

# CHESAPEAKE **BAY CROSSING STUDY** — TIER 1 NEPA —

WELCOME TO THE 2019  
OPEN HOUSES



Maryland  
Transportation  
Authority



# Open Houses

## CHESAPEAKE BAY CROSSING STUDY TIER 1 NEPA

★ Tuesday, September 24 (6-8 p.m.)  
**Kent County H.S.**

★ Thursday, September 26 (6-8 p.m.)  
**Calvert H.S.**

★ Tuesday, October 1 (6-8 p.m.)  
**Middle River Middle School**

★ Wednesday, October 2 (6-8 p.m.)  
**Anne Arundel Community College  
Student Union (SUN) Dining Hall  
(Use Parking Lot A)**

★ Thursday, October 3 (6-8 p.m.)  
**Talbot County Community Center**

★ Wednesday, October 9 (6-8 p.m.)  
**Kent Island H.S.**

★ Monday, October 28 (6-8 p.m.)  
**Annapolis H.S.**



The Maryland Transportation Authority (MDTA) is hosting a series of Open Houses to provide updates on the Chesapeake Bay Crossing Study: Tier 1 NEPA (Bay Crossing Study). Open House attendees will learn about:

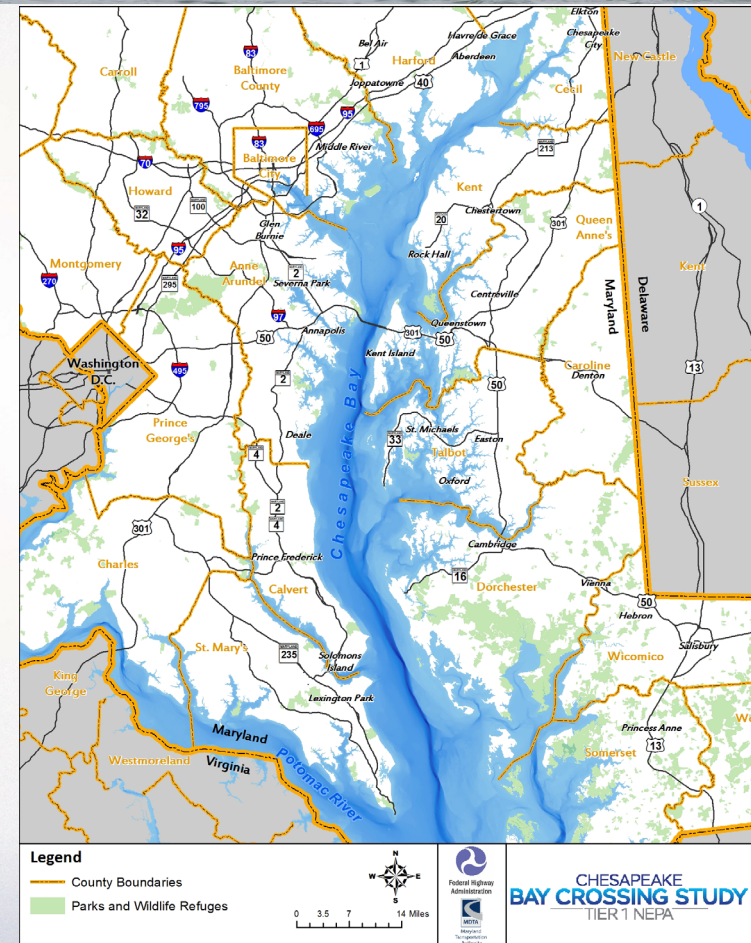
- the environmental review process for the Bay Crossing Study,
- the overall study schedule,
- public comments received to date, and
- the alternatives development, screening process and results.



# Bay Crossing Study Overview

The Bay Crossing Study will:

- Consider potential solutions to address existing and future traffic congestion at the William Preston Lane Jr. Memorial (Bay) Bridge,
- Encompass a broad geographic area, spanning nearly 100 miles of the Chesapeake Bay, and
- Result in a Tier 1 Environmental Impact Statement (EIS) in accordance with the National Environmental Policy Act (NEPA).





# Overview: Environmental Process

- The National Environmental Policy Act (NEPA) is federal legislation that applies to projects receiving federal funding or approval.
- NEPA requires consideration of a reasonable range of alternatives and ensures that environmental agencies and the public are informed and involved in the consideration of environmental impacts.
- The MDTA and Federal Highway Administration (FHWA) are following a tiered NEPA process.



## Tier 1 (current study)

- Establish Purpose and Need
- Evaluate a range of alternatives across the Bay using broad-scale engineering and environmental information
- Include public involvement and comment
- Identify the Preferred Corridor Alternative
- Prepare a Tier 1 EIS

## Tier 2 (future study)

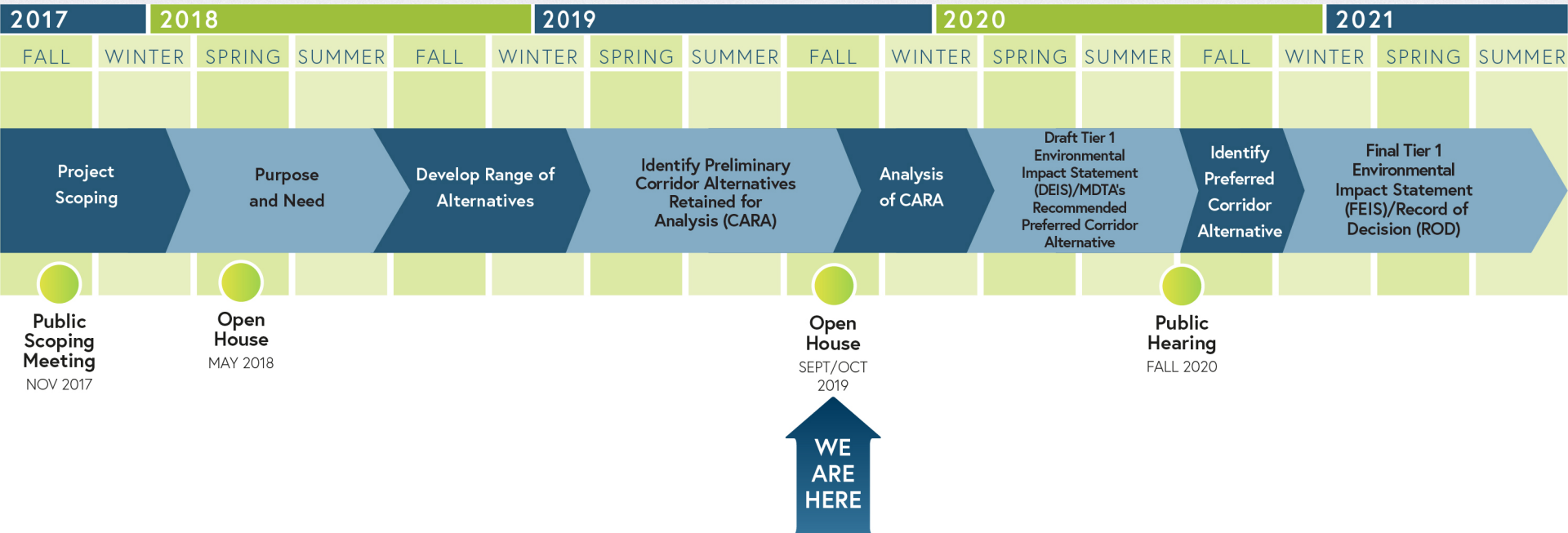
- Refine Purpose and Need
- Identify alignments within the Preferred Corridor Alternative identified in Tier 1
- Include more detailed engineering of alternatives and specific assessment of potential environmental impacts
- Include public involvement and comment
- Select a Preferred Alignment within the Preferred Corridor
- Prepare a Tier 2 EIS

Tier 1 completion does not presume Tier 2 initiation.

Tier 2 is not funded at this time.



# Overview: Study Schedule



## Public Meeting Topics

November 2017: Scoping Meeting

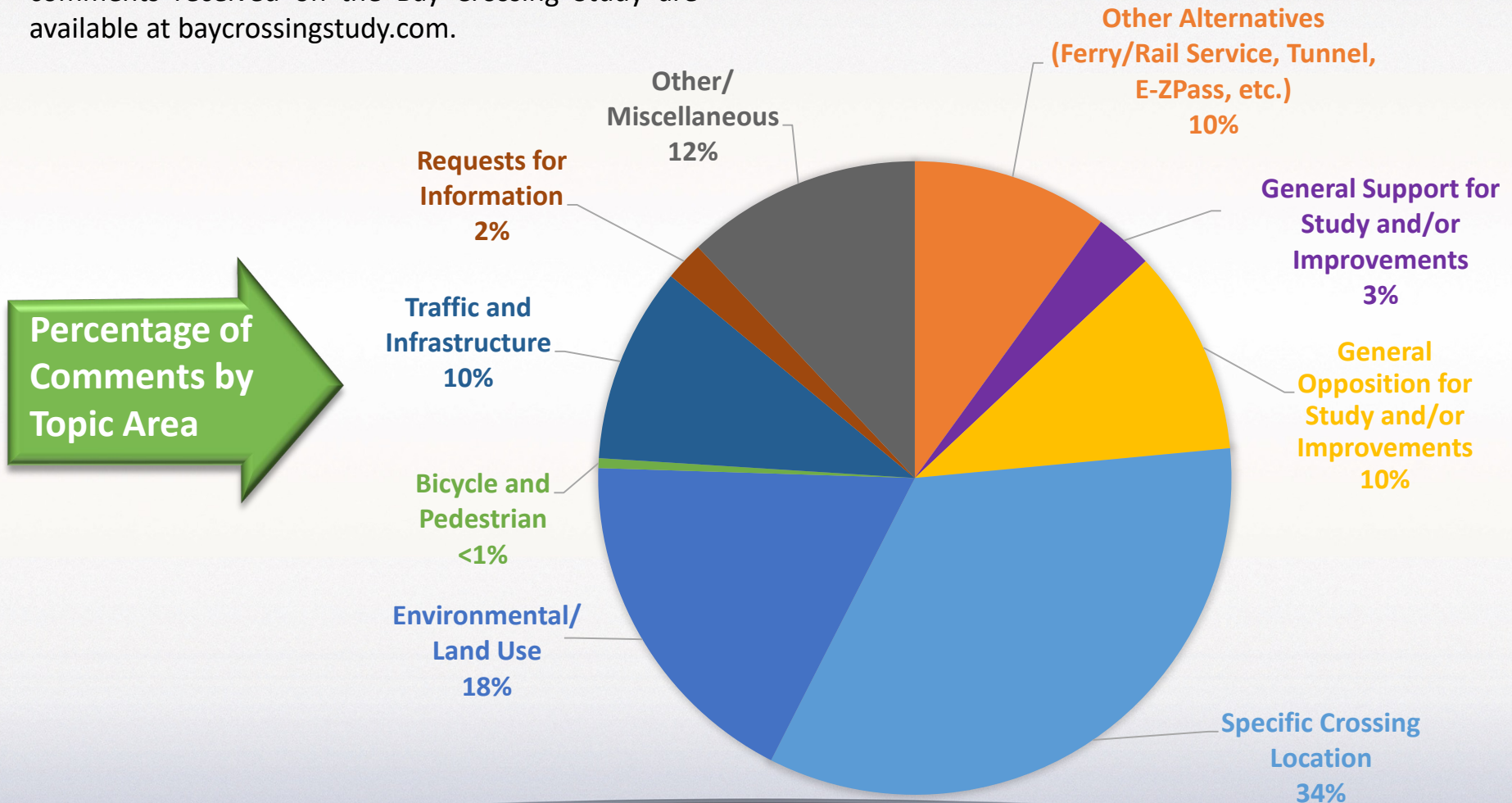
May 2018: Purpose and Need, Existing Traffic and Environmental Conditions

September/October 2019: Presentation of Range of Alternatives and Preliminary Corridor Alternatives Retained for Analysis



# Overview: Public Comments to Date

The MDTA has received more than **1,100 comments** since the start of the study through July 31, 2019. All comments received on the Bay Crossing Study are available at [baycrossingstudy.com](http://baycrossingstudy.com).





# Overview: Purpose and Need

The **PURPOSE** of the Bay Crossing Study Tier 1 NEPA is to consider alternatives for providing additional capacity and access across the Chesapeake Bay in order to improve mobility, travel reliability and safety at the existing Governor William Preston Lane Jr. Memorial (Bay) Bridge.

The project **NEEDS** include:

- adequate capacity
- dependable and reliable travel times
- flexibility to support maintenance and incident management

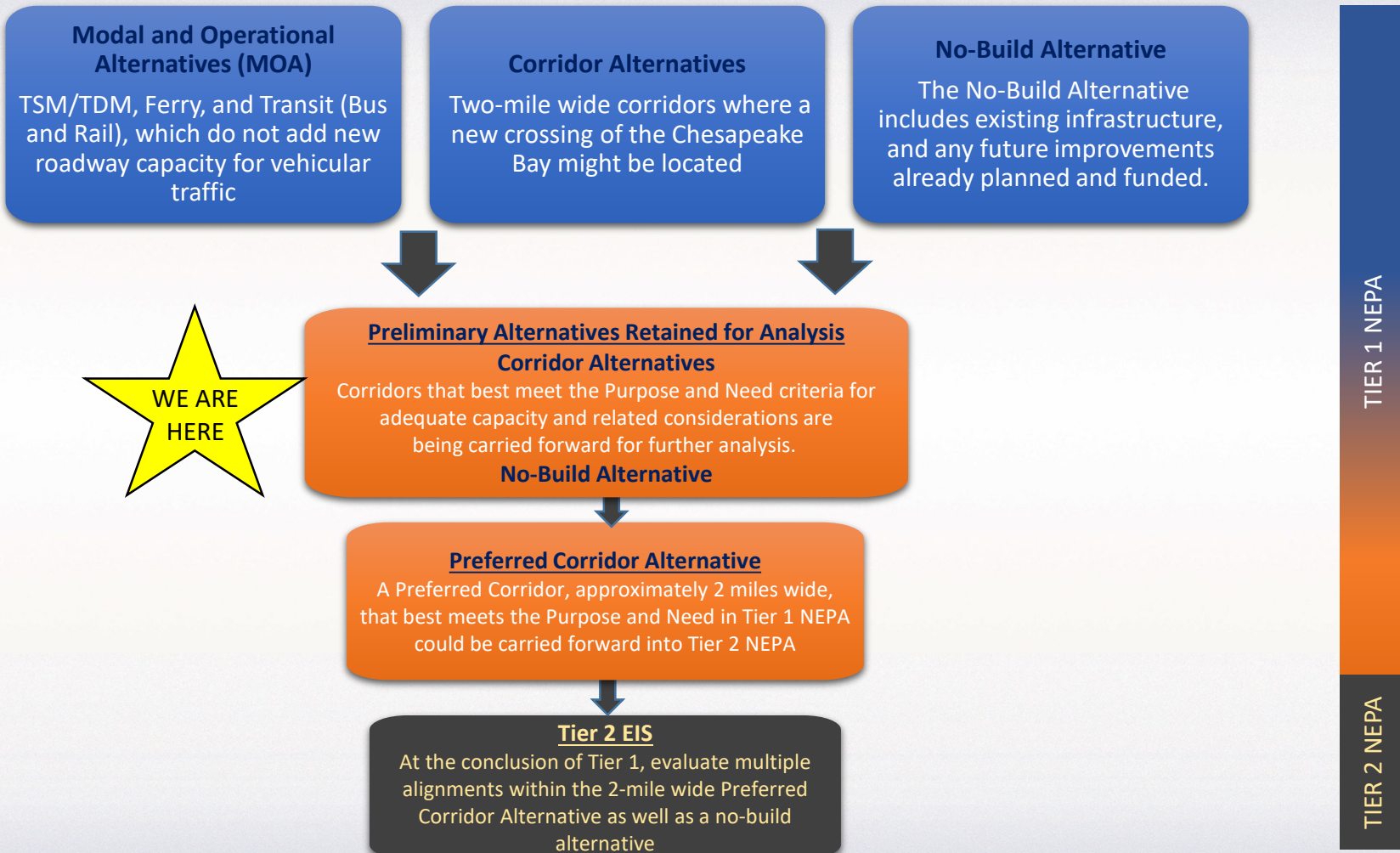
As part of the study, the MDTA will also consider:

- financial viability
- environmental considerations






# Alternatives Screening Process

## Apply Identified Needs and Related Considerations to:





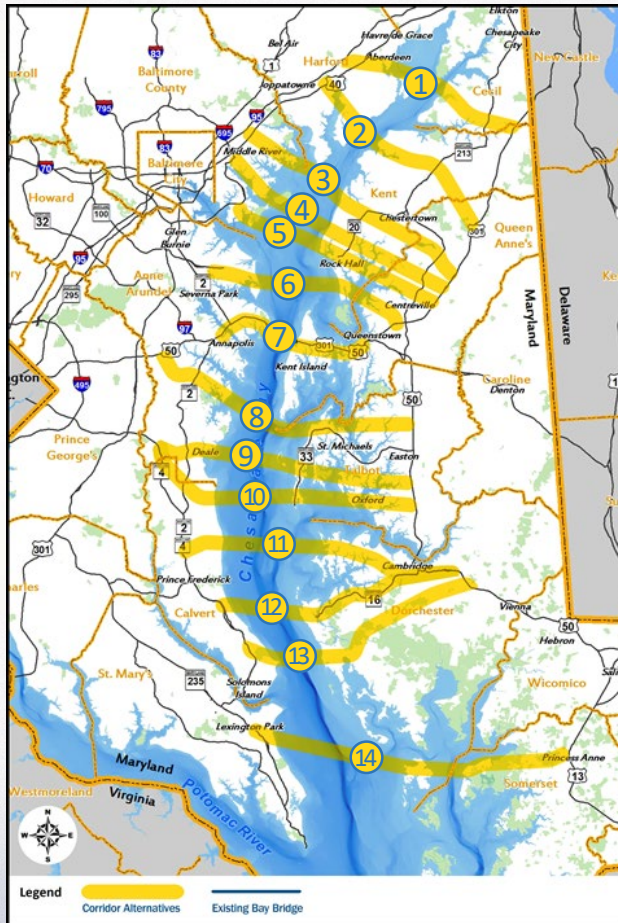
# Development of Modal and Operational Alternatives (MOA)

Alternative	Description
<b>Transportation System Management / Travel Demand Management (TSM/TDM)</b>	 <p>Infrastructure and operational changes to improve operations of the existing roadway network without adding major new capacity. Improvements could include all-electronic tolling, variable tolls, and/or other TSM/TDM.</p>
<b>Ferry Service</b>	 <p>A ferry service including one or more sets of ferry terminals to connect the Eastern Shore and Western Shore. May include roadway improvements to connect terminals to existing roadways.</p>
<b>Transit</b>	 <p>Bus service, light rail, or heavy rail connecting major destinations on the Eastern Shore and Western Shore. Bus service could cross on the existing Bay Bridge or could use a new Bay crossing. A new Bay crossing would be needed to support a new rail line.</p>



# Development of Corridor Alternatives

The Tier 1 Corridor Alternatives development process includes a broad geographic area to identify a reasonable range of corridors. The MDTA identified 14 corridor alternatives that were screened to narrow the range of alternatives.



## The 14 identified corridor alternatives:

- are approximately two miles wide
- are generally perpendicular to the shorelines
- generally connect to peninsulas or long stretches of Chesapeake Bay shoreline
- avoid mouths of rivers or other large bodies of water
- generally avoid towns and developed areas where practical
- extend from a freeway or major state highway on the Western Shore to US 301, US 50, or US 13 on the Eastern Shore



# Alternatives Screening Criteria & Considerations

The alternatives were evaluated to determine if they met the Purpose and Need adequate capacity criteria. The MDTA then analyzed the alternatives that met these criteria to see if they achieved dependable and reliable travel times, and provided adequate flexibility to support bridge maintenance and incident management. Cost, financial, and environmental inventory data were also considered.

## Project Needs

- Provide adequate capacity at the existing bridge
- Provide dependable and reliable travel times at the existing bridge
- Provide flexibility to support maintenance and incident management at the existing bridge

SCREENING CRITERIA

CONSIDERATIONS

## Cost and Financial Considerations

- Length and complexity of Chesapeake Bay crossing
- Length and type of roadway connections to Chesapeake Bay crossing on both shores

## Environmental Considerations

- Inventory of environmental resources and sensitive lands
- Potential for indirect and cumulative effects

# Alternatives Screening: Modal and Operational Alternatives (MOA)



## Transportation Systems Management/ Travel Demand Management (TSM/TDM)

Operational improvements to existing roadway networks such as all-electronic tolling (AET) and variable tolling

- By 2040, average daily traffic on the existing bridge is projected to increase by 15,700 vehicles/day on a non-summer weekday and 16,700 vehicles/day on a summer weekend
- Includes no major new capacity
- AET may result in slightly better operations in the eastbound direction only (where toll booths exist today)
- Variable tolling could shift traffic to nighttime hours, when maintenance activities on the bridge largely occur, negating any benefit
- May have relatively minor environmental impacts
- TSM/TDM alone would not meet the project need to provide adequate capacity at the existing bridge



## Ferry Service

One or more ferry routes owned and operated by a private entity

- By 2040, average daily traffic on the existing bridge is projected to increase by 15,700 vehicles/day on a non-summer weekday and 16,700 vehicles/day on a summer weekend
- One ferry route conveys fewer than 1,000 vehicles/day
- Ferry terminals, roadway approach infrastructure, and ferry service operation could impact environment
- Estimated fare would not be enough to cover operational costs
- Ferry service alone would not meet the project need to provide adequate capacity at the existing bridge

## Transit Service

One or more bus rapid transit (BRT) routes or a new rail system operated between the Western Shore and Eastern Shore

- By 2040, average daily traffic on the existing bridge is projected to increase by 15,700 vehicles/day on a non-summer weekday and 16,700 vehicles/day on a summer weekend

## **BRT**

- Would operate on the existing bridge and roadways, so minimal construction and impacts would result
- Most or all cost would be related to bus service operations
- Removes fewer than 1,600 vehicles/day from the existing Bay Bridge on summer weekends and less on non-summer weekdays
- Would not meet the project need to provide adequate capacity at the existing bridge

## **Rail**

- Would require construction of a new crossing and approach infrastructure with corresponding costs and impacts
- Removes fewer than 1,600 vehicles/day from the existing Bay Bridge on summer weekends and less on non-summer weekdays
- Would not meet the project need to provide adequate capacity at the existing bridge



# Alternatives Screening: Modal and Operational Alternatives (MOA)

- By 2040, average daily traffic on the existing bridge is projected to increase by 15,700 vehicles/day on a non-summer weekday and 16,700 vehicles/day on a summer weekend.
- Results of the screening process show that as a standalone alternative, none of the MOA meet project needs. Therefore, the MOAs have been eliminated from further analysis in this Tier 1 NEPA study.
- TSM/TDM, Ferry Service, and Bus Rapid Transit would be studied in combination with alignment alternatives in Tier 2 NEPA.
- Due to its high costs/impacts, Rail would not be studied in combination with alignment alternatives in Tier 2 NEPA.





# Assessment of Project Needs

Three types of traffic analyses were performed using the Maryland Statewide Travel Demand Model to determine how well each Corridor Alternative would meet the Project Needs at the existing Bay Bridge.

## Provide Adequate Capacity

- Developed traffic volume forecasts for 2040 for existing bridge and each corridor
- Compared 2040 volumes at the existing Bay Bridge (assuming a new crossing) with 2017 volumes at the Bay Bridge

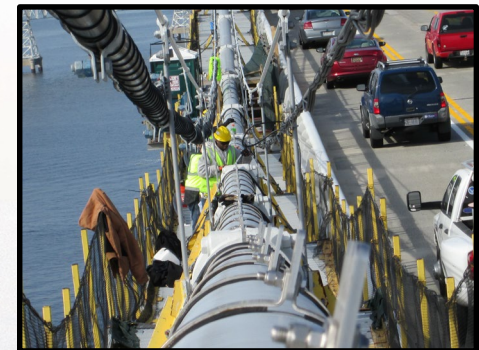
For those corridors that resulted in some congestion relief at the existing Bay Bridge compared to 2017, two additional screening criteria were applied:

## Provide Dependable and Reliable Travel Times

- Travel times during congested conditions are highly variable
- Queue lengths and durations were used to assess travel times

## Provide Flexibility to Support Maintenance and Incident Management

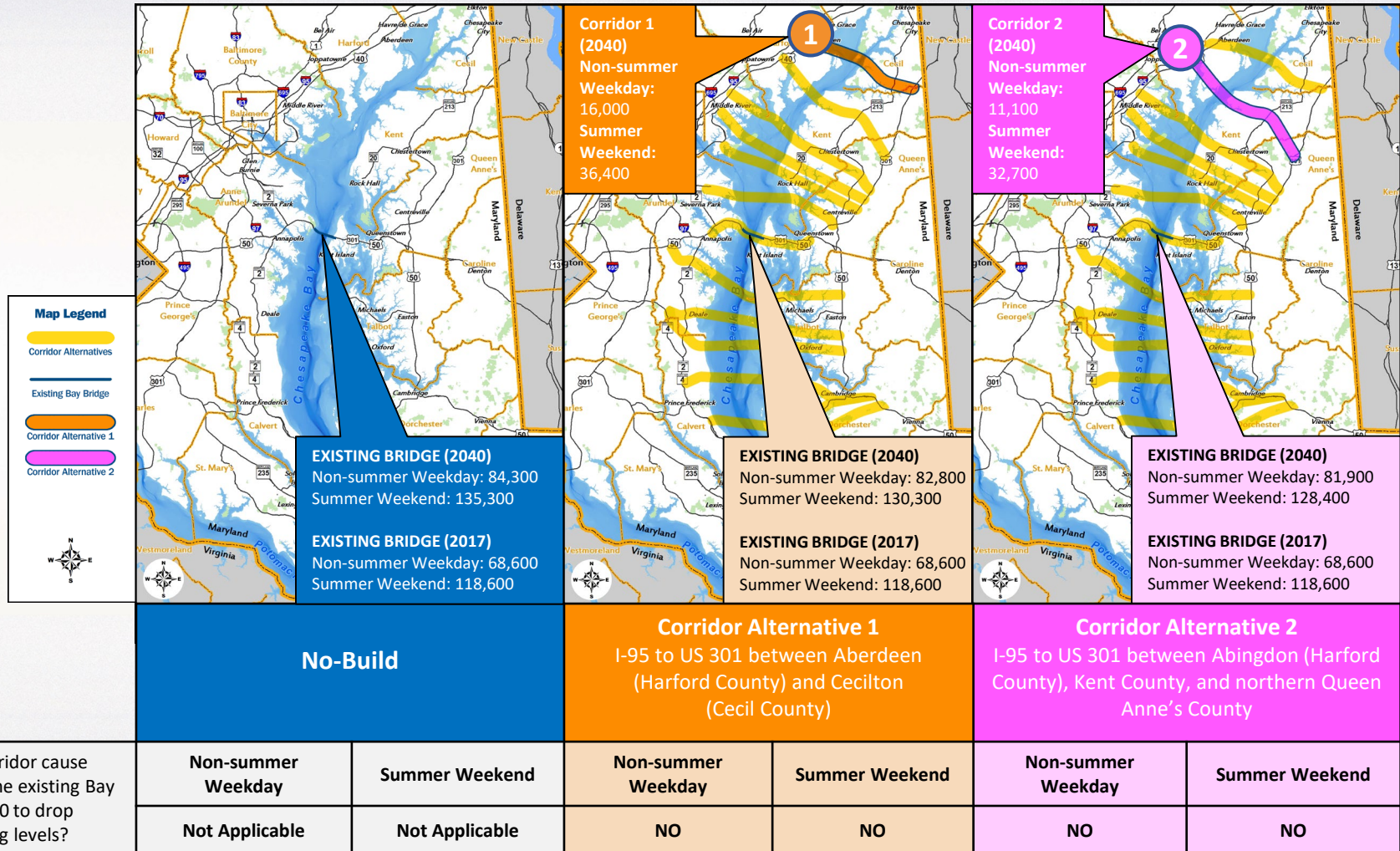
- During maintenance or incidents on the existing bridge or approaches, drivers may want/need to divert to another crossing, if one is available
- Travel times on diversion routes to new crossing were evaluated





# Provide Adequate Capacity: Traffic Forecasts

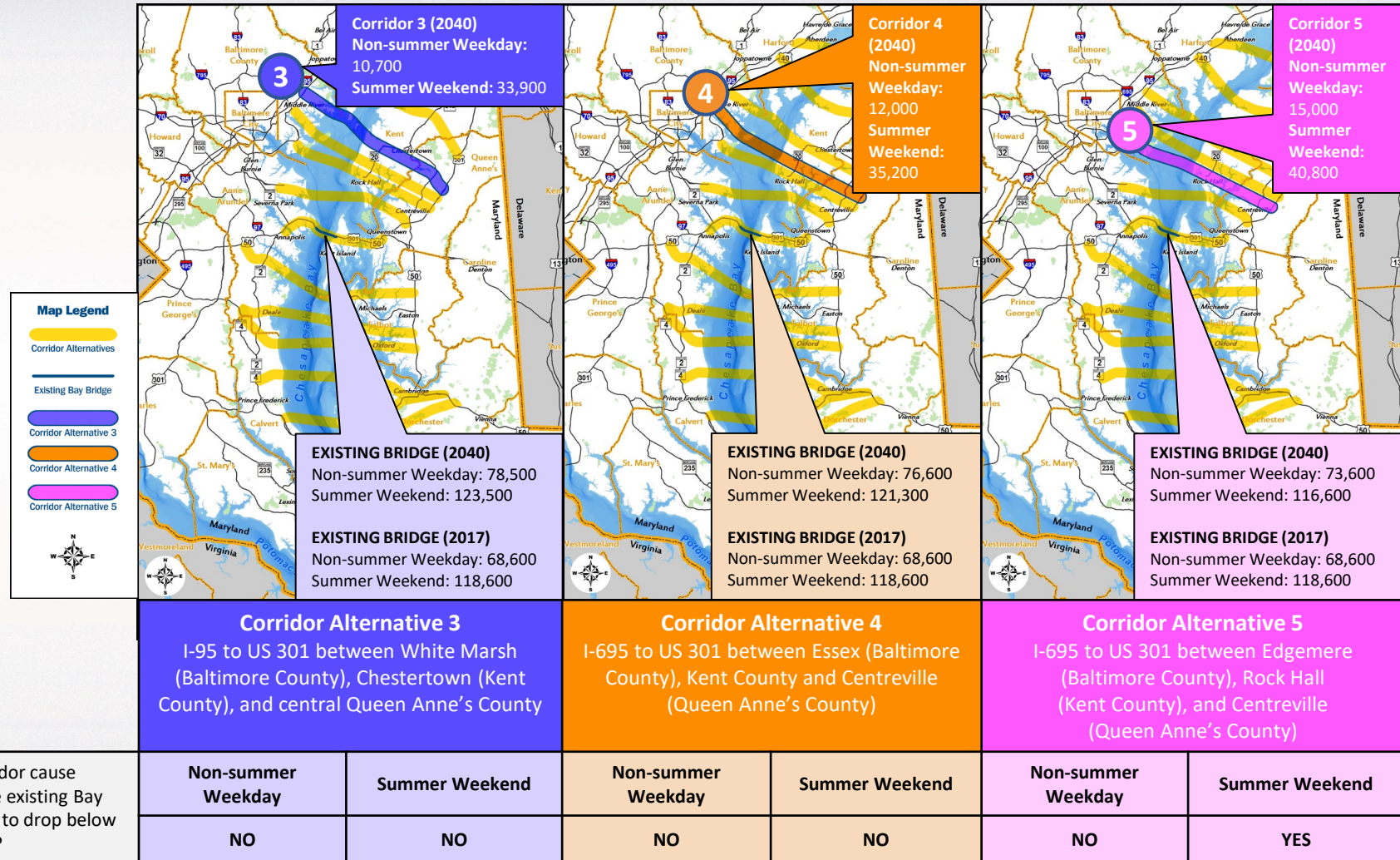
## 2040 Average Daily Traffic (ADT) Compared to 2017 ADT at Existing Bay Bridge





# Provide Adequate Capacity: Traffic Forecasts

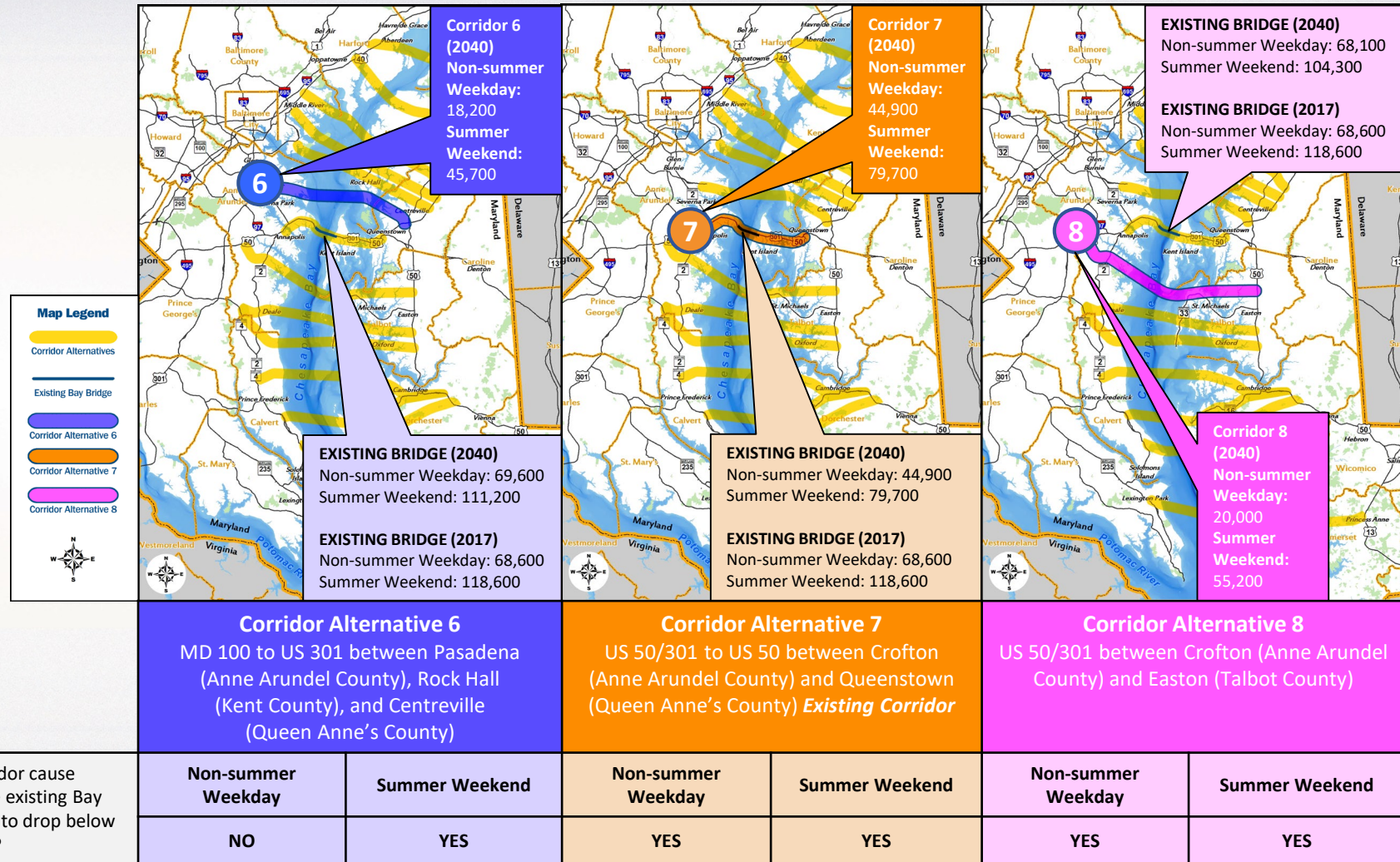
## 2040 Average Daily Traffic (ADT) Compared to 2017 ADT at Existing Bay Bridge





# Provide Adequate Capacity: Traffic Forecasts

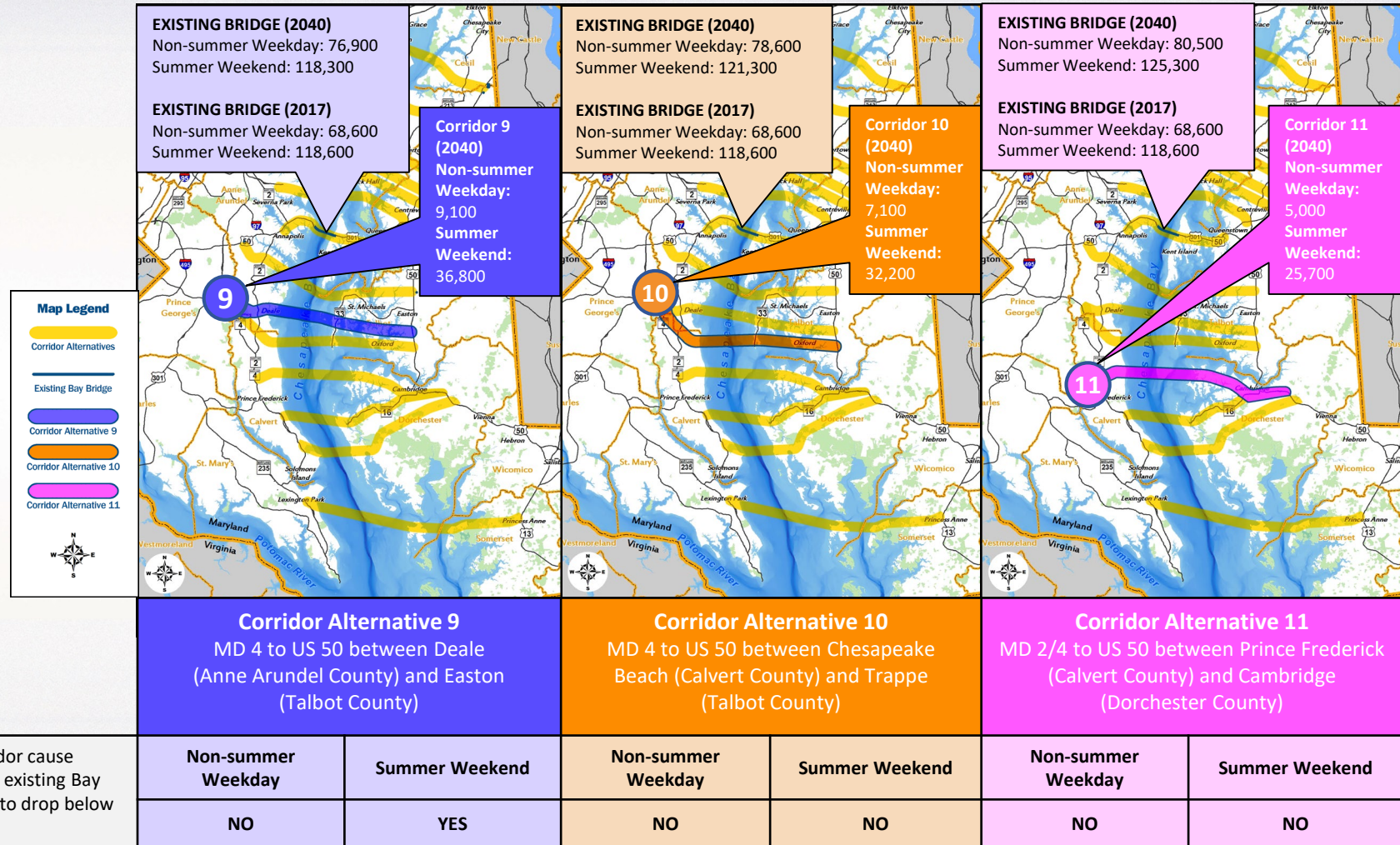
## 2040 Average Daily Traffic (ADT) Compared to 2017 ADT at Existing Bay Bridge





# Provide Adequate Capacity: Traffic Forecasts

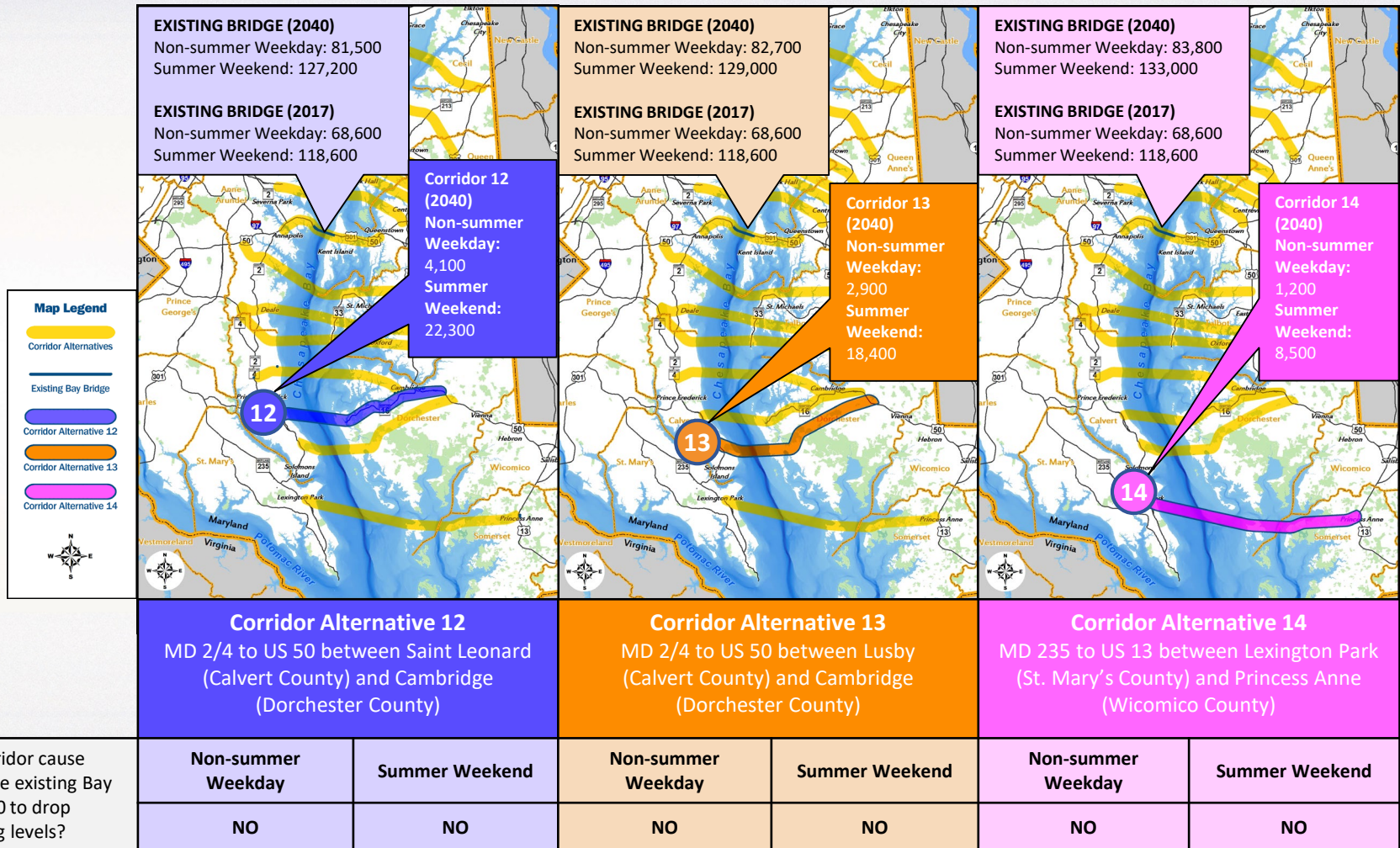
## 2040 Average Daily Traffic (ADT) Compared to 2017 ADT at Existing Bay Bridge





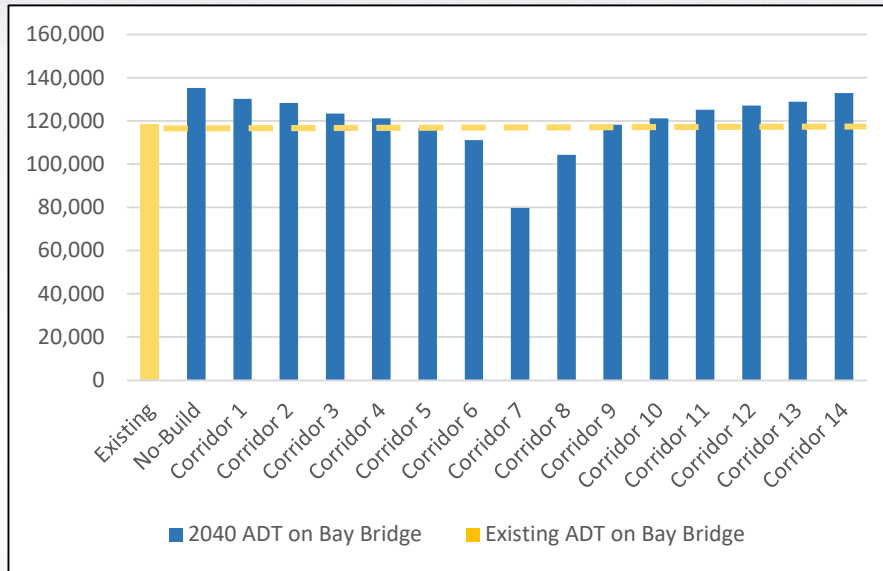
# Provide Adequate Capacity: Traffic Forecasts

## 2040 Average Daily Traffic (ADT) Compared to 2017 ADT at Existing Bay Bridge

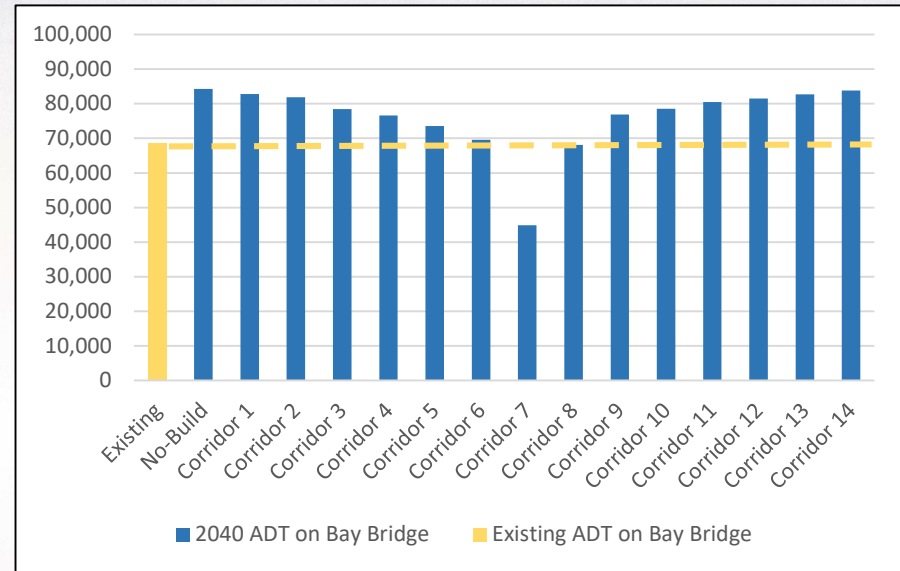


# Provide Adequate Capacity: Traffic Forecasts

2040 Summer Weekend Average Daily Traffic



2040 Non-Summer Weekday Average Daily Traffic



## In summary:

- Ideally, the future volumes would be LOWER than the existing (2017) volumes at the existing Bay Bridge. Corridor 7 provides the most congestion relief.
- On Summer Weekends, Corridors 5, 6, 7, 8 and 9 are the only corridors that reduce volumes on the Bay Bridge to below existing (2017) levels.
- On Non-Summer Weekdays, Corridors 7 and 8 are the only corridors that reduce volumes on the Bay Bridge to below existing (2017) levels.
- Corridors 5, 6, 7, 8, and 9 were carried forward for additional screening to determine if they met the remaining project needs.



# Provide Dependable and Reliable Travel Times

## What will backups at the existing Bay Bridge be in 2040 as compared to 2017?

Corridors 5, 6, 7, 8 and 9 were evaluated for reliable travel times because they would reduce volumes on the existing Bay Bridge to below 2017 levels.

	Typical Summer Weekend: Number of Hours where Backup is 4 Miles or Greater	Typical Non-Summer Weekday: Number of Hours where Backup is 1 Mile or Greater
Existing Bay Bridge (2017)	0	0
5	0	3
6	0	1
7	0	0
8	0	1
9	1	6
Existing Bay Bridge (2040) - No-Build Alt.	9	9

- The chart above compares the number of hours that backups and congestion would occur at the existing Bay Bridge in 2040 under Corridor Alternatives 5, 6, 7, 8, 9 and the No-Build Alternative.
  - Corridor 7 results in the least amount of backups at the existing Bay Bridge for both summer weekends and non-summer weekdays.
  - Corridors 6 and 8 result in backups over 1 mile on non-summer weekdays for 1 hour at the existing Bay Bridge.
  - Corridors 5 and 9 result in longer backups at the existing Bay Bridge than Corridors 6, 7 and 8.

# Provide Dependable and Reliable Travel Times

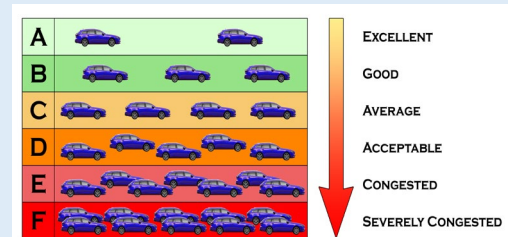
## What will the Levels of Service (LOS) at the existing Bay Bridge be in 2040 as compared to 2017?

Corridors 5, 6, 7, 8 and 9 were evaluated for Levels of Service because they would reduce volumes on the existing Bay Bridge to below 2017 levels.

	Typical Summer Weekend: Hours with LOS E or F		Typical Non-Summer Weekday: Hours with LOS E or F	
	Eastbound	Westbound	Eastbound	Westbound
<b>Existing Bay Bridge (2017)</b>	<b>10</b>	<b>9</b>	<b>3</b>	<b>0</b>
5	10	8	3	2
6	9	5	3	1
7	0	0	0	0
8	8	2	3	1
9	10	8	3	2
<b>Existing Bay Bridge (2040) – No-Build Alt.</b>	<b>12</b>	<b>10</b>	<b>5</b>	<b>2</b>

- The chart above compares the number of hours that LOS would be E or F at the existing Bay Bridge in 2040 under Corridor Alternatives 5, 6, 7, 8, 9 and the No-Build Alternative.
  - Corridor 7 results in no LOS E or F at the existing Bay Bridge for both summer weekends and non-summer weekdays.
  - Corridors 6 and 8 result in some LOS E or F on both summer weekends and non-summer weekdays at the existing Bay Bridge.
  - Corridors 5 and 9 result in the most hours of LOS E or F at the existing Bay Bridge.

Level of Service (LOS) is used to describe traffic flow on a scale of "A" to "F". ("A" is the best and "F" is the worst. Generally, "D" is the lowest acceptable LOS.)





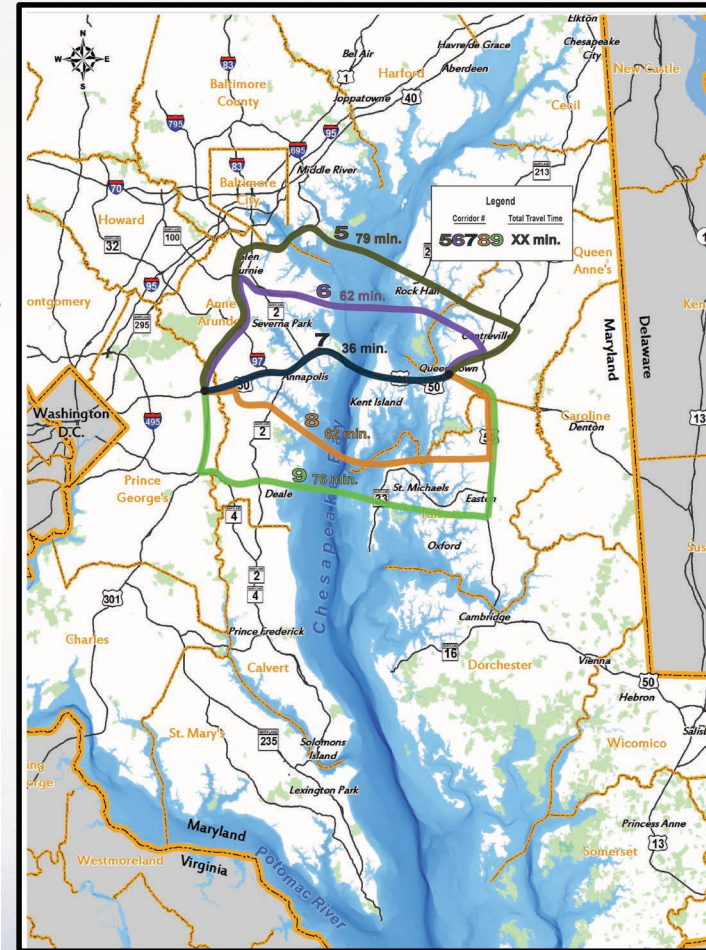
# Provide Flexibility to Support Maintenance and Incident Management at Existing Bridge

- Corridors 5, 6, 7, 8 and 9 were evaluated as part of the travel time analysis because they would reduce volumes on the Bay Bridge to below existing (2017) levels.
- During maintenance or incidents, travelers may want/need to divert to another crossing if one is available.
- Diversion travel times from the existing Bay Bridge to Corridors 5, 6, 7, 8 and 9 were developed.
  - Corridor 7: traffic can divert more than 25 minutes faster than the other corridors
  - Corridors 6 and 8 have similar results: approximately 26 additional minutes
  - Corridors 5 and 9 have similar results: approximately 40-43 additional minutes

## INCIDENT DIVERSION SUMMARY

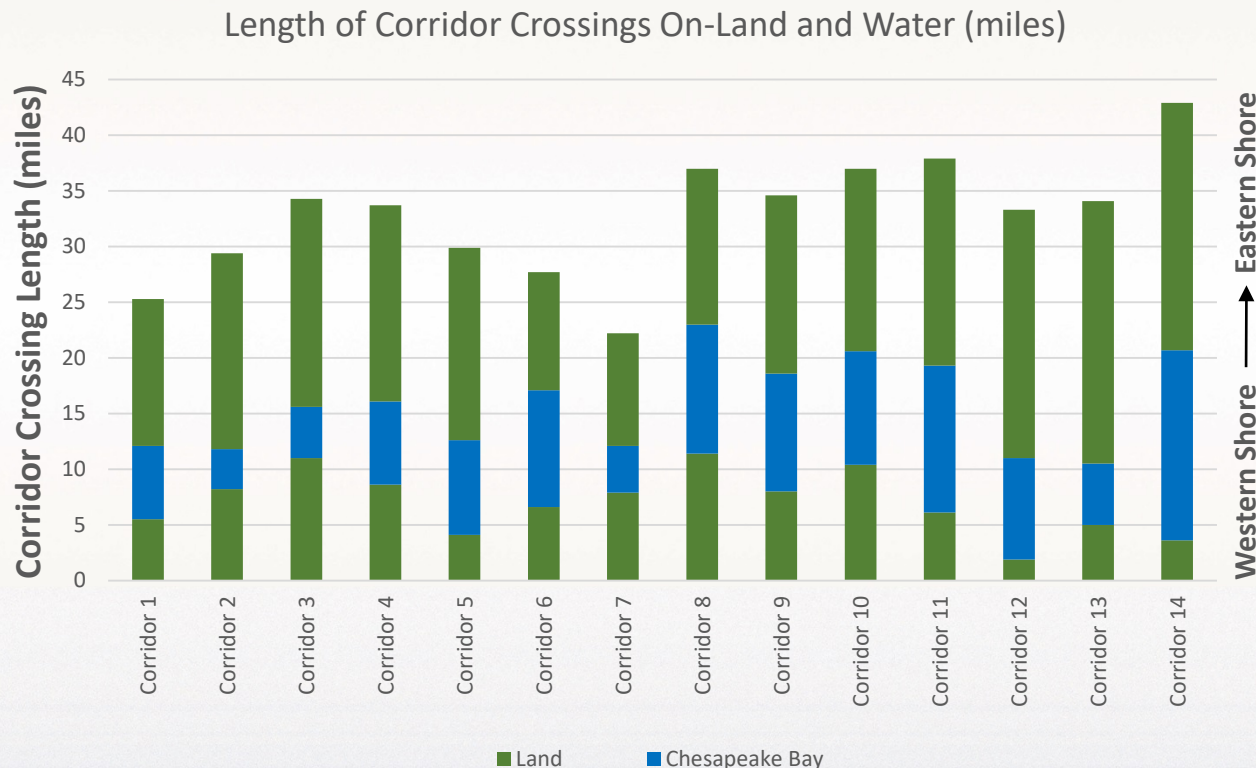
Origin: US 50/US 301 interchange on the Western Shore  
Destination: US 50/US 301 interchange on the Eastern Shore

Corridor #	Total Mileage (mi.)	Total Travel Time (min.)	Additional Travel Time from existing Bay Bridge (min.)
5	73	79	43
6	56	62	26
7	33	36	0
8	57	62	26
9	70	76	40



# Cost and Financial Considerations

The cost of a new Chesapeake Bay crossing is based on engineering factors such as the length of crossing needed for each alternative (on-land and water). The chart below shows the total length of each on-land and water crossing, allowing comparison of the potential cost magnitude among alternatives.



Corridors requiring longer, more complex crossings and approach infrastructure would be more expensive to construct.



# Environmental Considerations

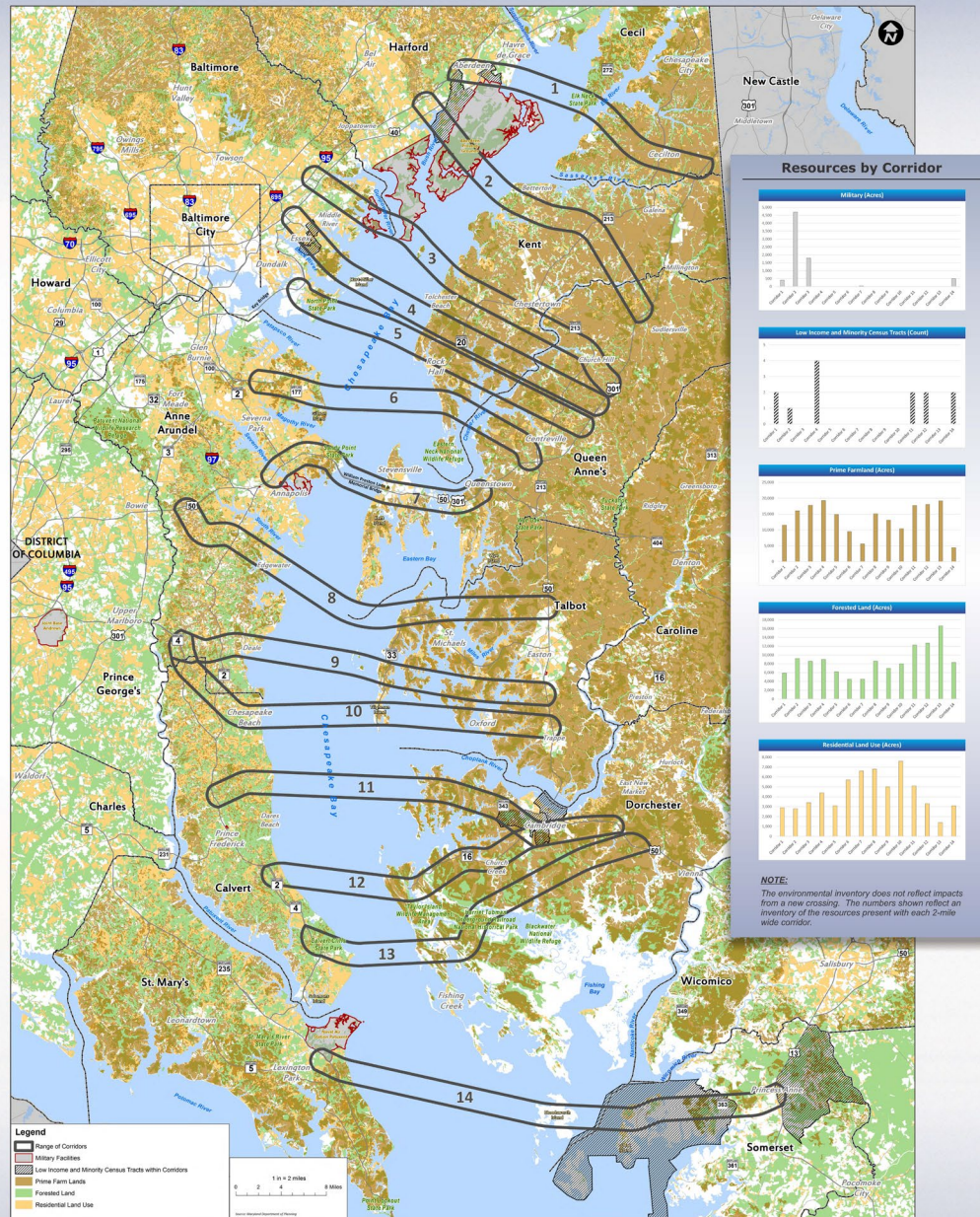
The **environmental inventory** quantifies the presence of natural, cultural and socioeconomic resources within the two-mile wide corridors. The environmental inventory does not reflect **environmental impacts** from the project. Actual environmental impacts would be a subset of the full inventory; the potential impacts would be evaluated in a Tier 2 NEPA study. The environmental inventory includes the following resources:

- ✓ Military Land
- ✓ Parks and Wildlife Refuges
- ✓ Residential Land Use
- ✓ Priority Funding Areas
- ✓ Low Income and Minority Census Tracts
- ✓ Prime Farmland
- ✓ Cultural Resources (historical sites, objects, structures, etc.)
- ✓ Wetlands
- ✓ Perennial Streams
- ✓ Floodplains
- ✓ Open Water
- ✓ Submerged Aquatic Vegetation
- ✓ Natural Oyster Bars
- ✓ Forested Land
- ✓ Chesapeake Bay Critical Areas
- ✓ Sensitive Species Project Review Areas
- ✓ Coastal Barrier Resources Act (CBRA) Protected Lands





# Environmental Inventory

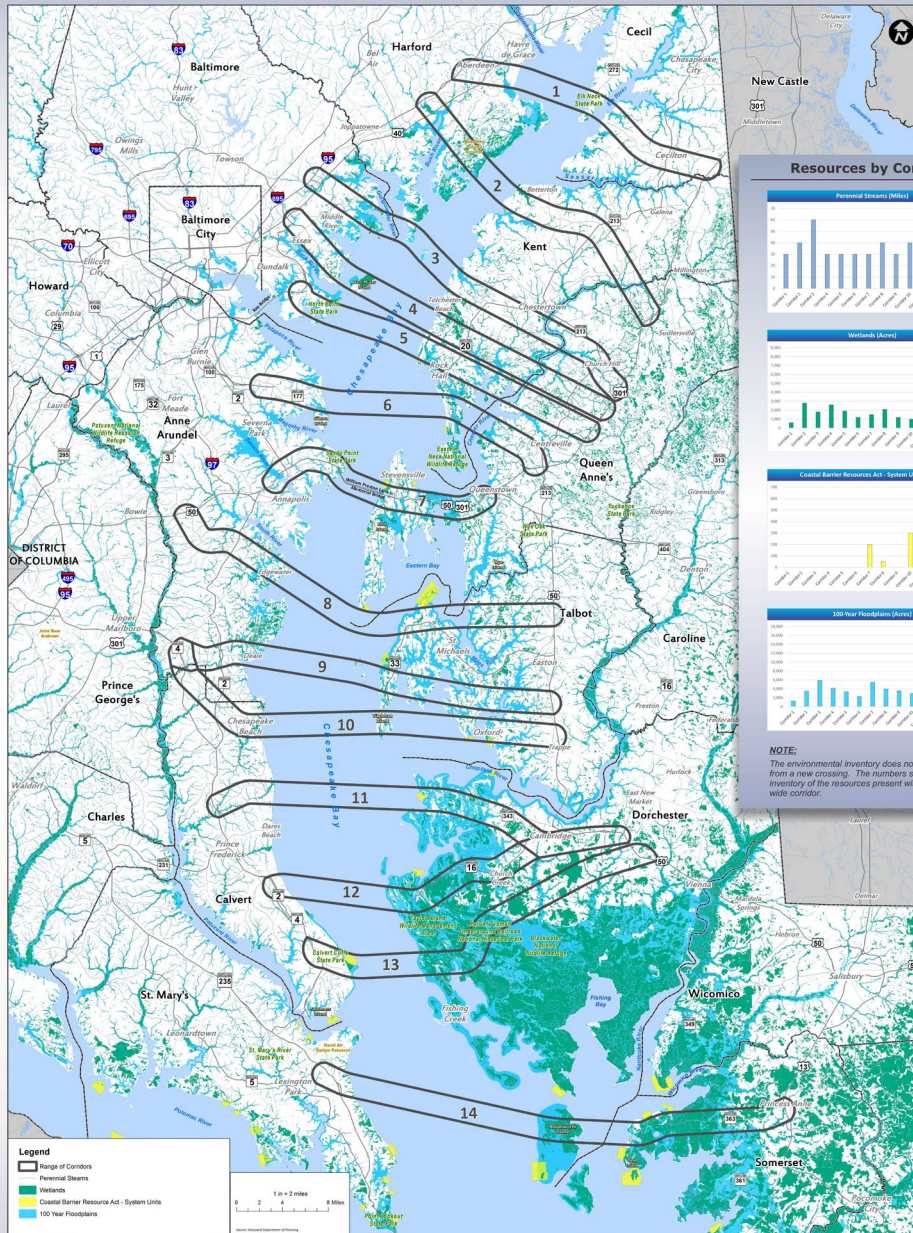




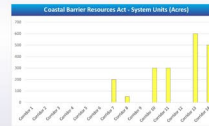
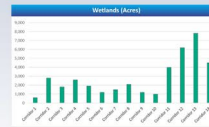
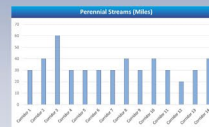
# Environmental Inventory

## CHESAPEAKE BAY CROSSING STUDY TIER 1 NEPA

## CHESAPEAKE BAY CROSSING STUDY TIER 1 NEPA



### Resources by Corridor



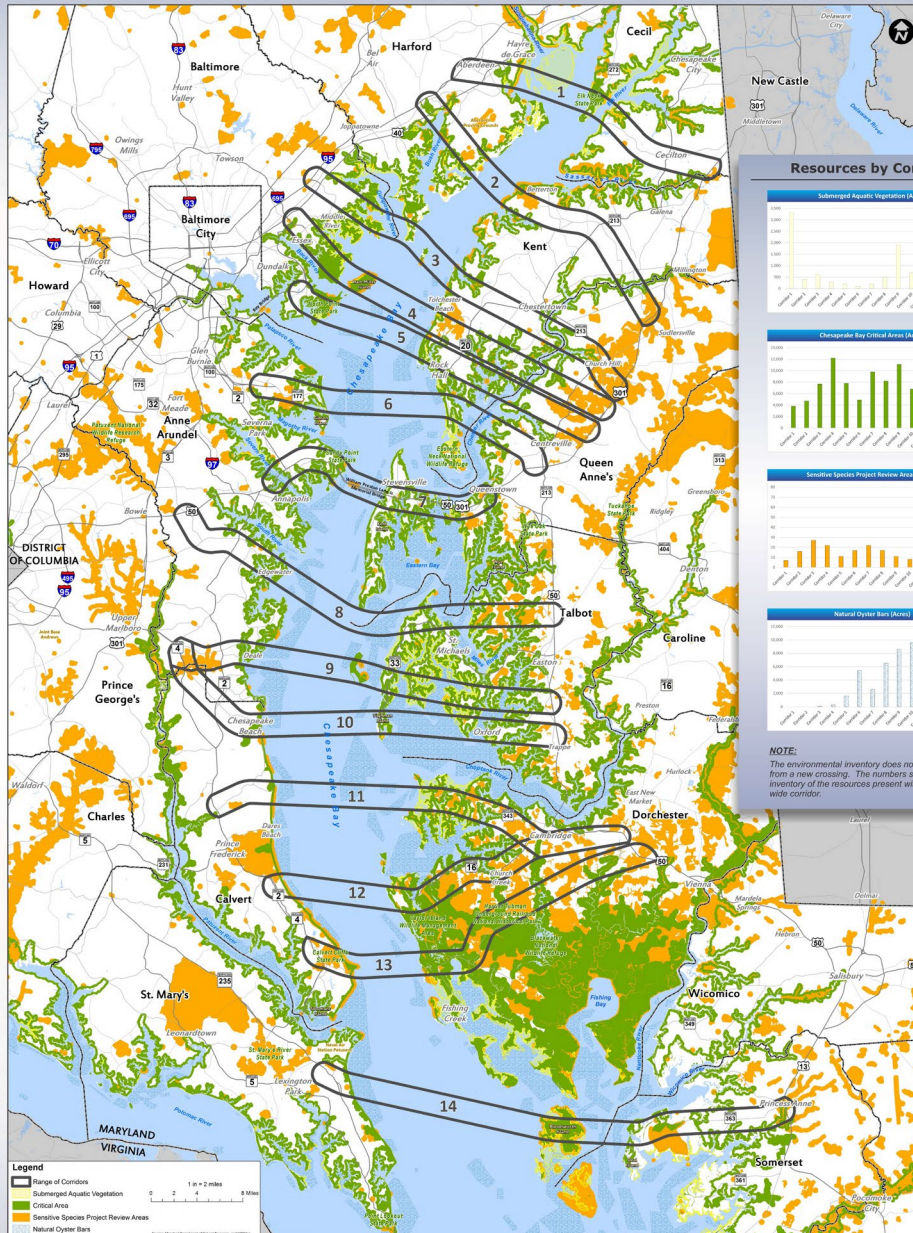
**NOTE:**  
The environmental inventory does not reflect impacts from a new crossing. The numbers shown reflect an inventory of the resources present with each 2-mile wide corridor.



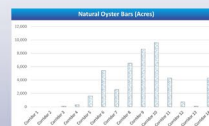
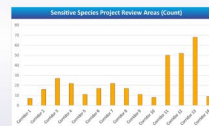
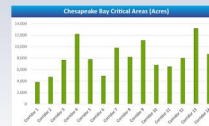
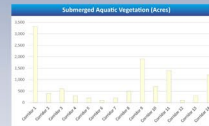
# Environmental Inventory

## CHESAPEAKE BAY CROSSING STUDY TIER 1 NEPA

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### Resources by Corridor



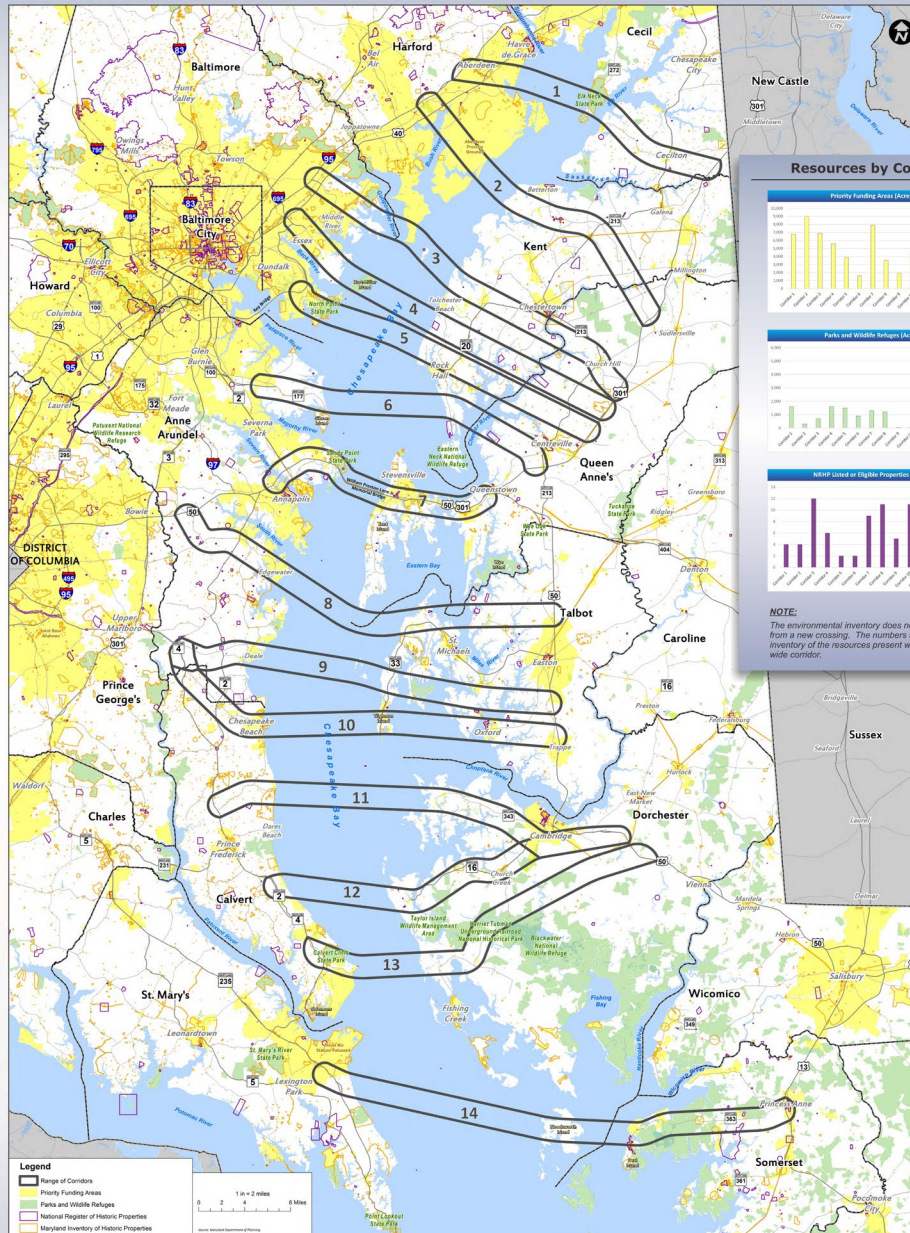
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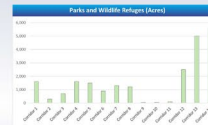
# Environmental Inventory

## CHESAPEAKE BAY CROSSING STUDY TIER 1 NEPA

## CHESAPEAKE BAY CROSSING STUDY TIER 1 NEPA



### Resources by Corridor



**NOTE:**  
The environmental inventory does not reflect impacts from a new crossing. The numbers shown reflect an inventory of the resources present with each 2-mile wide corridor.



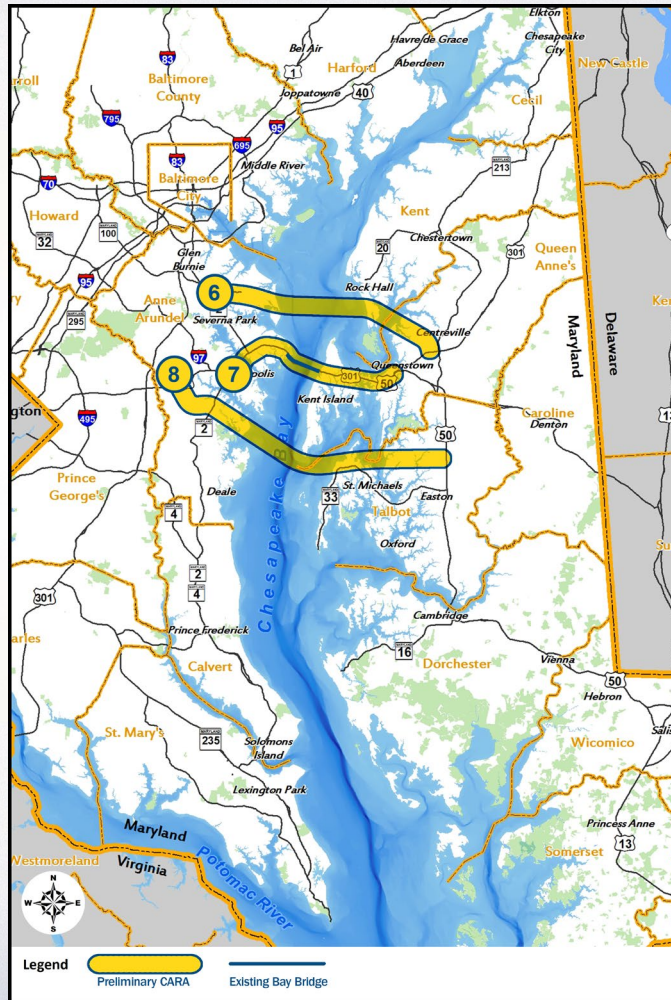
# Environmental Considerations

- The MDTA considered the potential for **indirect effects** from each corridor alternative. The screening considered:
  - **Undeveloped Land.** Providing new access to rural lands could lead to pressure for new development.
  - **Priority Funding Areas.** Designated areas where growth would be consistent with local plans.
  - **Proximity to Employment Centers.** Corridors that provide new access within a typical commute time (approximately 30 to 45 minutes) of a major employment center could drive demand for residential development.
  - **Consistency with County Master Plans.**
- Corridors 3, 4 and 5 would have the greatest potential to induce indirect effects from new development on the Eastern Shore due to their proximity to the Baltimore Metropolitan area, and prevalence of undeveloped farmland on the Eastern Shore.
- More detailed analysis of potential indirect and cumulative effects will be presented in the Tier 1 Draft EIS.





# Preliminary Corridor Alternatives Retained for Analysis (CARA)

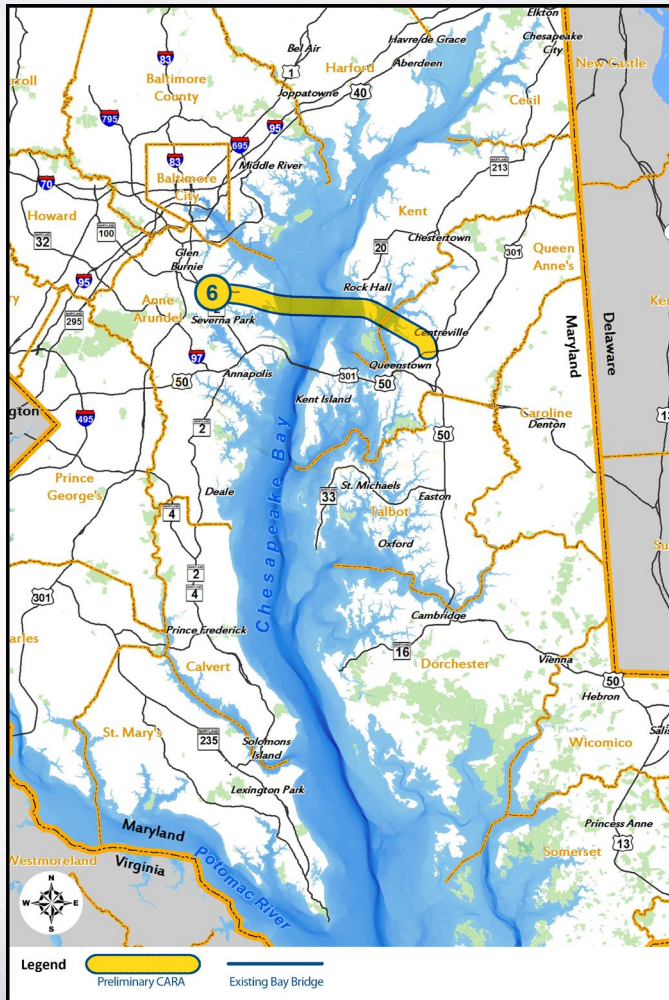


In accordance with NEPA, **Corridors 6, 7 and 8** will be carried forward as the preliminary CARA because they are the only corridors to sufficiently meet the Purpose and Need. The **No-Build Alternative** will also be carried forward.

- **Corridor 6:** MD 100 to US 301 between Pasadena (Anne Arundel County), Rock Hall (Kent County) and Centreville (Queen Anne's County)
- **Corridor 7/Existing Corridor:** US 50/301 to US 50 between Crofton (Anne Arundel County) and Queenstown (Queen Anne's County)
- **Corridor 8:** US 50/301 between Crofton (Anne Arundel County) and Easton (Talbot County)



# Preliminary Corridor Alternatives Retained for Analysis (CARA)

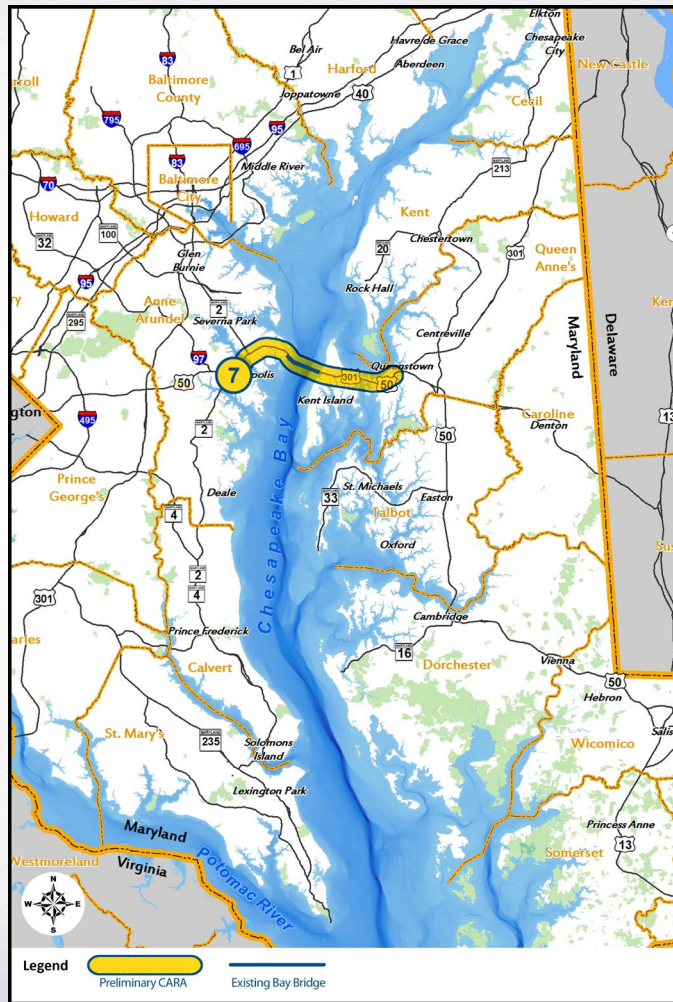


**Corridor 6:** MD 100 to US 301 between Pasadena (Anne Arundel County), Rock Hall (Kent County) and Centreville (Queen Anne's County)

- Reduces the duration of unacceptable Level of Service at the existing Bay Bridge on summer weekends but not on non-summer weekdays
- Relieves congestion at the existing Bay Bridge on summer weekends but not on non-summer weekdays
- Reduces backups at the existing Bay Bridge on summer weekends and non-summer weekdays
- Provides a more desirable diversion route than Corridors 5 and Corridor 9, but not as efficient as Corridor 7
- Less compatible with existing land-use patterns, resulting in greater potential for indirect effects



# Preliminary Corridor Alternatives Retained for Analysis (CARA)

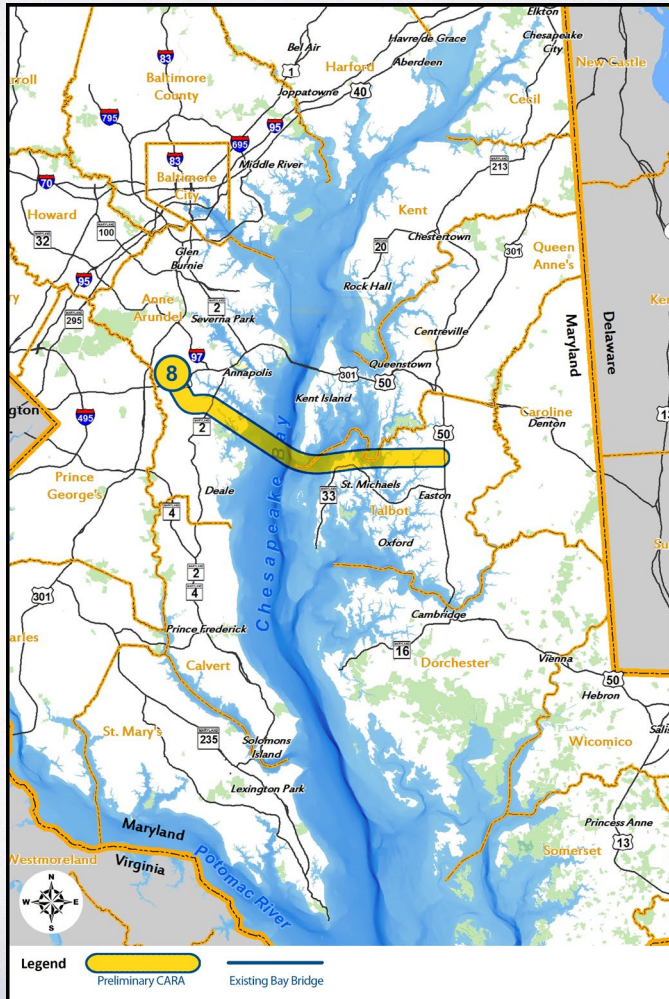


**Corridor 7/Existing Corridor:** US 50/301 to US 50 between Crofton (Anne Arundel County) and Queenstown (Queen Anne's County)

- Best reduces the duration of unacceptable Level of Service on summer weekends and non-summer weekdays
- Best relieves congestion at the existing Bay Bridge compared to all other corridors on both non-summer weekdays and summer weekends
- Reduces backups at existing Bay Bridge on summer weekends and non-summer weekdays
- Provides best diversion route
- More compatible with existing land-use patterns, resulting in fewer indirect effects



# Preliminary Corridor Alternatives Retained for Analysis (CARA)



## Corridor 8: US 50/301 between Crofton (Anne Arundel County) and Easton (Talbot County)

- Reduces the duration of unacceptable Level of Service at the existing Bay Bridge on summer weekends but not on non-summer weekdays
- Relieves congestion at the existing Bay Bridge on both non-summer weekdays and summer weekends
- Reduces backups at the existing Bay Bridge on summer weekends and non-summer weekdays
- Provides a more desirable diversion route than Corridor 5 and Corridor 9, but not as efficient as Corridor 7
- Less compatible with existing land-use patterns, resulting in greater potential for indirect effects



CHESAPEAKE  
**BAY CROSSING STUDY**  
— TIER 1 NEPA —

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# CHESAPEAKE BAY CROSSING STUDY TIER 1 NEPA

## 2019 Open House

### Comment Form

Please provide your comments on the range of alternatives presented.

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Please provide comments on the Preliminary Corridor Alternatives Retained for Analysis (CARA)  
(Corridors 6, 7 and 8 shown on the map to the right).

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Which three factors are most important to you in selecting the preferred Corridor Alternative?

☐ Reducing congestion

☐ Engineering / Construction

☐ Safety

☐ Environmental impacts

☐ Community / Development impacts

☐ Cost

☐ Other (explain) \_\_\_\_\_

Over



# Looking Forward

## Tier 1 NEPA Study – Summer 2021 Completion

- **Anticipated Spring / Summer 2020** - Analyze the CARA and develop the Draft Tier 1 EIS
- **Anticipated Fall 2020** - Hold Public Hearings
- **Anticipated Summer 2021** - Final Tier 1 EIS and Record of Decision
- **Next Steps** - If a Corridor Alternative is approved by the Federal Highway Administration in the Tier 1 Record of Decision, the NEPA process could move into the Tier 2 study.

## Potential Tier 2 NEPA Study – 3 to 5 Years

- **To deliver a Tier 2 Record of Decision, it could take three to five years to:**
  - identify and evaluate a no-build alternative and various crossing alignments within the two-mile corridor;
  - identify how buses, ferries, transportation system management and demand management could be used in conjunction with these crossing alignments;
  - review potential environmental impacts;
  - determine project delivery method (such as design-bid-build or design-build) to organize and finance design, construction, operations, and maintenance; and
  - develop a financial plan that could lead to the Federal Highway Administration ultimately approving one alignment with a Tier 2 Record of Decision.