I-495 American Legion Bridge Transit/TDM Study

DRAFT Summary Report

December 2020

MARYLAND DEPARTMENT OF TRANSPORTATION
MARYLAND TRANSIT ADMINISTRATION

DRPT
Virginia Department of Rail and Public Transportation

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Special thanks to the Project Stakeholder Group

I-495 American Legion Bridge Transit/TDM Study

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Project Overview and Purpose

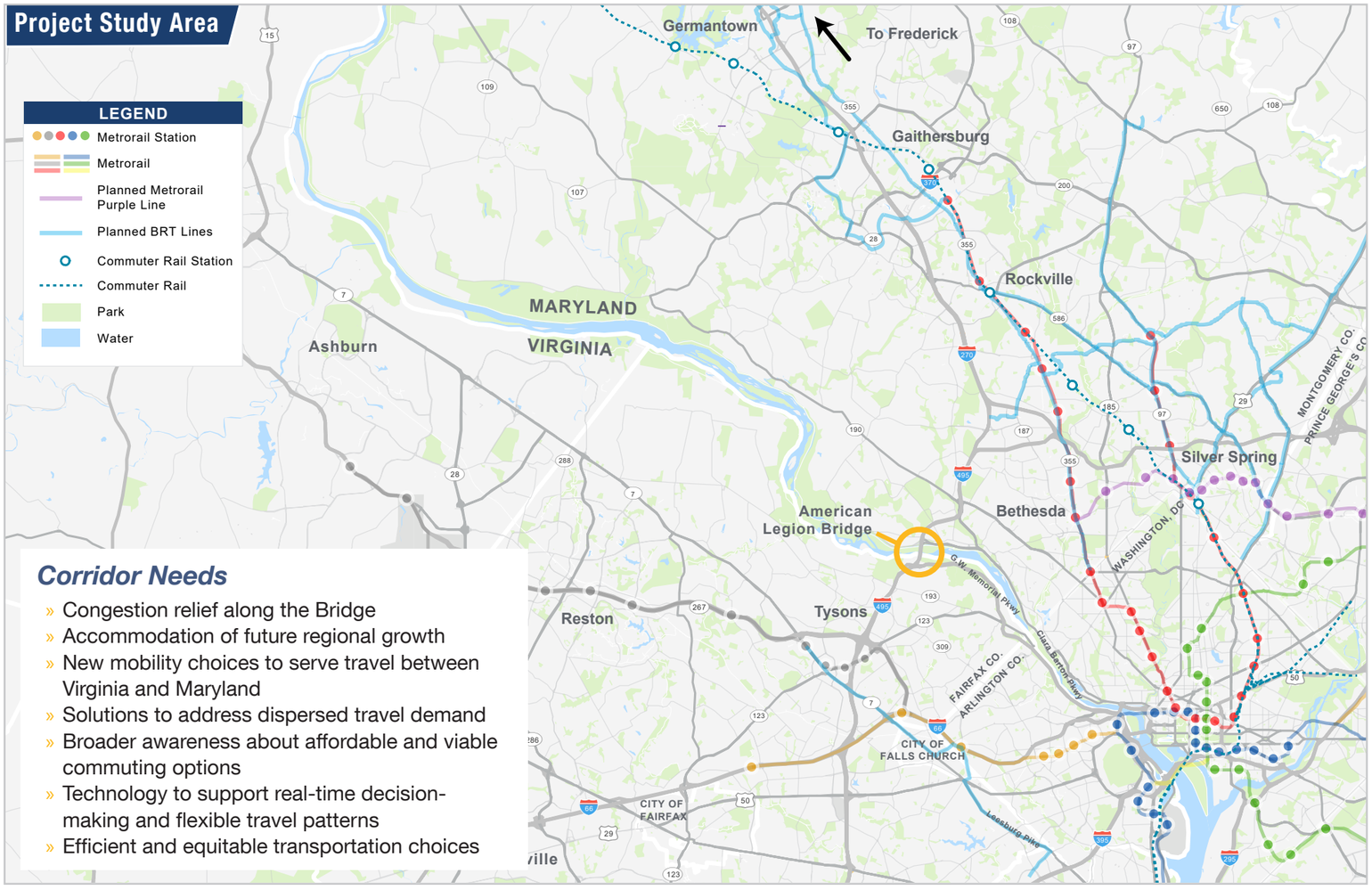
Introduction

The purpose of the I-495/American Legion Bridge Transit/Transportation Demand Management Study (the Study) is to identify a range of current and future potential multimodal solutions that could be implemented to reduce congestion, improve trip reliability and regional connections, and enhance existing and planned multimodal mobility and connectivity for bi-state travel across the American Legion Bridge (the Bridge).

The Study is a joint effort between Maryland and Virginia and was announced shortly after the announcement of the Capital Beltway Accord to Rebuild American Legion Bridge and connect the Interstate Highway System by Governors Hogan and Northam in Fall 2019. The Study complements Virginia's I-495 NEXT project and Maryland's Managed Lanes Study and their efforts to develop a region-wide seamless network of reliable travel options around the Capital Beltway, I-270, I-95, I-395 and I-66. **The potential construction of managed lanes in both states represents an opportunity to implement new transit service options that take advantage of this infrastructure and provide riders with congestion-free service.**

Study Area

The Study area focuses on the American Legion Bridge (the Bridge) and I-495 west and south of the MD Route 97 interchange in Maryland and north of the I-495/I-95/I-395 interchange in Virginia. The Bridge is the only crossing point between Virginia and Maryland connecting the employment hubs in Montgomery, Fairfax, and Loudoun counties besides US 15 that is roughly 30 miles west of I-495. Given that the Bridge is the main crossing point between Virginia and Maryland for commuters in both states, major corridors intersecting I-495 are being considered in the Study, including I-270 to Germantown and VA Route 267 to Dulles International Airport. Other major intersecting routes within one mile of I-495 are also being evaluated in the Study area. The complete Study area is shown in map (right).



Background

Previous Transit Service across the Bridge

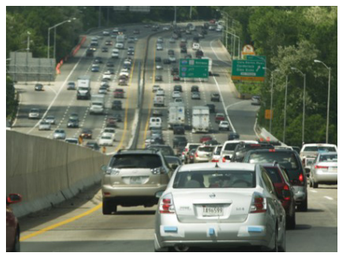
A Metrobus route (Route 14) operated between Tysons and Bethesda from 1998 to 2003. In Maryland, the bus was permitted to operate on the shoulders of I-495 to avoid congestion but could not use the shoulder in Virginia due to of Virginia Department of Transportation (VDOT) safety concerns.[1] According to the Fairfax County Transit Development Plans (TDP), this constraint and the bottleneck of the Bridge caused the bus to experience long delays on the interstate. Additionally, the high number of stops added to the length of a trip. Because of these challenges, the Metrobus route was discontinued in 2003.

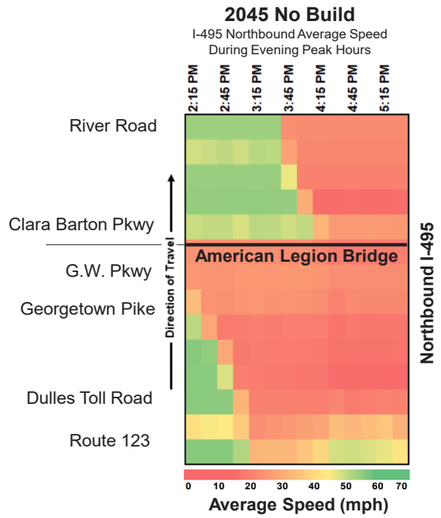
[1] *(National Capital Region Transportation Planning Board, 2013)*

Existing and Planned Services

Existing Conditions and Services

I-495 is one of the most congested roadways in all of Maryland and Virginia. Traffic is forecasted to increase in the future. In conjunction with the planned managed/express lanes, there is an opportunity to efficiently and effectively provide transit across the Bridge.





Source: I-495 NEXT, Virginia Department of Transportation, 2019
(Right: Northbound I-495 Chart)

Rail

Existing rail service is oriented for travel to Washington, DC, from the surrounding counties in Virginia and Maryland. The Metrorail Red Line and MARC commuter service run parallel to the I-270 corridor and the Metrorail Silver Line serves the Dulles Corridor but only connects with the Orange and Blue Lines in Arlington, VA before continuing to Washington, DC to connect with the Red Line. MTA's planned Purple Line will connect key activity centers in Montgomery and Prince George's County in Marlyand when constructed.

Local and Commuter Bus Service

Within the Study area, there is an abundance of local bus services operating between jurisdictions in each state. **However, there is currently no service between Virginia and Maryland across the Bridge.**

Park-and-Ride Lots

There are several park-and-ride facilities located along the I-270 corridor in Maryland that provide parking for existing commuter bus routes operating within Maryland. There are limited park-and-ride opportunities for areas along the I-495 loop, including high-demand origin and destinations such as Tysons, Bethesda, and the Westfield Montgomery Mall Transit Center.

Commuter Assistance Programs (CAPs)

There are a variety of programs provided by Commuter Connections, the Metropolitan Washington Council of Governments' (MWCOG) regional network of TDM organizations, that promote alternative travel options and incentives to commuters in the region. Each of the Study area jurisdictions also has programs that coordinates with Commuter Connections to provide information about available travel options. However, there is no coordinated effort or programming that specifically targets travel between Virginia and Maryland.

Operations and Maintenance Facilities

Operators for the potential transit routes have not been identified at this point. Except for MDOT MTA, each of the transit providers in the Study Area have maintenance facilities. Once operators have been identified for transit routes, a capacity and needs analysis should be conducted to determine any constraints on their operations.

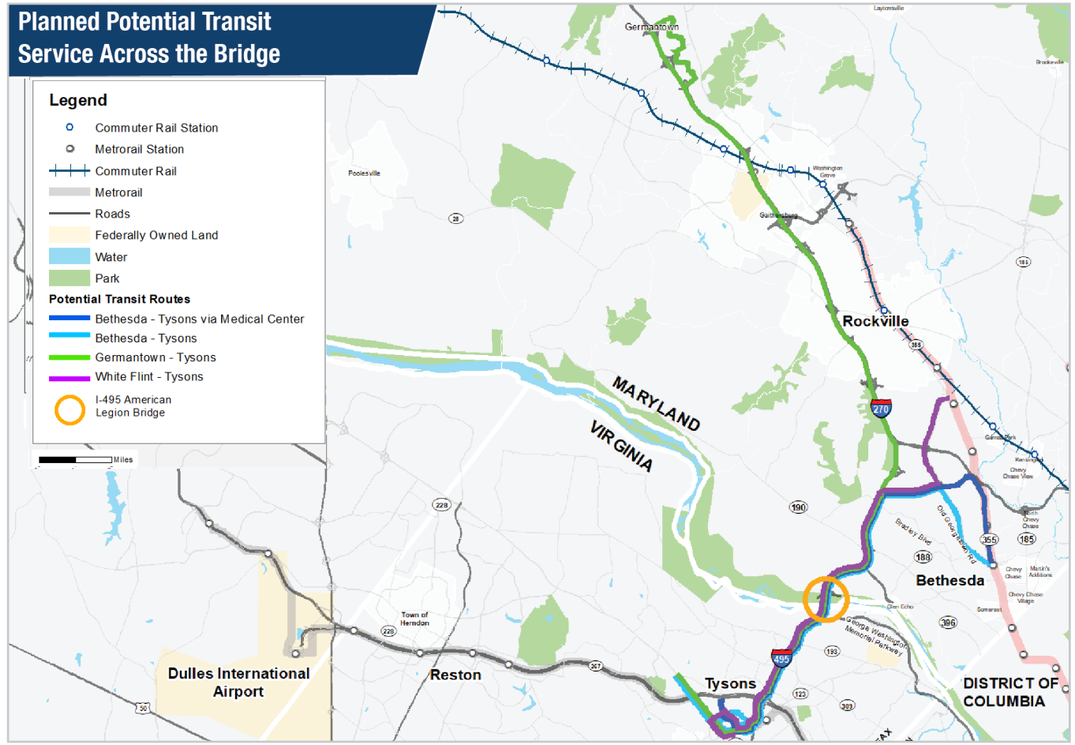
Planned Potential Services

Relevant and available data was collected and reviewed from a variety of sources to provide a comprehensive inventory of planned services in the corridor. Of the information reviewed, three sources contained planned potential transit routes across the Bridge:

- Fairfax County Transit Development Plan (TDP)[1]
- Maryland Transit Service Coordination Report[2]
- Northern Virginia Transportation Authority (NVTA) Transaction Plan[3]

The planned potential services are shown in the table and map below

Service Type (e.g., commuter bus/ express bus, etc.)	Maryland Destination(s)	Virginia Destination(s)
Metrobus	Bethesda Metrorail, Medical Center Metrorail	Tysons
WMATA Express Bus Transit	Bethesda Metrorail	Tysons, McLean
WMATA Express Bus Transit	Germantown, Gaithersburg, North Bethesda	Tysons, McLean
Bus Rapid Transit (BRT)	White Flint Metrorail	Tysons



[1] (Fairfax County, 2020) [2] (Maryland Department of Transportation State Highway Administration, 2020) [3] (Northern Virginia Transportation Authority, 2018)

Potential Transit Recommendations Development Process

To develop potential recommendations for transit, a five-step process was followed. The process began by developing a list of possible route connections based on travel demand and culminated in a set of building blocks of transit routes that could be used in a series of investment packages. Throughout the process, the Study team met with a group of stakeholders and solicited feedback through two public surveys. Additionally, public feedback was gathered at ongoing I-495 Virginia and Maryland projects.

1. Develop List of Evaluation Options
The Study team began its transit evaluation by identifying the markets in Maryland and Northern Virginia with the greatest demand for cross-Potomac travel. This resulted in 31 route options.

Stakeholder meeting #1

Public Survey #1

2. Initial Screening
Potential route options were screened down to eight options based on comparison with existing transit service, travel demand along the corridor and potential access to managed lanes.

Stakeholder meeting #2

3. Off-Model Testing and Evaluation
The eight remaining routes were evaluated comparatively against each other based on scores of equity (high concentrations of low-income and minority individuals), connectivity to jobs and residents and productivity (maximizing ridership for the lowest cost).

Stakeholder meeting #3

Public Meeting

Public Survey #2

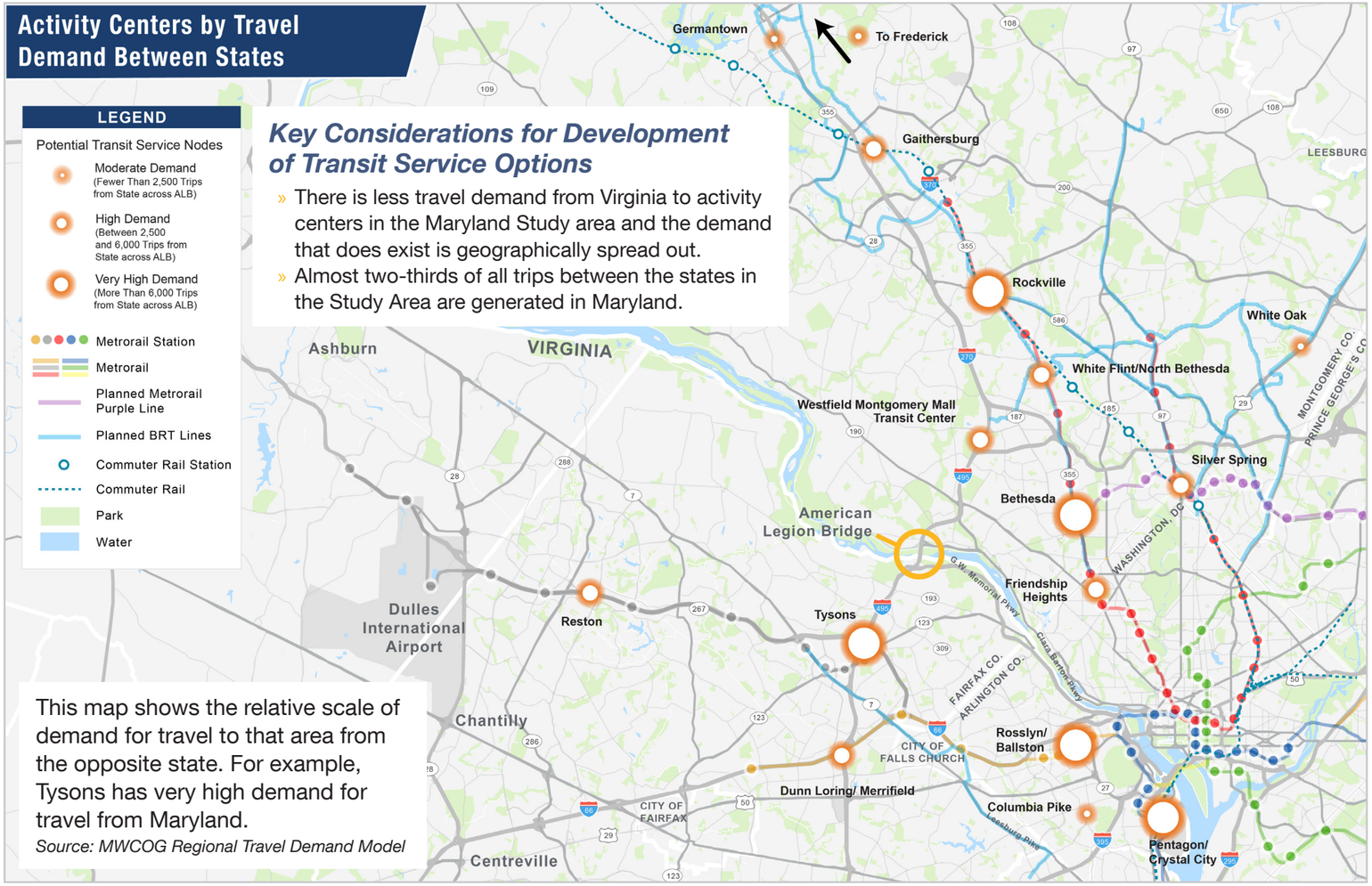
4. Modeling
The full group of eight routes was modeled to refine different combinations of routes, as well as how often and when each route should run.

Stakeholder meeting #4

5. Develop and Refine Investment Packages
Tiered groupings of routes were developed based on the number of markets served and how much service was provided (see following page for more information).

Public Meeting

Activity Centers by Travel Demand Between States



Key Considerations for Development of Transit Service Options

- There is less travel demand from Virginia to activity centers in the Maryland Study area and the demand that does exist is geographically spread out.
- Almost two-thirds of all trips between the states in the Study Area are generated in Maryland.

This map shows the relative scale of demand for travel to that area from the opposite state. For example, Tysons has very high demand for travel from Maryland.

Source: MWCOG Regional Travel Demand Model

Eight Transit Routes Retained

- Bethesda to Tysons
- Germantown to Tysons
- Silver Spring to Tysons
- Gaithersburg to Tysons
- Frederick to Tysons
- Bethesda to Reston
- Bethesda to Dunn Loring via Tysons
- Frederick to L'Enfant via Arlington

Public and Stakeholder Input Related to Multimodal Travel

Themes

- Support for analyzing multimodal solutions
- Importance of air quality and emissions goals
- Provide affordable and equitable choices
- Request for dedicated funding to expand transit
- Consider the effect of COVID-19 and potential increase in teleworking

Sources of Input

- Public comment on ongoing I-495 Virginia and Maryland projects
- Transit/TDM Public Survey #1
- Transit/TDM Public Survey #2
- Stakeholder coordination meetings

Potential Investment Packages

Investment Package Development Approach

Potential transit and TDM recommendations are grouped into three investment level packages: baseline, medium, and high. Each investment package is built around the level of transit service supported by complementary technology enhancements, CAPs, and parking facilities (described on the following page). Packages were developed to provide three varying levels of service in terms of frequency, markets served, and span (time of day).

- The baseline package includes two main route connections providing peak service, consistent with locations identified in previous planning efforts.
- The medium package includes additional routes, increased frequency, and the introduction of off-peak service.
- The high package includes additional route connections, further increased frequencies, and expands off-peak service.

Identification of complementary technology enhancements, CAPs, and parking needs within each investment package reflect consistency in terms of their implementation timeframe and their supportive role to the bus services.

Implementation Framework

The framework provides guidance for development of implementation timeframes in which complementary projects can be grouped together for delivery at the same time. The following considerations were taken into account when determining the timeframes of projects in each investment package:

- **Infrastructure Assumptions** — The anticipated status of the construction of the managed lanes network in Virginia and Maryland
- **Implementation Effort** — Length of time or amount of effort involved in implementing the service
- **Demand Served** — Whether the Study is serving an existing demand or one that is forecast to grow over time
- **Complementary Service** — Grouping of projects that supplement or enhance the use of new infrastructure or transit service

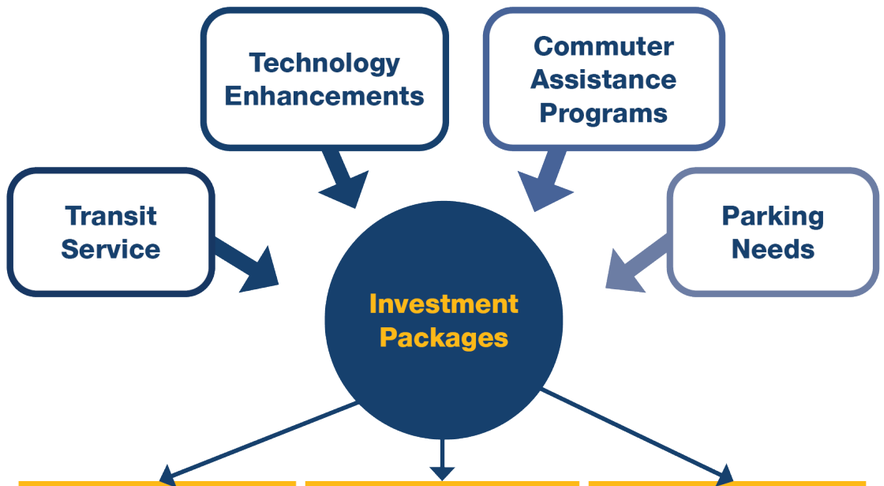
For the purpose of this Study, given the uncertainty in timing of potential managed lanes, timeframes have been assigned as follows:

- **Near-Term** — Prior to the opening of the managed lanes up to and over the Bridge in both Maryland and Virginia
- **Mid-Term** — In conjunction with the opening of the managed lanes up to and over the Bridge in both Maryland and Virginia
- **Long-Term** — Following opening of the managed lanes in Maryland and Virginia

Assumptions

- Potential operators for transit service has not been identified.
- Storage and maintenance facility locations, needs, and associated costs have not been identified.
- Parking needs are based on demand generated by transit service evaluated in this Study and growth in HOV travel on I-270 and I-495.
- Ridership and person-trips are based on 2045 MWCOG Model runs and represent daily riders (AM and PM peak periods plus off-peak) over the American Legion Bridge. Forecasts developed using the MWCOG Travel Demand Model are based on future regional cooperative land use forecasts and existing regional travel behaviors.
- Stop locations and routing within a general area were identified to show feasibility and should be refined closer to implementation.
- Although the various investment packages lend themselves to an incremental and cumulative implementation approach, it is important to note that each investment package can stand on its own as an overall bundle of Transit/TDM recommendations.

Developing Investment Packages



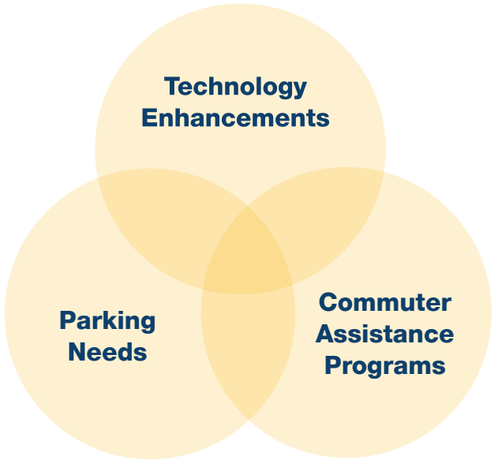
Additional Package Elements

Additional elements were assigned to packages and timeframes based on levels of transit service. Including commuter assistance programs, technology enhancements, and parking needs. They serve a complementary or supportive role to those transit services. Factors that describe the implementation effort of each of the supportive elements are defined in order to convey the amount of effort needed to implement those programs as proposed. Each of these elements are preliminary in nature and would require close coordination with entities throughout the region for more detailed planning and analysis. Performance over time should be monitored and adjusted.

Implementation Effort

The more factors identified for each transit/TDM enhancement, the more effort and complexity is assumed to be required to implement the projects proposed for each investment package. Implementation factors include the following:

- Multi-entity Coordination
- Multiple Locations
- Technology/Software Integration
- Major Capital Infrastructure



Parking Needs

The following parking assessments are included in each investment package for routes associated with their respective stops. Each assessment reflects a cost-effective approach for meeting the demand generated by the transit services and growth in HOV travel in each investment package.

- Demand can be served by existing parking capacity
- Potential expansion of existing parking facilities by negotiating new or by leveraging existing parking agreements for more spaces
- Potential capital expansion by constructing new surface or structural parking facilities

Technology

The following technology enhancements were included based on input from stakeholders as important for supporting transit service and carpool/vanpool travel across the Bridge.

Virginia and Maryland Commuter Parking Information System	Provides commuters with reliable expected parking space availability for parking lots serving rail, bus, and carpool/vanpool commuters, potentially leveraging Virginia's Regional Multi-Modal Mobility Program (RM3P).
Real-Time Toll and Transit Information	Work with private partners to incorporate real-time toll, congestion, and transit data into commonly used apps like Google Maps and Waze.
Real-Time Arrival Information	Work with transit agencies to make real-time arrival data available for public use. Once available, transit agencies can work with private partners to incorporate real-time transit arrival time information in commonly used apps such as Google Maps Transit and Transit App.
Real-Time Passenger Load Information	Work with private partners to incorporate real-time passenger load information for transit services in commonly used apps such as Google Maps Transit and Transit App using automated passenger counters (APCs).
Transit Signal Priority	Install transit signal priority and/or queue jumps at high-priority, bottleneck intersections on new transit routes to improve transit travel time reliability. This would need to be coordinated with local roadway and traffic signal operators. This Study does not propose any specific locations for transit signal priority.

Commuter Assistance Programs (CAPs)

The following list of potential CAPs was included based on input from stakeholders and assessment of potential return on investment. CAPs encourage people to use alternative modes of transportation besides single-occupancy vehicles(SOV), such as transit, carpool, and vanpool, among others. CAPs in the list below are a corridor-specific program that will supplement ongoing regional programs.

Vanpool Formation and Expansion Program	Financial incentives to start new vanpools and retain existing ones that travel over the Bridge.
Corridor-Specific Mobility Marketing Campaign	Public-facing media coverage (e.g., print, radio/TV, and digital) and advertisement via radio, news sites, and social media regarding transit service across the Bridge.
Targeted Residential Outreach	Target outreach to commuters in the Study area advertising and promoting the new transit routes and vanpool/carpool incentives as they become available.
Targeted Employer Outreach	Target employers located in and around key activity centers in the Study area with promoting the new transit routes and vanpool/carpool incentives as they are available.
Corridor-Specific HOV Incentive	Short-term financial benefit to try a new mode (e.g., car/vanpool or transit) that travels across the Bridge. This could be implementing using an existing or planned mobile platform.

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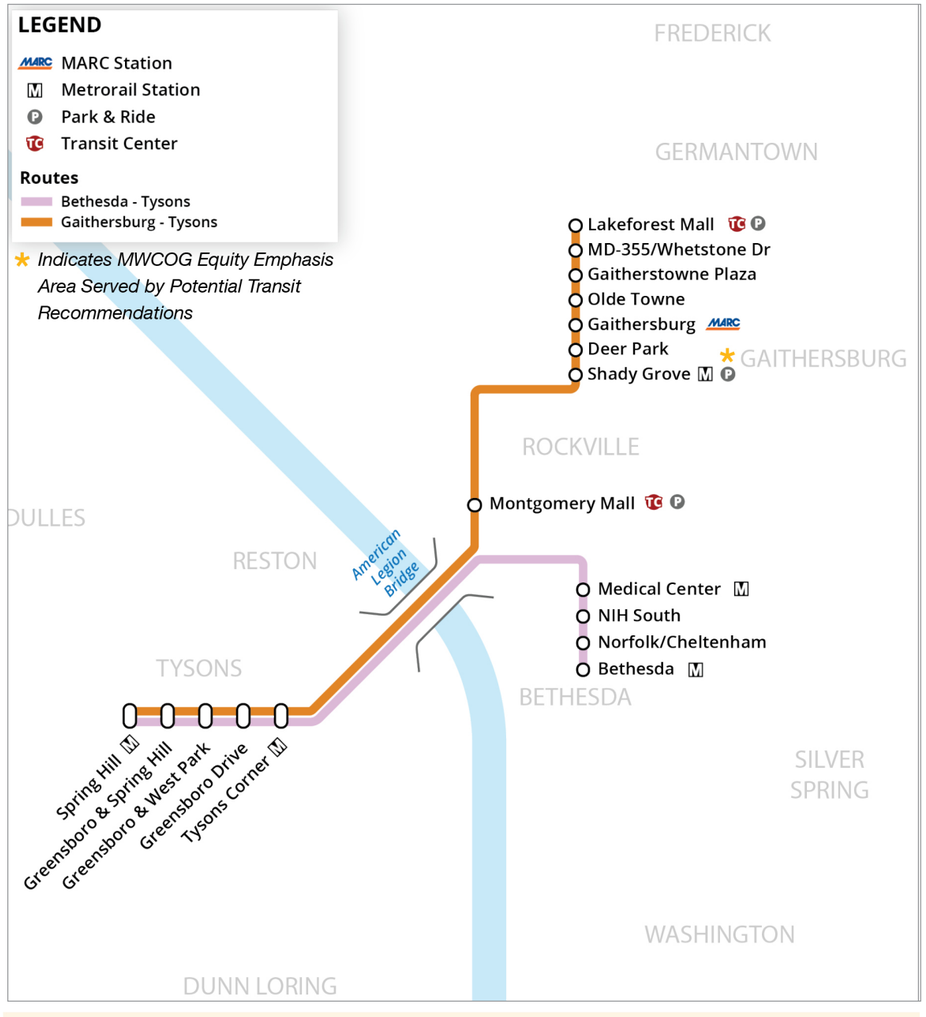
» **Alignment** - Start and end points of the route
» **Direction** - Indicates whether the service operates in both directions or just MD to VA in the AM and VA to MD in the PM
» **Peak Frequency** - How often the bus would come during peak period
» **Daily ALB Riders (2045)** - Number of people per day in 2045 forecast to cross the American Legion Bridge on the transit service

Baseline Package

Potential Transit Recommendations



Summary of Benefits

Total Forecasted Daily Riders (Over ALB)[1]: 1,000

Total Passenger Miles[2]: 17,000

1: *Number of people per day in 2045 forecast to cross the American Legion Bridge on the transit service (Forecasts developed using the MWCOG Travel Forecast Model are based on future regional cooperative land use forecast and existing regional travel behaviors)*

2: *Measure of total distance per day in 2045 traveled by passengers on the route (includes travel that does not pass over the American Legion Bridge)*

Summary of Potential Transit Recommendations

Alignment	Direction	Peak Frequency (min)	Daily ALB Riders (2045)	Time Frame
Bethesda - Tysons	Bi-Directional	30	400	Mid-Term
Gaithersburg - Tysons	Peak Direction Only	30	600	Mid-Term

» *Maintenance facility or expansion may be needed to advance potential recommendations and is dependent on operator.*
» *The Bethesda - Tysons Transit Route could be advanced as part of the Near-Term timeframe.*

Key Implementation Effort:
= Low
= Medium
= High

	Implementation Effort
Technology Enhancements	
Near-Term • VA and Maryland Commuter Parking Information	
Commuter Assistance Programs	

Near-Term
• Corridor-Specific Commuter Assistance Program
  • Targeted Residential Outreach
  • Targeted Employer Outreach
  • Vanpool Formation and Expansion Program
  • Corridor-Specific HOV Incentive Program
Continual
• Ongoing Regional and Statewide Programs	

Capital Parking Expansion Needs	
Mid-Term • Westfield Montgomery Mall	

Overview

» The baseline investment package focuses on low-cost traffic mitigation strategies with high rates of ROI that do not rely heavily on construction of the managed lanes for implementation.
» Transit service in the baseline package is consistent with markets that have been identified in previous studies.

Near-Term
Prior to the opening of the Managed Lanes up to and over the Bridge in both Maryland and Virginia

Mid-Term
In conjunction with the opening of the Managed Lanes up to and over the Bridge in both Maryland and Virginia

Long-Term
Following opening of the Managed Lanes

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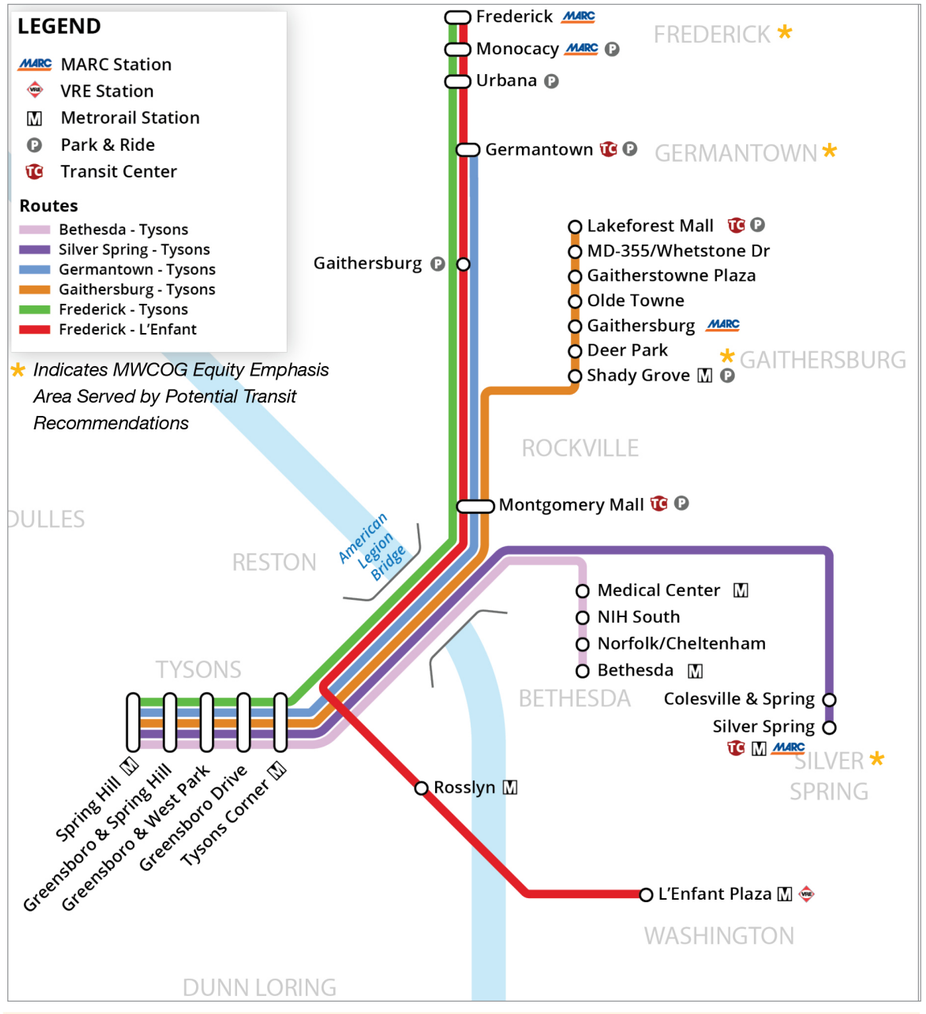
- **Alignment** - Start and end points of the route
- **Direction** - Indicates whether the service operates in both directions or just MD to VA in the AM and VA to MD in the PM
- **Peak Frequency** - How often the bus would come during peak period
- **Daily ALB Riders (2045)** - Number of people per day in 2045 forecast to cross the American Legion Bridge on the transit service

Medium Package

Potential Transit Recommendations



Summary of Benefits

Total Forecasted Daily Riders (Over ALB)[1]: 3,700
Peak: 3,500 Off-Peak: 200

Total Passenger Miles[2]: 101,000

1: Number of people per day in 2045 forecast to cross the American Legion Bridge on the transit service (Forecasts developed using the MWCOG Travel Forecast Model are based on future regional cooperative land use forecast and existing regional travel behaviors)

2: Measure of total distance per day in 2045 traveled by passengers on the route (includes travel that does not pass over the American Legion Bridge)

Summary of Potential Transit Recommendations

Alignment	Direction	Peak Frequency(min)	Off-Peak Service	Daily ALB Riders (2045)	Time Frame
Bethesda - Tysons	Bi-Directional	30	✓	600	Mid-Term
Silver Spring - Tysons	Peak Direction Only	30		600	Mid-Term
Germantown - Tysons	Peak Direction Only	30		600	Mid-Term
Gaithersburg - Tysons	Peak Direction Only	20		800	Mid-Term
Frederick - Tysons	Peak Direction Only	30		600	Long-Term
Frederick - L'Enfant via Arlington	Peak Direction Only	40		500	Long-Term

- *Maintenance facility or expansion may be needed to advance potential recommendations and is dependent on operator.*
- *The Bethesda - Tysons Transit Route could be advanced as part of the Near-Term timeframe.*

Key Implementation Effort:
🔧 = Low
🔧🔧 = Medium
🔧🔧🔧 = High

	Implementation Effort
Technology Enhancements	
Near-Term • VA and Maryland Commuter Parking Information	🔧🔧
Mid-Term • Maintain or Adjust Near-Term Program • Technology Enhancements to Existing Efforts (Levels Based on Proposed Service) • Real-Time Toll and Transit Information • Real-Time Passenger Load Information • Real-Time Transit Arrival Information • Transit-Signal Priority	🔧🔧🔧
Commuter Assistance Programs	
Near-Term • Corridor-Specific Commuter Assistance Program • Targeted Residential Outreach • Vanpool Formation and Expansion Program • Targeted Employer Outreach • Corridor-Specific HOV Incentive Program	🔧🔧
Mid-Term • Maintain or Adjust Near-Term Programs based on Performance • **New Addition to Program:** Corridor-Specific Mobility Marketing Campaign	🔧
Long-Term • Maintain or Adjust Mid-Term Program based on Performance **Continual** • Ongoing Regional and Statewide Programs	N/A
Capital Parking Expansion Needs	
Mid-Term • Westfield Montgomery Mall • Germantown	🔧🔧🔧
Long-Term • Urbana • Monocacy	🔧🔧🔧

Overview

- A key characteristic of the medium investment package is a significant increase in commuter bus services and supporting technologies that enhance the commuter experience.
- The medium package also introduces off-peak midday service for one high-ranking route.

Near-Term
Prior to the opening of the Managed Lanes up to and over the Bridge in both Maryland and Virginia

Mid-Term
In conjunction with the opening of the Managed Lanes up to and over the Bridge in both Maryland and Virginia

Long-Term
Following opening of the Managed Lanes

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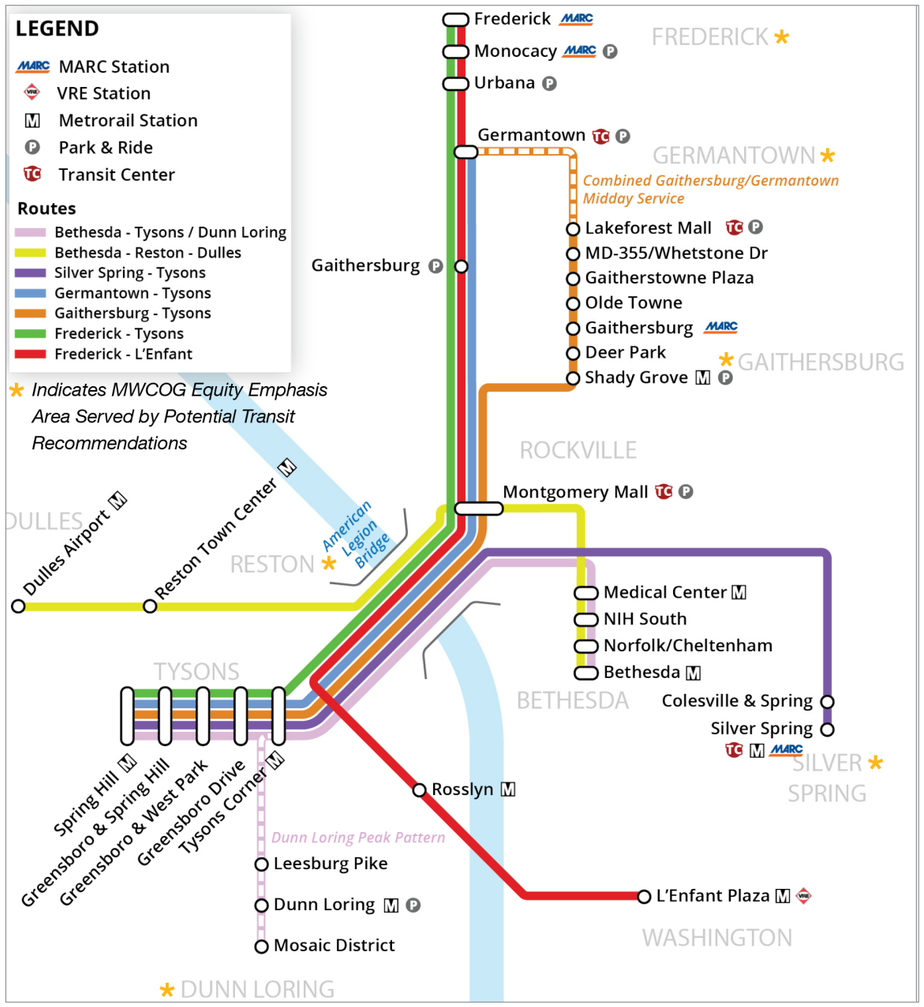
- **Alignment** - Start and end points of the route
- **Direction** - Indicates whether the service operates in both directions or just MD to VA in the AM and VA to MD in the PM
- **Peak Frequency** - How often the bus would come during peak period
- **Daily ALB Riders (2045)** - Number of people per day in 2045 forecast to cross the American Legion Bridge on the transit service

High Package

Potential Transit Recommendations



Summary of Benefits

Total Forecasted Daily Riders (Over ALB)[1]: 5,600
Peak: 4,500 Off-Peak: 1,100

Total Passenger Miles[2]: 152,000

1: Number of people per day in 2045 forecast to cross the American Legion Bridge on the transit service (Forecasts developed using the MWCOG Travel Forecast Model are based on future regional cooperative land use forecast and existing regional travel behaviors)

2: Measure of total distance per day in 2045 traveled by passengers on the route (includes travel that does not pass over the American Legion Bridge)

Summary of Potential Transit Recommendations

Alignment	Direction	Peak Frequency (min)	Off Peak Service	Daily ALB Riders (2045)	Time Frame
Bethesda - Tysons/Dunn Loring	Bi-Directional	12*	✓	800	Mid-Term
Bethesda - Reston/Dulles	Bi-Directional	30		300	Mid-Term
Silver Spring - Tysons	Peak Direction Only	20	✓	1000	Mid-Term
Germantown - Tysons	Peak Direction Only	20	✓	1000	Mid-Term
Gaithersburg - Tysons	Peak Direction Only	15	✓	700	Mid-Term
Frederick - Tysons	Peak Direction Only	20		900	Long-Term
Frederick - L'Enfant via Arlington	Peak Direction Only	30	✓	900	Long-Term

**Combined frequency; 2 buses per hour extend to Dunn Loring during the peak period*

- *Maintenance facility or expansion may be neededto advance potential recommendations and is dependent on operator.*
- *The Bethesda - Tysons Transit Route could be advanced as part of the Near-Term timeframe.*

Key Implementation Effort:
🔧 = Low
🔧🔧 = Medium
🔧🔧🔧 = High

	Implementation Effort
Technology Enhancements	
Near-Term • VA and Maryland Commuter Parking Information	🔧🔧
Mid-Term • Maintain or Adjust Near-Term Program • Technology Enhancements to Existing Efforts (Levels Based on Proposed Service) • Real-Time Toll and Transit Information • Real-Time Passenger Load Information • Real-Time Transit Arrival Information • Transit-Signal Priority	🔧🔧🔧
Commuter Assistance Programs	
Near-Term • Corridor-Specific Program • Targeted Residential Outreach • Vanpool Formation and Expansion Program • Targeted Employer Outreach • Corridor-Specific HOV Incentive Program	🔧🔧
Mid-Term • Maintain or Adjust Near-Term Programs based on Performance • **New Addition to Program:** Corridor-Specific Mobility Marketing Campaign	🔧
Long-Term • Maintain or Adjust Mid-Term Program based on Performance **Continual** • Ongoing Regional and Statewide Programs	N/A
Capital Parking Expansion Needs	
Mid-Term • Westfield Montgomery Mall • Germantown	🔧🔧🔧
Long-Term • Urbana • Monocacy	🔧🔧🔧

Overview

- The high investment package reflects the most robust level of service for the proposed commuter bus routes, with connections and service route extensions to all major destinations for users of the Bridge.
- Frequencies are consistent with those outlined in the Constrained Long-Range Transportation Plan (CLRP) for planned routes.
- Includes significant off-peak midday service for five of the seven commuter bus service options. The mid-day off peak service is added, mostly in the form of bi-directional service.

Near-Term
Prior to the opening of the Managed Lanes up to and over the Bridge in both Maryland and Virginia

Mid-Term
In conjunction with the opening of the Managed Lanes up to and over the Bridge in both Maryland and Virginia

Long-Term
Following opening of the Managed Lanes

Package Comparisons

Transit Service

Because transit service is the main component of the investment packages and the other improvements support and promote transit usage, it is important to recognize the effect that level of service (i.e. route frequency) has on transit ridership. The table shows the routes included in each investment package, the level of service at which the routes would operate, the resulting number of riders across the Bridge taking each route, and the estimated total number of daily riders and passenger miles across the Bridge associated with each investment package.

Alignment	Direction	Base Package			Medium Package			High Package		
		Peak Frequency (min)	Off-Peak Frequency (min)	Daily ALB Riders (2045)	Peak Frequency (min)	Off-Peak Frequency (min)	Daily ALB Riders (2045)	Peak Frequency (min)	Off-Peak Frequency (min)	Daily ALB Riders (2045)
Bethesda – Tysons*	Bi-Directional	30		400	20	60	600	12*	30	800
Bethesda - Reston/ Dulles	Bi-Directional							30		300
Silver Spring - Tysons	Peak Direction Only				30		600	20	60	1,000
Germantown - Tysons	Peak Direction Only				30		600	20	60	1,000
Gaithersburg - Tysons	Peak Direction Only	30		600	20		800	15	60	700
Frederick - Tysons	Peak Direction Only				30		600	20		900
Frederick - L'Enfant via Arlington	Peak Direction Only				40		500	30	60	900
Total Forecast Daily ALB Riders				**1,000**			**3,700**			**5,600**
Total Forecast Passenger Miles Traveled				**17,000**			**101,000**			**151,000**

**In high package, 2 buses per hour during peak extend to Dunn Loring. Frequency shown is a combined frequency for Bethesda-Tysons*

Note:

- *Ridership and person-trips based on 2045 MWCOG Model runs and represents daily riders (AM and PM peak periods plus off-peak) over the American Legion Bridge; Forecasts developed using the MWCOG Travel Forecast Model are based on future regional cooperative land use forecast and existing regional travel behaviors.*
- *Peak Periods assumed 3 hours in AM and 3 in PM; Off-peak - 8 hours*
- *Passenger Miles Traveled: Measure of total distance per day in 2045 traveled by passengers on the route (includes travel that does not pass over the American Legion Bridge)*

Base Package

The base investment package focuses on providing service on the two corridors identified in previous plans: Bethesda to Tysons and Gaithersburg to Tysons. These services would operate every 30 minutes during the peak period only. The Bethesda to Tysons service would run in both directions, while Gaithersburg to Tysons would operate to Tysons in the morning and from Tysons in the afternoon/ evening.

Medium Package

The medium-investment package focuses on introducing peak-period commuter service between the key transit markets identified in this Study's demand analysis. All but one route would connect Maryland to Tysons with a minimum headway of 30 minutes. The Bethesda to Tysons and Gaithersburg to Tysons options feature an increase in service frequency over the baseline-investment package, with the Bethesda to Tysons route including off-peak service. Frederick to L'Enfant service would provide a peak-period service to Arlington (Rosslyn) and L'Enfant Plaza, complementing existing MARC service, which has limited capacity to operate additional trips into Washington, DC from Frederick.

High Package

The high investment package envisions all-day transit service across the Bridge. For routes that operate only in one direction, off-peak service would be bi-directional. The Germantown and Gaithersburg to Tysons route would be combined during the off-peak period. The Bethesda to Tysons service would be complemented by an alternative service pattern that would operate to Dunn Loring via the Tysons Corner Metrorail station during the peak period. A new peak period service would operate between Bethesda and Dulles International Airport via the Westfield Montgomery Mall Transit Center and Reston Town Center.

Additional Package Benefits

Transit Connections

In addition to providing efficient service to key activity centers, effective transit service should also connect with other transit modes to increase regional connectivity and provide first and last mile connections. Connectivity with other transit service will increase ridership and has the potential to decrease the amount of driving and parking needed to support the routes. Below is a comparison of the connectivity of each investment package with other existing and planned transit service.

Metro

Tysons ●●○
Reston ○
Dulles ○
Dunn Loring ○
Bethesda ●●○
Silver Spring ●○
Shady Grove ●●○
Rosslyn ●○

MARC

Silver Spring ●○
Gaithersburg ●●○
Monocacy ●○
Frederick ●○

Purple Line

Silver Spring ●○
Bethesda ●●○

County BRT

Tysons ●●○
Bethesda ●●○
Silver Spring ●○
Westfield Montgomery Mall Transit Center ●●○
Gaithersburg ●●○
Germantown ●○

Local Bus

All stops ●●○

Notes:
Italicized stops are serviced by planned transit connections

- ● Denotes stops on routes included in the baseline package
- ● Denotes stops on routes included in the medium package
- ○ Denotes stops on routes included in the high package

Greenhouse Gas Emissions Reduction

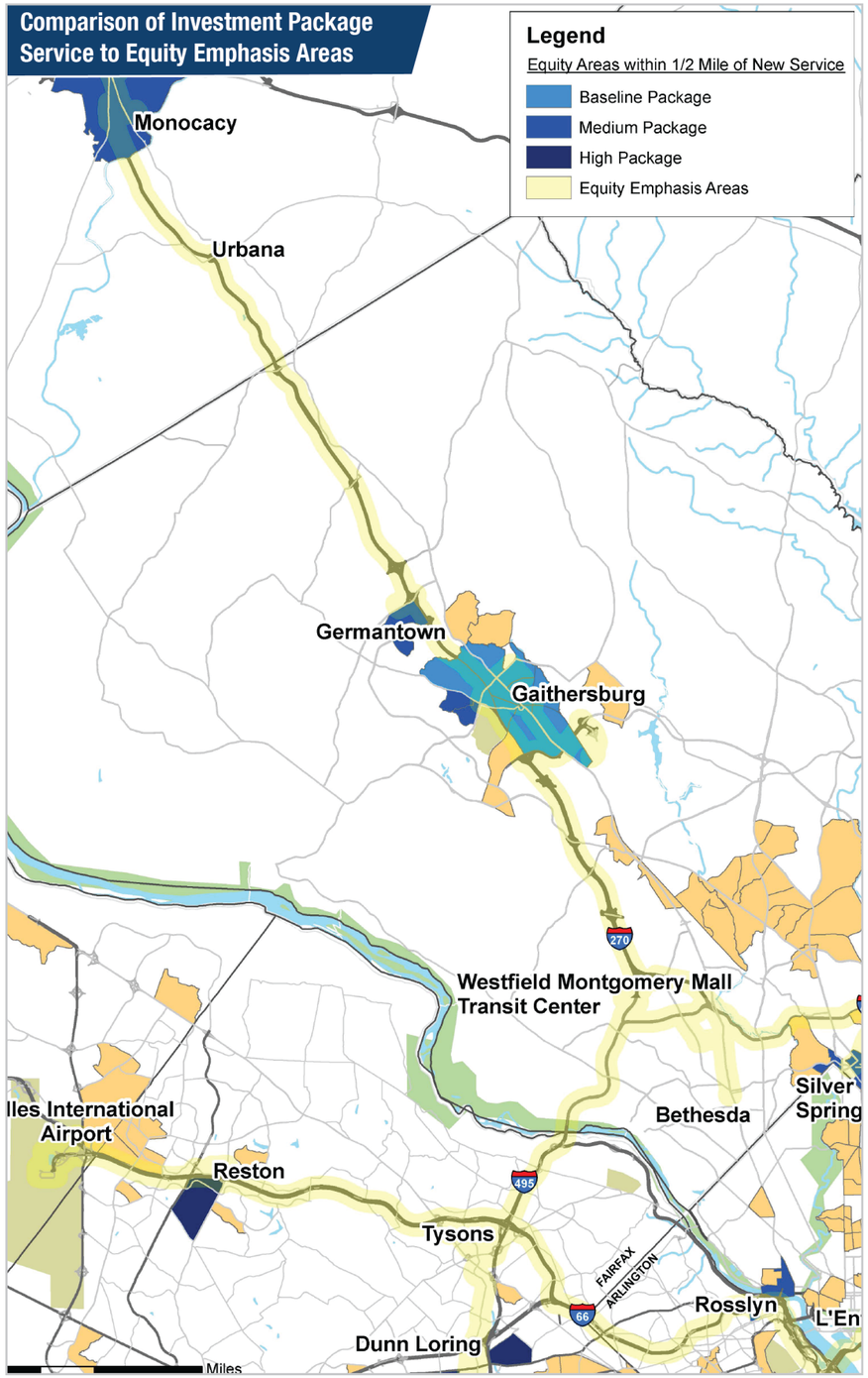
The transit service in the high package has the potential to reduce greenhouse gas (GHG) emissions by up to 61.4 metric tons of daily CO_2 emissions. That's the equivalent to the total daily use of approximately 4,900 vehicles.

	Maximum Potential Daily GHG Reduction (2045 Metric Tons of CO_2 Emissions)	Equivalent Vehicles (Total Daily Use)
Baseline	6.9	540
Medium	40.8	3200
High	61.4	4900

Notes/Assumptions
- *Based on total forecast Passenger Miles Traveled (total distance per day in 2045 traveled by passengers including travel that does not pass over the Bridge)*
- *Maximum potential assumes that all riders of the transit service switch from using Single-Occupant-Vehicle (SOV)*
- *A typical passenger vehicle travels 11,500 miles per year (including non-commuting travel) and emits 4.6 metric tons of CO_2 annually. 95-99% of GHG emissions from vehicles are CO_2* [1]

Serving Equity Emphasis Areas

Transit should also provide service to those who need it most, such as low-income populations who rely on transit as their main mode of transportation. Equity Emphasis Areas are small geographic areas identified by MWCOG that have significant concentrations of low-income, minority populations, or both.[2] The map shows the MWCOG Equity Emphasis Areas and highlights the areas that are within ½ mile of each investment package's new transit routes. It's worth noting that the medium package includes the baseline package's Equity Emphasis Areas, and the high package includes the medium and baseline package Equity Emphasis Areas.



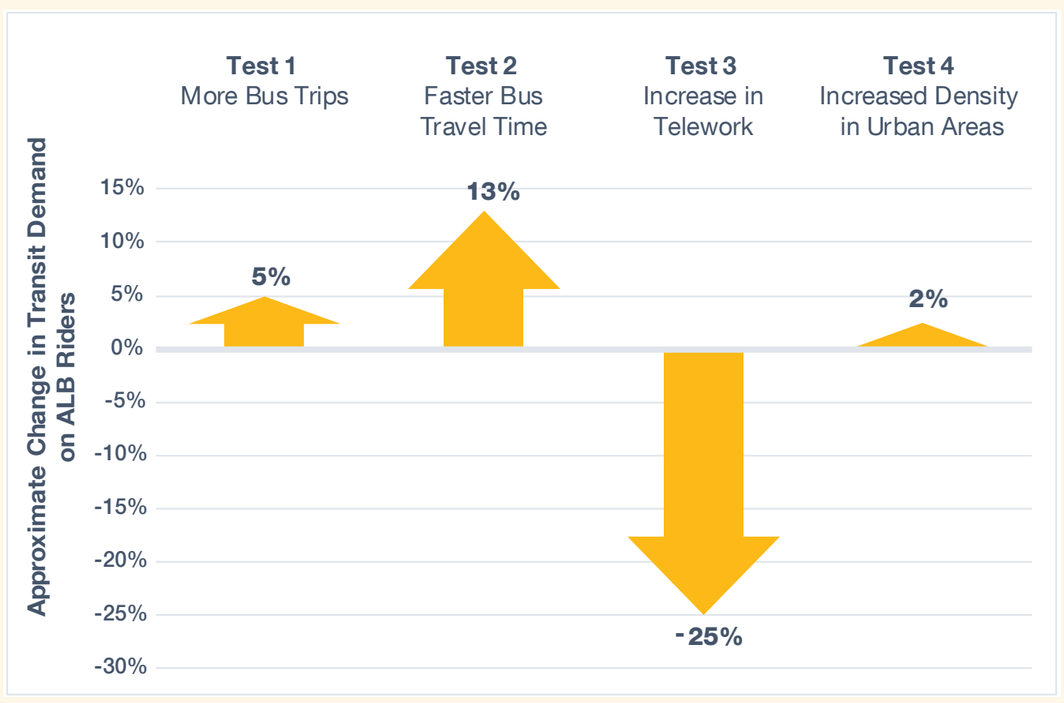
[1] (US EPA, 2018) [2] (Metropolitan Washington Council of Governments (MWCOG), 2020)

Modeling Potential Effects of Changes in Assumptions

Given the impact COVID-19 has had on commuting behavior and teleworking, future transportation trends are likely to be different than they were in early 2020. Other factors, such as concentrated population and employment growth are variables that can change the future transportation needs of the region. It is also important to note that the high-level assumptions for transit service in this Study are approximate and can vary from real-life behavior. Recognizing that certain elements in our future are unknown, the Study team ran modeling tests to provide a gauge of how the demand for transit service might change under different scenarios.

- What would happen if 10% more bus trips on the routes proposed were offered?
- What if the travel time for proposed buses was 10% faster?
- What if 20% more people teleworked in the future?
- What if urban areas like Bethesda, Tysons, Gaithersburg and Silver Spring grew at a rate 20% higher than currently projected?

The graph below shows an approximation of the potential change in demand for transit service over the Bridge for each of the four scenarios tested.



Next Steps

This Study identified a series of potential investment packages of recommendations that help meet the identified Study needs of providing new mobility choices to service travel between Virginia and Maryland. Each investment package provides a combination of transit service elements, technology enhancements, Commuter Assistance Programs, and parking needs. As the managed lanes studies in both Virginia and Maryland progress, these investment packages offer options to move more people over the Bridge in fewer vehicles. As these potential transit services move closer to implementation, the items below should be considered as next steps.

Additionally, the levels of investment and timing of the packages could be further refined pending more detailed information on funding availability and schedules for implementation of the managed/express lanes projects.

Transit Service

- Identify the potential to advance some transit service to near term before or during construction of managed lanes, potentially using a bus-on-shoulder approach based on the sequence and duration of construction of the managed/express lanes projects.
- Determine potential operator(s) and associated maintenance facility considerations.
- Conduct more detailed analysis of specific transit operating assumptions such as frequency, stops, and run times.
- Identify available bus bay capacity closer to the time of implementation based on the anticipated service levels at those locations.
- Work with local entities and transit providers to facilitate first-last mile connections and determine local service modifications.

Commuter Assistance Programs and Technology Enhancements

- Coordinate between states, localities, transit operators, and regional entities on implementation of programs.
- Monitor the Virginia RM3P Program for potential longer-term expansion to the I-495 corridor.
- Coordinate with private managed lanes operators about program promotion and real-time information regarding tolls.

Parking and Facility Needs

- Integrate the parking needs identified from the potential service in this Study with regional parking demand and other planned improvements.
- Coordinate with transit providers and property owners at locations such as Metrorail and MARC stations to confirm the use of available parking for bus service.