions would be required from ten residential, 14 business, and three community facility properties. The three community facilities are the MD DNR Police - Southern Region Broadneck Office (Area 3); the programmed Broadneck Trail; and Sandy Point State Park. Alternatives D, E, F, and G would require partial acquisition from an additional 26 residential properties (a total of 36 residential properties) compared to Alternatives B and C. Alternatives D and E would require partial acquisition from an additional 22 business properties (a total of 36 business properties), and Alternatives F and G would require partial acquisition from an additional 23 business properties (a total of 37 business properties) compared to Alternatives B and C.

Alternatives D, E, F, and G would impact an additional six community facility properties, for a total of nine impacted community facilities under those alternatives. The six additional community facilities affected by Alternatives D, E, F, and G include the Unity by the Bay and St. Andrew by the Bay places of worship; the Annapolitan Care Center; the Amberly Water Treatment Plant; a Cellular Tower; and St. Andrew By the Bay Preschool.

The partial acquisitions are primarily limited to sliver impacts along property lines and would not result in displacements or changes in property access, function, or community cohesion. Impacted community facilities including religious institutions, educational, medical, and childcare facilities accessed by vulnerable populations in Broadneck may experience temporary impacts during construction.

Partial property impacts are anticipated under each of the build alternatives to the Broadneck Trail, which is currently under construction and located along East College Parkway. Access to and connectivity of the trail is anticipated to be maintained during construction, with potential for detours or brief closures during certain construction periods. Any area of the trail impacted by a build alternative is anticipated to be reconstructed in-kind adjacent to the impacted area. Potential access issues, detours, and notification to trail users would be coordinated with Anne Arundel County. Impacts on this facility are anticipated to be minimal and not affect vulnerable populations

who utilize the trail. Please refer to the *Draft Section 4(f) Evaluation* for additional details related to this facility.

Displacements: Under Alternatives F and G, which provide for a 10-lane cross section through the Skidmore area (as the travel lanes transition from an 8-lane cross section to the west into the 10-lane bridge cross-section), one residential displacement would occur along eastbound U.S. 50/301 at the intersection of Skidmore Drive and Colbert Road. While this residence is located within the boundary of the Skidmore Historic District identified under Section 106 of the National Historic Preservation Act (NHPA) process, the structure is a modern home (constructed circa 1988) and is identified as a non-contributing element⁹ within the National Register of Historic Places (NRHP) eligible historic district.

Minimization efforts were completed to avoid displacements and reduce overall ROW requirements in the Skidmore Historic District¹⁰, which encompasses properties on either side of U.S. 50/301. Through those efforts, impacts to *contributing* historic elements adjacent to the westbound lanes (north of U.S. 50/301) and eastbound lanes (south of U.S. 50/301) were able to be avoided; however as ROW needs along the eastbound lanes (south of U.S. 50/301) for Alternatives F and G require an additional travel lane on both the mainline section and the Skidmore Drive access road, impacts to the non-contributing home immediately adjacent to Skidmore Drive at the Colbert Road intersection could not be avoided. Such efforts reduce the further division of the Skidmore Historic District and greater Skidmore community by U.S. 50/301.

Under Alternatives B and C, two business displacements would occur in the Broadneck community with one along eastbound U.S. 50/301 located near the Skidmore Drive/Whitehall Road intersection (an auto sales business) and one along westbound U.S. 50/301 at the intersection of East College Parkway and Log Inn Road (a tree care service company). Construction of Alternatives D, E, F, and G would include one additional business displacement (a restaurant) east of the U.S. 50/301 and Old Mill Bottom Road interchange. These businesses are not considered to provide vital services in support of vulnerable populations and their displacement would not raise equity concerns.

Noise: Ten NSAs are anticipated to experience noise impacts within the Broadneck community under the build alternatives. One of the impacted NSAs is protected by an existing noise barrier, located east of the Severn River along eastbound U.S. 50/301. The existing noise barrier will remain in place, and an extension to protect additional impacted residences will be evaluated during final design. Two additional barrier systems were evaluated. Barrier Systems West-1 and West-2 do not meet the cost-reasonableness threshold. Impacted areas include single-family residences, Sandy Point State Park, the Red Hot & Blue restaurant, and the Asbury Broadneck United Methodist Church. The church appears to utilize a fenced-in area along the side of the building for daycare. Impacts within Sandy Point State Park would include increased traffic noise within a small portion of the beach area adjacent to the Bay Bridge. However, the small portion of the beach impacted by traffic noise is not located near common active recreational areas.

⁹ A non-contributing element is considered to be a building, site, structure, or object that does not add to the historic significance of a property despite its location within an historic boundary ([National Register Bulletin 16A, How to Complete the National Register Registration Form](#)).

¹⁰ Additional information related to the Skidmore Historic District can be found in the Tier 2 Study *Cultural Resources Technical Report Volume 3: Architectural Historic Properties Identification* and the *Draft Section 4(f) Evaluation*.

6.5 Kent Island

The Kent Island community is in the westernmost portion of Queen Anne’s County. Characteristics of vulnerable populations in the Kent Island community are summarized below in **Table 6-7**.

Table 6-7: Kent Island Vulnerable Population Characteristics

Indicator Type	Vulnerable Population Characteristics	Kent Island Community	Comparative Data for the composite Analysis Area
Primary Indicator	Percent Minority Race and Ethnicity population	15%	20%
	Percent Households with 1 or more persons with a Disability	22%	21%
	Population Density (per square mile)	641	658
	Median Household Income	\$119,180	\$129,121
	Population under 17 years old	20%	24%
	Population over 65 Years Old	21%	18%
Secondary Indicator	Percent Households with LEP	1%	1%
	Percent of Zero Vehicle Households	3%	2%
	Percent of Persons Living Below Poverty Level	6%	5%
	Percent of Households using cash public assistance or food stamps/SNAP	11%	6%
	Population Born Outside of the United States	5%	6%
	Unemployment Rate	4%	4%
	Free/Reduced Lunch Enrollment ¹	29%	23%
	Households Reliant on Cell Provider / non-subscription internet services	15%	9%
Households without internet access	5%	3%	

Sources: ACS Five-Year Estimates (2018-2022); ¹MD Department of Education (2022-2023)

The primary and secondary indicator data show that the Kent Island community contains all vulnerable population types. Kent Island is made up of primarily very low to medium density residential land uses, with commercial uses found on or adjacent to U.S. 50/301; the population density is 641 persons per square mile. Community facilities present include healthcare facilities, senior facilities, subsidized housing and international grocery stores. There are six schools that participate in the free and reduced school lunch program.

Online screening tools, such as MDE MDEnviroScreen and the BMC Vulnerability Index, also indicate that the Kent Island community contains overburdened, elderly, LEP, and disabled populations. According to USDOT ETC, the Kent Island community also faces transportation insecurity, climate & disaster risks, and health vulnerabilities.

6.5.1 Burdens and Benefits

Equity-related benefits and burdens of the build alternatives on the Kent Island community are summarized in **Table 6-8**.

Table 6-8: Summary of Equity Benefits and Burdens of the Build Alternatives within the Kent Island Community

Transportation Equity Objective	Kent Island Potential Benefits	Kent Island Potential Burdens
Mobility and Accessibility	<ul style="list-style-type: none"> Reduced through traffic/ congestion on local roads as compared to Alternative A, outside of summer weekend peak travel periods If a SUP is included, travelers will have a non-motorized option to cross the Bay and access trails and parks Potential improvements to local park-and-ride facilities 	<ul style="list-style-type: none"> Bottlenecks extending back from Western Shore during summer weekend days will affect mobility and the potential for traffic diversion Temporary access changes during construction to U.S. 50/301 to/from local routes
Physical Design	<ul style="list-style-type: none"> Potential benefit if aesthetics, artwork, and improved landscaping are considered in roadway and noise barrier design SUP design could consider ADA amenities and alternative wayfinding signage to support disabled populations and sensitive age cohorts If SUP is included it will not result in any additional impacts to residential or business property 	<ul style="list-style-type: none"> Visual changes along U.S. 50/301 within study limits such as removal of trees and vegetation or temporary effects during construction Increased traffic noise and visual changes associated with relocated or larger noise barrier
Avoid further harm	<ul style="list-style-type: none"> If SUP is included, design could include artwork and informational signage or historical markers to promote area history and culture Potential benefits if SUP is implemented with improved ADA access and alternative wayfinding signage Potential social and health benefits if SUP is included 	<ul style="list-style-type: none"> Change in viewshed from key vantage points (e.g., Cross Island Trail, marinas) however, design is considered compatible Decreased distance of U.S. 50/301 travel lanes from adjacent neighborhoods (noise, visual, air quality) Improved access to Kent Island may increase demand for residential or commercial development in rural/underdeveloped areas Reduced property values due to decreased lot sizes resulting from partial property acquisition¹

¹ Property owners affected by right-of-way acquisition would be compensated and paid fair market value for the affected property in accordance with the Uniform Relocation and Real Property Acquisition Policies Act of 1970 and USDOT implementing regulations (49 CFR Part 24).

Mobility: Mobility of vulnerable populations in the Kent Island community would be affected by all the build alternatives. No queueing would occur during peak hour traffic conditions (eastbound PM and westbound AM) on U.S. 50/301 within the community on non-summer weekdays under all build alternatives, allowing for greater mobility to facilities which serve sensitive age cohorts and persons with disabilities, employment centers, and cultural and religious institutions. During summer weekend days, westbound queuing would occur on U.S. 50/301 within Kent Island under

all alternatives and it may limit access to facilities, jobs and services on the Western Shore and around Kent Island. Additional queuing eastbound may restrict travel towards Queenstown.

Should a SUP move forward with the preferred alternative, it will provide a non-vehicular route to access facilities on either side of the bridge, as well as increase recreational opportunities for all age cohorts. The SUP would not have any physical impact to the Kent Island community. The expansion of the Stevensville park and ride located on the southeastern side of the U.S. 50/301 and MD 8 (Romancocke Road) interchange, and Castle Marina park and ride located on the northern side of U.S. 50/301 off Castle Marina Road could be included as part of the transit-related investment from MDTA. This investment could provide additional benefits to populations who use transit and carpool services in the Kent Island community.

ROW Acquisition: All build alternatives would require partial right-of-way acquisition of property from two residential properties within the Kent Island community. Alternatives B and C would require ROW from properties housing 20 businesses within the Kent Island community. Businesses impacted are generally located along Pier One Road west of MD 8 (Romancocke Road), along Cleat Street/Island Plaza Drive, and east of Thompson Creek Road.

Alternatives D and E would affect an additional 40 business properties (a total of 60 business properties), while Alternatives F and G would affect 42 additional properties (a total of 62 business properties) in comparison with Alternatives B and C. In addition to the property locations affected under Alternatives B and C, the additional business partial acquisitions under Alternatives D, E, F, and G would affect business properties in all quadrants of the Castle Marina Road/Cox Neck Road intersection with U.S. 50/301, the Chester Station Lane/Dominion Road intersection with U.S. 50/301, and business locations between MD 18 (Main Street) and U.S. 50/301 from Dominion Road east to Dundee Avenue.

Alternatives B and C would impact seven community facility properties, including Stevensville Middle School, Kent Island United Methodist Church, Terrapin Nature Park, the Chesapeake Bay Water Trail, the Bay Bridge Marina, the Stevensville Park and Ride, and a Delmarva Power & Light Co electric substation. Alternatives D, E, F, and G would result in impacts to eleven additional community facility properties, including New Walk Community Church, Garnder Family Cemetery, Anne Arundel Medical Center Pavilion/Annapolis Pediatrics - Kent Island, University of Maryland Urgent Care - Kent Island, the Piney Creek Nature Area, the Cross Island Trail, the Kent Narrows South Water Trail, the Chester Post Office, and the Kent Narrows Boatel. The Kent Island Castle Marina Road Park and Ride, and Kent Narrows Landing, would also be impacted by Alternatives D, E, F, and G; however, these are located on existing right-of-way. Access to the Cross Island Trail, which provides both transportation and recreational benefits to the Kent Island community, would be maintained during construction and any portion of the trail impacted by a build alternative would be reconstructed in-kind adjacent to the impacted area.

The following religious institutions and medical facilities which serve vulnerable populations would require partial acquisitions under Alternatives D, E, F and G: Kent Island Methodist Church, New Walk Community Church, Anne Arundel Medical Center Pavilion/Annapolis Pediatrics - Kent Island, and University of Maryland Urgent Care - Kent Island.

The partial acquisitions within the Kent Island community are primarily limited to sliver impacts along property lines and would not result in displacements or changes in property access, function, or community cohesion and therefore impacts are not anticipated to burden vulnerable populations.

Displacements: No residential, business, or community facility displacements would occur within the Kent Island community from the implementation of any of the build alternatives.

Noise: Fourteen NSAs are anticipated to experience noise impacts within the Kent Island community under the build alternatives. One new barrier (East-1) that would benefit four NSAs is considered feasible and reasonable and will be further evaluated during final design. Noise abatement is not reasonable for the remainder of the impacted NSAs.

Impacted areas include single-family residences, apartments, restaurants, a resort, a medical center, a cemetery, Stevensville Middle School, and Terrapin Nature Park. Proposed noise abatement may require acquisition of right-of-way from properties within the Kent Island community, which could affect property values due to decreased lot sizes. Noise abatement (i.e., noise walls) may also affect the viewshed of certain properties. However, the benefit of noise abatement would be expected to offset the potential burdens. Additionally, aesthetics could be considered during final design to minimize viewshed impacts.

6.6 Kent Narrows/Grasonville

The Kent Narrows/Grasonville community is located between the Kent Island and Queenstown communities. Characteristics of vulnerable populations in the Kent Narrows/Grasonville community are summarized below in **Table 6-9**.

Table 6-9: Kent Narrows/Grasonville Vulnerable Population Characteristics

Indicator Type	Vulnerable Population Characteristics	Kent Narrows/Grasonville Community	Comparative Data for the composite Analysis Area
Primary Indicator	Percent Minority Race and Ethnicity population	18%	20%
	Percent Households with 1 or more persons with a Disability	18%	21%
	Population Density (per square mile)	473	658
	Median Household Income	\$126,769	\$129,121
	Population under 17 years old	22%	24%
	Population over 65 Years Old	21%	18%
Secondary Indicator	Percent Households with LEP	1%	1%
	Percent of Zero Vehicle Households	5%	2%
	Percent of Persons Living Below Poverty Level	8%	5%
	Percent of Households using cash public assistance or food stamps/SNAP	9%	6%
	Population Born Outside of the United States	3%	6%
	Unemployment Rate	3%	4%
	Free/Reduced Lunch Enrollment ¹	45%	23%
	Households Reliant on Cell Provider / non-subscription internet services	11%	9%
	Households without internet access	9%	3%

Sources: ACS Five-Year Estimates (2018-2022); ¹MD Department of Education (2022-2023)

The primary and secondary indicator data show that the Kent Narrows/Grasonville community contains all vulnerable population types. Similar to Kent Island, Kent Narrows/Grasonville has a

predominant land use of very low to medium density residential with commercial on or adjacent to U.S. 50/301; the population density is 473 persons per square mile. Community facilities present include healthcare facilities, senior facilities and subsidized housing. There is one school that participates in the free and reduced school lunch program.

Online screening tools, such as the BMC Vulnerability Index, also indicate that the Kent Narrows/Grasonville community contains Hispanic or Latino, LEP, elderly, and poverty populations. The Kent Narrows/Grasonville community also faces exposure to ozone (EPA EJ Screen) and transportation insecurity, climate & disaster risks, and health vulnerabilities (USDOT ETC).

6.6.1 Burdens and Benefits

Equity-related benefits and burdens of the build alternatives on the Kent Narrows/Grasonville community are summarized in **Table 6-10**.

Table 6-10: Summary of Equity Benefits and Burdens of the Build Alternatives within the Kent Narrows/Grasonville Community

Transportation Equity Objective	Kent Narrows/Grasonville Potential Benefits	Kent Narrows/Grasonville Potential Burdens
Mobility and Accessibility	<ul style="list-style-type: none"> SUP would provide non-motorized travel options when connected to bicycle and pedestrian facilities for access to trails and parks Potential improvements to local park-and-ride facility 	<ul style="list-style-type: none"> Bottlenecks extending back from Western Shore during summer weekend days will affect mobility and the potential for traffic diversion Temporary access changes during construction to U.S. 50/301 to/from local routes
Physical Design	<ul style="list-style-type: none"> SUP design could consider ADA amenities and alternative wayfinding signage to support disabled populations and sensitive age cohorts 	<ul style="list-style-type: none"> Visual changes along U.S. 50/301 within study limits such as removal of trees and vegetation or temporary effects during construction
Avoid further harm	<ul style="list-style-type: none"> If SUP is included, design could include artwork and informational signage or historical markers to promote area history and culture Potential social and health benefits if SUP is included 	<ul style="list-style-type: none"> Decreased distance of U.S. 50/301 travel lanes from adjacent neighborhoods (noise, visual, air quality) Reduced property values due to decreased lot sizes resulting from partial property acquisition¹ Potential adverse contributions to climate change/flooding risks in Kent Narrows from incompatible infrastructure modifications

¹ Property owners affected by right-of-way acquisition would be compensated and paid fair market value for the affected property in accordance with the Uniform Relocation and Real Property Acquisition Policies Act of 1970 and USDOT implementing regulations (49 CFR Part 24).

Mobility: Vulnerable populations in Kent Narrows/Grasonville will see changes in mobility under all build alternatives. There would be no queueing on U.S. 50/301 on the Eastern Shore under all build alternatives on non-summer weekdays, increasing access to employment centers, and

facilities which serve rural, disabled, elderly, youth and other vulnerable populations located east towards Queenstown and west towards Kent Island. Westbound bottlenecks and queuing will occur on the Western Shore under all build alternatives which could impact access to services and facilities in Anne Arundel County. On summer weekends, queuing on both eastbound and westbound U.S. 50/301 is anticipated within Kent Narrows/Grasonville under all build alternatives, impacting access to facilities, including healthcare facilities, senior facilities and subsidized housing via U.S. 50/301. Additionally, queuing/bottlenecks may impact local traffic patterns should vehicles divert off the roadway to avoid conditions on U.S. 50/301.

Kent Narrows/Grasonville could receive a non-motorized option to access the bridge via the Cross Island Trail, should the SUP be considered with the preferred alternative. The SUP would not have any physical impact on the Kent Narrows/Grasonville community.

ROW Acquisitions: The Kent Narrows/Grasonville community would not be directly affected by Alternatives B or C because the limits of those alternatives do not extend to the community. No residential displacements would occur under Alternatives D, E, F, and G.

Alternatives D, E, F, and G would require partial right-of-way acquisition from 30 business and two community facility properties. The business property acquisitions predominantly involve parcels located adjacent to the VFW Avenue/Station Lane intersection with U.S. 50/301, to the west and east of the Evans Avenue intersection with U.S. 50/301, and parcels west and east of the Hissey Road/Hess Road intersection with U.S. 50/301. The two community facility properties impacted by Alternatives D, E, F, and G are the University of Maryland Shore Medical Campus and Emergency Center and the Cross Island Trail.

The partial acquisitions within the Kent Narrows/Grasonville community are primarily limited to sliver impacts along property lines and would not result in displacements or changes in property access, function, or community cohesion and therefore impacts are not anticipated to burden vulnerable populations.

Access to the Cross Island Trail, which provides transportation and recreational benefits to the Kent Narrows/Grasonville community, would be maintained during construction and any portion of the trail impacted by a build alternative would be reconstructed in-kind adjacent to the impacted area.

Displacements: No residential, business, or community facility displacements would occur within the Kent Narrows/Grasonville community from the implementation of any of the build alternatives.

Noise: Nine NSAs are anticipated to experience noise impacts within the Kent Narrows/Grasonville community under the build alternatives. Two barriers were evaluated for this community. One new barrier (East-3) that would benefit one NSA is considered feasible and reasonable and will be evaluated during final design. One barrier (East-2) that would benefit two NSAs does not meet the cost-reasonableness threshold. Noise abatement is not reasonable for the remainder of the impacted NSAs. Impacted areas include single-family residences, Long Point Park, the Grasonville Seventh-day Adventist Church, and Holiday Inn Express Annapolis East – Kent Island. Proposed noise abatement may require acquisition of right-of-way from properties within the Kent Narrows/Grasonville community, which could affect property values. Noise abatement (i.e., noise walls) may also affect the viewshed of certain properties. However, the benefit of noise abatement would be expected to offset the potential burdens. Additionally, aesthetics could be considered during final design to minimize viewshed impacts.

6.7 Queenstown

Queenstown makes up the easternmost portion of the analysis area within Queen Anne’s County. Characteristics of vulnerable populations in the Queenstown community are summarized below in **Table 6-11**.

Table 6-11: Queenstown Vulnerable Population Characteristics

Indicator Type	Vulnerable Population Characteristics	Queenstown Community	Comparative Data for the composite Analysis Area
Primary Indicator	Percent Minority Race and Ethnicity population	30%	20%
	Percent Households with 1 or more persons with a Disability	27%	21%
	Population Density (per square mile)	63	658
	Median Household Income	\$92,981	\$129,121
	Population under 17 years old	18%	24%
	Population over 65 Years Old	23%	18%
Secondary Indicator	Percent Households with LEP	1%	1%
	Percent of Zero Vehicle Households	1%	2%
	Percent of Persons Living Below Poverty Level	7%	5%
	Percent of Households using cash public assistance or food stamps/SNAP	5%	6%
	Population Born Outside of the United States	7%	6%
	Unemployment Rate	4%	4%
	Free/Reduced Lunch Enrollment ^{1, 2}	n/a	23%
	Households Reliant on Cell Provider / non-subscription internet services	14%	9%
Households without internet access	9%	3%	

Sources: ACS Five-Year Estimates (2018-2022); ¹MD Department of Education (2022-2023)

² No public schools located within Queenstown analysis area community boundary.

The primary and secondary indicator data show that the Queenstown community contains all vulnerable population types. Queenstown is made up of primarily rural-agricultural with some low-density residential land uses; the population density is 63 persons per square mile. Community facilities are limited and include one seasonally operating food bank and homeless shelter. There are no public schools located within the analysis area community boundary.

Online screening tools, such as the BMC Vulnerability Index, also indicate that the Queenstown community contains Hispanic or Latino, LEP, and elderly populations. According to USDOT ETC, the Queenstown community also faces transportation insecurity, climate & disaster risks, and health vulnerabilities.

6.7.1 Burdens and Benefits

Equity-related benefits and burdens of the build alternatives on the Queenstown community are summarized in **Table 6-12**.

Table 6-12: Summary of Equity Benefits and Burdens of the Build Alternatives within the Queenstown Community

Transportation Equity Objective	Queenstown Potential Benefits	Queenstown Potential Burdens
Mobility and Accessibility	<ul style="list-style-type: none"> SUP would provide non-motorized travel option if Cross Island Trail is extended to Queenstown 	<ul style="list-style-type: none"> Bottlenecks extending back from Western Shore during summer weekend days will affect mobility and the potential for traffic diversion Temporary access changes during construction to U.S. 50/301 to/from local routes
Physical Design	<ul style="list-style-type: none"> SUP design could consider ADA and alternative wayfinding signage to support access for disability and elderly populations 	<ul style="list-style-type: none"> Visual change along U.S. 50/301 within the study limits such as removal of trees and vegetation or temporary effects during construction
Avoid further harm	<ul style="list-style-type: none"> If SUP is included, design could include artwork and informational signage or historical markers to promote area history and culture Potential social and health benefits if SUP is included 	<ul style="list-style-type: none"> Decreased distance of U.S. 50/301 travel lanes from adjacent neighborhoods (noise, visual, air quality) Reduced property values due to decreased lot sizes resulting from partial property acquisition¹

¹ Property owners affected by right-of-way acquisition would be compensated and paid fair market value for the affected property in accordance with the Uniform Relocation and Real Property Acquisition Policies Act of 1970 and USDOT implementing regulations (49 CFR Part 24).

Mobility: There would be changes in mobility and access along U.S. 50/301 for vulnerable populations in the Queenstown community. Overall, Queenstown would see local traffic conditions similar to those found today, under all alternatives in both directions on U.S. 50/301 during non-summer weekdays, maintaining access to facilities which serve vulnerable populations. Under all build alternatives, westbound U.S. 50/301 within the Queenstown community will see queuing on summer weekends, impeding access to jobs, services and institutions west of Queenstown and in Anne Arundel County. Eastbound queuing and bottlenecks at the U.S. 50/301 Split will occur under all build alternatives. This may impact access to medical facilities and other services located outside of the study limits, towards Easton.

Should the SUP move forward, Queenstown would be connected to the new facility by the Cross Island Trail, which terminates at Long Point Park. The addition of the SUP would not have any physical impact on the Queenstown community.

ROW Acquisitions: The Queenstown community would not be directly affected by Alternatives B or C because the limits of those alternatives do not extend to the community. Alternatives D, E, F, and G would require partial right-of-way acquisition from four residential properties, 12 business properties, and one community facility property in the Queenstown community. The business parcels affected are located to the south of U.S. 50 (Ocean Gateway). The community facility affected is the Queenstown Harbor Golf Links; however, the proposed partial acquisition would only involve forested buffer areas along the U.S. 50 westbound merge ramp with U.S. 301 and not affect any structures or active areas associated with the golf course. The partial

acquisitions are primarily limited to sliver impacts along property lines and would not result in changes to property access, function, or community cohesion.

Displacements: No residential, business, or community facility displacements would occur within the Queenstown community from the implementation of any of the build alternatives.

Noise: Noise impacts within one NSA containing single-family residences are anticipated within the Queenstown community from the build alternatives. Under the SHA Noise Policy, a new barrier is not considered reasonable as there are less than three impacted residences and further analysis is not required.

6.8 Summary of Burdens and Benefits to Vulnerable Populations

Across all analysis area communities, different vulnerable population types are present, including minority populations, persons with disabilities, persons living in rural areas, persons otherwise adversely affected by persistent poverty or inequality, and sensitive age cohorts. Different, but sometimes overlapping, contributing characteristics including demographic data, presence and types of community facilities land use, data from web-based screening tools and feedback through stakeholders and public engagement provide insight into the different population types and challenges they may experience.

Mobility and Accessibility

Mobility and accessibility impacts will vary across communities during both non-summer weekdays and on summer weekends, with some conditions being equal to or worse in comparison to Alternative A (No-Build). The MDTA is considering incorporation of a SUP which would provide recreational opportunities and a non-motorized connection between Queen Anne's and Anne Arundel counties.

Increased mobility on U.S. 50/301 would benefit transit buses and carpoolers, which can provide more affordable options for those who cannot afford to pay tolls or do not have access to a personal vehicle.

Local and state transit services serving communities of the Equity Analysis area are provided by Anne Arundel County, Queen Anne's County, and MTA and summarized in **Table 6-13**. The only transit services that cross the Bay Bridge are the MTA Commuter Bus Service and the Queen Anne's County Ride Annapolis Route. In addition to transit agencies, local organizations and private operators provide bus service for medical appointments as well as senior and disabled individual transport. All transit agencies and providers report congestion on local roadways in the vicinity of U.S. 50/301 on both sides of the Bay Bridge is a major issue in maintaining dependable transit schedules, specifically on Thursday and Friday afternoons. Improved mobility and reduced congestion anticipated for weekday off-peak hours would help to improve the reliability of existing transit services.

Table 6-13: Summary of Existing Transit Services in Equity Analysis Area

Service/Provider	Service Type	Hours	Headway	Description
Anne Arundel County Transit	Fixed route	Monday-Sunday 6:00 am to 9:56 pm	60 min	Gold Extension Route serves Route 2 corridor from Glen Burnie to Arnold Complementary Paratransit service provides access to locations within 0.75 mile of defined fixed route corridor
Anne Arundel Complementary Paratransit	Fixed route			
Anne Arundel General Paratransit	On-demand	N/A	N/A	Origin-to-destination service
Queen Anne's County, County Ride	Fixed route	Monday – Friday 6:30 am to 4:45 pm	Varies	Fixed routes serving U.S. 50/301 corridor: Route 1 (Kent Island & Grasonville to Easton) Route 2 (Centreville to Stevensville) Route 3 (Annapolis) Stops in Stevensville, Grasonville, and Queenstown Complementary Paratransit service provides access to locations within 0.75 mile of defined fixed route corridor
Queen Anne's Complementary Paratransit	Fixed route			
Maryland Upper Shore Transit (MUST)	Specialized service	N/A	N/A	Origin-to-destination service MUST is a collaborative public transportation effort between Delmarva Community Transit and Queen Anne's County, County Ride
Maryland Transit Administration – Commuter Bus	Route 210 Kent Island – Annapolis/Baltimore	Monday-Friday 5:30 am to 7:22 pm	60 min	Fixed route, express commuter service
	Route 240 Kent Island – Washington, D.C.	Monday-Friday 5:00 am to 7:33 pm	60 min	
	Route 250 Kent Island & Davidsonville – Washington, D.C	Monday-Friday 4:45 am to 7:23 pm	25 min	

Additionally, the MDTA would focus on providing a one-time investment for local transit agencies near the bridge that would support transit-related improvements as described in **Section 3.8.3**, which could provide additional benefits and expand travel options in the region.

Physical Design

Physical design benefits of the Tier 2 Study on vulnerable populations are primarily applicable to the just consideration of avoidance and minimization measures of the design process. The MDTA is committed to seeking input and providing information on the engineering design approaches that seek to minimize burdens on communities.

Burdens related to partial acquisitions of residential and business properties and community facilities are minimal as they would not result in changes to property access or function and would not change community cohesion. The non-residential displacements under the build alternatives in Cape St. Claire and Broadneck do not include any community facilities which serve vulnerable populations. There is one residential displacement under Alternatives F and G in the Broadneck community. Property owners affected by right-of-way acquisition would be compensated and paid fair market value for the affected property in accordance with the Uniform Relocation and Real Property Acquisition Policies Act of 1970 and USDOT implementing regulations (49 CFR Part 24).

Additional impacts may occur in communities where noise barriers will be added or reconstructed with the improvements, however, the benefit of noise abatement would be expected to offset the potential burdens. Additionally, aesthetics of the barriers could be considered during final design to minimize viewshed impacts.

Avoid Further Harm

Potential equity burdens of the Tier 2 Study relate to the implementation of roadway enhancements generally related to the widening of the corridor, bringing air, noise, visual, and related permanent effects of the improved roadway closer to existing residential areas, particularly in areas which were divided by the construction of U.S. 50/301, such as Skidmore in the Broadneck community. Impacts will be reduced where possible and minimized during construction in accordance with state and Federal laws, permitting requirements, and best management practices.

Should it be included with the preferred alternative, the SUP would provide additional social, recreational and health benefits to local communities, particularly to Broadneck and Kent Island which would have a direct connection to the facility. The presence of facilities which promote active transportation, including bicycling and walking, can reduce health risk and increase overall physical activity¹¹ in addition to providing a non-motorized transportation option to access the Eastern and Western Shores. Additional enhancements to the SUP could include historical markers and/or artwork that promote local history and culture, and alternative wayfinding signage to support a wide variety of trail users including disabled and LEP populations.

¹¹ <https://www.nrpa.org/our-work/Three-Pillars/health-and-well-being/ParksandHealth/fact-sheets/active-transportation-public-health/>

7 ENGAGEMENT WITH VULNERABLE POPULATIONS

To verify and address findings, the MDTA engaged all communities, including vulnerable populations, consistent with methods and approaches included in the study's Public Engagement Plan. Practices established in the Public Engagement Plan and utilized throughout the Tier 2 Study include the use of non-technical plain language, when possible, throughout community outreach efforts to gain higher quality input from all parts of the communities affected by the proposed action. For a comprehensive summary of the Tier 2 Study Public Engagement Events, please see the Tier 2 Study *Socioeconomic and Land Use Technical Report* and *Consultation and Coordination Report*.

7.1 Equity Engagement Survey

The MDTA developed an Equity Survey with the purpose of identifying vulnerable individuals, groups, and stakeholders, identifying needs and concerns specific to these populations, and understanding how best to engage with these identified groups to meet their specific needs. To encourage participation and to protect sensitive information, the Equity Survey was anonymous. A copy of the survey is found in **Appendix C**.

Extensive and wide-reaching efforts were conducted to notify the public of the availability of the Equity Survey and to encourage participation from all populations, including vulnerable populations. These efforts included e-blasts to the Tier 2 Study mailing list, advertisement of the survey on the Tier 2 Study's website, advertisement through postcards and yard signs, and participation at community events.

A total of 1,773 survey responses were received during the public comment period from July 18, 2023, through October 16, 2023, with 1,770 of those survey responses being received electronically. The survey questions focused on three discrete topics: travel needs and concerns (mobility and accessibility), methods of engagement, and demographics.

The zip codes from which most responses were received were 21666 (Stevensville), 21409 (Annapolis), and 21601 (Easton). Of the respondents who answered, 73% identified as White American/Caucasian. A total of 18% of the respondents preferred not to answer. A majority of the respondents indicated that English is the primary language spoken at home. About half (53%) of the respondents indicated they were employed full- or part-time, followed by 33% of the respondents identifying as retired.

General themes heard from the survey respondents included concerns over traffic/congestion on both U.S. 50/301 and the local traffic networks, concerns over safety and access to emergency services, and support for transit options and bike/pedestrian options. Some respondents voiced support for corridor alternatives that were eliminated during the Tier 1 Study. Residents that live within or near the U.S. 50/301 study limits voiced concerns on the impact of traffic/congestion on their daily lives, especially Thursday-Sunday during the peak season for travel to/from the beaches.

Another notable common theme heard in the survey was that residents living on the Eastern Shore tend to have issues with access to medical care due to congestion and trip reliability. Several residents indicated that they have missed medical appointments due to the congestion or have had to plan their travel well in advance of scheduled appointments. This is especially of concern for elderly residents who may need to rely on others for transportation to appointments.

Of the survey respondents, 50% indicated they were in the 60+ age group, followed by the 50-59 age group with 19%.

Thirty-seven respondents indicated they were completing the survey on behalf of an organization or community group. These survey responses included information on how to best engage with their organization and the communities they represent or interact with. This included the name of the organization, the best meeting format and ways to provide updates on the Study, and any special considerations that would help the team to better engage with their organization.

Of the respondents who indicated their community group/organization would like to meet with the Study team, 52% preferred an in-person meeting, while 20% preferred a virtual meeting. For those who responded that they would like for their community group/organization to meet with the Study team, 34% preferred reading of printed material, 23% would prefer large print for printed materials, and 17% requested an Americans with Disabilities Act (ADA) compliant meeting location. Others requested closed captioning (11%), sign language translation (9%), or having an American Sign Language (ASL) translator available (5%). For those that did not wish to meet with the Study team, the majority of respondents (90%) stated that they prefer to be engaged through emailed updates, with printed and mailed newsletters as the second most preferred engagement method.

To address concerns identified through the survey, this analysis considers populations age 65 and over, healthcare facilities and senior facilities as part of the identification of vulnerable populations and existing conditions.

7.2 Public Engagement with Vulnerable Populations

The MDTA participated in a wide range of events including fairs, festivals, open houses, award ceremonies, summits and other community events, and held pop-up events at local stores and farmers' markets. Engagement efforts focused on sharing the study scope and schedule, where to go for study information, encouraging mailing list signups, receiving public comments, and, when active, encourage participation in the Equity Engagement Survey. Materials provided at tabling activities utilized graphics to support a user-friendly look, feel and messaging. Written information shared at events was made available in Spanish and English, and the website provides study information in multiple languages and in accessible formats for persons with disabilities.

Tabling event locations were selected based on research conducted by the Public Engagement Team and through feedback received via public comment, the Equity Engagement Survey and Open House surveys. Some events that were incorporated after public feedback included the Kent Island Farmers' Market and Kunta Kinte Heritage Festival. A map of all equity engagement events can be found in **Figure 7-1**.

Eighteen (18) events to date were identified as opportunities for outreach to vulnerable populations, as defined in **Section 5.3**. These events were:

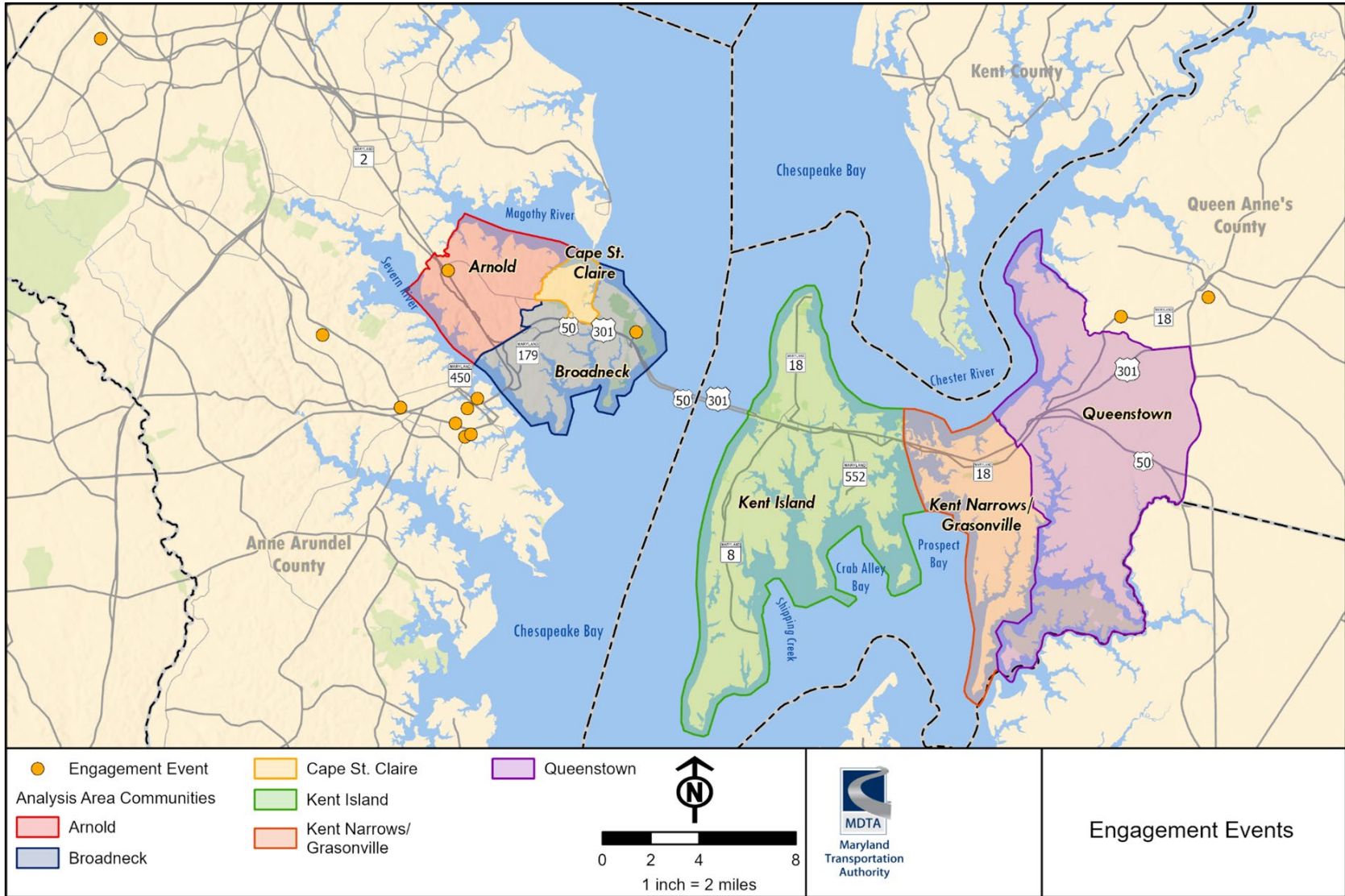
- 2023
 - Annapolis Pride Parade and Festival
 - Celebrate Annapolis Juneteenth (CAJUNE)
 - Discoveries Library- Community Pantry

- 2024
 - State of Black Annapolis
 - Asian American Festival
 - YMCA Healthy Kids Event
 - Annapolis Vet Center Open House
 - Fiesta Latina
 - Queen Anne's County Senior Summit
 - Annapolis Pride Parade and Festival
 - Kennard African American Cultural Heritage Center (KAACHC) Juneteenth
 - CAJUNE
 - Es Mi Parque
 - Kunta Kinte Heritage Festival
 - Hispanic Heritage Month Awards Ceremony
- 2025
 - Annual Dr. Martin Luther King, Jr. Parade & Festival (cancelled due to weather)
 - Annapolis Pride (cancelled due to weather)
 - Queen Anne's County Senior Summit
 - Annapolis Juneteenth Festival

The MDTA counted over 500 total interactions across the targeted engagement events. The MDTA provided Spanish translators at the Es Mi Parque and Hispanic Heritage Month Awards Ceremony events. Two of the sixteen events were held within the analysis area. Larger events, including Annapolis Pride, Juneteenth and the Asian American Festival were held at large-scale venues outside of but adjacent to the analysis area.

In addition to engagement at public events, the study team engaged with community groups and organizations via virtual meetings and by phone. Discussions included topics such as an overview of the Tier 2 Study, Section 106 process and consulting parties, equity considerations, and public engagement.

Figure 7-1: Equity Engagement Events



8 REFERENCES

- American Community Survey (ACS). 2022. American Community Survey 5-year 2018-2022. U.S. Census Bureau. Retrieved February 2024: <https://data.census.gov/cedsci/>
- Anne Arundel County. OpenArundel. Retrieved May 2024: Maps and Apps.
- Baltimore Metropolitan Council (BMC). 2020. Vulnerable Population Index. Retrieved November 2024.
<https://bmc.maps.arcgis.com/apps/webappviewer/index.html?id=b1e22c0caa7644ccb58484b00610712f>
- Environmental Protection Agency (EPA). 2024. EJ Screen: Environmental Justice Mapping and Screening Tool. Retrieved September 2024:
- EPA. 2024. EJScreen Technical Documentation for Version 2.3. Retrieved September 2024:
- Maryland State Department of Education. 2022-2023. Free and Reduced-Price Meals Data. Retrieved May 2024:
<https://marylandpublicschools.org/programs/SchoolandCommunityNutrition/Documents/Free%20and%20Reduced%20Data/FARMSSY2022-2023.pdf>
- Maryland Department of the Environment (MDE). MDEnviroScreen Tool. Retrieved July 2025: https://mde.maryland.gov/Environmental_Justice/Pages/MDEnviroScreen.aspx
- Maryland Department of Information Technology (MDoIT). iMAP. Retrieved May 2024: Maryland's GIS Data Catalog.
- Maryland Department of Transportation, 2050 Transportation Plan, The Playbook. January 2024. https://www.mdot.maryland.gov/OPCP/MTP_Playbook_web.pdf
- Maryland Transportation Authority, Strategic Plan, November 2024.
https://mdta.maryland.gov/sites/default/files/Files/About/MDTA_Strategic%20Plan%202024_rd19.pdf
- National Trust for Historic Preservation “Engaging Descendent Communities in the Interpretation of Slavery at Museums and Historic Sites, 2018.
https://montpelierdescendants.org/wp-content/uploads/2024/07/Interpreting-Slavery-10_19_18.pdf
- Oregon DOT and Washington DOT. Interstate Bridge Replacement Program Equity Framework, May 2022.
- Queen Anne’s County. QAC GIS Open Data Portal. Retrieved May 2024: QAC GIS Open Data Portal.
- USDOT. USDOT Equitable Transportation Community (ETC) Explorer. Retrieved October 2024:

USDOT, Federal Highway Administration (FHWA), Pedestrian and Bicycle Information Center. Pursuing Equity in Pedestrian and Bicycle Planning, April 2016. Sandt, L., Combs, T, and Cohn, J.