1 PURPOSE AND NEED

The Federal Highway Administration (FHWA), as the Lead Federal Agency, and the Maryland Department of Transportation State Highway Administration (MDOT SHA), as the Local Project Sponsor, have prepared a Draft Environmental Impact Statement (DEIS) under the National Environmental Policy Act (NEPA) for the I-495 & I-270 Managed Lanes Study (Study). The I-495 & I-270 Managed Lanes Study is the first element of the broader I-495 & I-270 Public-Private Partnership (P3) Program.

This chapter presents a summary of the Purpose and Need for the Study, which was developed by FHWA and MDOT SHA in coordination with Cooperating and Participating agencies and the public during the NEPA scoping process. The full Purpose and Need Statement that was concurred upon by the Cooperating Agencies[1] in November 2018 is included in **Appendix A**.

1.1 Overview of Study Corridors

This DEIS evaluates the potential environmental impacts of alternatives that address roadway congestion within the specific Study scope of I-495 from south of the George Washington Memorial Parkway in Fairfax County, Virginia, including improvements to the American Legion Bridge over the Potomac River, to west of MD 5 and along I-270 from I-495 to north of I-370, including the east and west I-270 spurs (**Figure 1-1**). The Study area extends between 0.1 and 1.5 miles along roads that cross I-495 and I-270 and intersect at interchange locations to capture potential modifications needed to tie in with the alternative improvements.

I-495 and I-270 in Maryland are the two most heavily traveled freeways in the National Capital Region, each with an Average Annual Daily Traffic (AADT) volume of up to 260,000 vehicles per day in 2018 (MDOT SHA, 2019). I-495 is the only circumferential route in the region that provides interregional connections to many radial routes in the National Capital Region, such as I-270, US 29 (Colesville Road), I-95, US 50, and MD 295/Baltimore-Washington Parkway (**Figure 1-1**). In addition to heavy commuter traffic demand, I-495 is merged with I-95 in Maryland for 25 miles around the east side of Washington, DC providing connectivity along the East Coast. I-270 is the only freeway link between I-495 and the fast-growing northwest suburbs of Frederick County, Maryland. I-270 is also the predominant route for freight and long-distance travel between the National Capital Region and points west (US Department of Transportation et al., 2009).

The three logical termini for the I-495 and I-270 Managed Lanes Study which reflect the area of influence for traffic and environmental analysis are described as follows.

Western Terminus: on I-495, 0.4 miles south of George Washington Memorial Parkway interchange; allows outer loop mainline improvements that are carried to the George Washington Memorial Parkway to be merged and transitioned into the existing mainline lanes without causing congestion due to lane drops and merges and would include a direct merge into the Virginia Express Lanes. The George Washington Memorial Parkway serves east-west travel along the Potomac River toward Arlington, VA and Washington, DC. The AADT on I-495 at the George Washington Memorial Parkway is over 250,000 vehicles. On I-495 at the George Washington Memorial Parkway, the existing AADT north of the Parkway

[1] NCPC concurred on the Purpose and Need only; M-NCPPC did not concur on Purpose and Need.

is 12 percent less than south of the Parkway. This 12 percent drop in traffic south of George Washington Memorial Parkway is also projected in 2040, indicating that the Parkway is a major traffic generation point.

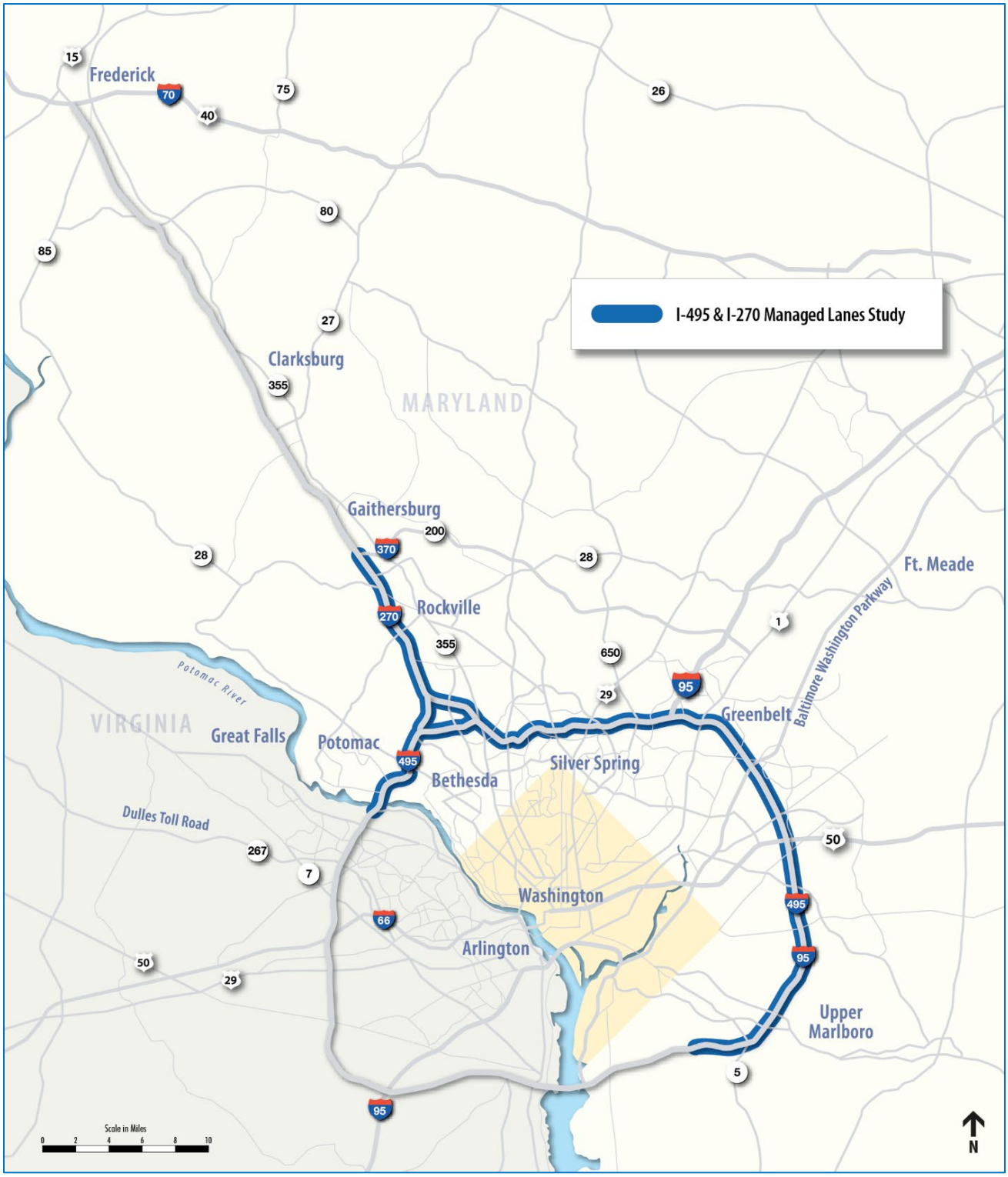
Southern Terminus: on I-495, 1.3 miles west of MD 5; allows inner loop mainline improvements that are carried to MD 5 to be merged into the existing mainline lanes without causing congestion due to lane drops, weaving, and merging. MD 5 (Branch Avenue) is a major traffic generator that carries approximately 150,000 vehicles per day under existing conditions (149,090 AADT in 2016). MD 5 is a regional access-controlled roadway that takes traffic south and east to US 301 and Charles County. On the I-495 inner loop, existing AADT is approximately 12 percent greater north of MD 5 than south of MD 5, indicating that a significant portion of I-495 inner loop traffic goes to MD 5. In 2040, the projected traffic volume (AADT) north of MD 5 would be approximately 15 percent greater than the volume south of MD 5. Similarly, existing AADT is approximately five percent greater on the I-495 outer loop north of MD 5 than the volume south of MD 5. In 2040, the projected I-495 outer loop traffic volume (AADT) north of MD 5 is approximately 11 percent greater than the volume south of MD 5.

Locating the logical terminus approximately 1.3 miles west of the I-495/MD 5 interchange allows any inner loop mainline improvements that are carried to MD 5 to be merged into the existing mainline lanes without causing congestion due to lane drops, weaving, and merging. For interstate operations, ending the improvements west of MD 5 will provide a longer transition area for inner loop traffic to weave between new mainline lanes and the existing Woodrow Wilson Bridge express-local system that starts between MD 414 and MD 210. Terminating new mainline lanes too close to the express-local system could result in concentrated weaving movements which could degrade the mainline traffic operations.

Northern Terminus: on I-270, 0.6 miles north of I-370; allows northbound mainline improvements that are carried to I-370 to be merged and transitioned into the existing general purpose lanes and the high-occupancy vehicle (HOV) lane safely, minimizing congestion due to lane drops and merges. The HOV lane from 0.6 miles north of I-370, will continue to its current terminus at MD 121 (Clarksburg Road), 8 miles north of I-370. I-370 links MD 200 (the Intercounty Connector), a major east-west tolled highway, with I-270. The roadway is a major traffic generator that carries over 100,000 vehicles per day under existing conditions (102,700 AADT in 2016). In the year 2040, traffic volumes on I-370 are projected to increase to approximately 120,000 vehicles per day. The average annual daily traffic volume on I-270 north of I-370 and MD 117 is approximately 10 percent less than the volume south of I-370 in existing conditions, indicating that a significant portion of traffic on I-270 comes from and goes to I-370. In the year 2040, the projected traffic volume on I-270 north of I-370 and MD 117 is approximately 16 percent less than the volume on I-270 south of I-370. Locating the logical terminus approximately 0.6 miles north of I-270/I-370 interchange allows any northbound mainline improvements that are carried to I-370 to be merged and transitioned into the existing general-purpose lanes and the high occupancy vehicle (HOV) lane safely, minimizing congestion due to lane drops and merges.

The traffic modeling and analysis has encompassed the next interchange beyond these three limits as the area of traffic influence. Furthermore, the logical termini for the area of environmental review and analysis area have been extended beyond these intersecting roadways to account for the necessary distance for the mainline improvements to tie into the existing roadway operations.

Figure 1-1: I-495 & I-270 Managed Lanes Study Corridors



1.2 Study Purpose and Need

The Study Purpose and Need were developed through a comprehensive process that included the examination of past studies, a review of existing regional plans, and an analysis of the environmental and socioeconomic conditions of the region. A summary of the Purpose and Need Statement is included in this DEIS chapter. This DEIS reflects the latest data, however, additional information may be found in the full Purpose and Need Statement (as concurred upon in November 2018) in **Appendix A**.

The Purpose of the Study is to develop a travel demand management solution(s) that addresses congestion, improves trip reliability on I-495 and I-270 within the study limits and enhances existing and planned multimodal mobility and connectivity.

The needs for the Study are:

- Accommodate Existing Traffic and Long-Term Traffic Growth
- Enhance Trip Reliability
- Provide Additional Roadway Travel Choices
- Improve Movement of Goods and Services
- Accommodate Homeland Security.

1.3 Accommodate Existing Traffic and Long-Term Traffic Growth

The state of Maryland experiences the second longest commuting times in the nation, according to 2015 US Census American Community Survey data. The National Capital Region is the most congested region in the nation based on annual delay and congestion per auto commuter. Specifically, I-495 and I-270 in Maryland each had an AADT volume up to 260,000 vehicles per day in 2018 (MDOT SHA, 2019).

1.3.1 Population and Employment Growth

I-495 connects key employment centers within the study area, many of which are undergoing redevelopment as multi-use activity centers with mixed land uses, including residential and retail activity. Bethesda, Rock Spring Technology Park, Silver Spring, Wheaton, College Park, Greenbelt, New Carrollton, Largo, and Suitland are all points of origin and destinations for large numbers of travelers. This creates travel demand during a broad range of time during the day and throughout the week as demonstrated by the fairly even traffic directional splits during the peak periods.

The I-270 corridor provides an essential connection between the National Capital Region, central and western Maryland, and longer-distance trips to the Midwestern US, through use of I-70 and I-68. It is an important corridor for both local and long-distance trips. The area up to I-370 includes residential, retail/commercial, and growing mixed-use development including Downtown Crown in Gaithersburg. Major government and corporate employment centers such as National Institute of Standards and Technology (NIST) and pharmaceutical corporations are spread throughout Montgomery County generating travel in both directions of I-270 during peak travel periods. However, there is a clear directional split in traffic on I-270 during the morning and afternoon/evening weekday commutes. I-270 is the primary route from the population centers around the National Capital Region to many recreational and tourism points of interest to the northwest including Monocacy National Battlefield, C&O Canal National Historical Park, Harpers Ferry National Historical Park, and Antietam National Battlefield.

Traffic growth along I-495 and I-270 is related in part to increased regional population. A growing population results in the need for additional mobility to intended destinations such as work, school, sites of commerce, and recreational/tourism points of interest. The population in Montgomery and Prince George's Counties have increased approximately 14.6 and 20.1 percent, respectively, between 2000 and 2020 (**Table 1-1**). The Metropolitan Washington Council of Governments (MWCOG) estimates that between 2020 and 2045, the population in Montgomery County and Prince George's County will increase approximately 16.3 percent and 7.9 percent, respectively (**Table 1-1**). According to MWCOG 2000 and 2020 data, employment in Montgomery and Prince George's Counties has increased between 14.5 percent and 3.3 percent, respectively (**Table 1-2**). The MWCOG estimates that between 2020 and 2045, employment in Montgomery County and Prince George's County will increase approximately 24.9 percent and 15.2 percent, respectively (**Table 1-2**).

Table 1-1: Regional Population Growth

Geography	2000	2020	% Increase Since 2000	2045 Forecast	Forecasted % Increase 2020 to 2045
Montgomery County	875,672	1,052,000	20.1%	1,223,300	16.3%
Prince George's County	805,723	923,100	14.6%	995,900	7.9%
Inner Washington, DC Suburbs[1]	390,386	529,400	35.6%	681,500	28.7%
Outer Washington, DC Suburbs[2]	891,273	1,093,000	22.6%	1,204,700	10.2%
MWCOG Planning Area Counties Total	4,385,759	5,690,000	29.7%	6,925,700	21.7%

Sources: MWCOG (2006; 2018)

[1] As defined by MWCOG and includes Calvert, Charles, and Frederick Counties.

[2] As defined by MWCOG and includes Anne Arundel, Carroll, and Howard Counties.

Table 1-2: Regional Employment Growth

Geography	2000	2020	% Increase Since 2000	2045 Forecast	Forecasted % Increase 2020 to 2045
Montgomery County	474,602	543,500	14.5%	678,800	24.9%
Prince George's County	337,976	349,000	3.3%	402,100	15.2%
Inner Washington, DC Suburbs[1]	161,003	201,100	24.9%	251,300	25.0%
Outer Washington, DC Suburbs[2]	525,294	649,200	23.6%	789,700	21.6%
MWCOG Planning Area Counties Total	2,791,859	3,360,600	20.4%	4,273,800	27.2%

Sources: MWCOG (2006; 2018)

[1] Includes Calvert, Charles, and Frederick Counties.

[2] Includes Anne Arundel, Carrol, and Howard Counties.

1.3.2 Traffic Growth

The *2018 Maryland State Highway Mobility Report* (MDOT SHA, 2018)[2] documents substantial traffic growth in the National Capital Region as a result of increasing population and employment levels. The employment and population growth is occurring not only in Washington, DC, but also in the near and far suburbs of Washington, DC, creating demand for suburb-to-suburb travel in the region, as well as suburb to DC travel. Nearly 260,000 vehicles commute daily from Maryland into Washington, DC and annual travel increased by 195 million vehicle miles traveled (VMT) from 2016 to 2017 in both Montgomery and Prince George's Counties, the most of any Maryland counties (MDOT SHA, 2018). Both of these statistics show the large movement of people into and around the National Capital Region at peak periods and the movement of goods throughout the day. All of this movement is focused around the major interstates. In addition, the top three highest volume roadway sections in Maryland based on an average daily traffic (ADT) are contained within the study limits. These locations include I-270 from the I-270 Split to MD 117, I-495 from the I-270 East Spur to I-95, and I-495 from the Virginia State Line to the I-270 West Spur. Refer to **Chapter 3, Table 3-1** for existing ADTs in the study corridors.

The high demand results from commuter, commercial, and recreational use of the study corridors and has created congestion along the roadways. The congestion occurs during peak travel periods when demand exceeds roadway capacity. Along I-495, these peak travel periods occur at various times throughout the day, not just during the typical AM and PM peak periods, for as long as 10 hours per day. This type of recurring congestion makes roadways in the study corridors susceptible to exponential increases in delay, as the systems have a fixed capacity base (Cambridge Systematics, Inc., 2005). This exponential increase in delay occurs after a traffic queue has formed and new vehicles arrive, thereby increasing the delay for those vehicles arriving behind them (Cambridge Systematics, Inc., 2005).

Additionally, as the congestion increases, the speeds decrease and the roadways in the study corridors become more susceptible to traffic incidents, such as vehicle crashes which cause non-recurring

[2] The Purpose and Need Statement in Appendix A of this DEIS was finalized in November 2018 based on the 2016 Mobility Report. The latest numbers from the 2018 Mobility Report have been included in this DEIS chapter.

congestion. Crashes are unpredictable and can result from decreased vehicle spacing (rear-end collisions) and weaving and merging maneuvers (sideswipes) to change lanes. Heavily trafficked areas and construction zones are especially prone to these types of incidents (National Capital Region Transportation Planning Board, 2016d). After a crash occurs, it produces stop-and-go traffic movements and can result in lane closures on these capacity-limited systems. These non-recurring delays make the highway systems unreliable, thus negatively affecting travel times and speeds. (This diminished reliability as a result of traffic growth is interrelated to the another need element, as described in **Section 1.4**.)

Long-term traffic management options are needed to address the existing and future recurring congestion along the study corridors. In the National Capital Region, as well as across the country, the addition of general purpose roadway capacity alone cannot keep up with the growing demand for mobility due to the expanding populations and growth in and around the cities. Options to address the growing traffic demand and congestion in the region have been the subject of many prior studies; refer to **Appendix A, Section 2.2.1**. While some of those strategies are being implemented, for example I-270 Innovative Congestion Management (ICM) Contract and the Purple Line, severe congestion on I-495 and I-270 adversely affects the regional and local roadway network, especially in and around the interchanges and arterial roads in the study area. The congestion on these corridors also has negative effects on access to and usage of other transportation modes. Besides enhanced performance on I-495 and I-270 themselves, improvements to provide congestion relief on these facilities will also enhance existing and proposed multimodal transportation services by improving connectivity and mobility through enhancing trip reliability and providing additional travel choices for efficient travel during times of extensive congestion. Improved direct and indirect connections to park and ride lots, Metrorail, bus and other transit facilities are anticipated to occur as a result of addressing congestion on these regional roadways, thus providing a system of systems approach to addressing overall transportation needs in the National Capital Region.

Traffic management strategies are one option in the transportation "tool-kit" that have been identified to address the growing congestion. Managed lanes would maintain traffic operations at a relatively free-flow condition with little congestion because the number of vehicles entering the lanes is controlled. Management strategies were evaluated in several prior studies for these corridors: Capital Beltway Study, I-270 Multi-modal Corridor Study, and the West Side Mobility Study. The management strategies previously evaluated in these prior studies include HOV, high-occupancy toll (HOT), or express toll lanes (ETLs).

1.4 Enhance Trip Reliability

Congestion on I-495 and I-270 results in unpredictable travel times. Travelers and freight carriers place a high value on reaching their destinations in a timely and safe manner, and in recent years, the study corridors have become so unreliable that uncertain travel times are experienced daily. More dependable travel times are needed to ensure trip reliability.

MDOT SHA uses the Travel Time Index[3] (TTI) as one of the primary measures of congestion on freeways/expressways. The 2018 Mobility Report identifies the top 15 congested segments during the AM peak hour and the PM peak hour in Maryland based on TTI data from the year 2017. Five of the top 15 most congested segments in Maryland during the AM peak are located within the study corridors on I-495 , as shown in **Table 1-3**. Nine of the most congested segments in Maryland during the PM peak are located within the study limits, as shown in **Table 1-4**. In 2040, travel times along the study corridors are projected to increase and users would likely have to increase their planned travel time to reach their intended destinations. In addition, increased amounts of congestion will likely decrease vehicle spacing along the roadways, thereby increasing the potential for congestion-related crashes (rear-end and sideswipe collisions). When these occur, traffic incidents and non-recurring congestion will further degrade the performance and reliability of I-495 and I-270, potentially causing delay for over 300,000 commuters each weekday by 2040 and increasing travel costs.

Table 1-3: 2017 and Projected 2040 No Build TTI for Most Congested Segments in AM Peak

Road	Location	Direction (Loop)	2017 TTI (MD Rank)	Projected 2040 TTI	Forecasted % Increase
I-495	MD 650 to MD 193	Outer	5.1 (1)	6.2	21%
I-495	at MD 650	Outer	4.6 (2)	5.3	16%
I-495	MD 193 to US 29	Outer	4.1 (3)	4.7	15%
I-495	I-95 to Prince George's County Line	Outer	3.6 (5)	5.9	63%
I-495	US 29 to MD 97	Outer	2.9 (9)	3.4	16%

Source: MDOT SHA (2018)
Note: MDOT SHA defines the various levels of congestion in four categories[4] based on TTI.

Table 1-4: 2017 and Projected 2040 No Build TTI for Most Congested Segments in PM Peak

Road	Location	Direction (Loop)	2017 TTI (MD Rank)	Projected 2040 TTI	Forecasted % Increase
I-495	at Cabin John Pkwy	Inner	4.5 (1)	6.5	45%
I-495	Clara Barton Pkwy to Cabin John Pkwy	Inner	3.8 (6)	5.9	55%
I-270	I-270 Split to Democracy Blvd	South	3.5 (7)	3.5	0%
I-495	MD 355 to MD 185	Inner	3.4 (9)	4.9	44%
I-495	at MD 185	Inner	3.4 (10)	4.4	29%
I-495	at MD 355	Inner	3.3 (11)	6.8	106%
I-495	MD 190 to I-270 West Spur	Inner	3.3 (12)	4.5	36%
I-495	at MD 190	Outer	3.2 (14)	3.4	6%
I-495	MD 190 to Clara Barton Pkwy	Outer	3.1 (15)	3.2	5%

Source: MDOT SHA (2018)
Note: MDOT SHA defines the various levels of congestion in four categories[4] based on TTI.

Overall, this TTI data shows that users in the study corridors need an option for a reliable trip when the general purpose lanes are congested due to recurring or non-recurring congestion (such as incidents,

[3] The TTI compares the 50th percentile travel time of a trip on a segment of freeway/expressway for a particular hour to the travel time of a trip during off peak (free-flow or uncongested) conditions. The higher the TTI, for a given hour of the day, the longer the travel times (MDOT SHA, 2018). Free Free-flow conditions equate to TTI 1.0, and a TTI of 2.0 indicates a trip takes twice as long as free free-flow conditions, and greater than 2.0 indicated severe congestion.
[4] These four categories are: Uncongested (TTI < 1.15); Moderate Congestion (1.15 < TTI < 1.3); Heavy Congestion (1.3 < TTI < 2.0); or Severe Congestion (TTI greater than 2.0).

weather, and disabled vehicles). Managed lanes are an option to provide users with a more reliable travel time for their trip. Managed lanes are designed to operate at an acceptable level of service even when the adjacent general purpose lanes are congested. Because they are managed to control the number of vehicles using the lane to keep them flowing, managed lanes provide users with a more reliable option to reach their destination(s).

1.5 Provide Additional Roadway Travel Choices

Travelers on I-495 and I-270 do not have free-flowing travel options in the study corridors during peak periods or during the high incidents of vehicle breakdowns or accidents which exacerbate congestion and delays. Other than on I-270 where there are some HOV lanes, existing low-occupancy vehicle, buses, carpools, and vanpools, and trucks are limited to general purpose lanes along these roadways. Users needing to travel during peak periods, which experience recurring delays, utilize a variety of methods seeking a less congested option. Users attempt to bypass high volume ramps and locations by using arterial streets for all or a portion of their travel. Other users adjust their travel schedule to avoid those timeframes with typical delays. In addition, other than choosing alternate non-freeway routes (local and arterial roadways), no options exist to avoid non-recurring delays, such as during crashes, which close travel lanes or substantially slow travel. Additional roadway management options are needed to improve travel choice for time-sensitive trips, provide opportunities to bypass delays, and manage demand, while improving reliability and maintaining the existing number of general purpose lanes in the study corridors (**Appendix A, Section 3.6**).

Managed lanes are an option to provide drivers with a choice pay for a less congested trip or to carpool because they are managed to control the number of vehicles using the lanes. Drivers adjust their travel behavior in order to take advantage of the management tool for those managed lanes if their particular trip purpose warrants a relatively free-flow condition. The management strategies could include HOV, HOT, or ETLs. Managed lanes can also encourage and support reliable, more efficient transit service such as express and commuter bus routes. Optimizing free-flow conditions has the potential to increase overall mobility by making transit usage on those lanes faster and more effective. Accommodating transit usage on the managed lanes, coupled with enhancing connectivity through reduced congestion on the study corridors, presents the opportunity to incorporate multimodal solutions to the identified transportation needs.

1.6 Accommodate Homeland Security[5]

The National Capital Region is the nation's main hub of government, military, and other facilities related to homeland security, such as US Customs and Border Patrol, Federal Emergency Management Agency, and Transportation Security Administration, refer to **Table 3-8 in Appendix A** for additional details. These agencies and facilities rely on quick, unobstructed roadway access during a homeland security event. During a homeland security event, the government facilities along the I-495 and I-270 study corridors, as well as beyond the limits of the study corridors into the Baltimore Metropolitan Area and Northern Virginia, may be required to utilize I-495 and I-270. Existing congestion would be exacerbated in the event of an emergency evacuation and/or homeland security event in the National Capital Region. Per the FHWA

[5] Homeland Security is defined by the National Strategy for Homeland Security as "a concerted national effort to prevent terrorist attacks within the United States, reduce America's vulnerability to terrorism, and minimize the damage and recover from attacks that do occur." 2017 Edition – Revision 2, issued October 16, 2017 https://www.dhs.gov/sites/default/files/publications/18_0116_MGMT_DHS-Lexicon.pdf

study, *Highway Evacuations in Selected Metropolitan Areas: Assessment of Impediments*, a primary impediment to effective large-scale evacuations in the National Capital Region is roadway capacity (FHWA, 2010).

I-495 and I-270 are primary connections to and from densely populated communities in the National Capital Region, and the daily high travel demand on these highways results in severe congestion. Mobility and access for emergency response vehicles are limited by the traffic conditions on these highways, where high vehicle volumes may reduce the ability for emergency response vehicles to navigate and pass through congestion. This may result in longer response times. A study based on surveys from Emergency Medical Services (EMS) first responders, *Emergency Medical Service Providers' Experiences with Traffic Congestion*, supports this idea. The EMS study results indicate that traffic congestion is more often experienced on interstates and national highways than city streets, and that traffic congestion, on average, contributes to an extra ten minutes in emergency response time (Griffin and McGwin, 2013).

Additional roadway capacity would assist in improving emergency response access and accommodating a population evacuation should an event related to homeland security occur.

1.7 Improve Movement of Goods and Services

The transportation connections that I-495 and I-270 provide are essential to the productivity of the National Capital Region's economy. The study corridors allow the movement of goods and services, including freight and commuting employees, throughout the region. Existing congestion along both corridors increases the cost of doing business due to longer travel times and unreliable trips. The effects of this congestion on the movement of goods and services is a detriment to the health of the local, regional, and national economy. Efficient and reliable highway movement is necessary to accommodate passenger and freight travel that move goods and services through the region.

1.7.1 Movement of Freight Goods

Freight-dependent industries, including goods transportation services, raw materials/intermediate products transportation services, and retail/consumer outlets, account for 19 percent of the National Capital Region's Gross Domestic Product (GDP), which totaled $464 billion in 2013 (National Capital Region Transportation Planning Board, 2016c). Among these industries within the National Capital Region, the truck transportation mode accounts for 86 percent of the total weight and 79 percent of the total value of freight moved (National Capital Region Transportation Planning Board, 2016c).[6] Reliable travel times are critical to the movement of freight trucks and, therefore, the economy of the National Capital Region.

Freight trucks contribute to daily traffic flow conditions along I-495 and I-270. As shown in **Figure 1-2,** the study corridors experience the highest AADT volumes of freight trucks and greater percentages of freight trucks relative to other vehicles in the Freight-Significant Network.[7,8] Based on annual average data, both

[6] The freight weight and value percentages presented here are based on the National Capital Region Transportation Planning Board's *National Capital Region Freight Plan* (July 2016). The most recently available freight demand analysis data used in the 2016 *Freight Plan* is from 2007. See page 45 of the 2016 *Freight Plan* for additional information.

[7] Based on the National Capital Region Transportation Planning Board's *National Capital Region Freight Plan* (July 2016). The most recently available freight demand analysis data used in the 2016 *Freight Plan* is from 2007. See page 45 of the 2016 *Freight Plan* for additional information.

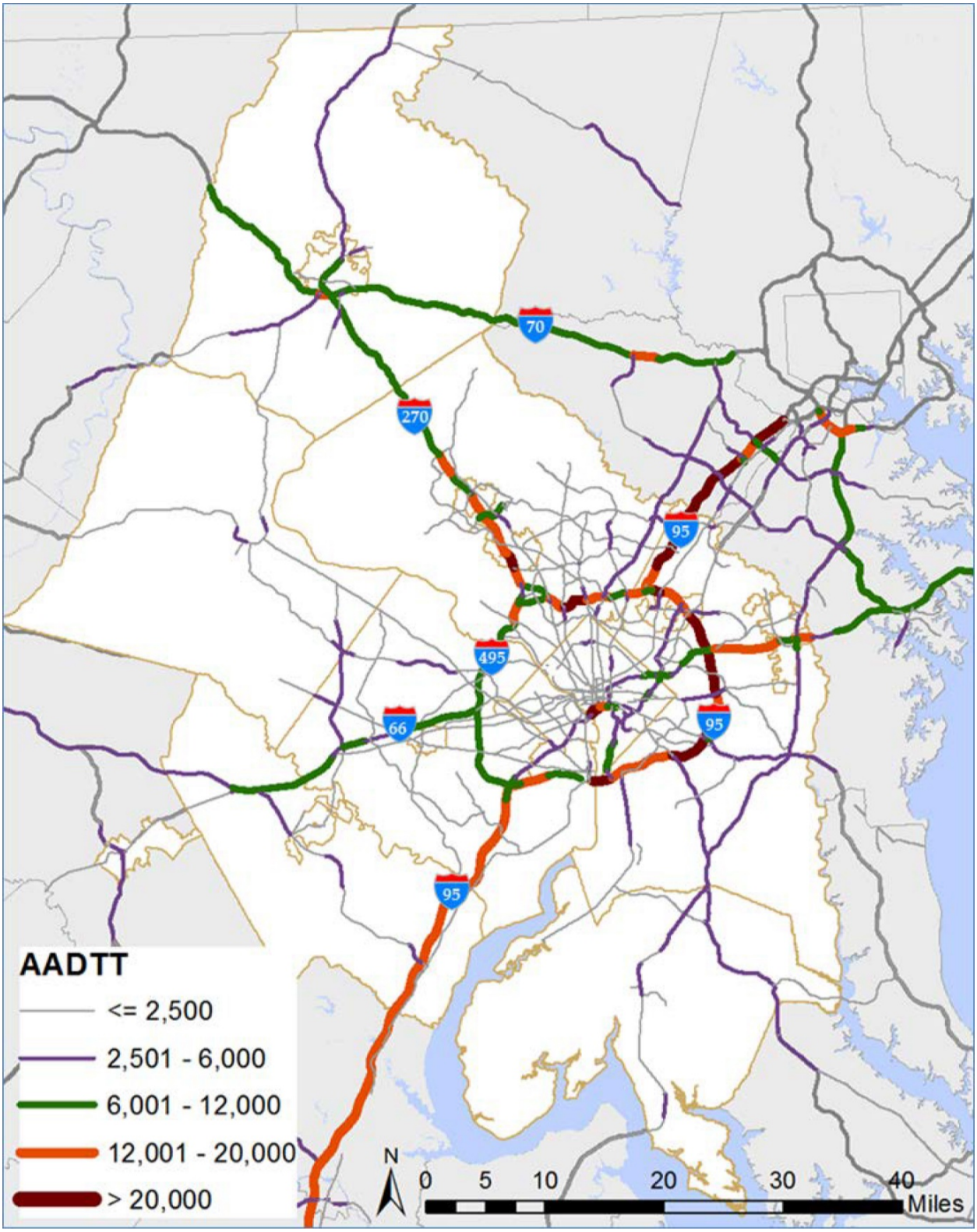
[8] Commercial traffic is not allowed on the National Park Service Parkways.

the I-495 study corridor and I-270 study corridor serve over 20,000 trucks per day, respectively. The demand for freight increases with population size. Each person in the United States generates demand for more than 60 tons of freight per year (MWCOG, 2016a), and with each new resident added, the demand for consumer goods increases. Therefore, as the population increases in the region, so does a corresponding demand for freight transportation. Refer to **Appendix A, Section 3.9** for additional details.

1.7.2 Movement of Commuting Employees

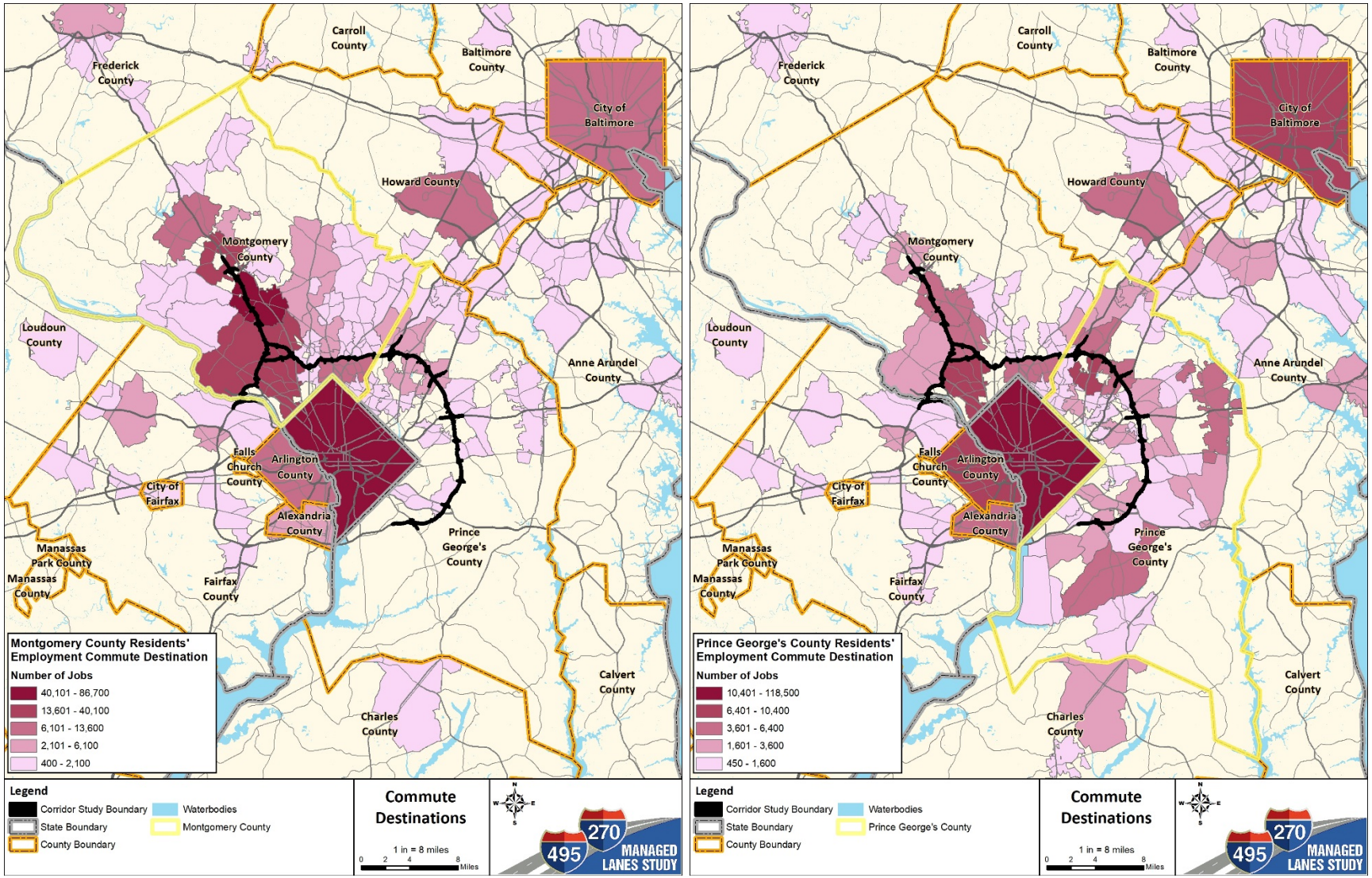
Thousands of employers in the National Capital Region depend on the study corridors for employee commuting and delivery access. As illustrated in **Figure 1-3**, approximately 54 percent of residents in Montgomery County and 56 percent of residents in Prince George's County travel ten or more miles from their homes for work with employment destinations and workers' home destinations densely clustered along the I-495 and I-270 study corridors (MD Maryland Department of Labor, Licensing, & Regulation, 2018). The ability to move freight and commuting employees through the study corridors will increasingly depend on the performance of the existing travel lanes on I-495 and I-270. Travelers, commuting employees, and freight trucks are especially sensitive to non-recurring delays (unanticipated disruptions), which are indicative of poor reliability, as they disrupt scheduled activities and manufacturing/distribution activities (TPB, 2016d). Refer to **Appendix A, Section 3.10** for additional details.

Figure 1-2: Average Annual Daily Truck Traffic



1. Source: National Capital Region Freight Plan, page 31. National Capital Region Transportation Planning Board, 2016.

Figure 1-3: Residents' Employment Commute Destinations in Montgomery and Prince George's Counties



Source: U.S. Census Bureau, Center for Economic Studies, OnTheMap (https://onthemap.ces.census.gov)

1.8 Other Goals and Objectives

1.8.1 Incorporate Alternative Funding Sources to Achieve Financial Viability

The State of Maryland is committed to provide timely transportation improvements that can accommodate existing and long-term traffic growth. Typical roadway infrastructure improvements are funded through use of Maryland's Transportation Trust Fund. The Transportation Trust Fund is primarily comprised of revenue from the gas tax and motor vehicle registration and titling fees. All funds dedicated to MDOT are deposited in the Transportation Trust Fund, and disbursements for all programs and projects are made from the Transportation Trust Fund. Revenues are not earmarked for specific programs.

However, the State's traditional funding sources, including the Maryland Transportation Trust Fund, are unable to effectively finance, construct, operate, and maintain highway improvements of the magnitude that are needed to address roadway congestion and enhance trip reliability in these study corridors, due to the fiscal constraints of the program and the state-wide transportation needs. These types of large projects must be financially viable and revenue sources, such as pricing options, that provide adequate funding are needed to support additional roadway capacity and improvements that address roadway congestion and enhance reliability.

Large-scale improvements, such as those being considered with the Study, would require decades to accumulate enough revenue in the State's Transportation Trust Fund to deliver the improvements with traditional funding. The use of alternative funding approaches, such as pricing options, provides needed large-scale improvements decades earlier than would otherwise be realized using traditional funding and allows the project to be fiscally-constrained in the metropolitan transportation plan. This is a critical step in the NEPA decision-making process, as current federal policy restricts issuance of a NEPA decision document unless the project is fiscally-constrained. For large-scale improvements such as those considered in this Study, MDOT SHA will seek to use innovative financing methods such as a P3 in order to design, build, finance, operate, and maintain the proposed infrastructure improvements.

1.8.2 Environmental Responsibility

The area surrounding the study corridors is highly constrained. MDOT SHA will work to avoid and minimize community, wetlands, waterways, cultural, noise, air quality, and parkland impacts, and mitigate for impacts when not avoidable. MDOT SHA will work with our federal, state, and local resource agency partners in a streamlined, collaborative, and cooperative way to meet all regulatory requirements to ensure the protection of significant environmental and community resources. In planning mitigation for a build alternative, MDOT SHA will strive to provide meaningful benefit to resources and improve their values, services, attributes, and functions that may be compromised by a build alternative. MDOT SHA will work in good faith with our regulatory agency partners to plan worthwhile mitigation based on identified priorities that would, at a minimum, bring no net loss to impacted resources with a goal of net benefit. Innovative, creative solutions, including modern environmental site design techniques to mitigate for unavoidable impacts will be identified and included in the Record of Decision (ROD). Commitments in the ROD will also be included in any contract documents regardless of project delivery method, including a Public-Private- Partnership (P3).