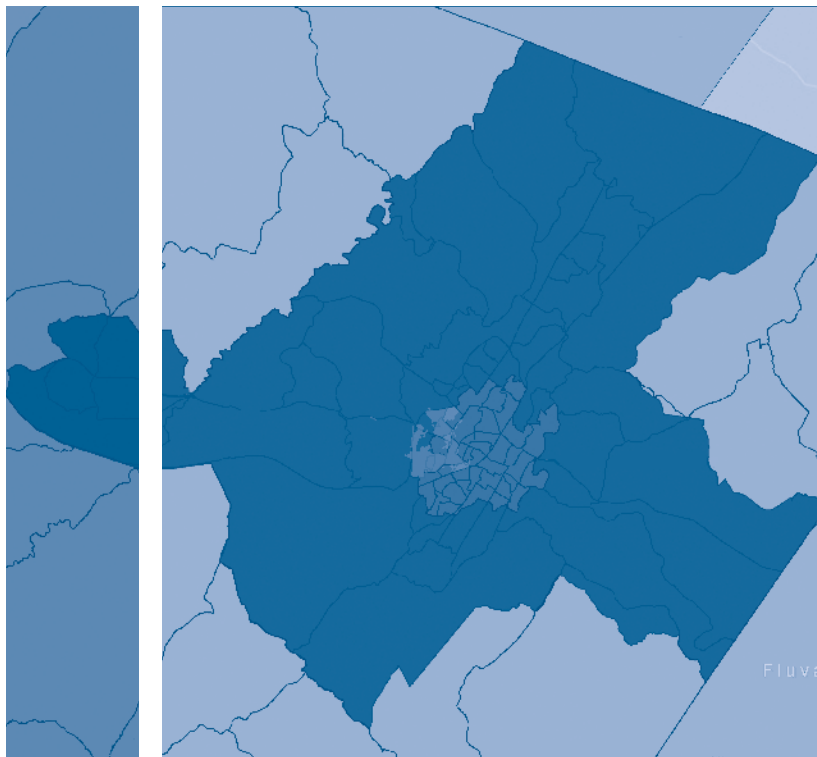


**Adopted by the MPO
Policy Board**

May 22nd 2019



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Acknowledgments

Developing this transportation plan involved cooperation from local government, the public and technical staff. The MPO staff expresses gratitude to those who have assisted with the plan’s development and ultimate adoption.

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Special Thanks

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► Disclaimer

This report has been prepared in cooperation with and financed in part by the U.S. Department of Transportation - Federal Highway Administration, the Federal Transit Administration, the Virginia Department of Transportation, and the Virginia Department of Rail and Public Transportation. The contents of this report reflect the views of the Thomas Jefferson Planning District Commission (TJPD) and Charlottesville-Albemarle Metropolitan Planning Organization (MPO), which are responsible for the facts and accuracy of the data presented herein. The contents do not necessarily reflect the official views or policies of the Federal Highway Administration, Federal Transit Administration, the Virginia Department of Transportation, or the Virginia Department of Rail and Public Transportation. This report is not a legal document, and does not constitute a standard, specification, or regulation. Although much care was taken to ensure the accuracy of information presented in this document, TJPD does not guarantee the accuracy of this information.

Acceptance of this report as evidence of fulfillment of the objectives of this planning study does not constitute endorsement/approval of the need for any recommended improvement, nor does it constitute approval of their location and design or a commitment to fund any such improvements. Additional project level environmental impact assessments and/or studies of alternatives may be necessary.

► Non-Discriminatory Statement

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Resolution Adopting 2045 Long Range Transportation Plan

WHEREAS, the U. S. Department of Transportation (DOT) requires that each urbanized area over 50,000 population prepare a Long Range Transportation Plan to be updated every five years; and,

WHEREAS, a Metropolitan Planning Organization (MPO) has been designated for the Charlottesville-Albemarle Urbanized Area; and,

WHEREAS, the MPO's 2045 Long Range Transportation Plan (2045 LRTP) addresses future planned transportation projects in the City of Charlottesville and the urbanized planning area of Albemarle County over the next 20 years; and,

WHEREAS, the major goal for the MPO's 2045 LRTP is to create and advance a balanced, regional, multimodal transportation network; and,

WHEREAS, the MPO led the efforts to complete the 2045 LRTP with a public outreach campaign conducted to solicit input from the community; and,

WHEREAS, the MPO recognizes that the SMART SCALE evaluation and funding process will guide major project funding decisions made by the Commonwealth Transportation Board (CTB); and,

WHEREAS, the MPO has set targets, as required, for the established national performance measures; and,


WHEREAS, the MPO's project and scenario evaluation criteria were chosen to reflect the measures used in SMART SCALE and the national performance measures; and,

WHEREAS, this update is required to meet Federal Highway Administration requirements, the deadline for which is the end of May 2019; and,

THEREFORE BE IT RESOLVED THAT the Charlottesville-Albemarle MPO approves the 2045 Long Range Transportation Plan, pending approval from the Federal Highway Administration and the Federal Transit Administration.

Adopted the 22nd day of May, 2019, by the MPO Policy Board.

ATTESTED:



Ann Mallek, Chair
Charlottesville-Albemarle MPO Policy Board

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Appendix C: VDOT Performance Based Planning and Programmingn/a

► List of Acronyms

AADT	Average Annual Daily Traffic
AASHTO	American Association of State Highway and Transportation Officials
ACS	American Community Survey
ADA	Americans with Disabilities Act
BMP	Best Management Practice
BRT	Bus Rapid Transit
CAT	Charlottesville Area Transit
CLRP	Constrained Long Range Plan
CMAQ	Congestion Mitigation and Air Quality
CSR	Center for Survey Research
CTAC	Citizens Transportation Advisory Committee
CTF	Commonwealth Transportation Fund
DDI	Diverging Diamond Interchange
DEQ	Department of Environmental Quality, Virginia
DMV	Department of Motor Vehicles
E+C	Existing and Committed
EJ	Environmental Justice
EPA	Environmental Protection Agency
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
FY	Fiscal Year (refers to the state fiscal year July 1 - June 30)
GA	General Aviation
GSI	Grade Separated Interchange
HSIP	Highway Safety Improvement Program
HUD	Housing and Urban Development, U.S. Department of
ISTEA	Intermodal Surface Transportation Efficiency Act
JAUNT	Regional transit service provider to Charlottesville City, and Albemarle, Fluvanna, Louisa, Nelson, and Buckingham Counties
LAB	League of American Bicyclists
LOS	Level of Service
LRTP	Long Range Transportation Plan, also referred to as 2045 LRTP
LRT	Light Rail Transit
MAP-21	Moving Ahead for Progress in the 21st Century
MOVES	Motor Vehicle Emission Simulator

MPO	Metropolitan Planning Organization
NGIC	National Ground Intelligence Center
NHPP	National Highway Performance Program
NHS	National Highway System
OTAQ	Office of Transportation and Air Quality
PDC	Planning District Commission
PE	Preliminary Engineering
REF	Regional Ecological Framework
RTA	Regional Transit Authority
SAFETEA-LU	Safe, Accountable, Flexible, Efficient, Transportation Equity Act
SHRP2	Second Strategic Highway Research Program
SHSP	State Strategic Highway Safety Plan
SPR	State Planning and Research Funding (used by VDOT to support MPO)
STP	Surface Transportation Program
SYIP	Six Year Improvement Program
TA	Transportation Alternatives
TCAPP	Transportation for Communities - Advancing Projects through Partnerships
TDM	Travel Demand Management
TDP	Transit Development Plan (for CAT and JAUNT)
TEA-21	Transportation Efficiency Act for the 21st Century
TIP	Transportation Improvement Program
TJPCDC	Thomas Jefferson Planning District Commission
TMPD	VDOT Transportation and Mobility Planning Division
TRB	Transportation Research Board
UPWP	Unified Planning and Work Program (also referred to as Work Program)
UnJAM	United Jefferson Area Mobility Plan
UTS	University Transit Service
UVA	University of Virginia
SOV	Single Occupant Vehicle
V-C	Volume-to-Capacity Ratio
VCTIR	Virginia Center for Transportation Innovation and Research
VDOT	Virginia Department of Transportation
VDRPT	Virginia Department of Rail and Public Transportation
VMT	Vehicle Miles Traveled

► Executive Summary

Housed within the Thomas Jefferson Planning District Commission (TJPD), a regional planning commission located in central Virginia, is the Charlottesville-Albemarle Metropolitan Planning Organization (MPO). Composed of the City of Charlottesville and a portion of Albemarle County, the Charlottesville-Albemarle MPO is the forum for continuing, cooperative and comprehensive transportation planning and decision-making among Charlottesville, Albemarle, state, and federal officials. The MPO collaborates with various agencies, facilitates public input, and conducts its own research and analysis to develop forward-thinking solutions for the region’s transportation system.

One of the recurrent responsibilities of the Charlottesville-Albemarle MPO is the creation of a Long Range Transportation Plan (LRTP): a federally-mandated plan that outlines the region’s priority transportation improvements over the next decades. The Long Range Transportation Plan is a fundamental document for our community. It states our region’s collective vision for the future of our transportation system, and it identifies projects that we anticipate our region will implement in the foreseeable future. The LRTP considers all modes of transportation including private vehicles, public transit, bicycles, pedestrians, and air, and covers other transportation issues such as bridge maintenance and safety improvements. Per federal mandate, the Charlottesville-Albemarle MPO’s LRTP must be updated every five years. The preceding version, approved by the MPO Policy Board in May 2014, was named the 2040 Long Range Transportation Plan (2040 LRTP). The updated plan presented in this document has been named the 2045 Long Range Transportation Plan (2045 LRTP).

With the development of the 2045 Long Range Transportation Plan, the Charlottesville-Albemarle MPO continues and enhances a process for identifying and evaluating transportation projects that began with the 2040 LRTP. Public input played an important role in all aspects of the process, especially the identification of transportation deficiencies and potential projects. The evaluation process leverages the interconnectedness of our transportation system. Rather than assessing the benefits of individual projects in an isolated manner, proposed projects were combined into scenarios, tested as a system, and compared with other project groupings through a method of performance measure analysis. A set of performance measures, created using federal resources, public comment, and committee input, was used to produce quantitative values for project scenarios. With these tools, the MPO was able to determine the degree to which various transportation improvements accomplished the region’s vision, goals, and objectives, and select the most optimal project combination for achieving them.

The 2045 Long Range Transportation Plan describes the region’s characteristics and transportation deficiencies; details the region’s vision, goals, and objectives; and describes the method of analysis and its findings and conclusions. The 2045 Plan is organized as follows:

Chapter 1: *Regional Demographics* gives an overview of the region’s demographics.

Chapter 2: *Transportation Assessment* provides information about the existing transportation system in the region.

Chapter 3: *Planning for Uncertainty* includes an overview of technological advances and other evolving trends that are making transportation planning more uncertain.

Chapter 4: *2045 LRTP Overview* gives an overview of the purpose, requirements, goals and objectives of the LRTP, and the public engagement completed as part of the process.

Chapter 5: *Transportation Deficiencies Overview* assesses the regional transportation deficiencies anticipated for our region in 2045.

Chapter 6: *Evaluation Process for Roadway and Transit Projects* describes the assessment process for considering road and transit projects for inclusion in the LRTP.

Chapter 7: *Additional Transportation System Elements* outlines the assessment process for considering bridge, intersection, bicycle and pedestrian projects for inclusion in the LRTP.

Chapter 8: *Transportation Projects Identified* outlines the fiscal-constraint process for the LRTP and provides the constrained and vision project lists.

Appendix A: *Project Review Pages*

Appendix B: *Public Participation Record of Input*

Appendix C: *VDOT Performance Based Planning and Programming*

The 2045 Long Range Transportation Plan is a package designed to improve the efficiency and interconnectedness of our facilities and services, and strives to plan for and develop a continuing, cooperative and comprehensive regional transportation system.

We invite you to learn more about the 2045 Long Range Transportation Plan through the pages that follow in this document.

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Saunders-Monticello Trail, Photo: Peter Krebs/Piedmont Environmental Council

Overview

To effectively consider the future of the Charlottesville-Albemarle region, the MPO must examine the community as it is currently structured; specifically focusing on location, population, unique elements, and specialized populations. The Charlottesville-Albemarle Metropolitan Planning Organization (MPO) region is a diverse and vibrant community. The region is home to the University of Virginia, and boasts one of the most vibrant outdoor pedestrian malls in the nation. Further, its proximity to major urban areas, such as Washington, D.C. and Richmond, VA, and scenic rural areas such as Shenandoah National Park make the region an attractive place for a variety of people.

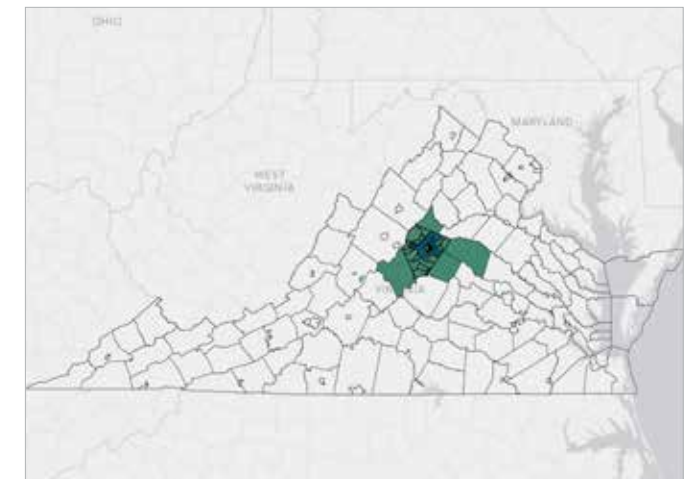
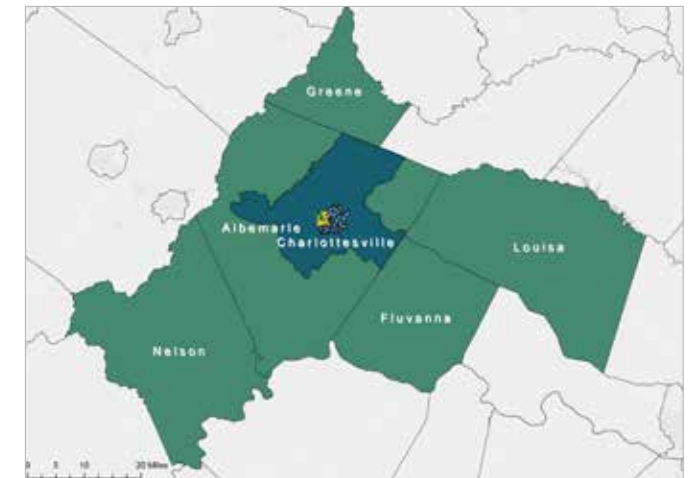
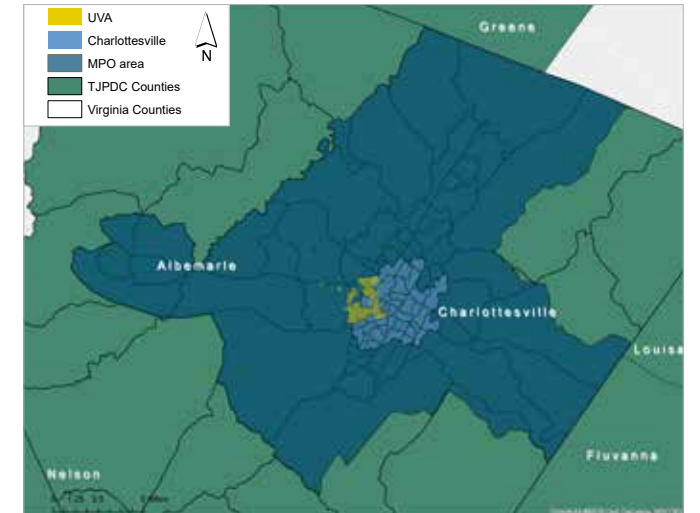
Location

The City of Charlottesville is an independent city surrounded by Albemarle County and located in western Central Virginia, approximately 115 miles southwest of Washington, D.C. and 70 miles northwest of Richmond, VA. Charlottesville is located along the Rivanna River (a tributary of the James River), in the Chesapeake Bay watershed. The Charlottesville-Albemarle Metropolitan Planning Organization was formed in 1982 and is federally mandated due to its urban nature and regional population of more than 50,000 people. The MPO area includes the City of Charlottesville and portions of Albemarle County that are urban or expected to be urban in the next 20 years.

Political Boundaries

Figure 1-1 is provided to help orient the reader with the Charlottesville-Albemarle area. The top map is the Charlottesville-Albemarle MPO, broken down by block group. The middle map in Figure 1-1 shows the Thomas Jefferson Planning District Commission's jurisdiction, and the bottom map shows the Charlottesville-Albemarle MPO within the state of Virginia.

Charlottesville—Albemarle MPO Region (Figure 1-1)



► History

The City of Charlottesville and Albemarle County have a long history of rural landscapes, industrialization, growth, and community. The following timeline highlights a few of the major milestones in the region’s land and transportation development.

1744	Establishment of Albemarle County
1762	Founding of the City of Charlottesville
1770	Building of Monticello, Thomas Jefferson’s home
1819	Founding of the University of Virginia
1850	Railroad services established
1866	City streetcar services begin
1885	Union Station (now Amtrak) opens
1927	The first traffic lights start operating in the City of Charlottesville
1936	City streetcar service terminated; tracks paved over
1955	Service began at the Charlottesville Albemarle Airport (CHO)
1976	City of Charlottesville opens a pedestrian mall on a portion of Main Street
1982	Charlottesville-Albemarle MPO formed
2012	City celebrated its 250th anniversary

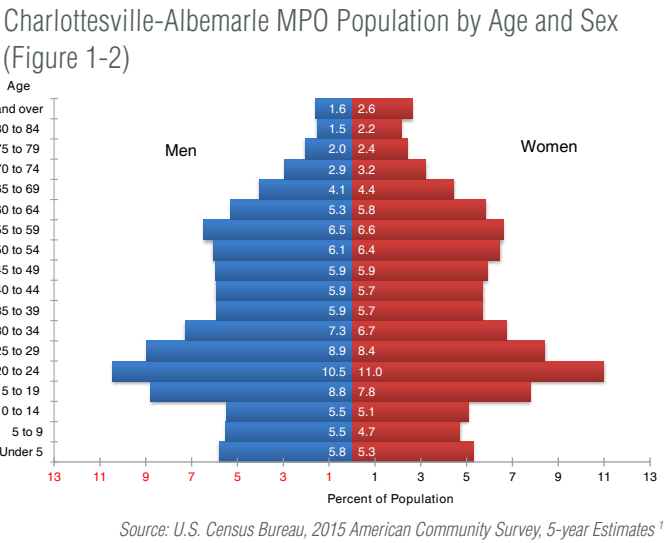
(Timeline 2013; Daily Progress 2013)

► Population

The total population of the MPO region was 127,659 as of 2015. The following describes specific characteristics of residents in the area.

Age & Sex

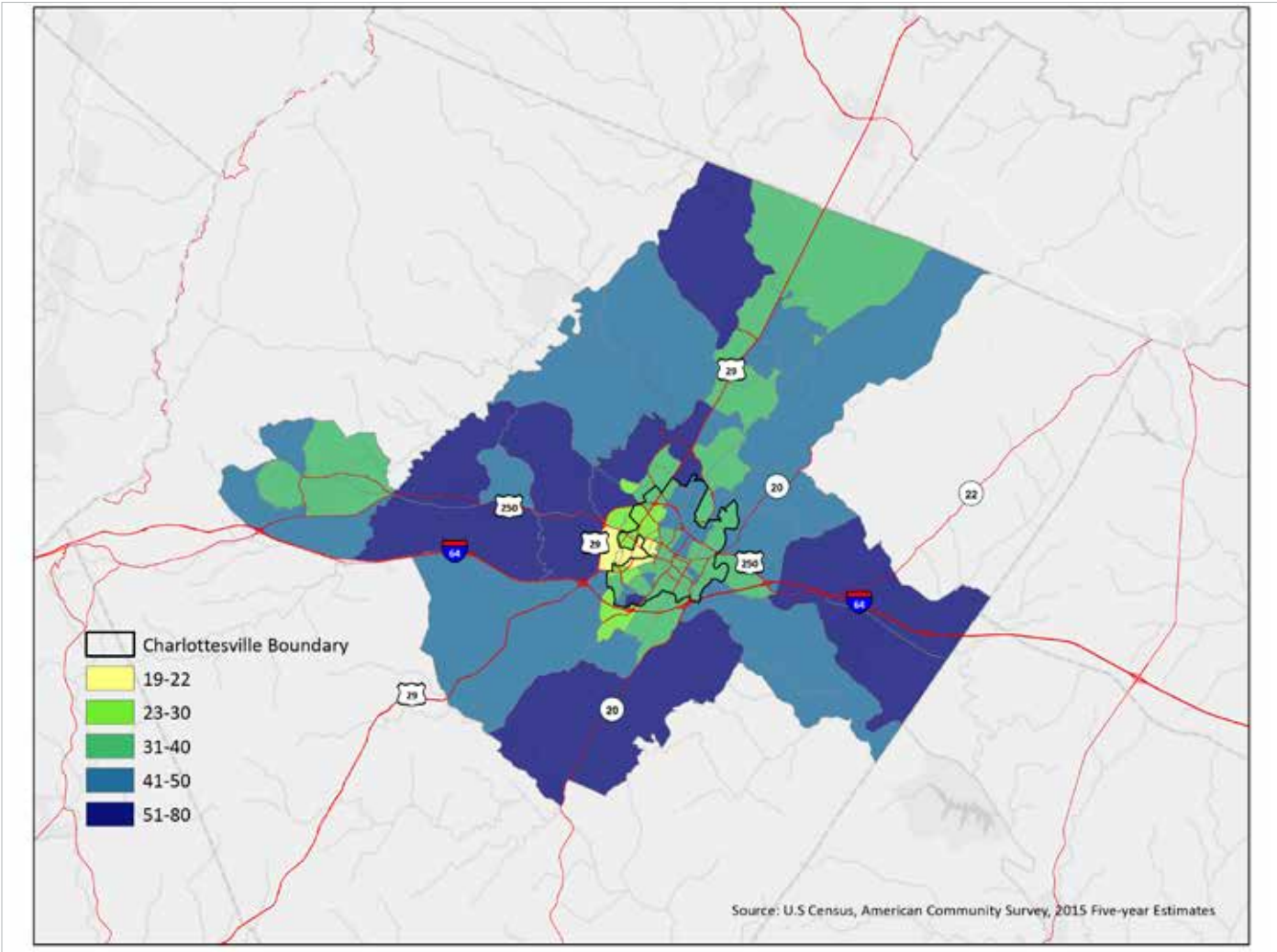
Figure 1-2 shows the distribution of population in the MPO area, which consists of the entire City of Charlottesville and several block groups from Albemarle County, by age and sex in 2015. The age distribution of the MPO, graphed below, reveals specific trends. The MPO has a relatively large percentage of young adults and elderly residents and a lower percentage of children. While age is evenly distributed by sex in most categories, there is clearly a much larger population of 20-24 year olds, as well as 15-19 year olds, and 25-29 year olds. This is due to the presence of students living in the region while they are enrolled at the University of Virginia.



Age groups 19-22 years and 22-32 years, represented in the lightest shades in Figure 1-3, dominate the areas in close proximity to University grounds. Generally, the population over age 52 is concentrated outside the city.

The data in Figure 1-2 above is derived from the U.S. Census Bureau’s American Community Survey 5-year estimate from 2011-2015.

Median Age by MPO Block Group (Figure 1-3)

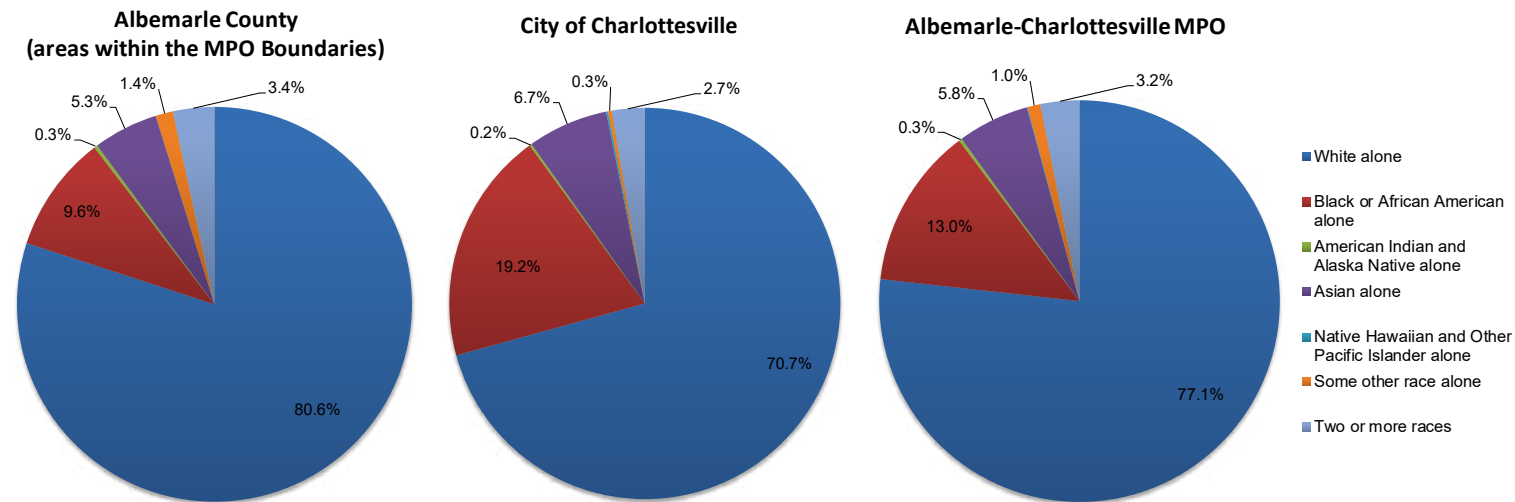


Source: U.S. Census Bureau, 2015 American Community Survey, 5-year Estimates

Racial Composition

The MPO region is made up of people of many races, with about 77% of residents identifying as White (Caucasian), 13% identifying as African American, and about 6% identifying as Asian. Overall, the City of Charlottesville has a larger proportion of residents who are racial minorities compared to the areas of Albemarle County that are within the MPO.

Racial Composition in Albemarle & Charlottesville (Figure 1-5)

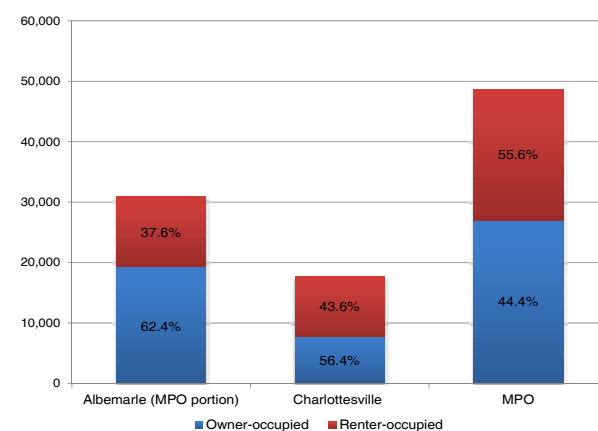


Source: U.S. Census Bureau, 2015 American Community Survey, 5-year Estimates

Housing

The City of Charlottesville and Albemarle County combined have a total of 63,465 housing units, and the MPO area has a total of 54,289 housing units. Nearly 57% of the housing stock in the MPO area is comprised of single-family detached homes, and 68% of the housing stock is made up of single-unit residences. Almost half of the housing in the combined area was built between 1970 and 2000, and 18% of the housing units were built after 2000. The overall vacancy rate is 11%, which can be attributed to a combination of rental vacancies and units used for short-term rentals (i.e. made available for rental through a platform such as Airbnb). There is a sizable difference in tenant type between occupied housing in the City and County, as depicted in Figure 1-6.

Renter/owner occupancy (Figure 1-6)



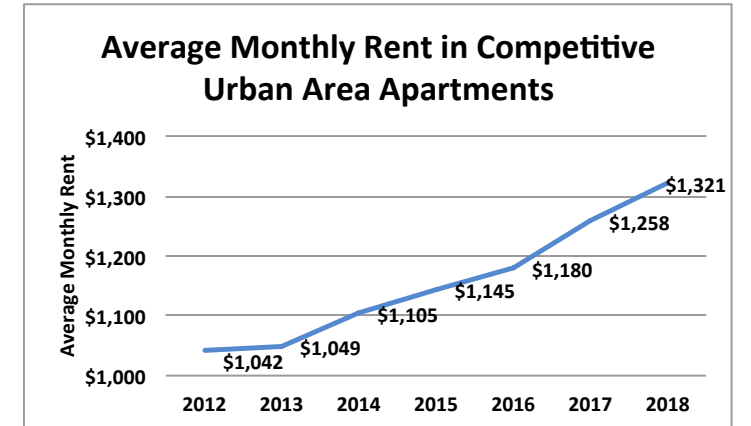
Source: U.S. Census Bureau, 2015 American Community Survey, 5-year Estimates

Affordability of Housing

The TJPDC recently created the Regional Housing Partnership to serve as an official advisory board and address housing needs in the region. A Comprehensive Regional Housing Study identified the following facts related to affordability in the region's housing market.

- Rents in major apartment complexes in the urban area grew 5.8% annually over the past two years and 4.0% annually since 2012, averaging \$1,321 per month, as shown in Figure 1-7.
- Nine thousand renter households in Charlottesville and Albemarle (excluding student households) are paying more than 30 percent of their income for housing costs, with over 4,000 paying more than half of their income on housing.
- The median sales price for single-family houses in Charlottesville and Albemarle County was \$325,000 in 2017 and \$349,900 in 2018.
- Limited affordable housing in the region has contributed to many workers commuting from neighboring localities, including 1,400 people from Augusta County alone.
- When workers in the region choose to live outside of the MPO to reduce housing costs, transportation costs add to the cost of living as driving alone or carpooling are often the only transportation options.

Urban area rental costs for major apartment complexes (Figure 1-7)

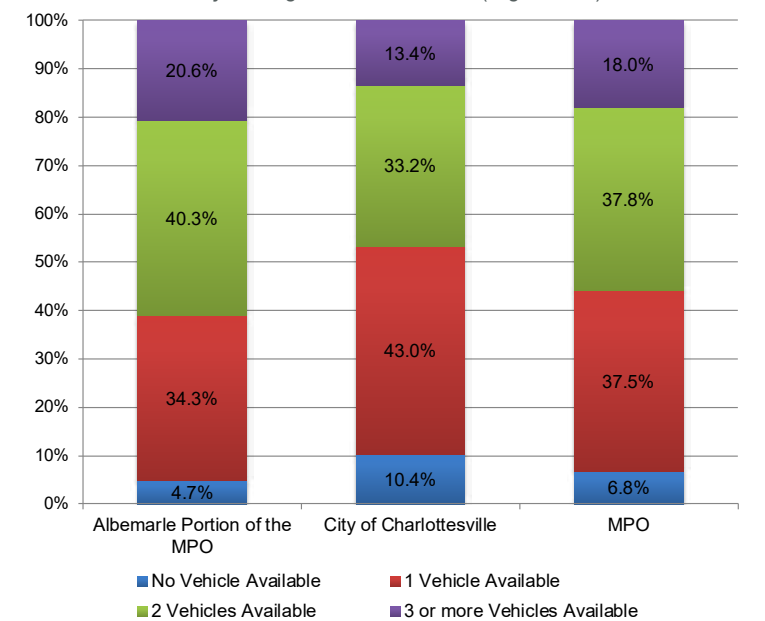


Vehicle ownership

Close to 5% of households in the Albemarle portion of the MPO and 10.4% in the city do not have at least one personal vehicle available. In comparison with the City of Charlottesville, the portion of Albemarle County within the MPO area has a higher percentage of residents with 3 or more vehicles available and a lower percentage of residents without any vehicles, as shown in Figure 1-8.

The fact that almost 7% of households in the MPO do not own a vehicle indicates the importance of creating a multimodal transportation system that provides many transportation options. Yet the reality that over 90% of households own at least one vehicle makes it clear that driving a personal vehicle is currently the most common method of transportation in the region.

Vehicle availability for regional households (Figure 1-8)

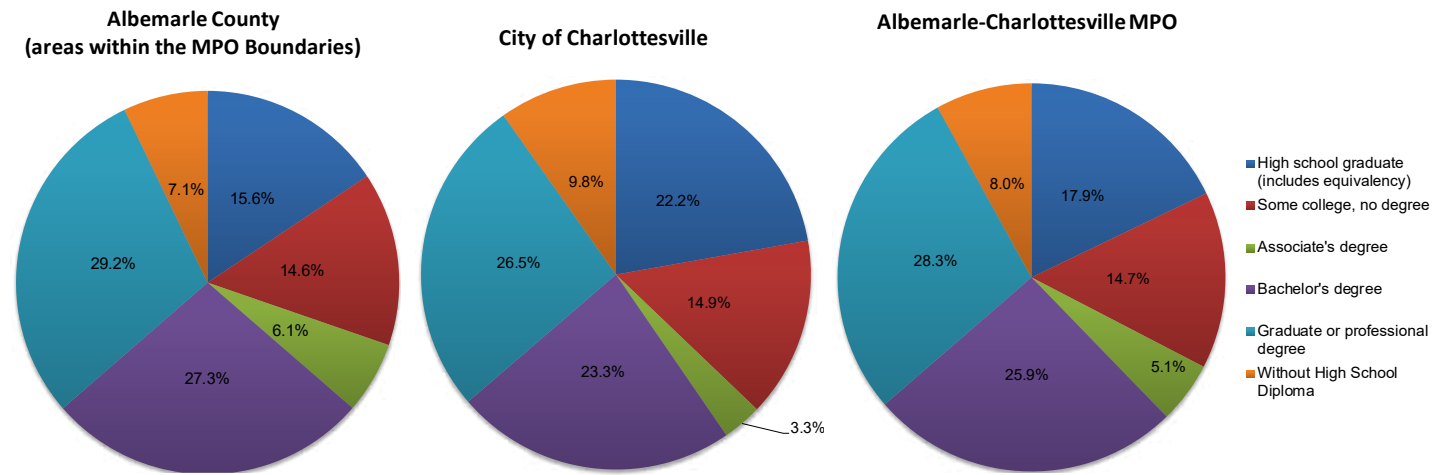


Source: U.S. Census Bureau, 2015 American Community Survey, 5-year Estimates

Education

Figure 1-9 shows the highly-educated population in both Charlottesville and Albemarle. Three quarters of the population between ages 18 and 24 have completed some of their college education, and 54% of the population 25 years and over have completed at least a Bachelor's degree, with an additional 20% having completed some college.

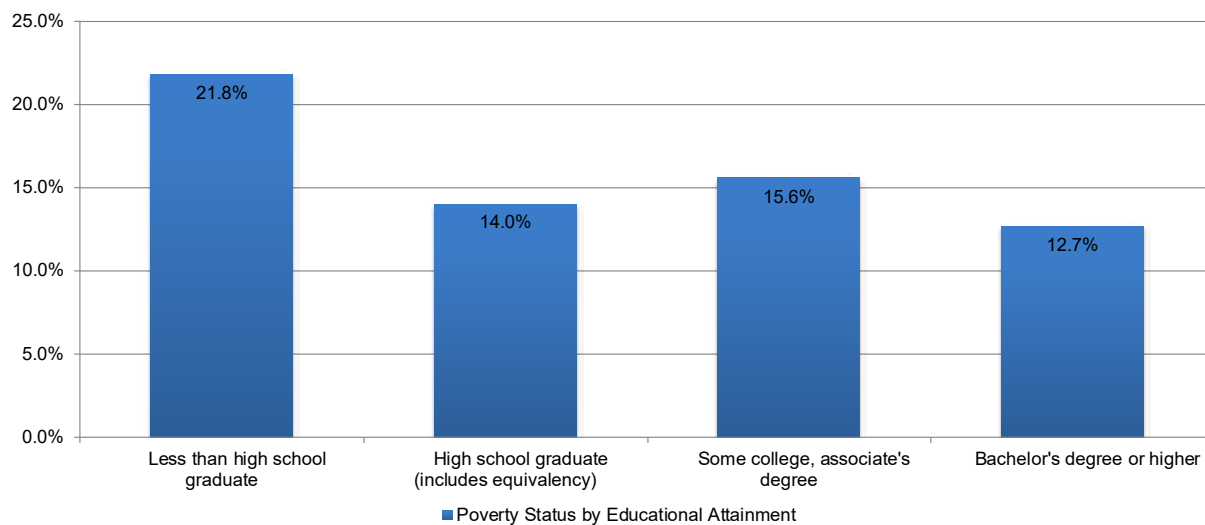
Educational Attainment for 25+ Population (Figure 1-9)



Source: U.S. Census Bureau, 2015 American Community Survey, 5-year Estimates

Like the rest of the U.S., the poverty rate for residents 25 years and over rises dramatically without the attainment of a high school degree, from 14% to 21.8%. The poverty rate for residents with a Bachelor's degree or higher is 12.7%, though this rate may be inflated by full-time graduate students studying in the area without a sizeable income. (Refer to Figure 1-10).

Poverty Rate by Education for Albemarle & Charlottesville Residents 25+ Years (Figure 1-10)

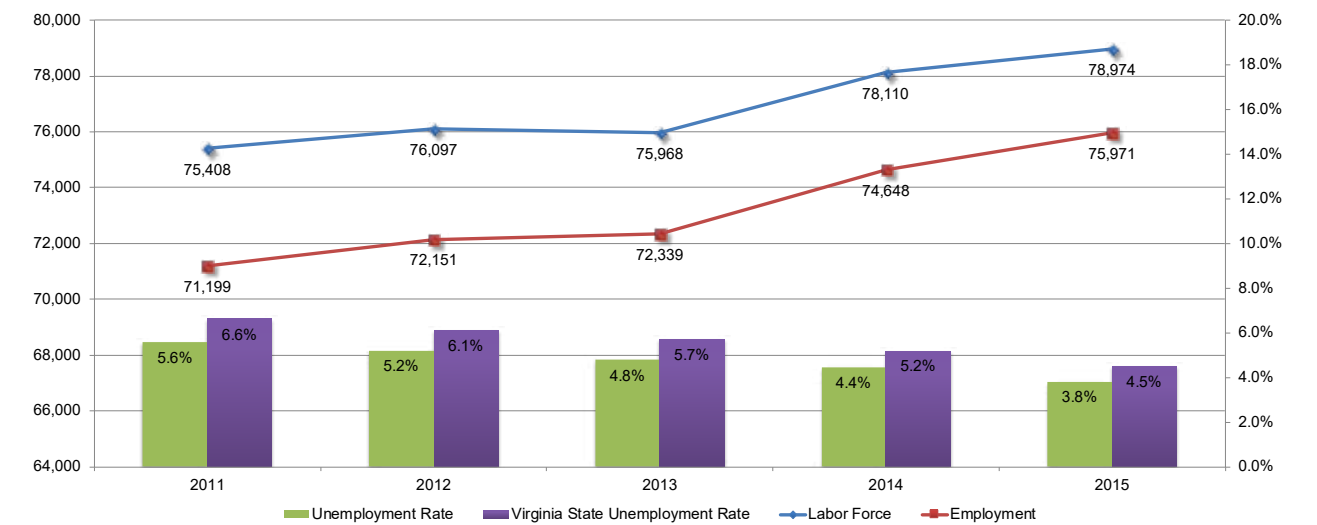


Source: U.S. Census Bureau, 2015 American Community Survey, 5-year Estimates

Economy and Employment

According to the Bureau of Labor Statistics' data, the average unemployment rate for the combined area of the City of Charlottesville and Albemarle County decreased between 2011 and 2015 from 5.6% to 3.8% (See Figure 1-11). For all the years between 2011 and 2015, the unemployment rate for the area had been lower than the Virginia state unemployment rate. Both the size of the labor force and the number of employment constantly increased in this period of time.

Overall Unemployment Rates by local, regional, state and national (Figure 1-11)



Source: Bureau of Labor Statistics, Local Area Unemployment Statistics (LAUS), 2011-2015

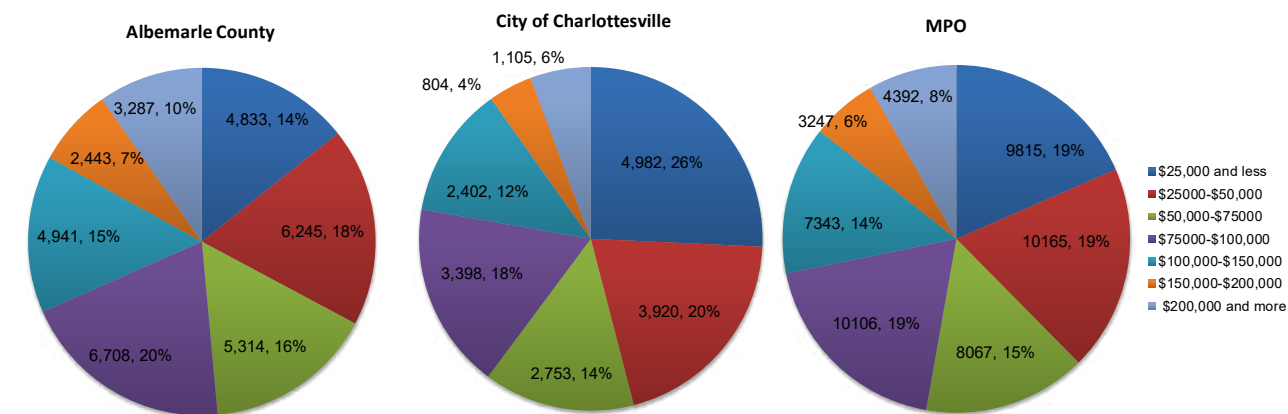
The relative strength of the Charlottesville area is due in large part to its central Virginia location and the nature of the local economy. As the seat of both the City of Charlottesville and Albemarle County governments, Charlottesville serves as an economic, cultural and educational center in Central Virginia. As the home of the University of Virginia, one of the most prestigious and highly-regarded universities in the country, the City derives a number of benefits, both economic and in the quality of life associated with this area (Charlottesville 2011).

The predominant economic sectors are healthcare, education, service-related industries, tourism and hospitality. Some emerging sectors including technology and renewable energy. Some of the area's largest employers include the University of Virginia, the University of Virginia Medical Center, the Martha Jefferson Hospital, Lakeland Tours, SNL Financial LP, and State Farm Mutual Automobile Insurance. The National Ground Intelligence Center (NGIC), National Radio Astronomy Observatory headquarters, Leander McCormick Observatory, and CFA Institute are other notable employers located in the Charlottesville area. Local governments and school boards are also among major employers in the area.

► Income

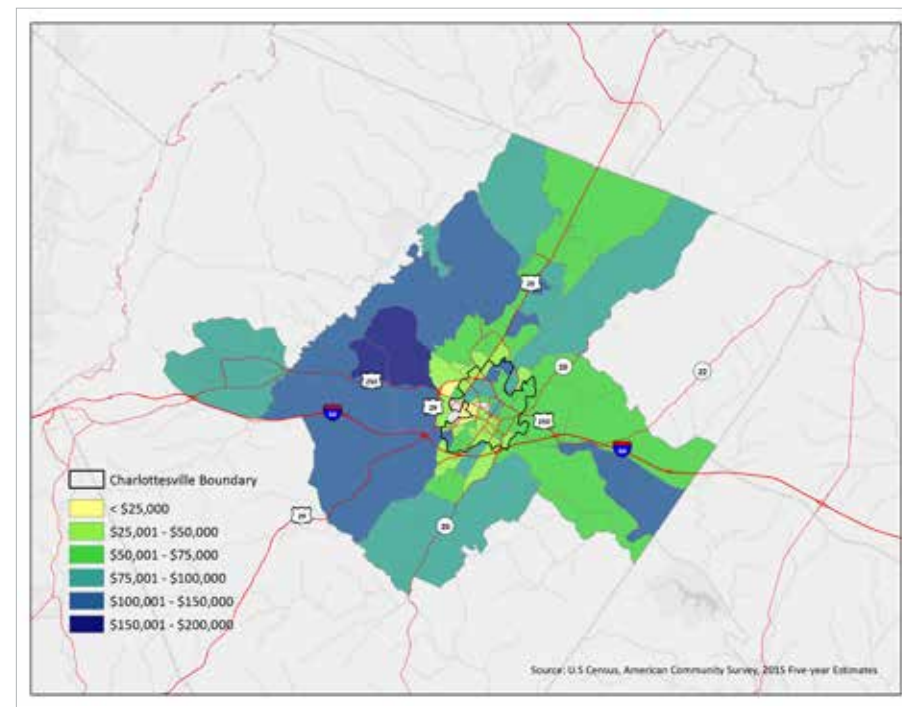
Income level data for the County and City (Figure 1-12) shows that the City holds a greater portion of low-income households. Median household income is \$70,342 in Albemarle and \$50,727 in Charlottesville, and \$66,149 in the state of Virginia. Differences here may be attributed in part to the large student population in Charlottesville. The southwest side of Albemarle County, however, appears to be the most affluent (Figure 1-13).

Household Incomes in 2015 in Albemarle, Charlottesville, and the MPO area (Figure 1-12)



Source: U.S. Census Bureau, 2015 American Community Survey, 5-year Estimates

Median Household Income in 2011 by Block Group (Figure 1-13)



► Specialized Communities

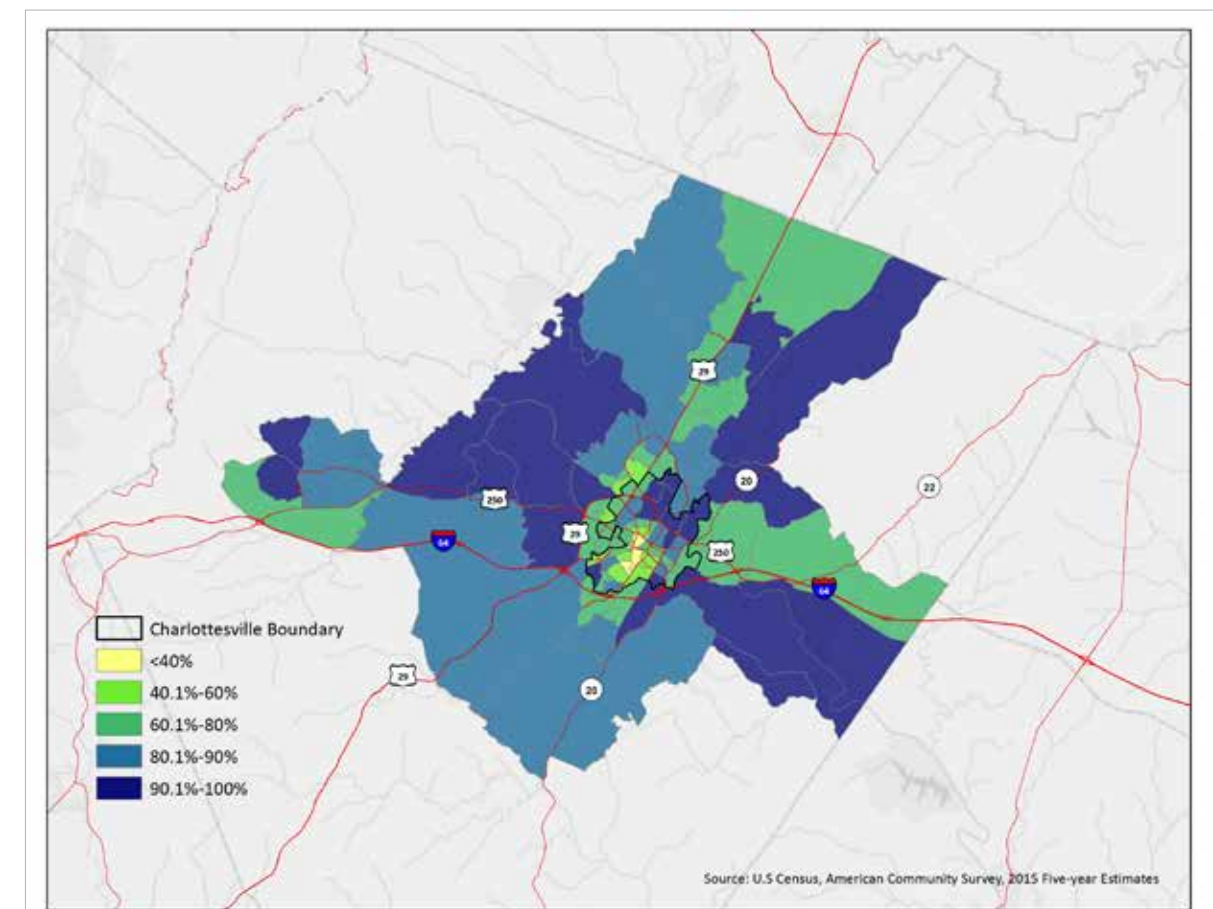
The Charlottesville-Albemarle MPO approved its current Title VI Plan on May 25th, 2016 outlining how the MPO achieves Title VI and Environmental Justice compliance. The plan discusses the efforts the MPO makes to include specialized populations in the regional planning process including minorities, the elderly, the disabled, low-income populations, and limited English-speaking populations. The plan also discusses the demographic breakdown of the MPO region and outlines a procedure for filing complaints should any MPO stakeholders feel they were subject to discrimination under Title VI guidelines and accompanying policies, including negative impacts on the health or environment of minority and low income populations.

Racial Minorities

American cities have historically left minority voices out of planning processes that affect their communities. The legacy of marginalization and segregation is seen in the fact that African American, Asian, and other racial minorities are largely clustered in central areas of Charlottesville and Albemarle, like in many cities in the United States. Figure 1-14, which represents the percentage of residents that identify as White-only, shows the higher concentration of minority residents

near the downtown area of Charlottesville. Given the region's history, it is important to target outreach and engagement to reach minority populations. In addition to being racially diverse, the MPO area is also ethnically diverse, with a large Spanish-speaking population and schools with students that speak more than 30 different first languages. Outreach to this community and other more recent immigrants may require materials that are accessible for limited English-speaking populations.

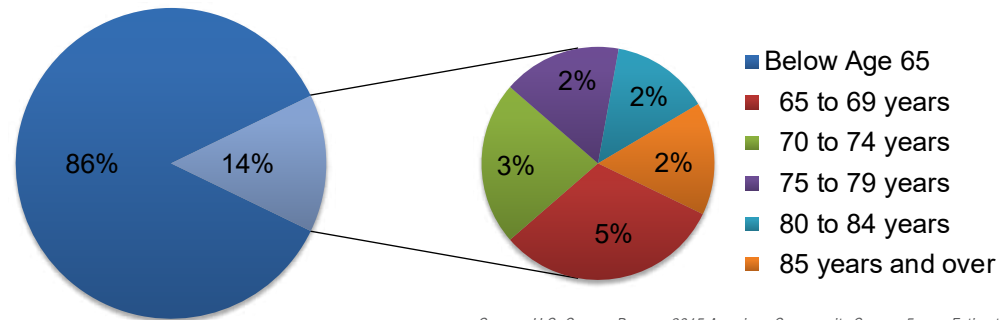
Percentage of Residents who Identify as White Only within the Charlottesville-Albemarle MPO (Figure 1-14)



Older Adults

As shown in Figure 1-2 histogram at the beginning of this chapter, nearly 14% (17,305) of the population in Charlottesville-Albemarle MPO area is 65 years or older. Shares of each area's elderly population are broken down further in Figure 1-15. The younger portions of the elderly population represent larger pieces of the secondary pie chart. Older adults may be presented with a variety of barriers that prohibit them from engaging in planning processes. Involving older adults may mean targeted strategies like sending letters, making phone calls, or making neighborhood visits.

Older Adult Populations in Charlottesville-Albemarle MPO area (Figure 1-15)



Source: U.S. Census Bureau, 2015 American Community Survey, 5-year Estimates



Photo: <https://www.caba.org.uk/help-and-guides/information/exercise-older-adults>

Persons with Disabilities

In September 2012 the American Community Survey released County- and City-level estimates regarding the disability characteristics of the MPO's population during the 2011 year. According to the 2015 American Community Survey, disability is defined as the product of interactions among individuals' bodies; their physical, emotional, and mental health; and the physical and social environment in which they live, work, or play. Disability exists where this interaction results in limitations of activities and restrictions to full participation at school, at work, at home, or in the community.

The questions asked in the 2015 American Community Survey cover six disability types. The six types of disability categorized include:

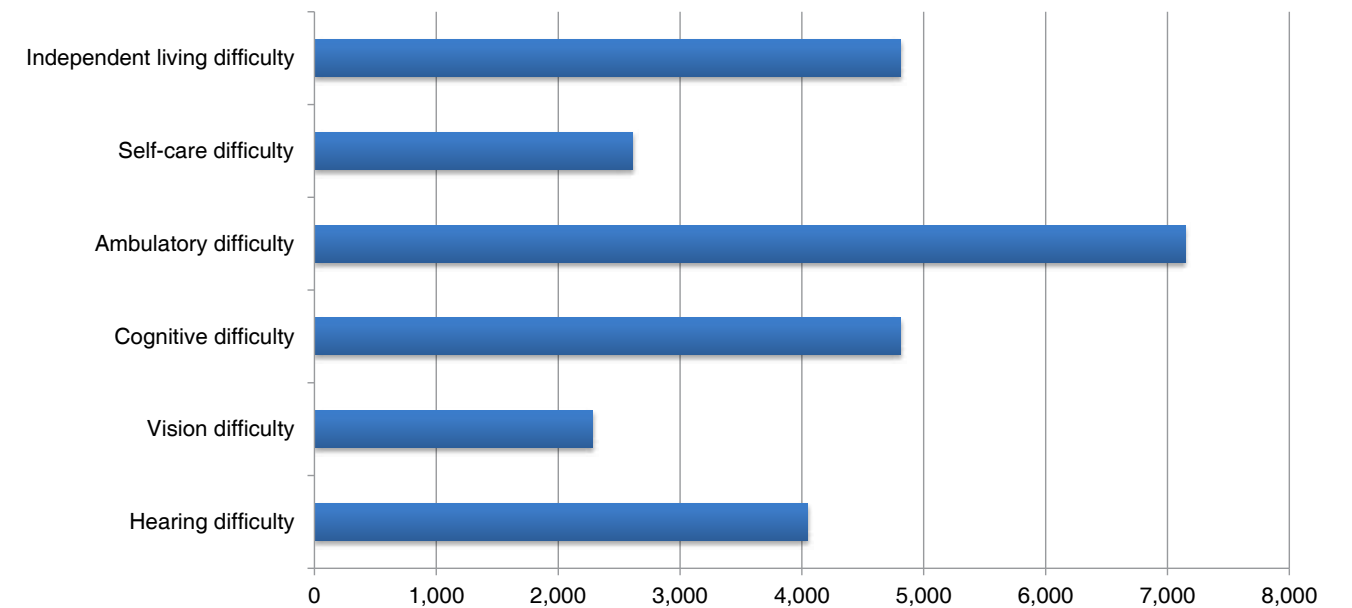
- **Independent living difficulty:** Because of a physical, mental, or emotional problem, having difficulty doing errands alone such as visiting a doctor's office or shopping (DOUT).
- **Self-care difficulty:** Having difficulty bathing or dressing (DDRS).
- **Ambulatory difficulty:** Having serious difficulty walking or climbing stairs (DPHY).
- **Cognitive difficulty:** Because of a physical, mental, or emotional problem, having difficulty remembering, concentrating, or making decisions (DREM).
- **Vision difficulty:** Blind or having serious difficulty seeing, even when wearing glasses (DEYE).
- **Hearing difficulty:** Deaf or having serious difficulty hearing (DEAR).

- **Cognitive difficulty:** Because of a physical, mental, or emotional problem, having difficulty remembering, concentrating, or making decisions (DREM).
- **Vision difficulty:** Blind or having serious difficulty seeing, even when wearing glasses (DEYE).
- **Hearing difficulty:** Deaf or having serious difficulty hearing (DEAR).

Disability status is determined from the answers from these six types of difficulty. For children under 5 years old, hearing and vision difficulty are used to determine disability status. For children between the ages of 5 and 14, disability status is determined from hearing, vision, cognitive, ambulatory, and self-care difficulties. For people aged 15 years and older, they are considered to have a disability if they have difficulty with any one of the six difficulty types.

Figure 1-16 provides estimates of these characteristics for Albemarle County and the City of Charlottesville. The total share of the population with disabilities increases with age and estimates skew toward residents living with an "Independent Living Difficulty."

Number of People by Disability in Charlottesville-Albemarle MPO Area (Figure 1-16)

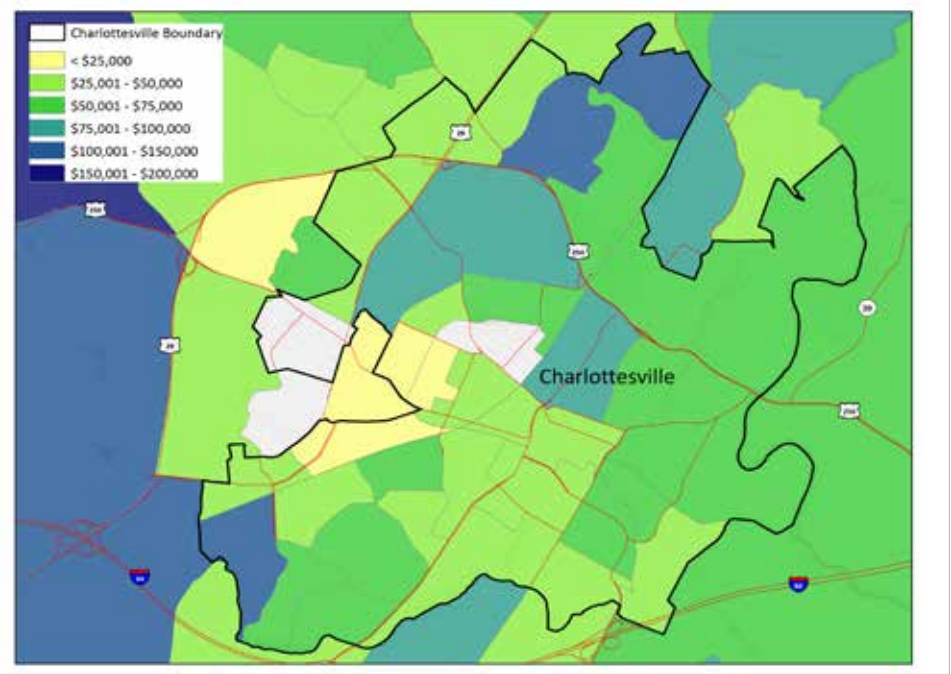


Source: U.S. Census Bureau, 2015 American Community Survey, 5-year Estimates

Low-Income

According to the U.S. Census Bureau 2011-2015 American Community Survey (ACS) 5-year estimates, Poverty Status in the Past 12 Months, 6.5% of residents in the Albemarle County portion of the MPO area, and 10.8% of residents in the City of Charlottesville live below the poverty level (Figure 1-18). Poverty thresholds are the dollar amounts used to determine poverty status by the U.S. Census Bureau. Each person or family is assigned one out of 48 possible poverty thresholds, which vary according to size of the family and ages of the members. Persons living in poverty frequently live in low-resource communities where the outcome of a planning project can be higher risk for residents. Additionally, low-income residents are often not active in planning processes due to limited leisure time and energy outside of work and family responsibilities. Engaging low-income communities that could be affected by planning processes is important because appropriate planning projects have the potential to improve a community's quality of life.

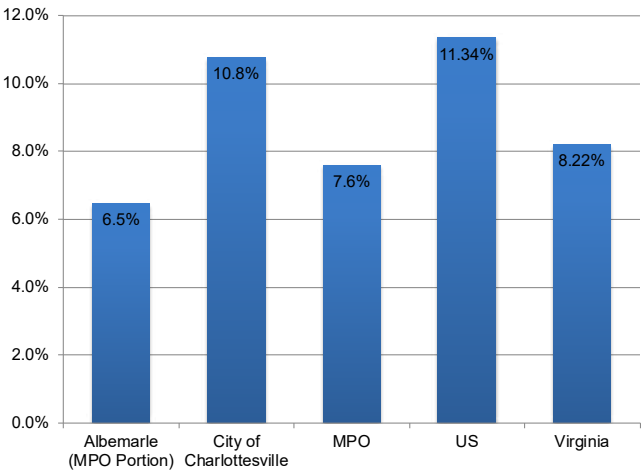
Median Household Income in 2015 by Block Group, Charlottesville view (Figure 1-17)



Source: U.S. Census Bureau, 20115 American Community Survey, 5-year Estimates

Percentage of People living below Poverty Line in 2015 (Figure 1-18)

Due to the large population of unemployed full-time students at UVA the survey results are skewed. Census block groups on, and adjacent to, the UVA campus have a median household income less than \$20,000, likely because a majority of the residents in these areas are students. There are a few block groups (e.g. east of the UVA campus in the 10th & Page neighborhood; in the southeast Belmont neighborhood; and in the westernmost area of the TJPDC shown in Figure 1-17) where the median household income is also less than \$20,000, even though there are fewer students that live in these areas. The median household incomes in Albemarle County (\$68,449) is significantly greater than the national average (\$53,889), and due to the student-populated block groups adjacent to the UVA campus, the median household income in City of Charlottesville (\$49,775) is lower than both the national and Virginia state average (\$65,015).

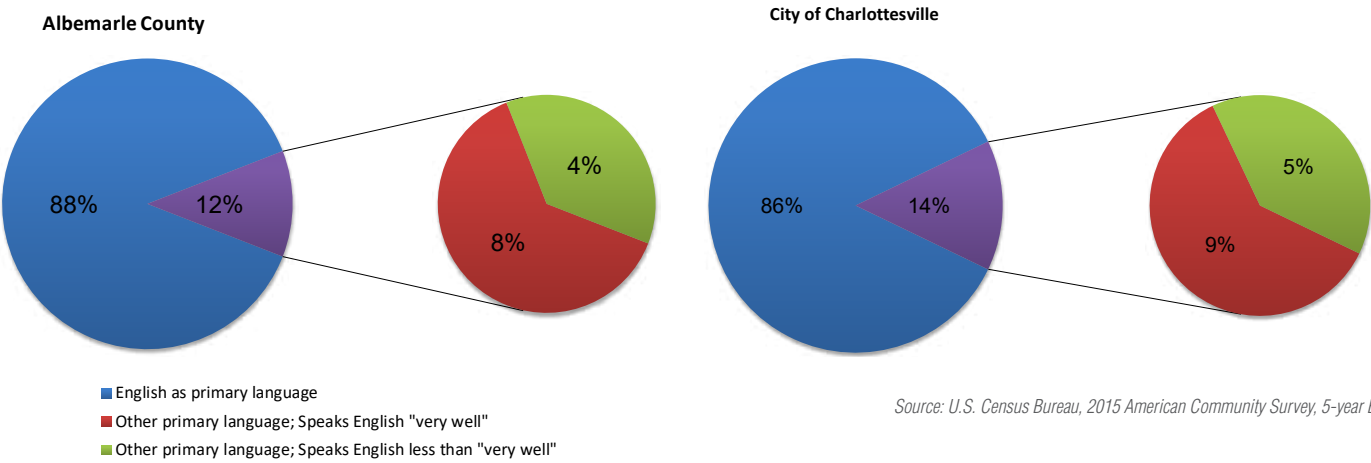


Source: U.S. Census Bureau, 20115 American Community Survey, 5-year Estimates

Limited English-Speaking Population

Limited English-speaking populations make up approximately 4.7% of the Charlottesville-Albemarle total population. This 4.7% equates to 6,645 citizens in a total population of 139,986. The largest group within this cohort is Spanish-speaking. The percentage of City and County populations that speak limited English are broken down further in Figure 1-19. These populations require targeted outreach in an appropriate language.

Limited-English Speaking Populations (Figure 1-19)



Source: U.S. Census Bureau, 2015 American Community Survey, 5-year Estimates

Responsibilities and Strategies

The MPO makes efforts to include stakeholders in both the development and approval of regionally-significant transportation plans; to ensure that its planning efforts are holistic and include all populations that are part of the regional community. The MPO hosted three public input events in addition to two public hearings prior to the approval of the 2045 Plan. There have also been a variety of ways to comment on the plan. Residents were able to provide comments at the events, at MPO committee meetings, through the website comment box, or directly to MPO staff. Also, as a federally-funded agency, the Charlottesville-Albemarle MPO has developed a method for receiving and handling complaints should they be made.

Growth Projections

The contents of this chapter describe the Charlottesville-Albemarle MPO as it exists today. Between now and the year 2045 the population is expected to change both in size and composition. Between the year 2015 and the year 2045, the population living within the MPO is expected to increase by 35.3%. Most of this growth is expected to occur in Albemarle County, with comparatively little in Charlottesville. Table 1-1 shows the population growth projections for Charlottesville and Albemarle (within the MPO) for the year 2045.

Population Growth Projections for 2045 (Table 1-1)

Charlottesville			Albemarle (within MPO)			MPO Total		
2015	2045	% increase	2015	2045	% increase	2015	2045	% increase
48,326	56,770	17.5%	85,129	123,822	45.5%	133,455	180,592	35.3%

Source: Rivanna Water and Sewer Authority Regional Water Demand Forecasts, August 24, 2011

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- [Figure 2-5b:](#) Charlottesville Amtrak Station Boardings/Disembarkings
- [Figure 2-6:](#) Existing Bicycle Infrastructure
- [Figure 2-7:](#) Existing Sidewalk Infrastructure
- [Figure 2-8:](#) Virginia's Inbound/Outbound/Internal Truck Tons
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► Overview

This section provides an overview of the regional transportation network, focusing on roadways, bridges, freight, public transit, passenger rail, bicycle and pedestrian facilities, and travel demand management. The physical infrastructure and transportation programming in the MPO influence how the existing transportation system is used and informs opportunities for future improvements.

► Roadways

The following section identifies primary roadways in the Metropolitan Planning Organization (MPO) region and indicates deficient bridges.

Roadway Classification

Per the Federal Highway Administration (FHWA) and American Association of State Highway Transportation Officials (AASHTO), functional classification is the process by which streets and highways are grouped into classes, or systems, according to the character of traffic service that they are intended to provide.

There are three functional classifications: arterial, collector, and local roads (FHWA 2012). Arterials provide the highest level of service at the greatest speed for the longest uninterrupted distance, with some degree of access control. These roads are typically classified as principal arterials (sub-grouped by Interstate, Freeway/Expressway, and other principal arterials) and minor arterials. Collectors provide a lower level of service at a slower speed, and provide service for shorter distances by collecting traffic from local roads and connecting them with arterials. Collectors are typically classified as major collectors and minor collectors. Finally, local roads consist of all roads not defined as arterials or collectors, and primarily provide access to land with little or no through traffic.

VDOT further classifies roadways as interstate, primary, or secondary roads. Interstates are limited access highways that connect states and major cities. Primary roads connect cities and towns with each other and with interstates. Secondary roads are local connector and county roads, and are generally designated with Route numbers 600 and above.

Roadway Classification in the MPO (Figure 2-1)



Roadways within the MPO

The region’s road network consists of primary, secondary, and local roads. The MPO region contains only one interstate: Interstate 64. US primary roads within the MPO region include US Routes 29, 250, 22, 20, and 53. These are the most heavily-used commuter and commercial routes (VDOT 2010).

A network of secondary roads provides residents with connections to local and regional centers. Charlottesville and urban areas of Albemarle County function as hubs for commercial and economic development within the Planning District. Residents from both the urban core and outlying rural areas commute to Charlottesville for work, shopping, and recreation. The following describes the primary and secondary roadways in the MPO region:

» Interstate 64

Interstate 64 is an east-west highway that connects the region to Interstate 95 (to the east) and Interstate 81 (to the west). The interstate carries through-traffic, but also serves local traffic in Albemarle County, especially during rush hour, making it a key roadway in the commuter network. Residents and visitors use Interstate 64 to access urban centers and other primary roads.

» U.S. Route 29

US 29 is a north-south route that links the region to Washington, D.C. (to the north) and North Carolina (to the south). Within the region, US 29 runs through Greene, Nelson, and Albemarle Counties, as well as the City of Charlottesville, and is the major commuter and truck freight route through central Virginia, connecting Danville, Lynchburg, and Charlottesville. Increased development along US 29 in the Places29 development area of Albemarle County has led to an increase in traffic between the area and Charlottesville. This six-mile section ranges from four to eight lanes and has been the focus of extensive improvements through multiple projects known collectively as “Route 29 Solutions”. US 29 to the south of Charlottesville is a less-trafficked, four-lane highway that connects with more rural areas of Albemarle County.

» U.S. Route 250

US 250 is an east-west corridor that roughly parallels Interstate 64 and connects the Pantops area, Charlottesville, Ivy, and Crozet. The US 250 Bypass was created to provide an alternative route around downtown Charlottesville. The eastern leg of US 250 in Albemarle County is used by commuters from Fluvanna and Louisa County. Rapid development in Pantops, including Martha Jefferson Hospital, two shopping centers, a large retirement community, and increased residential development, is increasing the amount of traffic on US 250, particularly at Free Bridge.

» State Route 22

Route 22 intersects US 250 at Shadwell and runs east-west through Louisa County. The road runs through the Town of Louisa and handles a moderate amount of local traffic. Route 22 passes through Green Springs National Historic Landmark District and experiences tourist traffic moving through Louisa County to Shadwell: the birthplace of Thomas Jefferson.

» State Route 20

Another primary road in Albemarle County is Route 20, a rural highway that runs north-south and connects Charlottesville to the Town of Scottsville. Because it is designated by VDOT as a Virginia Byway for its scenic and historic qualities, and is part of the historic “Journey Through Hallowed Ground,” Route 20 carries a moderate amount of tourist traffic.

» State Route 53

Route 53 extends from Albemarle County into Fluvanna County and intersects with US 15 in Palmyra. This road, along with secondary Route 616, is heavily used by commuters from the northwest section of Fluvanna County, particularly those originating from the Lake Monticello community. Tourists also use Route 53 when traveling to Monticello and Ashlawn: the historic homes of Thomas Jefferson and James Monroe, respectively.

» Secondary Roads

The MPO also has a network of heavily-used secondary roads which provide residents with connections to local and regional centers. The City of Charlottesville has a dense roadway network that includes 108.31 miles of secondary roads. Albemarle contains 858.94 miles of secondary roads, 220.20 miles of which are unpaved. Secondary roads provide connections from developed areas, residential, or commercial, to larger scale regional roads or primary roads. Secondary roads are typically more robust than local roads. Examples of secondary roads in the urban area are Rio Road and Hydraulic Road.

Bridges

VDOT assesses condition for over 100 bridges, and over 100 additional culverts, in Charlottesville and Albemarle County. Like roadways, the City of Charlottesville is responsible for bridges within its boundaries while VDOT maintains bridges in Albemarle County. Additional information about bridges is provided in Chapters 5 and 7.

Public Transit

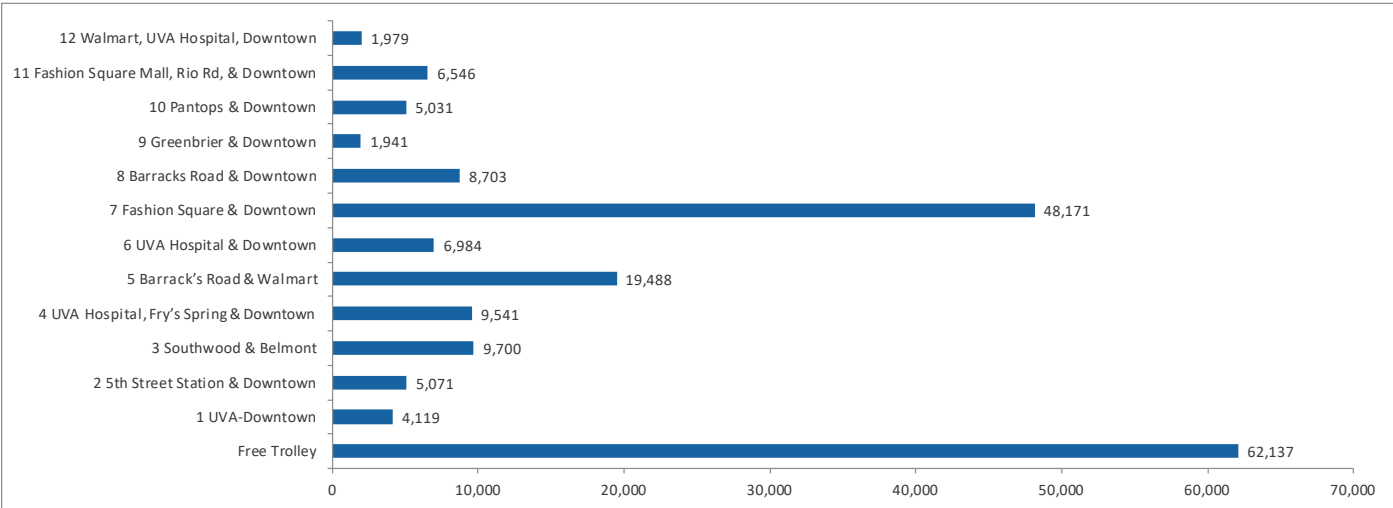
Several public transit options exist within the MPO region, including commuter, local, regional and intra-county bus service provided by Charlottesville Area Transit (CAT), JAUNT, and University Transit Service (UTS). In 2017, the Regional Transit Partnership (RTP) was formed to increase communication and coordination between transit providers, and identify regional transit goals and opportunities. The region is served by inter-city bus service provided by Greyhound; and inter-city passenger rail service provided by Amtrak.

Charlottesville Area Transit (CAT)

CAT provides public bus service to the greater Charlottesville area. CAT offers 14 daytime and four nighttime routes, serving an average of 7,500 riders daily during the workweek. Displayed in Figure 2-2, the routes with the highest ridership are the Free Trolley, running from Downtown to UVA (33% of trips); Route 7, running from Downtown to Fashion Square Mall (25% of trips); and Route 5, running from Barracks Road to Wal-Mart (10% of trips). Additional ridership information can be found on the RTP webpage (Monthly Transit Ridership Reports section).

CAT serves a variety of groups within the Charlottesville-Albemarle area and offers several fare types to meet riders’ needs. Free ridership is offered to children age five and under; youth ages six to eighteen (summer only); and UVA students, faculty, and staff. Reduced fares are offered to senior citizens and persons with disabilities.

CAT Monthly Ridership by Route (Oct 2017) (Figure 2-2)



Source: 2017 CAT Transit Ridership Data

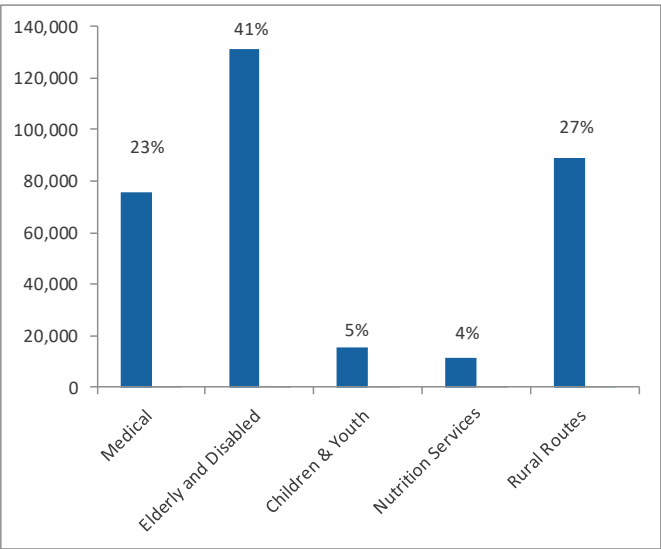
JAUNT

JAUNT is a regional transportation system for Central Virginia and serves as the Americans with Disabilities Act (ADA) paratransit service for CAT. JAUNT is funded by Charlottesville, Albemarle, and other local governments, and uses Federal, State, and local funding to supplement fares.

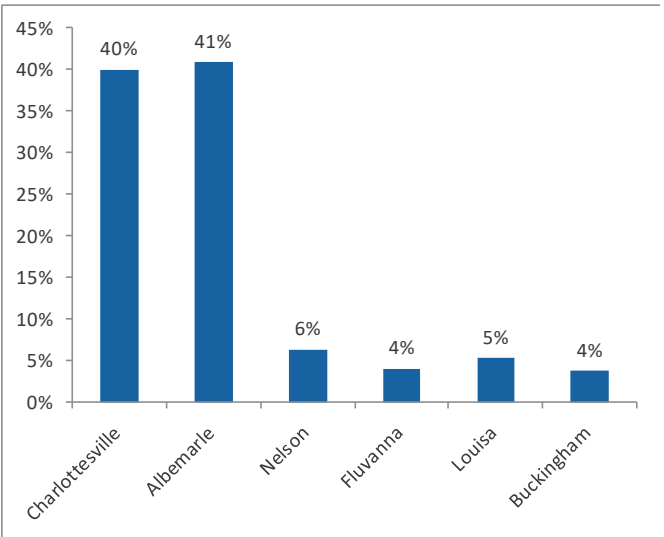
Service is available for all residents of Charlottesville and five surrounding counties in Central Virginia (Albemarle, Fluvanna, Louisa, Nelson, and most recently, Buckingham), and reduced fares are offered for persons with disabilities. JAUNT offers both fixed route and door-to-door service. For door-to-door service, riders must schedule trips by phone or e-mail. The fixed-route services operated by JAUNT include the 29 Express and Park Connect, with a planned service between Crozet and Charlottesville.

Figure 2-3 shows annual ridership by service type in Fiscal Year 2016-17, with a total ridership of 322,822. JAUNT’s highest ridership was in Charlottesville and Albemarle, as shown in Figure 2-4, accounting for 81% of rides taken in FY 2016-17.

JAUNT Ridership by Service Type FY16-17 (Figure 2-3)



JAUNT Ridership by Place of Origin FY16-17 (Figure 2-4)



University Transit Service (UTS)

UTS is the transit service UVA provides to its students, faculty and staff, and the general public. UTS services UVA Hospital and the Central, West and North Grounds of UVA. It also provides service to popular student housing areas, including Jefferson Park Avenue, Grady Avenue, Rugby Road and 14th Street. UTS currently operates six routes. Service hours vary by day, route, and time of year. UTS is funded through student activity fees, so there is no fare collected on board the buses. The general public is also permitted to ride “fare free” through a reciprocal agreement with CAT that began in 2008.

Regional Transit Partnership (RTP)

The Regional Transit Partnership (RTP) serves as an official advisory board, created by the City of Charlottesville, Albemarle County and JAUNT, in partnership with the Virginia Department of Rail and Public Transportation to provide recommendations to decision-makers on transit-related matters. There are four main goals of the RTP:

- Establishing Strong Communication
- Ensuring Coordination between Transit Providers
- Set the Regions Transit Goals and Vision
- Identify Opportunities

More information can be found on the RTP webpage

Inter-Regional Bus Service

Greyhound offers inter-city bus service from a station on West Main Street in Charlottesville. Bus service is available throughout the day to destinations including Richmond, Lynchburg, Roanoke, Fredericksburg, and Washington DC, with connections available to other major metropolitan areas (Greyhound). Megabus also offers inter-city bus service, with one daily trip between the train station in Charlottesville to Union Station in Washington DC, where passengers can transfer to other bus or rail routes.

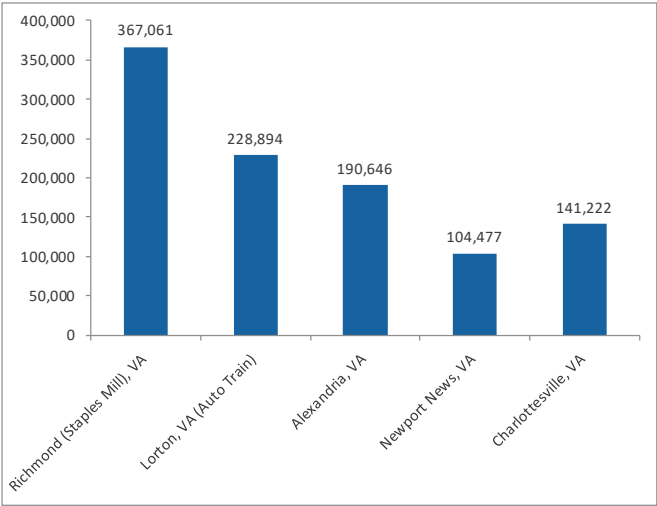
Inter-Regional Passenger Rail

Amtrak currently operates three service routes from Charlottesville Union Station (CVS): the Crescent, running daily from New York City to New Orleans; the Cardinal, operating three days per week between New York City and Chicago; and the Northeast Regional, offering daily service from Roanoke to New York City.

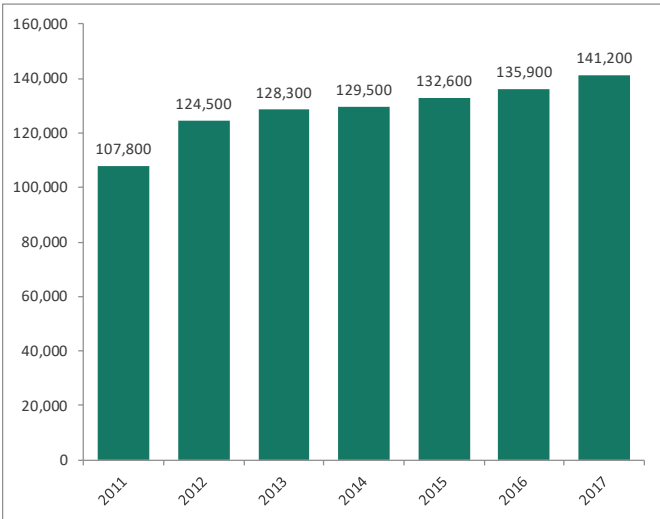
Amtrak’s Northeast Regional line has become a reliable transportation alternative for commuters and travelers along the eastern seaboard. Although Virginia is not strictly part of the Northeast Corridor, some Northeast Regional trains continue into Virginia, serving the stations listed in Figure 2-5a. Northeast Regional service south to Alexandria, Richmond, Williamsburg, and Newport News formally began on June 14, 1976. In October 2009, Amtrak extended the Northeast Regional with daily service from Alexandria, VA, via Burke, Manassas, Culpeper, and Charlottesville, to Lynchburg. From late October 2017, this service extended to provide same-seat trips to and from Roanoke, VA. The Washington – Lynchburg service increased by 2.6% in FY 2017 in comparison with FY16, attaining a total of 189,800 passengers. State funding is committed for a second daily train between Roanoke and Washington DC, but this has not been implemented yet due to challenges associated with capacity on the tracks and working with the host railroad company.

As evident in Figure 2-5a, the Charlottesville station is one of the top stations in the state in terms of total ridership, and the ridership has been increasing steadily since FY11 as shown in Figure 2-5b (Rail Passengers Association 2018). An evaluation by Amtrak indicated that the current station does not have the recommended space and capacity to handle the high passenger volumes using the station.

Total Amtrak Station Boardings/Disembarkings for Top Stations in Virginia FY17 (Figure 2-5a)



Charlottesville Amtrak Station Boardings/Disembarkings FY11-FY17 (Figure 2-5b)



Bicycle and Pedestrian

An update to the Jefferson Area Bicycle and Pedestrian Plan was approved by the MPO Policy Board in March 2019. The plan seeks to encourage implementation by providing a focused list of regionally-significant bicycle and pedestrian projects that enhance connectivity and provide routes to important residential and economic centers.

Charlottesville is a bicycle-friendly city, having earned the League of American Bicyclists’ silver designation as a “Bicycle Friendly Community” in 2012. (League of American Bicyclists). The University of Virginia also received a silver designation from the League of American Bicyclists, as a “Bicycle Friendly University.” Charlottesville was designated a “Gold-Level Pedestrian Community” by Walk Friendly Communities due to its high rates of walking, innovative planning practices, and a centralized, successful Downtown Pedestrian Mall. (Walk Friendly Community). Nonetheless, the region can continue to increase efforts to improve conditions for people biking and walking. Improving safety is a particularly important aspect noted in the updated regional plan, and relevant for the safety performance measure targets discussed in Chapter 4.

Data in the Existing Infrastructure maps on pages 26-27 was assembled from existing facility inventories maintained by Albemarle County, VDOT and the City of Charlottesville. This data was supplemented with an inventory performed by TJPDC interns during the summer of 2017. The existing condition data is not complete and is in the process of being updated. One of the action items from The Jefferson Area Bicycle and Pedestrian Plan is for Albemarle, Charlottesville, UVA and the Planning District Commission to develop procedures to maintain and share comprehensive bicycle and pedestrian infrastructure and facility data. This will include an online regional dataset and map of existing and proposed bicycle and pedestrian infrastructure.

The maps on pages 26-27 show:

- Existing Bicycle Infrastructure: This includes all bike lanes, shared use paths and shared roadways.
- Sidewalk Infrastructure: This includes sidewalks and walkways. The inventory primarily includes sidewalk facilities that are on public roadways or provide access to major businesses like shopping centers.
- Bike Route 76: Bike Route 76 is a designated, national, on-road bike route that traverses the region. It is the only designated bike route to pass through the Planning District.



Construction of McIntire Park shared use path bridge, Photo: City of Charlottesville

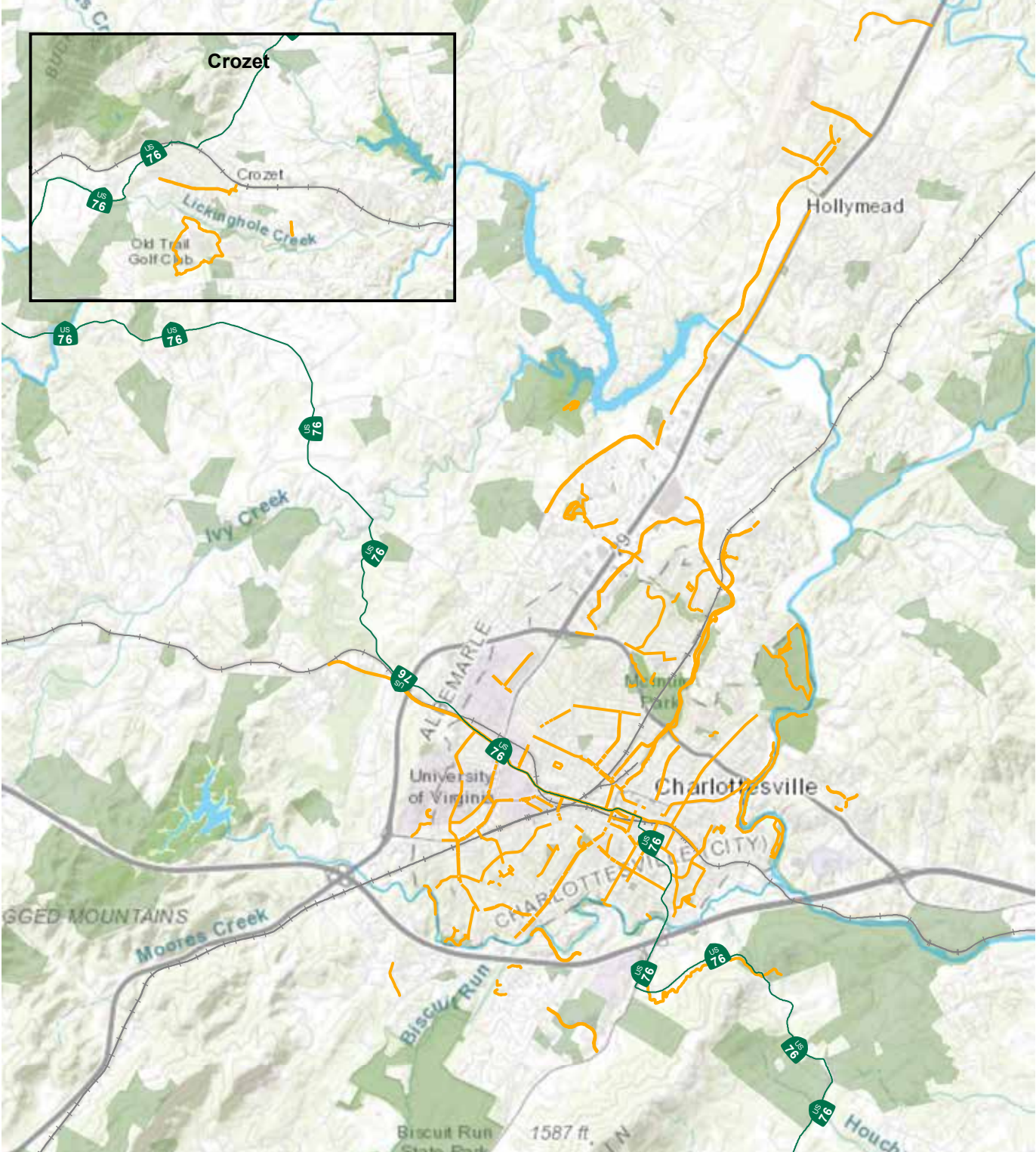


Figure 2-6
Existing Bicycle Infrastructure

- FEATURES**
- Parks and Conservation
 - Lakes and Rivers
 - Railroads
 - Bicycle Infrastructure
 - Bike Route 76

ABOUT THIS MAP:
This map provides a contextual reference to the City of Charlottesville, the urbanized area of Albemarle County and surrounding area. The map depicts existing bicycle infrastructure.

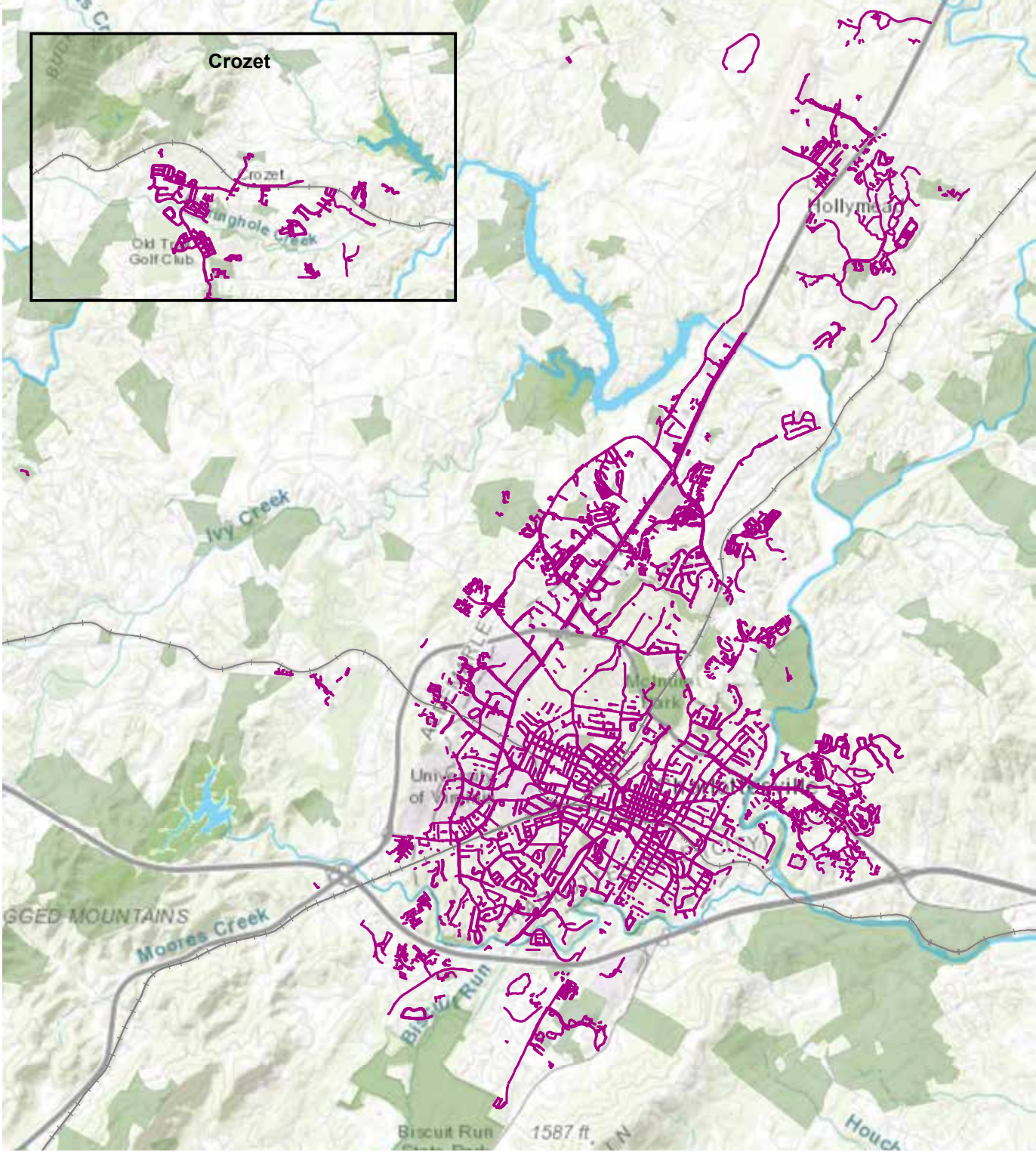


Figure 2-7
Existing Sidewalk Infrastructure

- FEATURES**
- Parks and Conservation
 - Lakes and Rivers
 - Railroads
 - Sidewalk Infrastructure

ABOUT THIS MAP:
This map provides a contextual reference to the City of Charlottesville, the urbanized area of Albemarle County and surrounding area. The map depicts existing pedestrian infrastructure.

Freight

The identification of freight corridors and preservation of freight mobility is a component of the Long Range Transportation Plan. The MPO is primarily served by truck freight and supplemented by rail service.

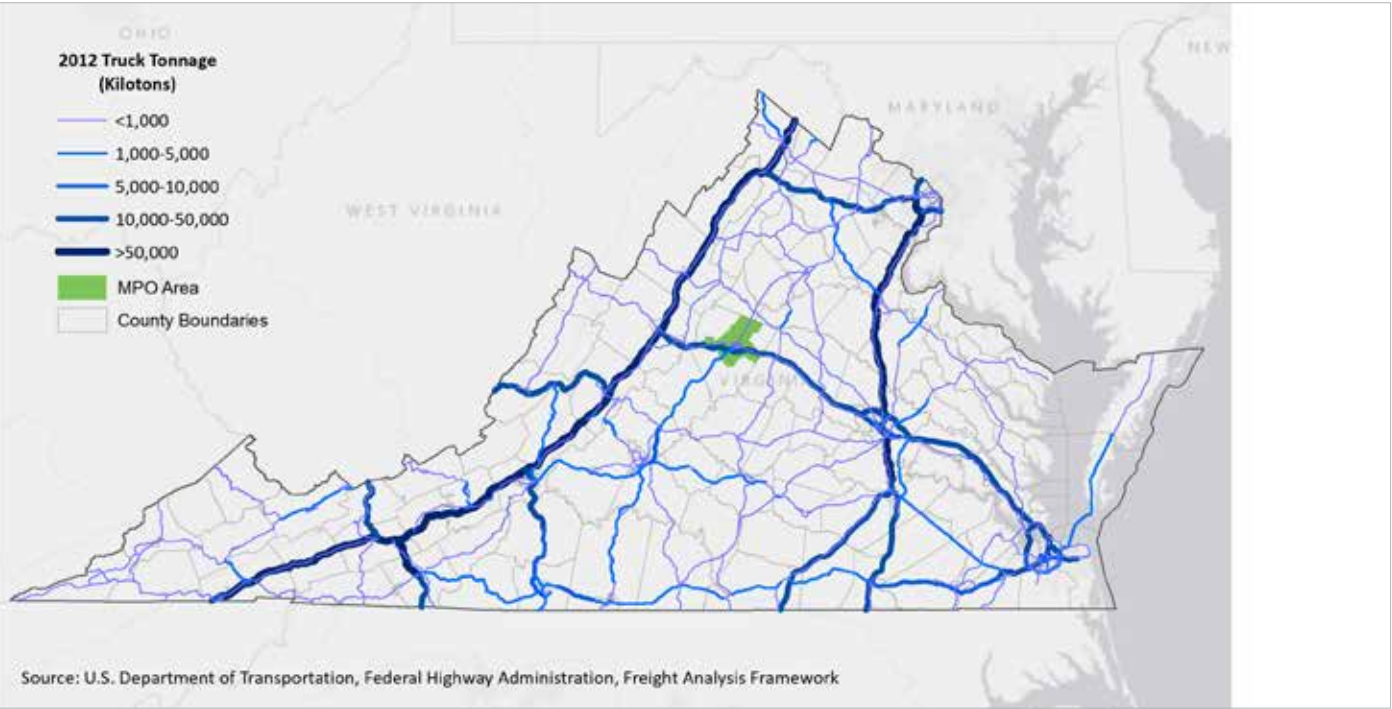
Truck

In the MPO region, Interstate 64 is the primary east-west truck route, transporting goods statewide and connecting neighboring industrial centers. In 2015, the portion of Interstate 64 which runs through the MPO area carried a daily truck traffic volume that is approximately 11% of total daily traffic in the region. Truck freight also utilizes US 29. US 29 not only serves as the primary truck route in the north-south direction, but also facilitates freight routing changes. One of those routing changes, US 250, also carries significant freight traffic and has become a major shipping corridor in recent years. Maintaining and improving the roadways for such movement is critical to the region’s economic development and sustainability.

Three roadways provide primary access to the major commercial areas and business centers at the center of the MPO region: Interstate 64, US 29, and US 250. At times, US 29 has become congested due to traffic volume, hilly terrain, reduced speed limit, and the number of signalized intersections, creating difficult driving conditions for freight trucks. This was one reason why VDOT supported multiple projects known collectively as “Route 29 Solutions”. Continued implementation of Route 29 projects is necessary so that Charlottesville does not become a bottleneck for freight on the US 29 corridor.

As evident from the Freight Analysis Framework (FAF) data shown in Figure 2-8, the highest densities of truck activity are at Virginia’s major population hubs: Northern Virginia, Richmond, and Hampton Roads, with concentrations also visible at Roanoke, Lynchburg, and Charlottesville. Around 32,000-34,000 tons of freight are carried through I-64 in the Charlottesville-Albemarle MPO area, with closer to 1,000 tons carried on US 29.

Virginia’s Inbound/Outbound/Internal Truck Tons (2012) (Figure 2-8)

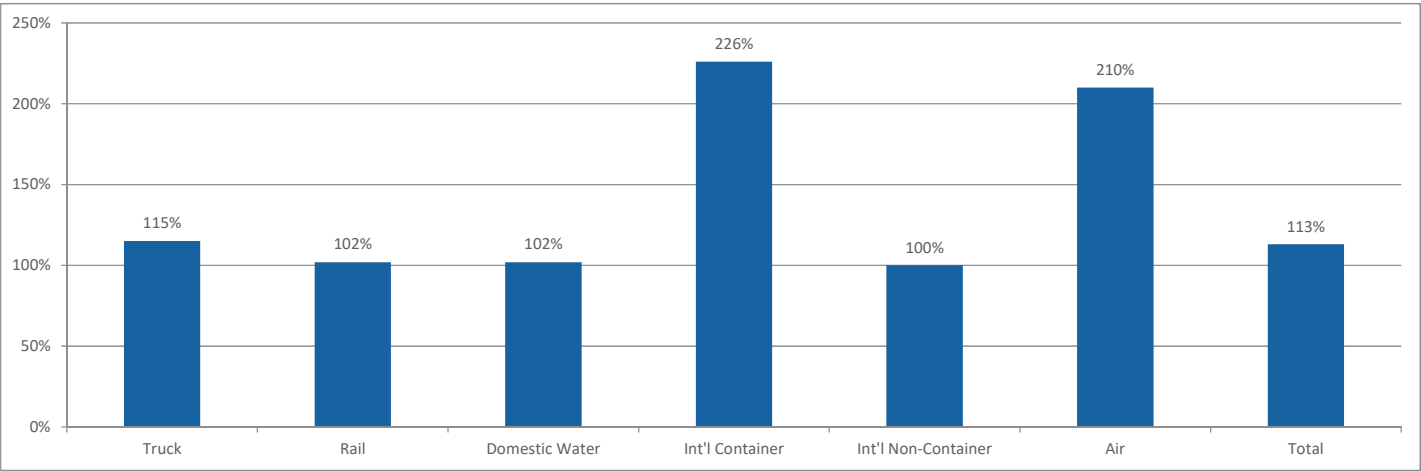


Rail

Freight rail is provided via two railroads which cross at grade in downtown Charlottesville: CSX Transportation and Norfolk Southern Corporation, two of the largest railroad conglomerates in the U.S. The Norfolk Southern line travels north-south through Albemarle County, the City of Charlottesville and Nelson County. The CSX line follows a roughly east-west route through Albemarle County, the City of Charlottesville, and Louisa County, carrying primarily empty coal cars.

CSX has recently leased its short line to the Buckingham Branch Railroad, the majority of which lies in Louisa County. A second CSX route roughly follows the James River in Albemarle, Nelson, and Fluvanna counties. Both Norfolk Southern and CSX have only a few freight sidings or off-loading sites in the region (CvilleRail). As evident in Figure 2-9, both truck and rail freight in Virginia are expected to more than double from their 2004 tonnage by 2035.

Projected Growth in VA Freight Tonnage (Figure 2-9)



Source: Virginia Statewide Multimodal Freight Study, Phase I



Photo: TJPDC

► Airport

Charlottesville-Albemarle Airport (CHO)

Charlottesville-Albemarle Airport (CHO) is the only commercial service airport in the region. CHO is located eight miles north of Charlottesville and one mile west of US 29 on Airport Road. It is both a general aviation and commercial service airport, offering 50 daily non-stop flights to and from Charlotte, Philadelphia, New York/LaGuardia, Washington/Dulles, Atlanta and Chicago. The airport is served by Delta, United, and American Airlines. The number of enplaned and deplaned passengers has been steadily increasing since 2013. In Fiscal Year 2017, the number of enplaned and deplaned passengers reached 315,099 and 313,512 respectively, marking a 10% increase from Fiscal Year 2016. General aviation facilities include an executive terminal offering a full-service fixed-base operation, a flight school, and aircraft charter firms.

Transportation to and from CHO is generally limited to automobile, although recently-completed bicycle and pedestrian facilities along Berkmar Drive have increased multimodal access to the airport. Daily and hourly parking are available at the airport. Car rentals are available in the terminal facility. Many area hotels provide shuttle service from the airport for guests. Taxi companies also provide service to CHO.



Photo: CHO Airport

► Travel Demand Management

Two programs currently implemented for regional Travel Demand Management (TDM) in the MPO region include RideShare and Park & Ride Lots.

RideShare

RideShare is a program housed within the TJPDC, in cooperation with the Central Shenandoah Planning District Commission (CSPDC), working to reduce traffic congestion and increase mobility throughout Central Virginia and the Central Shenandoah Valley. Services include free carpool matching, vanpool coordination, and a Guaranteed Ride Home program to provide free rides home in an emergency. RideShare also works with employers to develop and implement traffic reduction programs and advertises the region’s Park and Ride lots. There were 521 members in the RideShare carpool matching program and 183 registered users in the Guaranteed Ride Home program as of October 2018 (RideShare).

Park & Ride Lots

There are twenty-seven Park & Ride lots within the RideShare service area – twenty-two located within the TJPDC, twelve of which are located within the MPO area, as listed in Figure 2-10. Some of these lots are formal facilities managed by VDOT and others are informal lots made available to commuters by businesses or organizations that own the property.

Quarterly inventories of the lots are conducted by RideShare. The most active lot is in Waynesboro, with an average of 65 cars each weekday (AUG2). Based on interviews conducted at the lot, and data collected from RideShare, the majority of members parking at this lot are commuting to Charlottesville. The second most active lot is at Zion Crossroads (LOU1), with an average of 40 cars each weekday. Data on commuting destinations was not available for this lot, but Charlottesville and Richmond are likely the primary destinations.

Park and Ride Lots in Region (Figure 2-10)

Albemarle County

- ALB1: Maple Grove Christian Church
- ALB2: Forest Lakes North Health Services Center
- ALB3: Peace Lutheran Church
- ALB4: Wal-Mart South Lot
- ALB5: Mountainside Senior Living
- ALB6: Darden Towe Park
- ALB7: US 29 South and I-64
- ALB8: Avon Street Extended
- ALB9: Keene
- ALB10: Scottsville

Augusta County

- AUG1: Verona
- AUG2: Waynesboro Town Center

City of Charlottesville

- CVL1: Azalea Park

Fluvanna County

- FLU1: Beaver Dam Baptist Church
- FLU2: Lake Monticello (Jefferson Centre)

Greene County

- GRN1: Greene County School System
- GRN2: Ruckersville Walmart

Louisa County

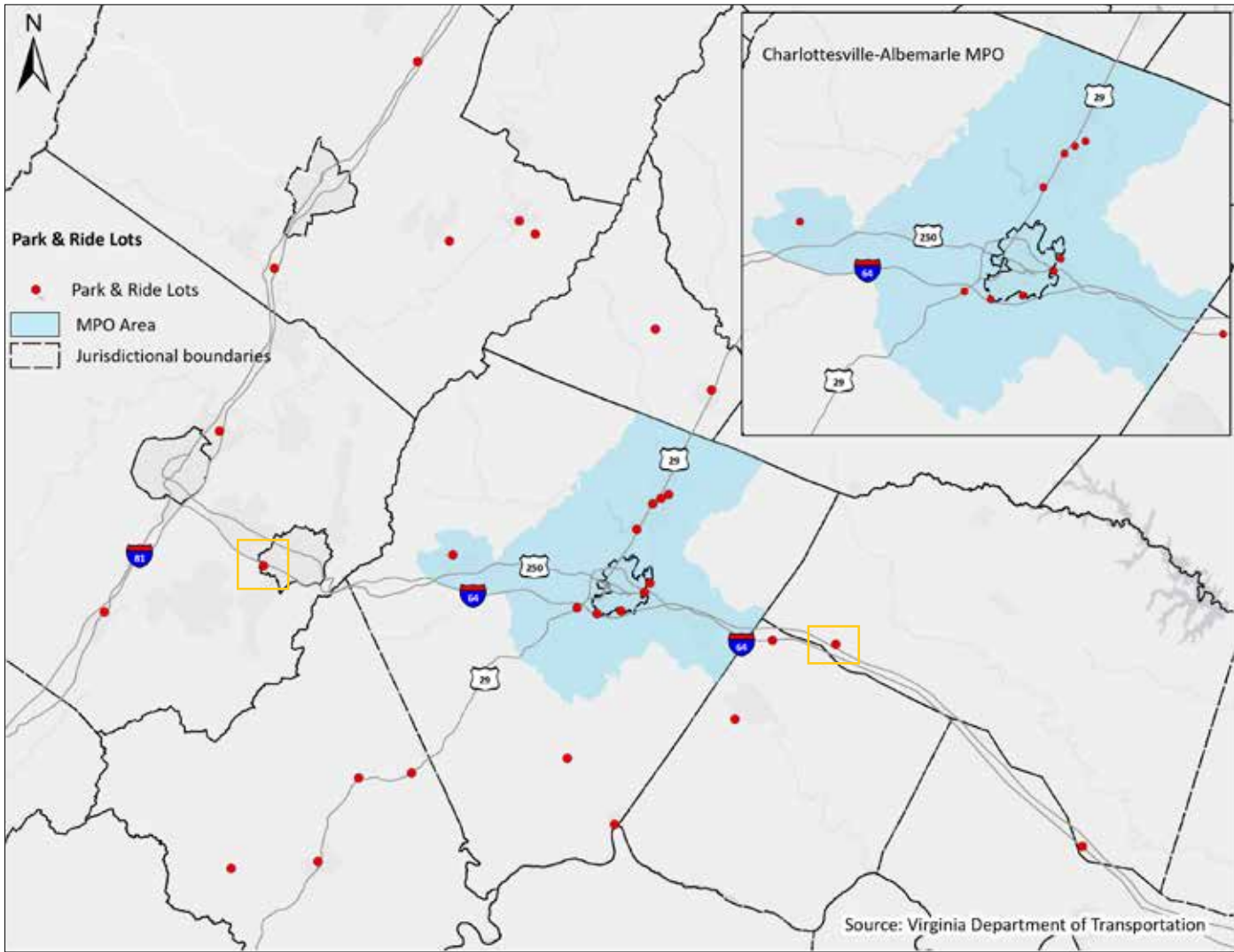
- LOU1: Zion Crossroads
- LOU2: Gum Springs

Nelson County

- NEL1: Route 6 East
- NEL2: Route 6 West
- NEL3: Lovington Volunteer Fire Department
- NEL4: Route 655 and Route 151

Rockingham County

- ROC1: Massanutten
- ROC2: Elkton - Blue and Gold Dr
- ROC3: Elkton - Tanyard Bridge Road
- ROC4: Mt. Crawford



Most Active Lots

Chapter 3: Planning for Uncertainty

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► Overview

This chapter discusses some of the uncertainties related to long-range transportation planning. The chapter provides an overview of technologies and trends that are important factors in transportation planning.

► Changing Technologies

The transportation sector is entering into a period of rapid change and technological disruption. New services such as bike sharing and Transportation Network Companies (TNCs) coupled with a move towards autonomous vehicles and connected infrastructure are forces that are reshaping how people and goods move. These new technologies and new modes of transportation have the potential to radically reshape the transportation landscape as they mature. With some of the technologies being new there is very little consensus around how to plan for them and make assumptions for the future. Long-range plans require a planning horizon of 20 years and many of the planning assumptions used for that 20-year horizon are based on historical trends. These trends are changing rapidly and may not be representative of the transportation systems of the future. Therefore, it is important to monitor trends and new developments and adapt the plan to meet the needs of the changing environment. It is also important that local, regional and state decision-makers are aware of these trends and are prepared to embrace or regulate as necessary. Currently both the City of Charlottesville and Albemarle County have been taking action to encourage appropriate use of some of the new technologies described in this chapter.

This plan begins the process of understanding the current state of change and provides a baseline understanding of the new modes and technologies. Future plans will have to begin to address the changing nature of transportation. Many of the projects included in this plan are designed to fix current capacity constraints, improve operational efficiency, safety, and mode choice. Therefore, it is expected that the projects will help meet the transportation needs in both the short- and long-term.

Transportation Network Companies

The MPO area is serviced by two Transportation Network companies (TNCs) / Mobility Service Providers (MSP), Uber and Lyft. These companies rely on online-enabled platforms to connect users and drivers. One of the hallmarks of these systems is the use of non-commercial vehicles. In the Commonwealth of Virginia these are companies that “provides prearranged rides for compensation using a digital platform that connects passengers with drivers using a personal vehicle.” This is different from local taxi services, which have provided similar on-demand transportation services to the region for many decades.

The arrival of these services has already begun to change some travel behaviors especially with the large university population in Charlottesville whom lack personal cars. As these services continue to grow in popularity there is the potential for planners to need to rethink the design of downtown streets in order to better facilitate drop off and pickup activities at the curb. TNC services are likely to play a small but growing role within the timeframe of the 2045 Long Range Transportation Plan.

Bikeshare

Bikeshare programs are one form of innovation reshaping active transportation in urban areas. Bikeshare programs and other shared mobility programs attempt to address the demand for quick and affordable transportation in urban areas. Locally, The University of Virginia bikeshare program, UBIke, has been successful since it started in 2015. Nationally, due to increasing ridership of existing systems as well as new systems being built, 35 million bike share trips were taken in 2017, a 25% increase from 2016. The large increase in new systems was partly due to dockless bike share programs being introduced in 2017, causing the number of bikeshare bikes available to more than double. Station-based systems were previously the only available bikeshare option, while dockless systems address the limitation of only being able to ride bikes between stations and needing to know the station locations.

Electric Scooters

Similar to dockless bikes, many companies are introducing dockless electric scooters. In 2018, the City of Charlottesville approved a temporary Dockless Scooter and Bicycle Policy Pilot Program to evaluate their impacts in Charlottesville. The City provided permits to Lime and Bird, and the first dockless scooters were introduced in December of 2018. While a successful pilot program could lead to scooters becoming a more permanent fixture in the area, the presence of scooters in Charlottesville and other cities has also caused many concerns. If scooters are to remain in use, ensuring appropriate and safe use of them is essential. Appropriate parking of the scooters is also important, to ensure that they do not obstruct sidewalks or otherwise endanger or limit access for pedestrians. Despite bikeshare and other shared mobility programs aiming to provide affordable mobility options, the cost and dependence on smartphones and credit cards can still make them inaccessible to some segments of the population. In order to ensure that bikes and scooters are accessible to everyone, many programs have introduced discounts or subsidized passes for riders based on income thresholds and have options for text-to-unlock features. Given these concerns both locally and in cities across the nation, it is unclear if electric scooters will become a widespread transportation option or if they will disappear in the coming years.

Electric Mobility

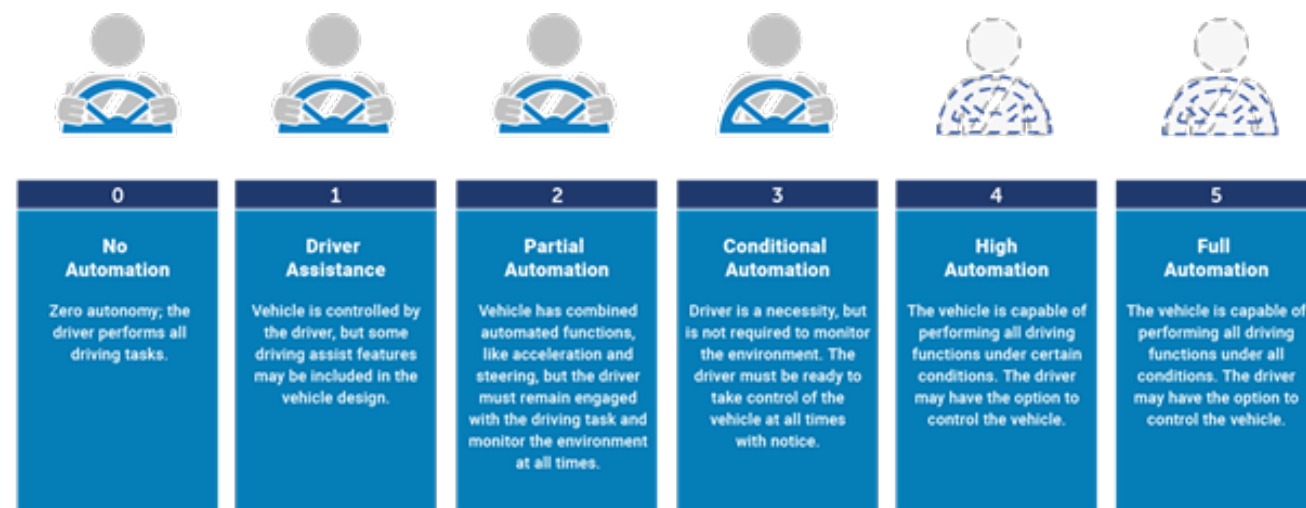
Electric bicycles (e-bikes) are now available either by purchasing one directly or through use of a service such as Lime, which offers e-bikes in some cities. Electric vehicles are also becoming common in the region and nationwide. This growth is expected to continue due to improvements in battery technology that are increasing the affordability and range of electric vehicles, and the recognition that electric vehicles emit fewer pollutants and greenhouse gases than gas-powered vehicles. The need to charge a car, bike or other vehicle adds an additional element to the transportation system, so there is increasing need for local governments to ensure that there are adequate public charging stations.

Connected and Autonomous Vehicles

Connected Vehicles (CVs) and Autonomous Vehicles (AVs) are two technologies which are likely to significantly impact transportation within the time frame of the 2045 Long Range Transportation Plan. CVs refer to vehicles which can communicate with one another to achieve goals such as reducing traffic congestion and improving safety. Autonomous vehicles refer to vehicles which can travel independently of a human operator. The precise timeframe for the widespread implementation of these technologies is uncertain with estimates ranging from the 2020's to the 2040's. There is also disagreement on the costs and benefits the technologies will have on the transportation network. Some research indicates there is a potential upside for capacity of roadways, while other predictions indicate a scenario with roads clogged with roving AVs.

The technology has several potential benefits such as reduced traffic congestion, increased safety, reduced fuel consumption and travel time, lower insurance and healthcare costs, better city planning due to less need for parking, increased productivity, and improving personal mobility and public transit. The impact of CVs and AVs on commuting patterns is not clear. Some research suggests that they could increase vehicles miles traveled (VMT) by encouraging workers to live farther away from employment and take advantage of their commute time to increase productivity. The impact of CVs and AVs on vehicle ownership is another significant factor. Some research suggests that they will reduce personal vehicle ownership and consumers will use on-demand driverless transportation services for most of their travel.

CVs and AVs also have the potential to significantly change transit, freight movement, and other travel. Since autonomous vehicles would not have drivers, costs for transit and freight would be dramatically decreased. The decrease in other limitations, such as required breaks and rest stops, may lead to these vehicles being operational more continuously or for more hours of the day.



There are barriers to widespread adoption of CVs and AVs, such as public safety and privacy concerns from possible equipment failures and cyber security. There is also uncertainty regarding the impact of partial implementation of CVs and AVs which would result in a mixed fleet of driverless and non-autonomous vehicles. Estimates for how long it would take for most of the vehicle fleet to transition from non-autonomous to driverless vehicles are generally more than ten years. National Highway Transportation Safety Administration (NHTSA) estimates that between 2016-2025 will be the period of partially automated safety features such as lane keep assist, adaptive cruise control, traffic jam assist and self-parking. Fully-automated safety features, such as highway autopilot, are not expected to be in use across a large portion of the vehicle fleet until 2025 or beyond. VDOT has developed a Connected and Automated Vehicle Program Plan and the MPO will continue to monitor systems as they evolve over the next five years.

Transit

Transit has been impacted, and will be increasingly impacted, by new technologies and their applications. Technology has increased possibilities related to bus-only lanes, and bus priority at traffic signals. Technology also has the potential to make payment of transit fares quicker and easier than in the past. Autonomous transit vehicles, including those being tested in Albemarle County, could dramatically decrease the cost of providing transit service. On-demand mobility is also an opportunity for transit agencies, as they may determine that they can provide improved service and efficiency through replacing low ridership routes with flexible, on-demand service.

Access to real-time transit data, often on cell phones, has made use of transit more desirable for riders. The increase in other transportation options, such as the on-demand mobility services provided by TNCs, may decrease the number of people using transit. It is also possible that the transportation changes discussed in this chapter will lead to fewer households owning cars and an increase in use of transit in combination with other modes.

Telecommuting and Remote Work

A growing number of area residents are working from home. The latest estimates from the U.S. Census bureau show that approximately 7% (5,402) of residents in the MPO area work from home. A 22% increase since 2010. This data is further supported by a national Gallup survey which found 43% of employees nationally spent at least some time working from home. There are a number of factors that have contributed to an increase in telecommuting. More employers are encouraging employees to telework and advances in technologies have made it more practical. Growth has been strongest in the professional and high-tech sectors.

It is expected that the teleworking trend will continue in the region. With the arrival of 5G cellular technologies and an expansion in rural broadband services, a greater number of residents will have the option to work from home, at least part time.

Sustainable and Resilient Transportation Systems

The region's transportation system is a notable source of greenhouse gas emissions and is vulnerable to the impacts of climate change both in the short- and long-term.

Use of gasoline to power vehicles contributes significantly to greenhouse gas emissions, both in this region and nationwide. Albemarle County's climate action data suggests that in the year 2000, the transportation sector was responsible for 52% of greenhouse gas emissions in the county, the largest share of emissions by sector, followed by residential uses (27%) and commercial uses (11.5%). The 2016 Greenhouse Gas Inventory by the City of Charlottesville indicated that transportation sector emissions were approximately 28% of total emissions in the city. A similar proportion came from residential uses (30%) and commercial uses (27%).

In order to reduce transportation emissions, it is essential that transportation and land use planning be coordinated. Land use decisions have a major impact on the number and length of trips made in the region, and also impact the mode used for each trip. These land use factors include the density of development and how it is connected to the transit, roadway, bicycle and pedestrian networks.

Strategies that could reduce regional transportation greenhouse gas emissions include: increasing public transit frequency and routes; building more bicycle and pedestrian infrastructure; encouraging ride sharing; installation of charging stations for electric vehicles; and increasing the number of people who work from home. Many of these strategies involve changing resident behavior to reduce the number of vehicle trips. Strategies should substantively involve citizens to successfully reduce regional greenhouse gas emissions.

Climate change raises important questions about community resilience and adapting infrastructure for an environment that may have different precipitation or temperature patterns than we experience today. For example, communities in our region, and nationally, have recently been confronted with increases in flooding. Transportation planning in the 21st century will require increased attention to both resiliency and environmental protection. Roads and parking lots are generally impervious surfaces, which increase runoff, pollution of waterways, and potential for flooding. For these reasons, transportation planning must continue to take steps such as avoiding flood prone areas and maintaining wetlands and inclusion of flood mitigation strategies.

Conclusion

Transportation planning currently involves a great deal of uncertainty. The reasons for this uncertainty range from technological innovations to an increasing need for a transportation system that is sustainable and resilient. This was considered as projects were evaluated for inclusion in the LRTP.



Photo: <https://www.stanleyconsultants.com/markets-we-serve/transportation/multi-modal/>

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► Overview

The Charlottesville-Albemarle MPO's 2045 Long Range Transportation Plan (LRTP) is a federally-mandated plan that looks ahead three decades to assess future priority transportation projects for the region. The plan considers all modes of transportation including roadways, transit, rail, bicycle, pedestrian, and air. This planning process updates the previous plan, the 2040 LRTP, which was approved by the MPO Policy Board in May 2014. This chapter describes the federal requirements fulfilled by this LRTP and the local goals and objectives that were identified as part of this LRTP process.

► Purpose

The 2045 LRTP is a fundamental document for the Charlottesville-Albemarle community. Not only does it outline the region's long-range transportation vision, it also lists projects that the region anticipates undertaking in the next 20 to 30 years in an effort to attain that vision.

Requirements from FHWA and FTA

In order for transportation projects to be eligible for federal funding, the Federal Highway Administration (FHWA) and Federal Transit Administration (FTA) require that they be listed in a long-range transportation plan. The Plan must consider the interaction between land use and transportation planning, as well as the environmental impacts of proposed projects. The MPO is required by federal regulation to review the long-range plan every year and update it every five years.

According to metropolitan planning requirements, Titles 23 and 49 U.S.C., 2045 LRTP must also contain a financial plan that demonstrates how it may be implemented using both public and private resources that are reasonably expected to be available over the life of the plan. The purpose of the fiscal constraint requirement is to ensure that the total estimated cost of projects and programs included in the plan (the estimated cost of constructing, operating, and maintaining the transportation system) does not exceed the reasonably available estimated revenues. For the purpose of financial forecasting, historical trends are used with respect to estimating resource availability in the context of an uncertain budgeting process. The Virginia Department of Transportation (VDOT) and the MPO cooperatively develop estimates of funds that will be available to support plan implementation.

It is important to remember that federal and state funds shown in the LRTP will not be available in exactly the same amounts or within the same funding sources indicated in the Plan. The actual funding amounts depend on the federal and state budget process for any given fiscal year. A major component of the current state funding process, SMART SCALE, is competitive across the state and within VDOT districts, making it particularly difficult to estimate future funding. Given the long-term nature of the LRTP, and the degree of uncertainty in the estimation of both costs and revenues, a precise accounting is not required. Other documents, such as the Transportation Improvement Program (TIP), must demonstrate stricter fiscal constraint, ensuring that in the near term, as costs and revenues become easier to predict, fiscal accountability is maintained.

► National Goals and Performance Measures

Performance Based Planning and Programming requirements for transportation planning are laid out in the Moving Ahead for Progress in the 21st Century (MAP-21), enacted in 2012 and reinforced in the 2015 FAST Act, which calls for states and MPOs to adopt performance measures. Each MPO adopts a set of performance measures, in coordination with VDOT and the Virginia Department of Rail and Public Transit (DRPT). These measures are used to help in the prioritization of TIP and LRTP projects. MAP-21 also established seven national goals, listed below.

National Goals

- 1. Safety** - To achieve a significant reduction in traffic fatalities and serious injuries on all public roads
- 2. Infrastructure Condition** - To maintain the highway infrastructure asset system in a state of good repair
- 3. Congestion Reduction** - To achieve a significant reduction in congestion on the National Highway System
- 4. System Reliability** - To improve the efficiency of the surface transportation system
- 5. Freight Movement and Economic Vitality** - To improve the national freight network, strengthen the ability of rural communities to access national and international trade markets, and support regional economic development
- 6. Environmental Sustainability** - To enhance the performance of the transportation system while protecting and enhancing the natural environment
- 7. Reduce Project Delivery Delays** - To reduce project costs, promote jobs and the economy, and expedite the movement of people and goods by accelerating project completion through eliminating delays in the project development and delivery process, including reducing regulatory burdens and improving agencies' work practices.

National Performance Measures

Since passage of MAP-21, federal transportation agencies have gone through several rounds of rulemaking to establish the criteria for the performance measures. The rulemaking process was completed in January of 2017. The nationally-required performance measures include the following:

» Highway Safety (crashes)

- Number and rate of fatalities (per 100 million VMT)
- Number and rate of serious injuries (per 100 million VMT)
- Number of non-motorized fatalities and serious injuries

» Highway Infrastructure Condition

- Percent of pavement on the interstate system in good condition
- Percent of pavement on the interstate system in poor condition
- Percent of pavement on the non-interstate national highway system in good condition
- Percent of pavement on the non-interstate national highway system in poor condition
- Percent of national highway system bridges classified in good condition
- Percent of national highway system bridges classified in poor condition

» Highway System Performance

- Percent of person miles traveled on the interstate system that are reliable
- Percent of person miles traveled on the non-interstate national highway system that are reliable (Vehicle Reliability Index)
- Percent of interstate system mileage providing for reliable truck travel times (Truck Travel Time Reliability Index)
- Annual hours of peak-hour excessive delay per capita (not applicable to the MPO)

» Transit Asset Management

- Percent of revenue vehicles that have met or exceeded their useful life benchmark
- Percent of non-revenue vehicles that have met or exceeded their useful life benchmark
- Percentage of track segments with performance restrictions
- Percentage of facilities rated in poor condition

» Public Transportation Agency Safety Plan

Measures are currently in the process of being created. The measures will be related to fatalities, injuries, safety events, and system reliability.

Performance Targets

States, MPOs, and public transportation providers must establish performance targets for each of the performance measures. The targets established by VDOT are provided in Appendix C, along with related VDOT planning and programming efforts. MPOs have the option to adopt and support statewide targets or adopt their own. The MPO has been coordinating with VDOT and DRPT to adopt performance measure targets as they become available. The MPO reports its targets to the State and there is currently no penalty if an MPO fails to meet a target. Adopted targets are detailed in the TIP and are highlighted below. Performance reporting will be at intervals specified for each performance measure target. Future plans will indicate whether each target was or was not met.

The process used to screen projects for this plan was developed with these performance measures in mind. Project selection and funding decisions related to planned projects are expected to make progress towards achieving the region’s performance measure targets identified on this page and included in the TIP.

» Highway Safety (crashes)

VDOT established statewide targets in its 2019-2023 Strategic Highway Safety Plan and has been implementing a strategic approach for infrastructure improvements to meet the targets through VDOT’s Highway Safety Improvement Program. To achieve the goal of reducing roadway deaths and serious injuries by 50% by 2030 the Commonwealth established measurable fatality and serious injury objectives based on many factors, including population growth, VMT, young drivers and a mode shift toward more bikes and pedestrians. Safety targets are tracked yearly with the target indicating that VDOT and the MPO hope to do better than the target. For example, a target of a 3% increase indicates that an increase is unfortunately expected, but that VDOT and the MPO hope to limit that increase to less than 3%. 2019 targets are listed below:

- less than 3% increase in fatalities
- less than 1.4% increase in the fatality rate
- greater than 1.15% reduction in serious injuries
- greater than 2.65% reduction in the serious injury rate
- greater than 0.3% reduction in non-motorized fatal and serious injuries

» Transit Asset Management

The Transit Asset Management (TAM) rule requires Federal Transit Administration (FTA) grantees within the CAMPO to develop asset management plans. The measures look specifically at the percentage of revenue vehicles that have exceeded their Useful Life Benchmark (ULB), the percentage of non-revenue and service vehicles that have exceeded their ULB, and percentage of facilities with a condition below 3.0 on the Federal Transit Administrator’s TERM Scale. All transit agencies receiving grants from the FTA are required to complete a TAM plan. The FTA has established two tiers of agencies based on size parameters.

- A Tier I agency operates rail, OR has 101 vehicles or more across all fixed route modes, OR has 101 vehicles or more in one non-fixed route mode.
- A Tier II agency is a subrecipient of FTA 5311 funds, OR is an American Indian Tribe, OR has 100 or less vehicles across all fixed route modes, OR has 100 vehicles or less in one non-fixed route mode.

Tier I providers must create their own TAM Plans. The transit providers in the MPO currently fall under the Tier II category and have opted to participate in the statewide TAM Plan rather than developing their own. The measures and targets included in the Tier II TAM plan are included in [Table 4-1](#) below.

TAM Performance Measures (Table 4-1)

Performance Measure	Asset Class	2018 Target	2019 Target
Revenue Vehicles			
Age - % of revenue vehicles within a particular asset class that have met or exceeded their Useful Life Benchmark (ULB)	Ab- Articulated Bus	20%	15%
	BU- Bus	10%	10%
	CU- Cutaway	10%	10%
	MB- Minibus	25%	20%
	BR- Over-the-road-bus	20%	15%
	TB- Trolley Bus	10%	10%
Equipment	VN- Van	25%	25%
Age - % of vehicles that have met or exceeded their Useful Life Benchmark (ULB)	Non-Revenue/Service Automobile	25%	25%
	Trucks & other rubber tire vehicles	25%	25%
Facilities			
Condition - % of facilities with a condition rating below 3.0 on the FTA TERM Scale	Admin and Maintenance Facilities	10%	10%
	Admin Offices	10%	10%
	Maintenance Facility	10%	10%
	Passenger Facilities	10%	10%

» Highway Infrastructure Condition

VDOT maintains and operates over 128,000 lane-miles of pavement, representing the third largest network of state-maintained highways in the nation. For the highway infrastructure condition rule, the focus is on 17,136 lane miles of Interstate and National Highway System (NHS) facilities. VDOT manages and implements an automated data collection program for pavements, covering 100% of national highway system pavements annually. VDOT collects and maintains data on all bridges consistent with definitions and requirements of the National Bridge Inventory.

For the measures related to pavement and bridges, the State set initial 4-year targets in May of 2018 with the MPO setting 4-year targets in October of 2018. For pavement condition targets, the MPO adopted the statewide targets. However, for bridge condition the MPO has opted to adopt MPO-specific targets based on short-term bridge replacement schedules. Baseline and 4-year targets are included in [Table 4-2](#).

» Highway System Performance

The highway system performance measures applicable to the MPO are focused on travel time reliability on the Interstate and NHS system. Reliability is defined as the ratio of longer travel times (80th percentile) to a normal travel time (50th percentile) based on speed data and vehicle volume data collected in 15 minute time segments on a daily basis. Measures of reliability attempt to quantify the additional time that each trip may be expected to take to complete relative to an expected or “normal” travel time. The three required measures use existing national datasets, which may be supplemented by regional or local datasets to estimate the percent of person-miles traveled that are considered reliable.

For system performance, the State set initial 4-year targets in May of 2018 with the MPO setting 4-year targets in October of 2018. The MPO has adopted MPO-specific targets, shown in [Table 4-3](#), based on expected local conditions.

► LRTP Goals

The following pages provide the goals and objectives that have guided the entire long range transportation planning process. 2045 Plan goals and objectives were developed through a collaborative process involving the MPO committees and the public and were adopted by the MPO early in the LRTP planning process. The Plan goals are informed by SMART SCALE and federally-required performance measures, but are more broadly reflective of what kind of transportation system the community at large would like to see for the MPO area.

Pavement and Bridge Performance Measures (Table 4-2)

PERFORMANCE MEASURE	SCOPE	CA-MPO		STATEWIDE	
		2017 BASELINE	4-YEAR TARGET	2017 BASELINE	4-YEAR TARGET
% Pavement in good condition	Interstate	Adopted Statewide targets		57.8%	45%
% Pavement in poor condition	Interstate			0.4%	<3%
% Pavement in good condition	NHS- non interstate			35.4%	25%
% Pavement in poor condition	NHS- non interstate			0.9%	<5%
% Bridge area deck in good condition	NHS -all	12.8%	23.0%	34.5%	33.0%
% Bridge area deck in poor condition	NHS- all	12.1%	2.0%	3.5%	3.0%

Reliability Performance Measures (Table 4-3)

PERFORMANCE MEASURE	SCOPE	CA-MPO		STATEWIDE	
		2017 BASELINE	4-YEAR TARGET	2017 BASELINE	4-YEAR TARGET
% Person-miles traveled that are reliable	Interstate	99%	99%	82.6%	82.0%
% Person-miles traveled that are reliable	NHS- non interstate	86.2%	80.0%	86.8%	82.5%
Truck travel time reliability index	NHS All	1.13	1.20	1.49	1.56



ACCESSIBILITY & MOBILITY- Improve inter and intra-regional access and mobility for all users (people, goods, and services) by integrating various modes of transportation in an effort to improve connectivity and coordination among stakeholders.

Objectives:

- Improve access to transit for all users. Ensure the diverse needs of a changing population are met including the elderly, disabled, limited English proficiency, and persons lacking access to private vehicles.
- Ensure the appropriate, types, connections, and levels of freight service are provided to the entire region.
- Continue to support efforts to enhance access to inter-regional transit services, to include bus, rail, and air services.
- Increase awareness and continue to support RideShare and Travel Demand Management (TDM) services.
- Enhance connectivity among and between various modes of transportation through identifying and filling gaps in networks.
- Providing a forum for policy discussion among transportation stakeholders.



ECONOMIC DEVELOPMENT & LAND USE- Support the region's economic competitiveness by ensuring the integration of transportation and land use decisions in the planning process to enhance efficiency across all modes of transportation.

Objectives:

- Improve the effectiveness of the existing transportation network, recognizing internal and external future travel demands from tourism, freight, and commuters.
- Assure activity centers are designed to accommodate a range of transportation modes.
- Target transportation improvements to support local land use and development priorities.



OPERATIONS & MAINTENANCE- Encourage and promote the cost-effective operations and maintenance of the regional transportation network that delivers optimal performance for all users.

Objectives:

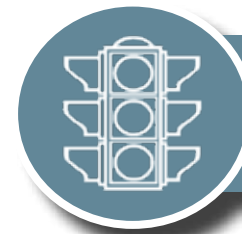
- Identify and prioritize addressing of physical deficiencies, to include pavement, bridges and other multi-modal deficiencies, on the existing transportation network.
- Improving communication among stakeholders regarding transportation data, maintenance coordination, best practices, and emerging technologies.



SAFETY- Improve the geometric conditions and physical characteristics of the transportation network to reduce fatalities and serious injuries.

Objectives:

- Reduce the number and severity of crashes.
- Identify key safety deficiencies in regional networks across all modes including the needs of bike and pedestrian users.
- Collaborate with law enforcement and other agencies to ensure a safer transportation network.



CONGESTION- Where appropriate, improve roadway design to reduce congestion for vehicles, freight, and transit.

Objectives:

- Improve the efficiency of the existing transportation system and services whenever possible.



ENVIRONMENT & COMMUNITY- Promote sustainable transportation improvements that avoid impacts on the environment and ensure nondiscriminatory planning in our region.

Objectives:

- Promote use of alternative transportation modes and alternative fuel vehicles.
- Incorporate environmentally/context-sensitive design into roadway, bicycle/pedestrian facilities and transit improvements to improve or maintain the aesthetic values for the surrounding environment.
- Avoid encroachment on historic and culturally significant assets and minimize environmental impacts.
- Promote the inclusion of minority, low income, and other underrepresented groups in the planning process.

► LRTP Process

Project Categories

In order to work towards the goals identified, the LRTP process included completing or compiling evaluation of multiple aspects of the transportation network. Projects were separated into 5 categories for evaluation, and for the creation of the final constrained project lists. These categories are:

- Roadway projects that improve safety and flow for those using vehicles, as well as improving bicycle, pedestrian and transit infrastructure.
- Transit projects that increase transit service in the region.
- Intersection projects that improve safety and flow for all transportation modes at intersections.
- Bicycle and pedestrian projects that create safe and desirable infrastructure for bicycling and walking.
- Bridge projects that rehabilitate or replace bridges to ensure the region's bridges remain safe and in good condition.

Chapter 5 presents information regarding deficiencies in each of these categories. Chapter 6 explains the process completed to evaluate the roadway and transit projects. Chapter 7 provides information about the remaining categories, and the evaluation that was compiled for use in this plan. Finally, Chapter 8 provides the constrained lists and vision lists for each of these categories.

Planning Tools Used

The LRTP process used a regional travel demand model to identify needs and evaluate projects and scenarios. The travel demand model uses population and employment information for the region to calculate the number of trips being made and the resulting traffic volumes and bus ridership. The area included in the model was larger than the MPO boundaries, and included portions of Greene, Louisa and Fluvanna Counties. This was done to include the many trips made from these areas, and because it is possible that the MPO boundaries will expand to include these areas after the 2020 census. The model was calibrated with data from 2015, and projections of 2045 population and employment were added to the model. These projections were made for each transportation analysis zone (TAZ), which are relatively small geographic areas which comprise the MPO area. Future conditions, including traffic volumes and bus ridership, were then estimated by the model. The model calculates traffic volumes and bus ridership using the regional transit network and a simplified network of regional roadways. The traffic volumes from the model are used to identify roadway congestion, as shown in Chapter 5. Projects that would increase roadway capacity or provide additional transit service were put in the model. The resulting impacts, including on congestion, safety and mode share, were estimated by the model and used in the project and scenario evaluations described in Chapter 6.

The other primary tool used for analysis and mapping for the LRTP process was ArcMap. ArcMap is a GIS (geographic information system) software that has a wide range of map-making and analysis capabilities. Most of the maps and demographic analyses in this document were produced using ArcMap, with most demographic data coming from the US Census and associated American Community Survey (ACS).

Public Engagement

Input and feedback from local residents has been central to the planning process. MPO staff conducted multiple open houses to seek input from the public on transportation needs and provide citizens with an opportunity to review project scenarios and associated performance measure data.

Public Input Sessions Included:

Open House 1 (September 2017): Overview of process and regional transportation needs

Open House 2 (June 2018): Debut 2045 modeling & input regarding transportation deficiencies

Open House 3 (October 2018): Input following Round 1 scenario results

Open House 4 (January 2019): Input following Round 2 and Round 3 scenario results

First Public Hearing (April 2019): Input on draft plan document

Final Public Hearing (May 2019): Final review and approval

Other opportunities for public input have existed throughout the 2-year process. These include:

- Committee meeting public comment periods
- Online comment box
- Opportunity for citizens to e-mail or call the office, or mail or drop off written comments

Along with the public open houses and public hearings, TJPDC staff presented to the City of Charlottesville and Albemarle County Planning Commissions. Presentations were made to each body in October 2018, to the Charlottesville Planning Commission in March 2019, and to the Albemarle Planning Commission in May 2019.

The TJPDC recognizes that not all communities and its members have enjoyed the same level of access or representation in transportation and other decisions made by public agencies. Therefore, as part of its public participation strategy, the TJPDC takes steps and measures to reach and engage minority, low-income, and other underserved groups in Charlottesville and Albemarle.

► Conclusion

The Charlottesville-Albemarle MPO's 2045 Long Range Transportation Plan updates the existing LRTP 2040. To develop this plan, MPO staff worked with the localities and residents to establish future transportation needs for the region between 2020 and 2045. Staff relied heavily on public input as well as recommendations from its committees to prioritize which projects are of higher priority to be funded during the life of the Plan. Federal performance measures, for which targets were recently adopted by the State and MPO, were also considered in the evaluation of projects in this Plan. The subsequent chapters of this document outline the process utilized to develop the lists of projects, with the final lists of projects provided in Chapter 8.

Chapter 5:

Transportation Deficiencies Overview

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► Overview

Developing a plan for improving any aspect of the community must start with identifying what elements of the community's system are deficient. For this plan, MPO staff examined how the region's future transportation system would function if no future improvements were planned beyond projects included in the State's Six Year Improvement Program (SYIP) or proffered from local developers. Through this process, MPO staff, working with the MPO Committees, identified infrastructure that is expected to be incomplete or insufficient by 2045. All maps consider the 2045 community condition. That is, the analysis for each mode considers the population total and distribution for 2045; the employment total and distribution for 2045; and the road network for 2045 (i.e. projects that are not yet built, but will be by 2045).

► Roads, Freight, Bridges and Intersections

Roads

The majority of the traffic in the MPO travels via the region's roadway system. Over time, as the Charlottesville-Albemarle region grows, an increasing number of people are expected to use this system, constraining its capacity and resulting in congestion and delays. To ascertain how congested the road system would likely be in the year 2045, the MPO used its travel demand model to forecast where demand on the system is expected to exceed system capacity.

The travel demand model identifies these congested areas by calculating a Volume-to-Capacity ratio. The ratio indicates the volume of traffic expected on the road, compared with the capacity the roadway can accommodate. Roadways that are approaching capacity, or are over capacity are considered to be deficient. These roads are mapped in [Figures 5-1 and 5-2](#), showing roads that are expected to experience "Minor Congestion" or "Congested." The MPO used VDOT's volume to capacity ratio standards to define minor congestion and congestion. The capacity identified for each roadway varies based on multiple factors, including whether it is leading to an intersection. While this is helpful for estimating the congestion caused by intersections, it is not a detailed analysis of any specific roadway or intersection.

» Minor Congestion

Roads approaching capacity are those with a Level of Service (LOS) E, which indicates that between 85% and 100% of the road's capacity is being used. These roads are expected to experience minor congestion, which means that they are likely to be congested during rush hour travel but operate at free flow conditions during other times of the day.

» Congested

Roads over capacity are those with a LOS F, which indicates that the roadway is expected to carry more volume than it was built to handle. These roads are expected to be congested throughout the day.

» Significance of the Congestion Maps

The level of congestion of the transportation system in 2045 was identified for two purposes. First, it was used to identify which areas would likely need improvements to reduce congestion and function more efficiently in the future. Second, it served as a base against which each scenario could be compared.

Freight

The issue of freight movement throughout the region, while important, is not an overriding concern for regional mobility at this time. As mentioned in Chapter 2, the key freight corridors in the region are Interstate 64 and US 29. Both routes are susceptible to congestion issues that affect general traffic mobility concurrent with any freight movements.

Freight movement along rail corridors is also not currently a prevalent regional traffic concern. At this time, rail freight movement in the region travels through the area to destinations outside the MPO's boundaries. While facilitating the movement of goods throughout the region is a priority discussed in Chapter 4, it is not as prominent in the Charlottesville-Albemarle MPO as it is for other MPOs.

2045 Regional Congestion (Figure 5-1)



2045 Local Congestion (Figure 5-2)



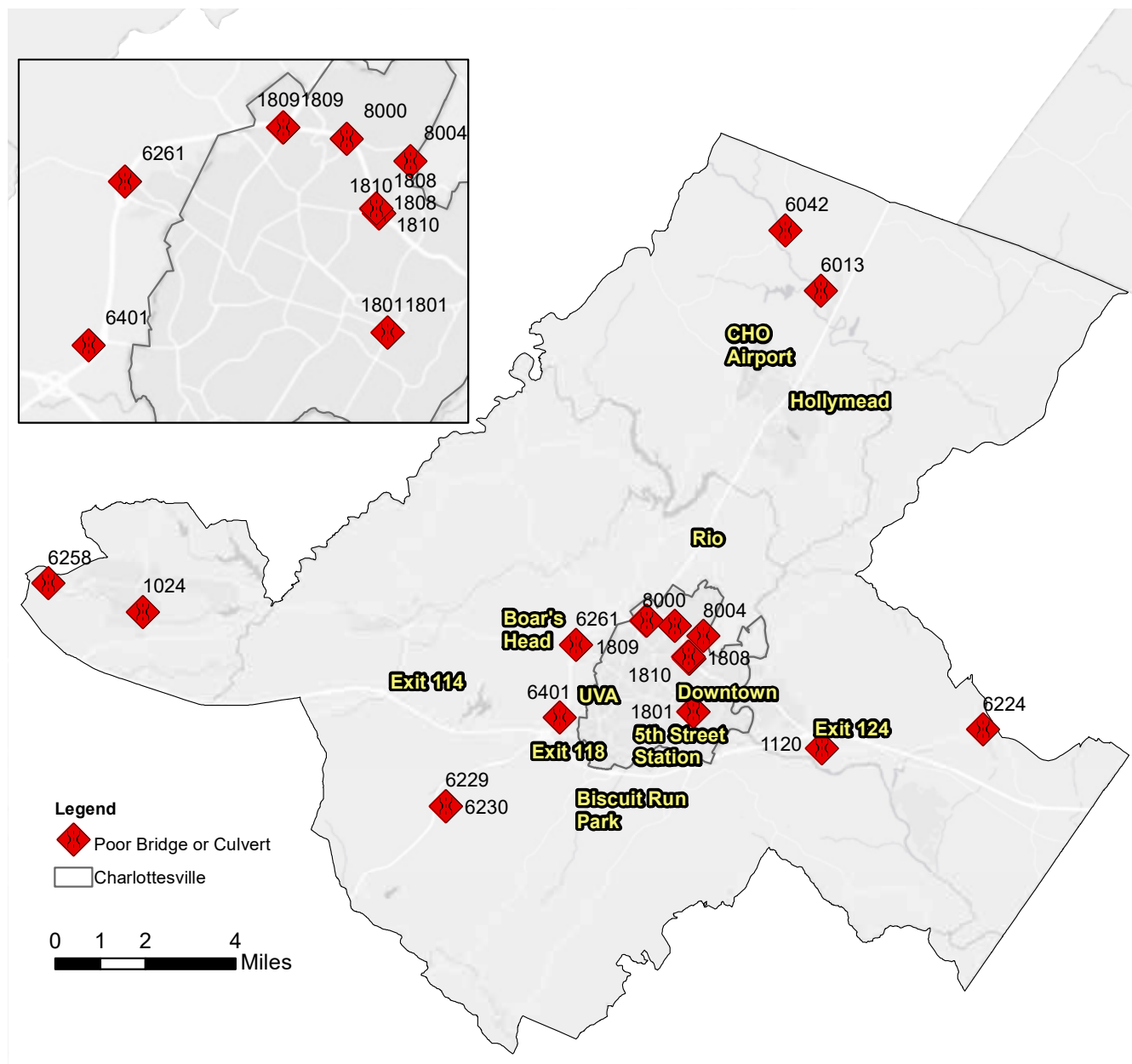
Bridges

Safe and adequate bridges are a vital component for a fully functional transportation system. Using VDOT bridge condition reports, the entire region of Albemarle County and the City of Charlottesville was reviewed to identify the condition of each bridge and assess the need for improvements. For the federal performance measure, bridges are categorized as “good”, “fair”, or “poor,” and determined by the worst condition of the deck, superstructure and substructure. Given this, a bridge in poor condition does not mean dangerous conditions and may not even require a full replacement.

Bridges that have been identified as being in poor condition are identified in [Figure 5-3](#) below, with VDOT structure ID numbers shown on the map. A list of these bridges, including those where improvements are already funded and those where funding is needed for improvements, is provided in Chapter 8.

Source: Virginia Department of Transportation Sufficiency Ratings

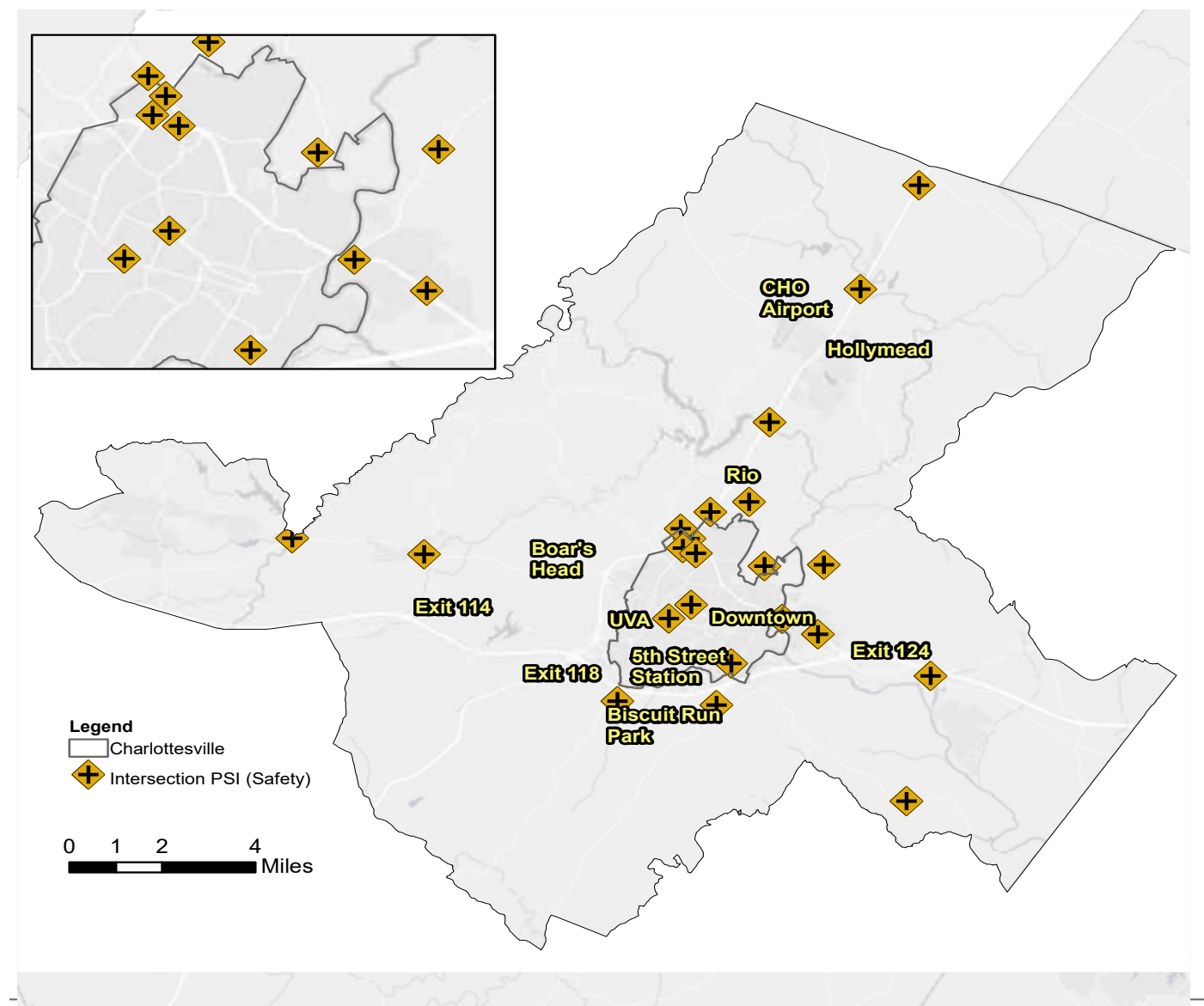
Bridges in Poor Condition (Figure 5-3)



Intersections

Intersections are a central concern in the MPO, as intersections are primary areas of congestion, locations where many crashes occur, and barriers to bicycle and pedestrian travel. VDOT evaluates intersections to identify potential for safety improvement (PSI) locations. This evaluation is based on the number of crashes that occurred at each intersection over the most recent 5-year period. The intersections in the region that have the highest PSI scores are shown below, indicating the most potential benefit from improvements. A list of intersections identified for improvement, or already funded, is provided in Chapter 8.

High PSI Intersections (Figure 5-4)

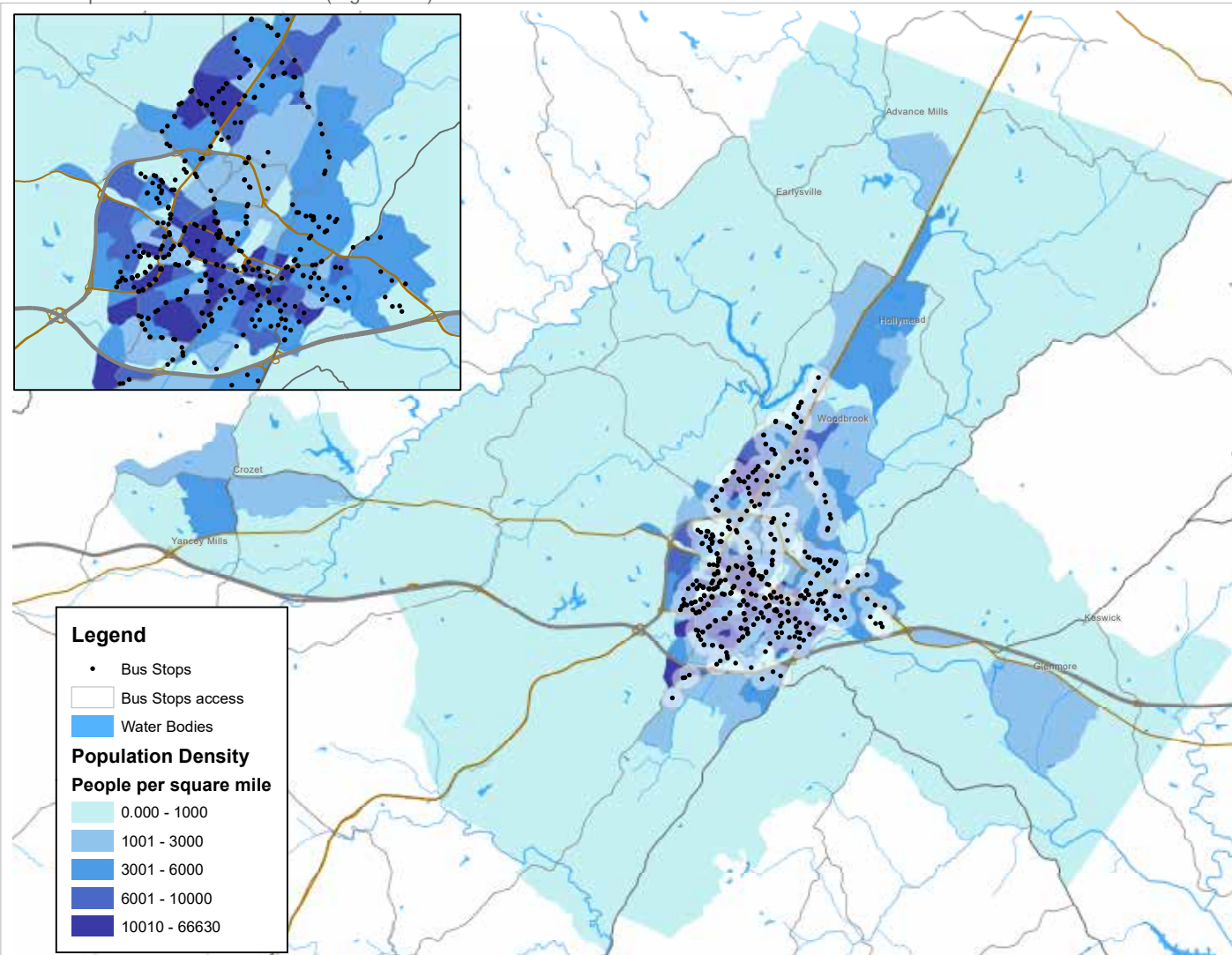


► Transit and Rail

Transit

The MPO's transit system is relatively robust compared to other small regions in the state. As discussed in Chapter 2 (Existing Conditions), three transit entities serve the MPO: Charlottesville Area Transit (CAT), run by the City of Charlottesville with additional contributions coming from Albemarle County; University Transit Service (UTS), run by the University of Virginia; and JAUNT, which provides transit and para-transit service for several contiguous counties in the region including the City of Charlottesville and Albemarle County. To determine transit deficiencies in the region, MPO staff considered regional transit services that have identified stops. As such, CAT and UTS routes are included while shuttle-style services, such as JAUNT's 29 Express and Park Connect services, are not included. The CAT route map is provided as [Figure 5-7](#) on page 54.

2045 Population Access to Transit (Figure 5-5)



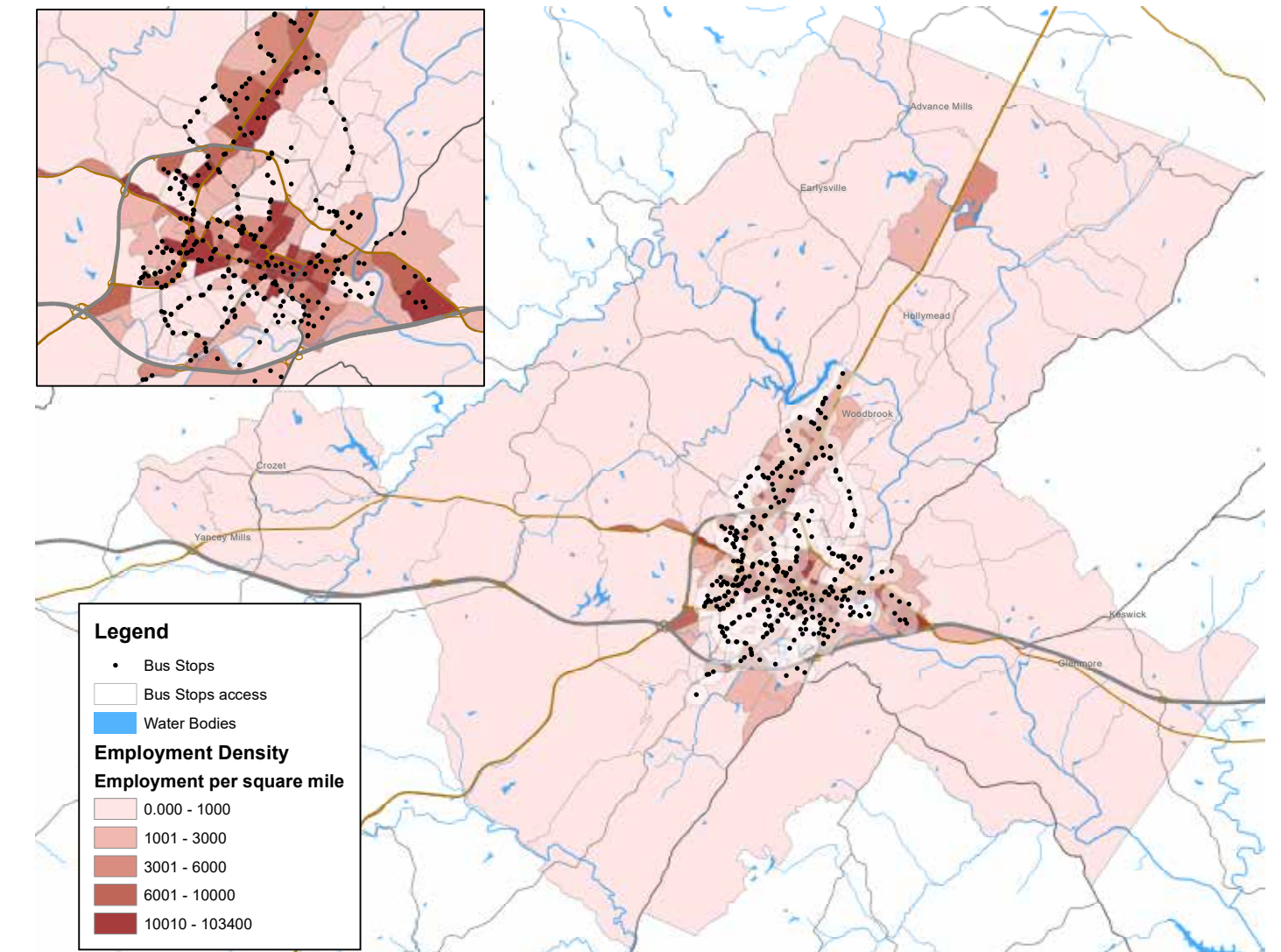
» Transit Accessibility to Population and Employment Maps

The travel demand model's 2045 population and employment data was used to map the population and employment densities forecast for each zone. Dark shades of blue indicate densely populated zones, while light shades of blue indicate sparsely populated zones. (Refer to [Figure 5-5](#)). Similarly, dark shades of red indicate zones with considerable employment opportunities, while light shades of red indicate zones with few employment opportunities. (Refer to [Figure 5-6](#)). The existing bus stop locations for UTS and CAT routes were added to the maps, as future bus stop locations for 2045 cannot be anticipated. The existing bus stops for UTS and CAT were buffered using a one-quarter mile radius, and the population or employment within a one-quarter mile buffer of transit stops was calculated to determine what percentage of the population or employment in 2045 would have access to

transit. In this analysis, all stops are considered equally, although some routes have a frequency as low as one bus per hour. The scheduled time between buses arriving at a stop is referred to as headway, and a map of transit access with bus headway information is shown in [Figure 5-8](#) on page 55. The frequency of service is taken into account in the evaluation described in Chapter 6, and must be considered in any regional transit planning effort.

Within the MPO, approximately 47% of the population and 71% of employment opportunities are located within a one-quarter mile radius of a bus stop. This indicates that there is the opportunity to expand service to a larger proportion of residents, and also opportunities to increase use of transit by residents who live close to existing transit services. These maps are useful for identifying the general areas that would benefit from additional transit service.

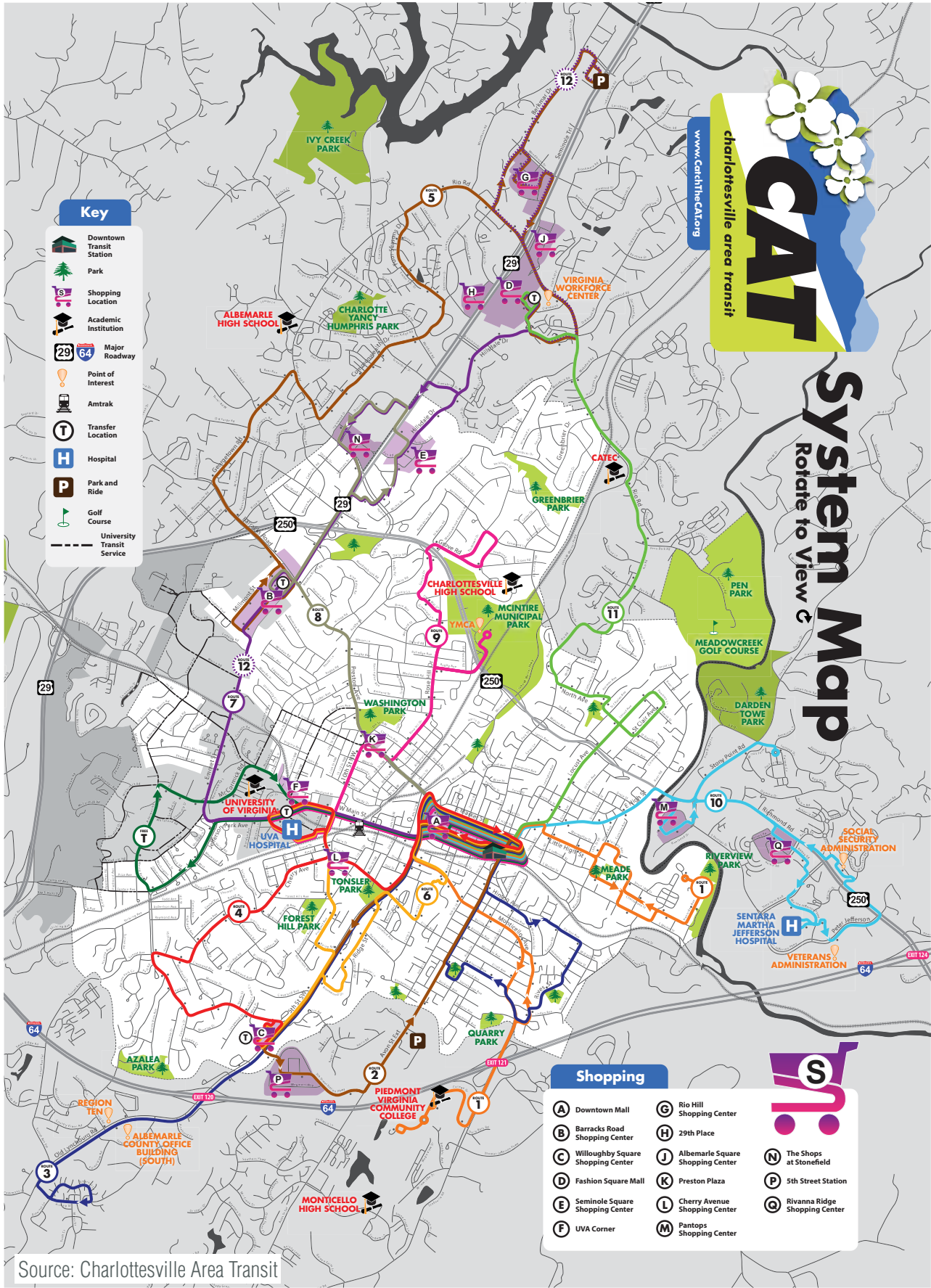
2045 Employment Access to Transit (Figure 5-6)



Darker shaded areas without bus stops indicate areas where expanded service is expected to perform well due to the high concentration of residents or employment opportunities in these areas.

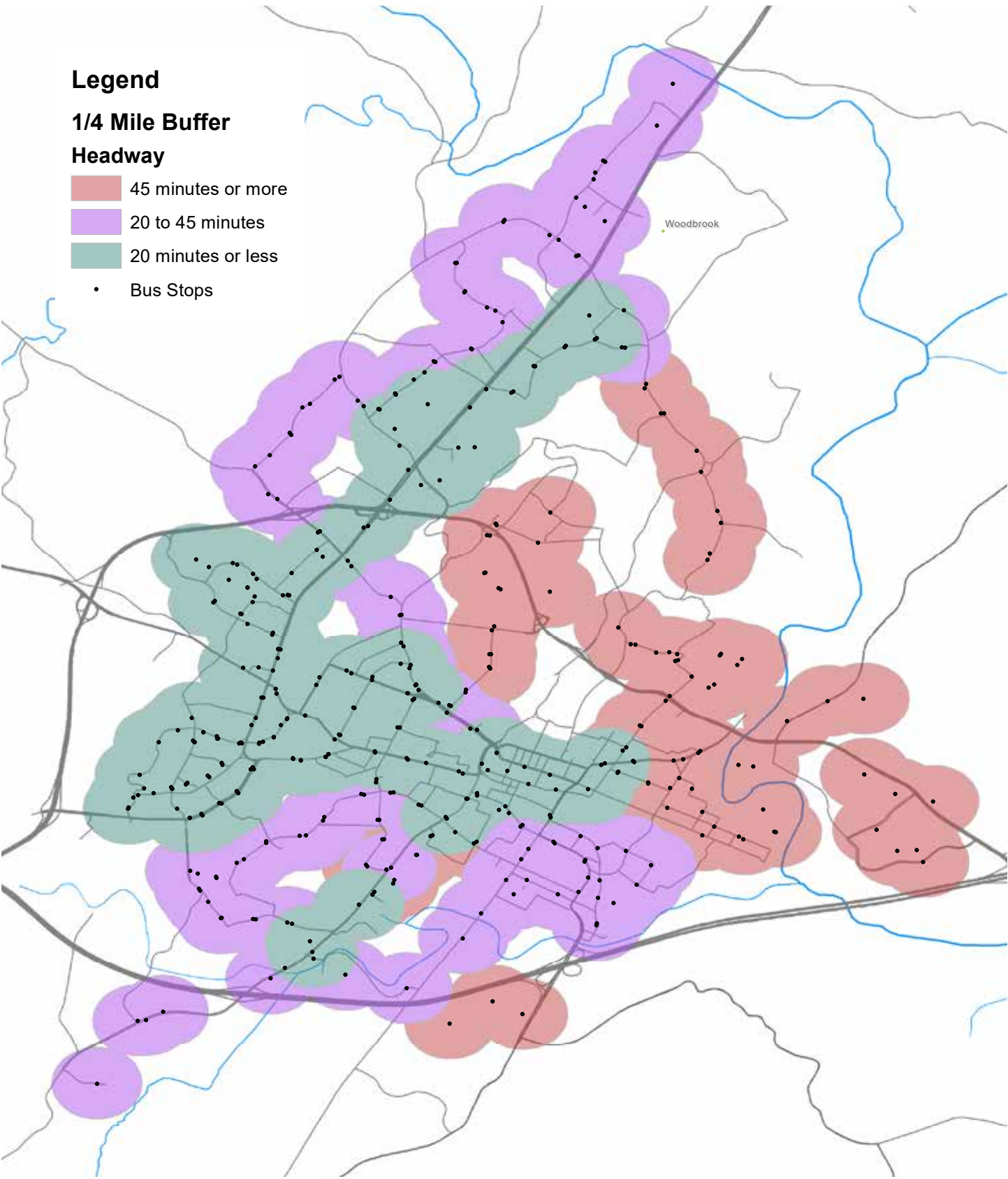
Rail

In reviewing regional rail service, it is clear that additional service is important; particularly early morning service that supports business travel between the region and Washington D.C. and other areas in the northeast corridor. As noted in Chapter 2, an evaluation by Amtrak indicated that the current station does not have the recommended space and capacity to handle the high passenger volumes using the station. Passenger rail service, while important for the region, is not a mode that can be fiscally-constrained within the LRTP process.



Chapter 5: Transportation Deficiencies Overview

Transit Access by Headway (Figure 5-8)



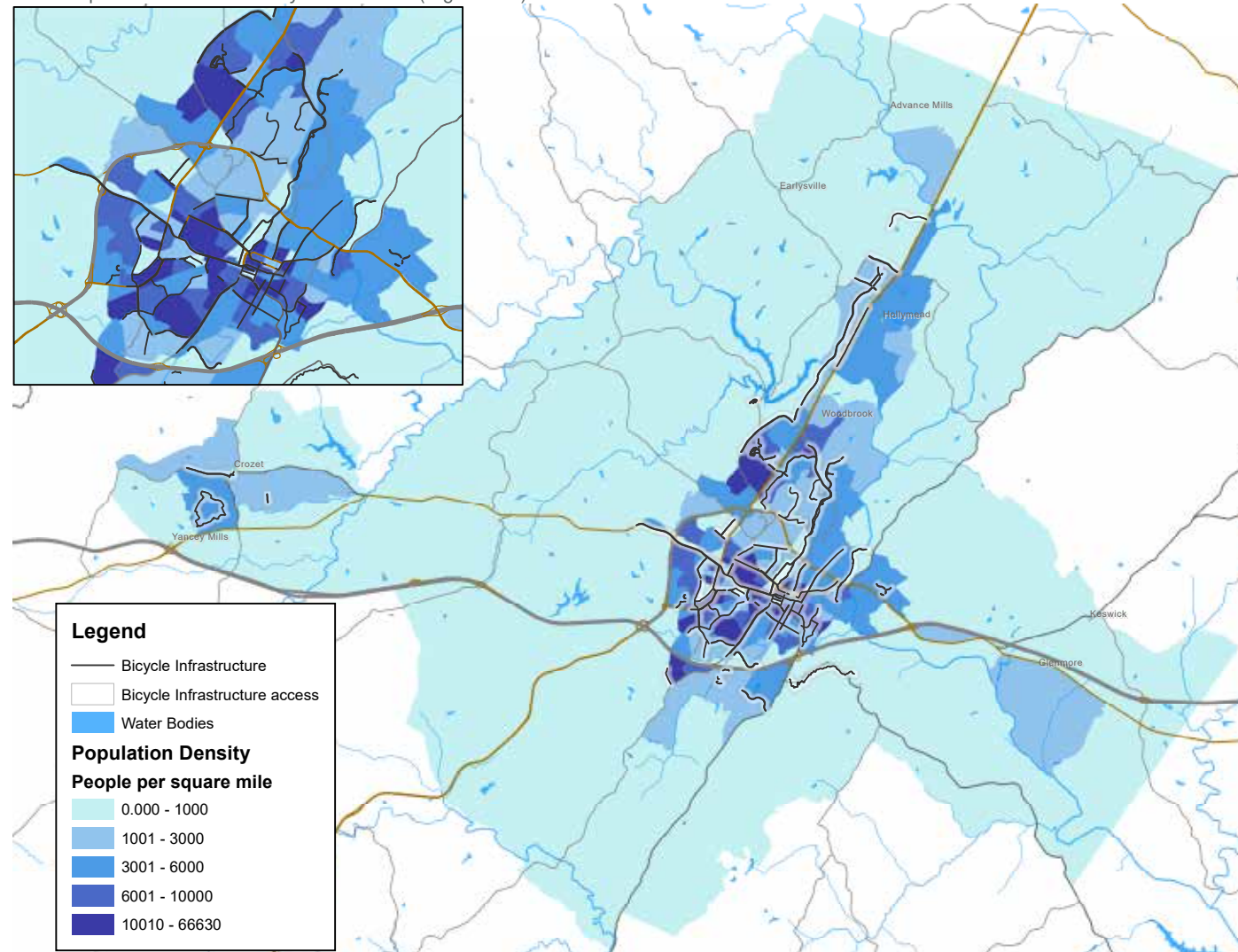
Bicycle and Pedestrian

The MPO's bicycle and pedestrian infrastructure is relatively robust and offers benefits for recreation and some transportation trips. Yet the current network is not extensive or connected enough to be a viable transportation option for most of the 2045 MPO's population and employment base. Public outreach completed as part of the [Jefferson Area Bicycle and Pedestrian Plan](#) indicated that the community appreciates existing bicycle and pedestrian infrastructure in the region, but residents have a strong desire for additional infrastructure. Creation of a more connected network would increase the desirability of bicycling and walking, for both transportation and recreation, in the region. The updated [Jefferson Area Bicycle and Pedestrian Plan](#) indicates the efforts needed to create an extensive, connected network.

Bicycle

The MPO's bicycle network includes bike lanes, shared use paths, and shared roadway facilities. The analysis focuses on existing, designated bicycling facilities and does not focus on areas that do not have these facilities, but are in fact bikeable due to the nature of the roadway. It includes all existing bicycle infrastructure that has been identified, although the Bicycle and Pedestrian Plan identified the need for improved infrastructure in many of these corridors. Many bike lanes and shared roadways in the region are on roads with speed limits of 35 or 45 mph. In these places, protected bike lanes and shared use paths could dramatically increase safety and comfort for people riding bicycles.

2045 Population Access to Bicycle Facilities (Figure 5-9)

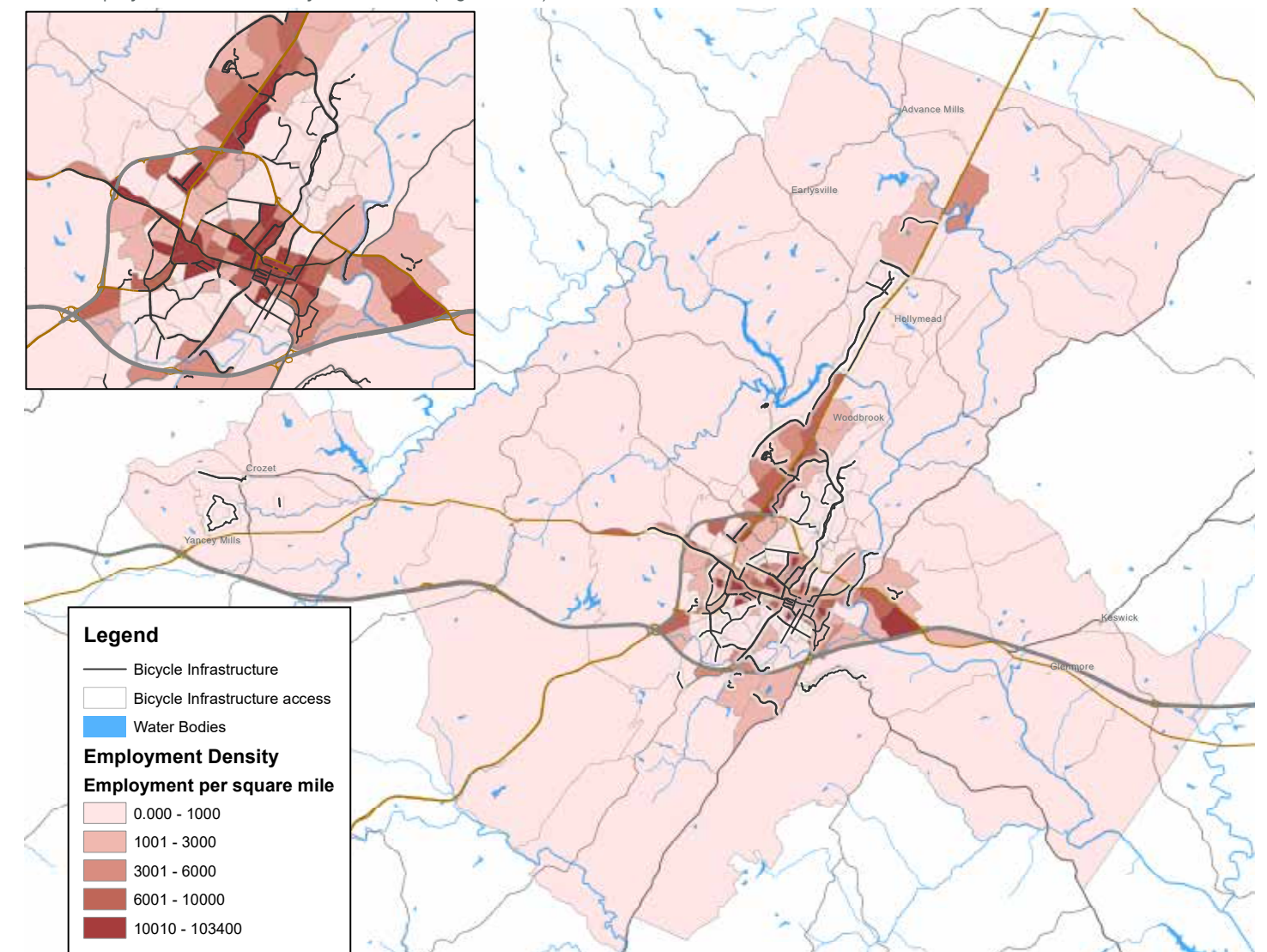


» Bicycle Accessibility to Population and Employment Maps

The travel demand model's 2045 data was used to map the population and employment densities forecast for each zone. Dark shades of blue indicate densely populated zones while light shades of blue indicate sparsely populated zones. (Refer to [Figure 5-9](#)). Similarly, dark shades of red indicate zones with considerable employment opportunities while light shades of red indicate zones with few employment opportunities. (Refer to [Figure 5-10](#)). Existing bicycle facilities were added to each map (thin black lines) along with a 500-foot buffer. The population or employment within 500 feet was calculated to determine what percentage of the population or employment in 2045 would have relatively easy access to bicycle facilities.

Within the MPO, approximately 29% of the projected population and 47% of employment opportunities are located within 500 feet of a bicycle facility. However, regional biking tends to be limited to smaller zones due to barriers that prohibit bicycling beyond these areas. These maps are useful in identifying the general areas that would benefit from improved connectivity.

2045 Employment Access to Bicycle Facilities (Figure 5-10)



Pedestrian

Nearly every trip includes some walking, whether walking to the bus, to a vehicle in a parking lot, or traveling to the destination on foot. The MPO's pedestrian network includes sidewalks and walkable areas, such as the Downtown Pedestrian Mall. This analysis focused on access to this walkable network.

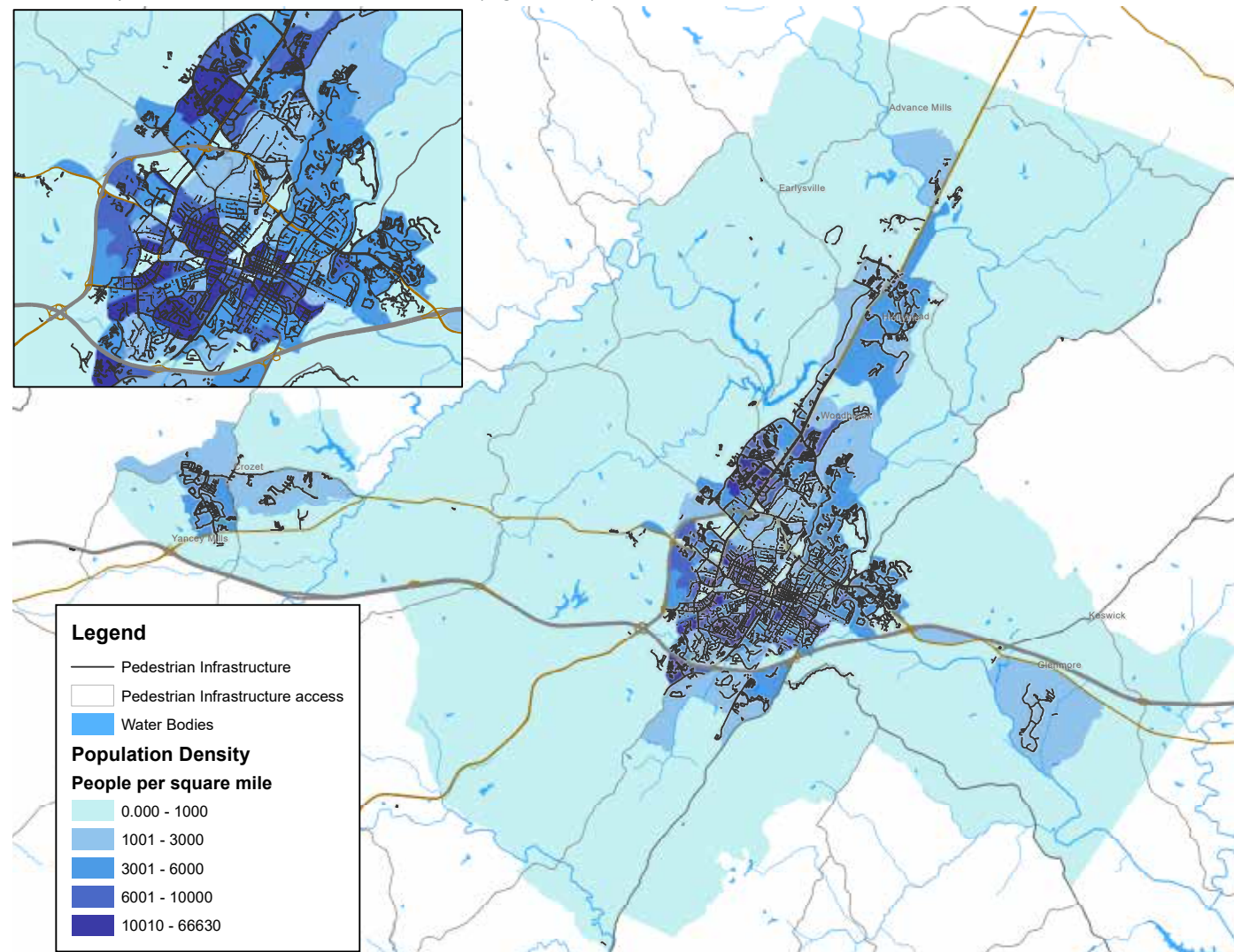
» Pedestrian Accessibility to Population and Employment Maps

The travel demand model's 2045 population and employment data was used to map the population and employment densities forecast for each zone. Dark shades of blue indicate densely populated zones, while light shades of blue indicate sparsely populated zones. (Refer to Figure 5-11). Similarly, dark shades of red indicate zones with considerable employment

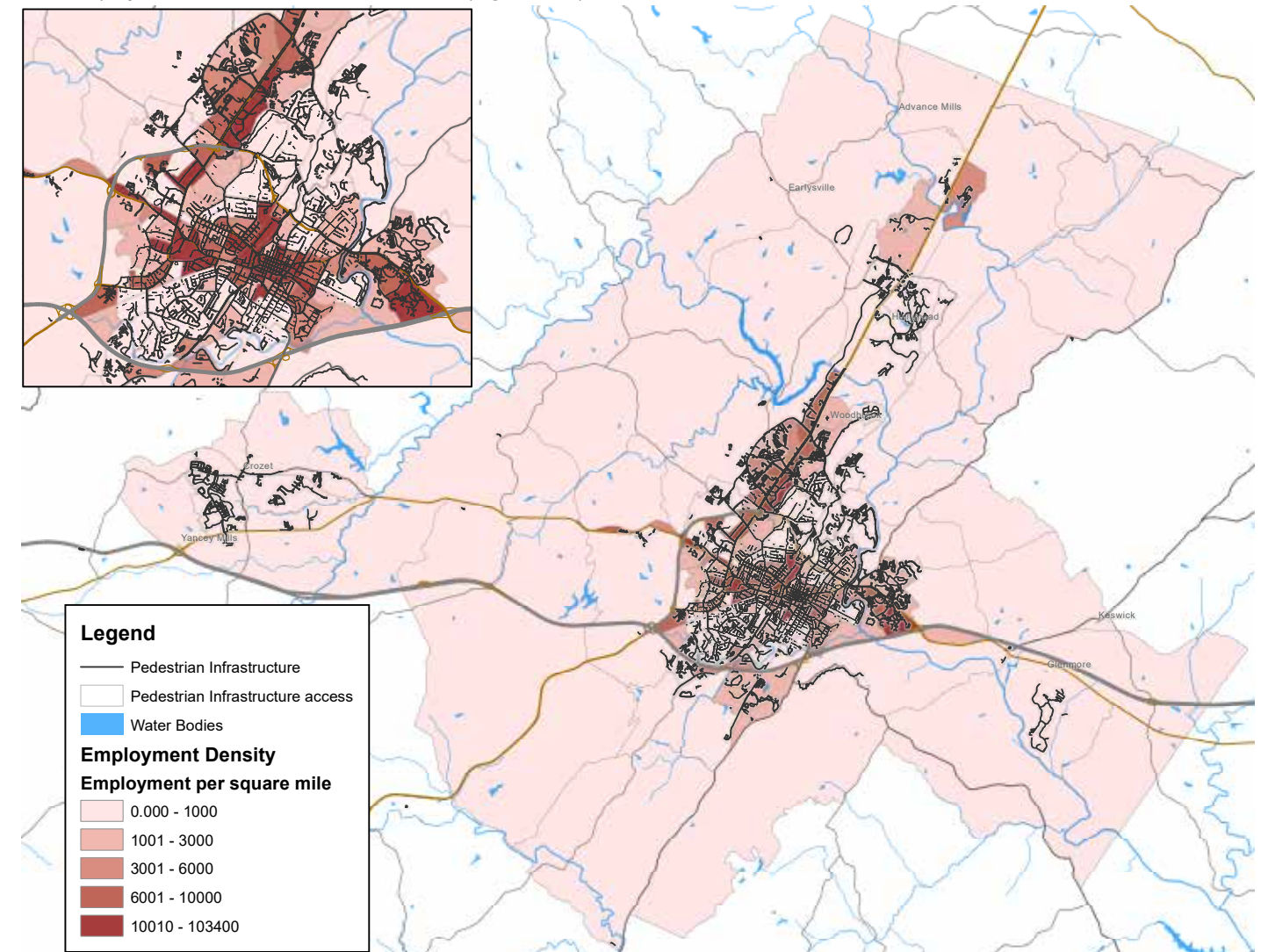
opportunities, while light shades of red indicate zones with few employment opportunities. (Refer to Figure 5-12). The existing pedestrian facilities were added to the maps and then buffered using a distance of 200 feet. The population or employment within 200 feet of pedestrian facilities was calculated to determine what percentage of the population or employment opportunities in 2045 would have access to a sidewalk or walkable area.

Within the MPO, approximately 46% of the population and 60% of employment opportunities are located within 200 feet of a pedestrian facility. The regional pedestrian network, while extensive, is missing links or extensions that would make the network more effective for the region. These maps are useful in identifying the general areas that would benefit from improved pedestrian connectivity. Effort is also necessary to improve conditions on existing sidewalks, as many sidewalks are narrow or difficult to use due to impediments such as utility poles.

2045 Population Access to Pedestrian Facilities (Figure 5-11)



2045 Employment Access to Pedestrian Facilities (Figure 5-12)



Conclusion

The transportation deficiency analysis provided the MPO with information about transportation improvements to be considered for the 2045 Long Range Transportation Plan. From this analysis, staff learned that roadway improvements need to be targeted at key locations throughout the region such as the US 29/US 250 Bypass or US 250 at Pantops. Regarding transit improvements, the ongoing work of the Regional Transit Partnership will be valuable in identifying priorities for the transit system. As part of the Jefferson Area Bicycle and Pedestrian Plan, staff determined that access via bike facilities is limited by significant barriers prohibiting connectivity, despite reasonable access to facilities within the urban core. Likewise, staff established that the pedestrian network is missing key links that could provide greater accessibility.

When doing these analyses, it became clear that additional efforts are necessary to collect and coordinate data, particularly related to bicycle, pedestrian and transit networks and usage. Many of these efforts have begun, and will be essential for understanding and improving the region's multimodal transportation network.

Staff used this information, along with recommendations from other plans, to develop an initial list of proposed roadway, transit, bicycle, and pedestrian projects targeted at improving these areas. Potential roadway and transit projects were modeled to evaluate their potential impacts and benefits for the community. These projects are discussed further in Chapter 6. Bicycle and pedestrian projects were taken from the 2019 Jefferson Area Bicycle and Pedestrian Plan. Intersection and bridge projects were identified based on VDOT and locality evaluations. These projects are discussed further in Chapter 7.

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- [Table 6-5:](#) All Scenarios Evaluation Results
- [Table 6-6:](#) Project List and Scenario Evaluation

► Overview

Performance measures provide a quantitative value for potential transportation improvements. Using performance measures allows for future investment and infrastructure scenarios to be evaluated objectively and compared against one another in order to understand which groupings of projects will generate the greatest benefit for the region. The use of performance measures has become transportation planning best practice. As discussed in Chapter 4, MPOs must demonstrate compliance with MAP-21 national goals and performance measures. The MPO's use of performance measures ensures that the MPO meets the federal performance-based planning requirements. This chapter explains the projects that were considered, the performance measures and evaluation processes used, and the multiple rounds of scenario evaluation that were completed. This process resulted in a preferred scenario of projects, all of which are included in the constrained or vision project lists provided in Chapter 8.

As with all quantitative measurement systems, the MPO's evaluation process was limited by available data, tools and resources. Even with these limitations, the MPO developed a robust set of 10 scenario performance measures and 7 project review categories to evaluate roadway and transit projects. Information about the project review criteria are described and summarized in [Figure 6-3](#). Following that, the scenario performance measures are provided and summarized in [Table 6-3](#). All aspects of evaluation are related to the LRTP goals provided in Chapter 4.

This chapter provides details about the roadway and transit projects that were evaluated and the results of those evaluations. The primary purpose of this evaluation process was to provide information to the MPO Policy Board to determine regional roadway and transit priorities. This chapter only addresses roadway and transit projects, as information regarding intersection, bridge, and bicycle and pedestrian projects is provided in chapter 8. Though in most cases the roadway projects evaluated include bicycle, pedestrian and intersection improvements.

► Identification of Projects

MPO staff created a list of projects to consider for inclusion in the LRTP by looking through previous plans and studies completed by localities or the MPO, including the CAT and JAUNT Transit Development Plans (TDPs) that were in the process of being created. MPO staff also met with locality staff to ensure all priority roadway and transit projects were being considered. A public open house was held to review the projects and the MPO committees (MPO Tech, CTAC and the Policy Board) also reviewed the projects proposed for evaluation. Following this review process, staff proceeded with the project and scenario evaluation processes that had been approved by the MPO committees. The roadway and transit projects that were considered are shown on the next page in [Figures 6-1 and 6-2](#), and listed in [Tables 6-1 and 6-2](#). All project descriptions and locations were estimated for evaluation purposes and do not reflect exactly what may be implemented if projects are funded.

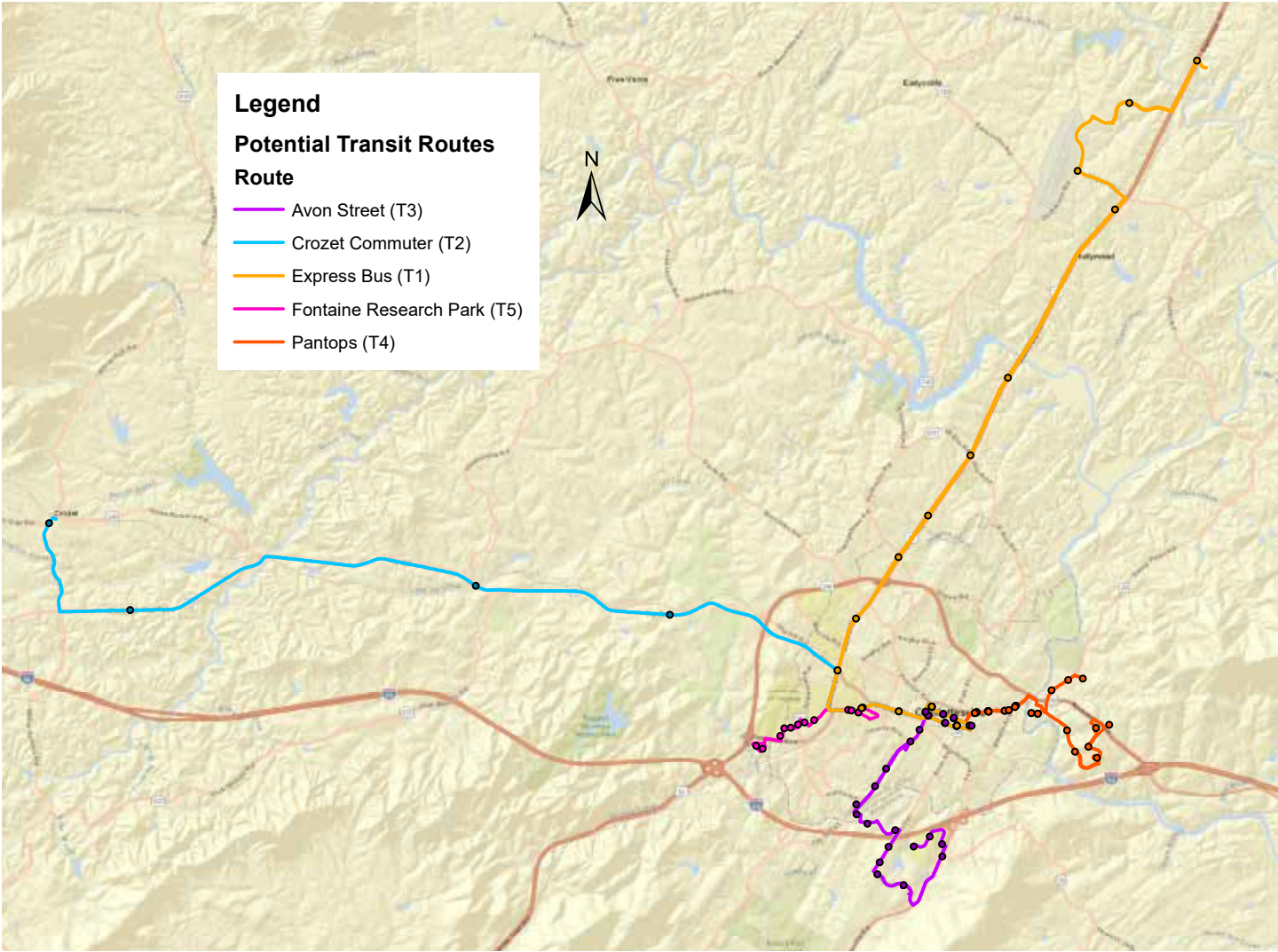
Roadway Projects Considered (Table 6-1)

ID	Name	Description
R1	US 29/US 250 Bypass widening	Widen the bypass from 4 to 6 lanes from I-64 (exit 118) to the interchange with Barracks Road.
R2	US 250 widening - Shadwell	Widen US 250 from 2 to 4 lanes from I-64 (exit 124) to Milton Rd. Roadway would include a median and a shared use path.
R3	Hydraulic and US 29 Area Projects	Multiple projects, as identified by the Hydraulic/29 planning process. Improvements include: grade-separated intersection (GSI) at Hydraulic/29, roundabouts at Hydraulic/Hillsdale and Hydraulic/District, Hillsdale extension to bypass and reconstruction of bypass ramps, and construction of bridges over US 29 at Zan Road (overpass) and Angus Road (GSI).
R4	Fontaine/Bypass Interchange	Improve traffic flow and safety at the Fontaine/Bypass interchange through creation of a diverging diamond interchange (DDI). The project will provide bicycle and pedestrian infrastructure for crossing the bypass.
R5	US 250 and Free Bridge widening	Widen Free Bridge and the adjacent segment of US 250 (from St. Clair Ave to Flow Volkswagen) from 4 lanes to 6 lanes. Project involves construction of a bicycle and pedestrian bridge adjacent to Free Bridge.
R6	West Main Street Multimodal	Reconstruct the West Main Street streetscape, including corridor and intersection changes that improve traffic safety and flow, transit stops, bicycle lanes, and sidewalks.
R7	Route 20 Multimodal	Make upgrades that improve safety, traffic flow, and multimodal infrastructure on Route 20 from Mill Creek Drive to Route 53.
R8	Rio Road Multimodal	Make upgrades that improve safety, traffic flow, and multimodal infrastructure on Rio Road from John Warner Parkway to Park Street.
R9	Fifth/Ridge/McIntire Multimodal	Make upgrades that improve safety, traffic flow, and multimodal infrastructure on the Fifth/Ridge/McIntire corridor from the US 250 bypass south to the city/county line.
R10	Avon Street Multimodal	Make upgrades that improve safety, traffic flow, and multimodal infrastructure on Avon Street from Mill Creek Drive to Palatine Ave. Would include a bicycle and pedestrian bridge across I-64.
R11	Berkmar Drive Extension	Extend Berkmar Drive from current extent to Lewis and Clark Drive. Would include 2 lane roadway with bicycle and pedestrian infrastructure.
R12	Sunset/Fontaine Connector	Construct a new roadway from Sunset Avenue Extended to Fontaine Avenue, including improvements to Stribling Avenue. Would include 2 lane roadway with bicycle and pedestrian infrastructure.
R13	Eastern Avenue (Crozet)	Extend Eastern Avenue South to US 250. Would include new or upgraded 2 lane roadway with bicycle and pedestrian infrastructure.
R14	Old Lynchburg Multimodal	Make upgrades that improve safety, traffic flow, and multimodal infrastructure on Old Lynchburg Road from Singleton Lane to the City/County line.
R15	Ivy Road Multimodal - East	Make upgrades that improve safety, traffic flow, and multimodal infrastructure on Ivy Road from Canterbury Road to Old Ivy Road.
R16	I-64 Truck Lanes	Widen I-64 from 4 to 6 lanes from exit 118 to exit 114.
R17	Ivy Road Multimodal - West	Make upgrades that improve safety, traffic flow, and multimodal infrastructure on Ivy Road from Kirtley Lane to Canterbury Road.
R18	Hillsdale Drive to Rio Road	Construct a new road to realign Hillsdale Drive to connect with Rio Rd near the Putt Putt Place intersection. Would include 2 lane roadway with bicycle and pedestrian infrastructure.
R19	South Pantops Drive Bridge	Construct a new bridge and roadway to connect High Street to South Pantops Drive. Would include a 2 lane roadway and shared-use path.

Transit Projects Considered (Table 6-2)

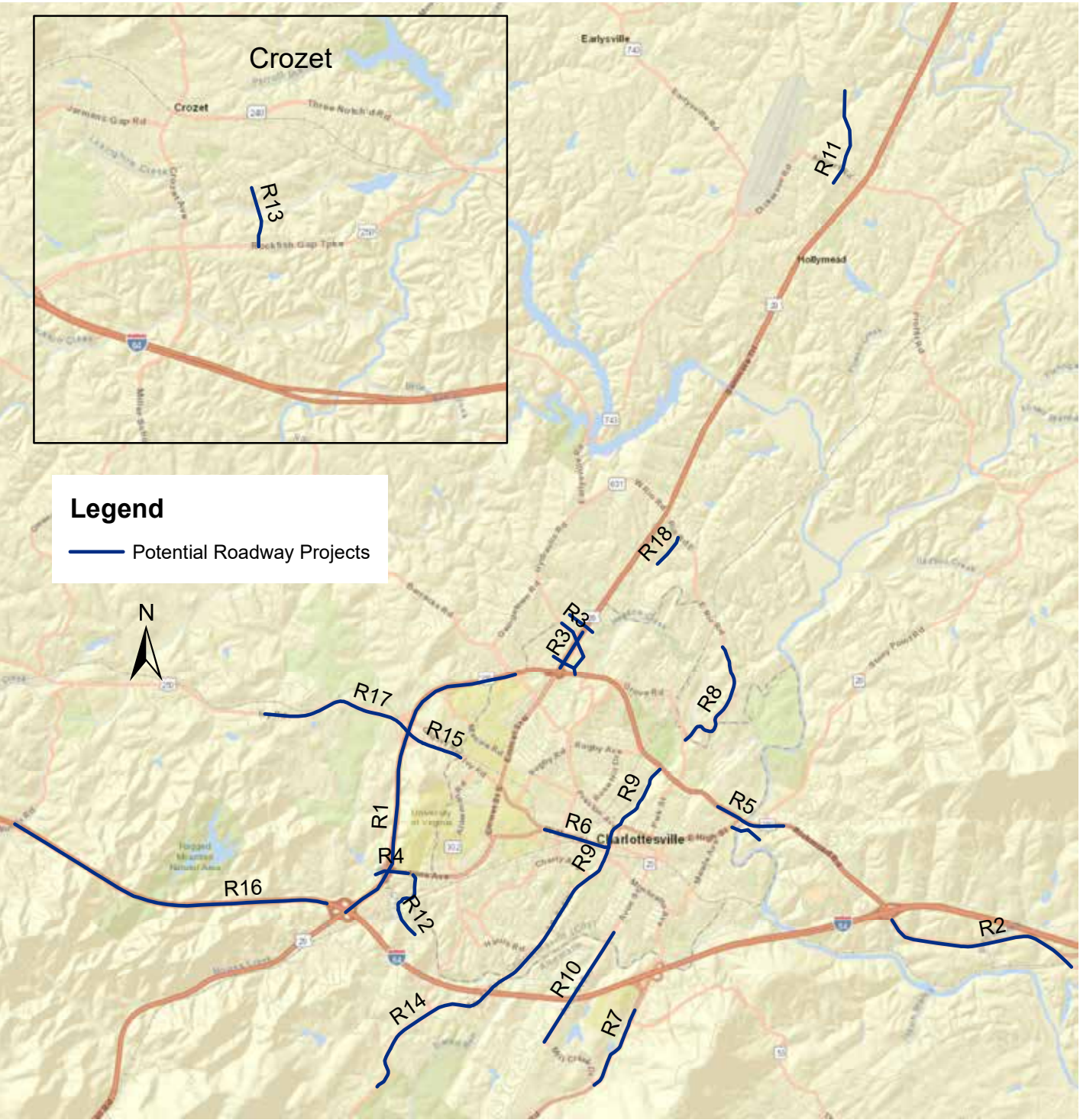
ID	Name	Description
T1	Express Bus on US 29 Corridor	Create an express bus service, potentially BRT, along the US 29 corridor from downtown, through UVA, to CHO airport and Rivanna Station. Buses run every 15 minutes.
T2	Commuter bus to Crozet	Commuter bus service from downtown, through UVA, to Ivy and Crozet. Peak-hour service only, buses run every 30 minutes.
T3	Bus route to Avon/Mill Creek	Create new route from downtown, along 5th Street, through 5th Street Station, along Avon St., along Mill Creek Drive, and north on Rte 20 to PVCC. Buses run every 30 minutes.
T4	Increased bus service to Pantops	Add new route to provide additional service across Free Bridge. Change Route 10 alignment. Buses on both routes run every 30 minutes.
T5	Fontaine Research Park bus route	Extend UTS route to provide service from UVA to Fontaine Research Park. Buses run every 10-30 minutes.

Transit Projects Considered (Figure 6-1)



All project descriptions and locations in this document, particularly the potential location of transit stops, were estimated for evaluation purposes and do not reflect exactly what may be implemented if projects are funded.

Roadway Projects Considered (Figure 6-2)



► Project Review Criteria

In addition to scenario evaluation criteria, the MPO developed project review criteria. The project review criteria were used to describe each roadway and transit project and provide an overview of potential impacts a project may have on the transportation network, environment and community. Project review information was collected for each of the 19 roadway projects and five transit projects evaluated for inclusion in the constrained list. The information was used by the MPO Policy Board to inform their selection of projects for scenario evaluation. The project review pages for all considered roadway and transit projects are provided in Appendix A.

The first section of the project review page provides calculations related to congestion mitigation, transit access and bike/ped improvements. This information indicates major benefits of each project, and is related to the performance measures used for the scenario evaluation.

» Environmental Design

For this evaluation, it was identified whether the project would include Complete Streets elements such as street trees, bus shelters or other amenities. Bicycle and pedestrian infrastructure was not included with this evaluation, as information regarding whether each project included such infrastructure was provided separately.

» Environmental Impacts

Seven environmental categories were identified and evaluated for each project:

- 1. Wetlands
- 2. Endangered Species
- 3. Flood Plain
- 4. Scenic Rivers
- 5. Conservation Easements
- 6. Conservation Lands and Parks
- 7. Historical Sites

To identify potential impacts of LRTP projects, the acreage of land designated as each category was calculated, except for the scenic river and historic site categories. Acreage was calculated by estimating roadway widths based on type and number of lanes. Lengths and widths of road segments were added into GIS, which allowed MPO staff to calculate the area of projects that could potentially impact each category. Existing roadway area was included in the calculation, so acreage impacted will likely be less than the calculations indicate.

» Wetlands

Calculations were done using the National Wetlands Inventory from the US Fish and Wildlife Service. The National Wetlands Inventory is a public resource that provides information on the abundance, characteristics, and distribution of US wetlands.

» Endangered Species

Data used is from the Virginia Department of Conservation and Recreation’s Natural Heritage Program.

» Flood Plain

100-year flood plain data was sourced from Albemarle County and the City of Charlottesville. Flood plain data is maintained by FEMA and is available online at <http://www.floodsmart.gov>.

» Scenic Rivers

Potential impacts to scenic rivers were determined by identifying the presence of scenic rivers that might be impacted by the Long Range Transportation Plan projects. The data used Scenic Rivers identified as Potential and Qualified by the Scenic Rivers Program that is maintained by The Department of Conservation and Recreation. The program has identified and designated rivers and streams that possess outstanding scenic, recreational, historic and natural characteristics of statewide significance for future generations.

» Conservation Easements

Data came from the Department of Conservation and Recreation’s Virginia Conservation Lands Database.

» Conservation Land and Parks

Data came from the Department of Conservation and Recreation’s Virginia Conservation Lands Database.

» Social Impacts

The number of residents who live within 500 feet (roadway) or 1/4 mile (transit) of a project was estimated. Additionally, the number of residents who are minority, in poverty, older than 65 or have limited English proficiency was calculated. Impacts to schools were based on a tally of the total number of schools immediately adjacent to the Long Range Transportation Plan project. All public and private schools from preschool through grade 12 were included in this evaluation. Importantly, the information provided in this section may indicate negative impacts (increased exposure to air pollution) or positive impacts (increased multimodal transportation options for residents), so the numbers are provided for decision-makers to interpret.

Project Name

Project Description: includes project location and scope (roadway, transit, bike/ped), cost estimate if available, and any other essential information

 Congestion
Projected change in # of vehicle-hours of delay (model)

 Transit Access
Change in transit access measure

 Bike/Ped
Length of bicycle and pedestrian improvements

Project Impacts	
Environmental Design	Incorporates Complete Streets elements that aren’t in measures (street trees, bus shelters, benches or other amenities). List potential elements included.
Environmental Impacts	Potential project impact on wetlands, floodplains, park lands, scenic rivers, land under conservation easement, and endangered species habitat. Quantative values presented, with qualitative description if necessary.
Social Impacts	Estimated number of individuals who are minority, in poverty, older than 65, or have limited English proficiency, and live within 500 feet of the project (1/4 mile from a stop for transit). Quantative values presented. Total population of the MPO area is approximately 118,000.
Historical Site Impacts	List of National Register of Historic Places (NRHP) sites potentially impacted by the project. Site information presented, with qualitative description if necessary.
Inter-regional corridors	Impact on corridors that are identified by VDOT as part of the National Highway System (NHS). Qualitative description.
Inter-regional transit	Impact on inter-regional transit. Qualitative description.
Maintenance and Safety	Project creates a new bridge or includes deficient bridge(s). Project includes location(s) that VDOT has identified as having a high potential for safety improvement (PSI).

Icons from flaticon.com made by Freepik, Scott de Jonge, and Google

Project A

» Historical Site Impacts

Impacts to historical sites were based on a tally of the total number of sites adjacent to the Long Range Transportation Plan projects. This analysis was conducted using the Virginia Cultural Resource Information System (V-CRIS) provided by the Virginia Department of Historic Resources. Sites accounted for included eligible, potential, and NRHP sites. As with the social impacts, information provided in this section may indicate negative impacts (damage from increased traffic) or positive impacts (increased multimodal access to the site), so the numbers are provided for decision-makers to interpret.

» Inter-regional corridors

Impacts on corridors that VDOT has identified as part of the National Highway System (NHS) were determined and explained.



Fifth Street at Ridge Street, Photo: TJPDC

» Inter-regional transit

Impacts on inter-regional transit were identified, including directly improving access to the regional airport, rail station and bus station.

» Maintenance and Safety

As described in previous chapters, ensuring good bridge condition and a safe multimodal transportation system are important for the MPO, and the MPO has set targets for the related national performance measures. In this project review, it is identified whether a project creates a new bridge or includes a bridge in poor condition (although the cost estimate may not include the bridge improvement.) Projects that include locations that VDOT has identified as having a high potential for safety improvement (PSI) are also included, and these projects would likely improve safety at these locations.



Free Bridge, Photo: TJPDC



Fifth Street south of I-64, Photo: TJPDC

► Scenario Measures

Congestion Measure

One measure, vehicle-hours of delay, was used to evaluate the congestion impact of each scenario.

» Vehicle-Hours of Delay

Vehicle-hours of delay was estimated using the regional travel demand model. The model calculated this based on values for both free-flow and congested travel times. Congestion in the model is primarily determined as the ratio of the modeled traffic volume to the capacity identified for each road. Therefore, as the volume on a road approaches the capacity of the road, vehicles traveling on the road have increased travel times.

Accessibility Measures

Three measures assesses Accessibility and Mobility

- 1. Resident access to transit
- 2. Average commute time (driving)
- 3. Access to mode transfers

» Resident Access to Transit

Resident access to transit included an evaluation of the total population close to transit stops, as well as calculation of disadvantaged populations close to transit stops. The sub-categories are listed below, with the values for all sub-categories added together to create a value for the measure. For total population, the 2045 population projections (by TAZ) were used. The data used for the other sub-categories came from the American Community Survey 5-year estimates (2016). All analyses exclude stops that are only served during the peak-hour (rush hour) by commuter bus routes.

- 1. Total population within 1/4 mile of a transit stop, adjusted for bus headway

Recognizing that bus routes with lower headways (the scheduled time between buses) provide improved transit access, the population near each stop was adjusted based on the headway. Specifically, the population value was multiplied by two if the peak-hour headway is less than 20 minutes, and divided by two if the peak-hour headway is less than 45 minutes.

- 2. Population in poverty within 1/4 mile of a transit stop
 - 3. Minority populations within 1/4 mile of a transit stop
- Includes all residents who identify as a race other than White, along with those who identify as White and of Hispanic or Latino origin.
- 4. Population over age 65 within 1/4 mile of a transit stop
 - 5. Population with limited-English proficiency within 1/4 mile of a transit stop

» Average Commute Time (Driving)

The average commute time for residents driving to work in the region was calculated by the regional travel demand model. The share of residents commuting by other modes was too low to accurately estimate travel times using the travel demand model.

» Access to Mode Transfers

Access to mode transfers includes two sub-categories that both represent aspects of multimodal trips in the region. The first is the number of park and ride spaces in the region, as these park and ride lots are used by residents who carpool, vanpool, or ride transit. The second is the number of bike rack spaces at transit stops in the region, as bicycling can be a valuable mode for traveling to and from transit stops.

Economic Development and Land Use Measures

Three measures were used to evaluate the impact of each scenario on economic development and land use. Two of these measures used TAZs that were identified as activity centers where relatively high-density, mixed-use areas exist or are likely to be developed. A map of these activity centers is shown in [Figure 6-4](#).

» Access to Activity Centers by Bus, Bicycle and Walking

This measure includes three sub-categories that quantify multimodal transportation access to the region's identified activity centers.

- 1. Transit stops within activity centers
- The number of transit stops within, or immediately adjacent to, activity center TAZs was counted, with express bus stops counting as two stops. Stops only served by peak-hour routes were not included.
- 2. Length of bicycle facilities within, or immediately adjacent to, activity center TAZs
 - 3. Length of pedestrian facilities within, or immediately adjacent to, activity center TAZs

» Transportation Projects within Activity Centers

This measure calculates the miles of roadway in the identified activity center TAZs. Roads with a functional classification of "local" were excluded. This measure was included to encourage increased connectivity with new roads that provide benefits for economic development and appropriate land uses.

Scenario Performance Measures (Table 6-3)

L RTP Goal	L RTP Objective	Aspect to Quantify	Performance Measure
Congestion	Improve the efficiency of the existing transportation system and services whenever possible.	Delay due to Congestion	Vehicle-hours of delay
Accessibility & Mobility	Improve access to transit for all users. Ensure the diverse needs of a changing population are met including the elderly, disabled, limited English proficiency, and persons lacking access to private vehicles.	Resident access to Transit	Total population within 1/4 mile of a transit stop* (multiply by 2 if peak-hour headway is 20 minutes or less, divide by 2 if peak-hour headway is 45 minutes or more)
			Population below poverty line (present-day) within 1/4 mile from transit stop
			Minority population (present-day) within 1/4 mile from transit stop
			Population age 65+ (present-day) within 1/4 mile from transit stop
			Limited-English proficiency (LEP) population (present-day) within 1/4 mile from transit stop
Accessibility & Mobility	SMART SCALE: Access to jobs	Commute time	Average commute time - driving
	Enhance connectivity among and between various modes of transportation through identifying and filling gaps in networks.	Access to mode transfers	# of park-and-ride spaces in the region
	Increase awareness and continue to support Rideshare and Travel Demand Management (TDM) services.		# of bike rack spaces at transit stops in the region
Economic Development and Land Use	Assure activity centers are designed to accommodate a range of transportation modes.	Access to activity centers by bus, bike and walking	# of transit stops* within (or immediately adjacent to) activity center TAZs, with each express bus stop* counting as 2 stops
			Length of bicycle facilities within (or immediately adjacent to) activity center TAZs
			Length of pedestrian facilities within (or immediately adjacent to) activity center TAZs
	Target transportation improvements to support local land use and development priorities.	Transportation projects within or connected to activity centers	Miles of road that are within (or immediately adjacent to) activity center TAZs
Safety	Improve the effectiveness of the existing transportation network, recognizing internal and external future travel demands from tourism, freight, and commuters.	VMT (vehicle-miles traveled) per capita	VMT per capita
	Reduce the number and severity of crashes	Crashes	Fatality crashes, multiplied by 540 Injury crashes, multiplied by 10 Property damage only crashes
	Identify key safety deficiencies in regional networks across all modes including the needs of bike and pedestrian users.	Bicycle and Pedestrian network	Length of regional shared-use paths and bike lanes Length of regional sidewalks and shared-use paths
Environment & Community	Promote use of alternative transportation modes and alternative fuel vehicles.	Non-SOV Commute Mode Share	% of trips non-motorized
			% of trips transit

*excludes stops that serve only peak-hour (commuter) routes

» VMT (vehicle-miles traveled) Per Capita

Vehicle-miles traveled per capita is a measure of the efficiency of the regional transportation network. It was estimated using the travel demand model. Scenarios with lower vehicle-miles traveled per capita may involve higher proportions of transit trips or more direct routes for vehicle trips.

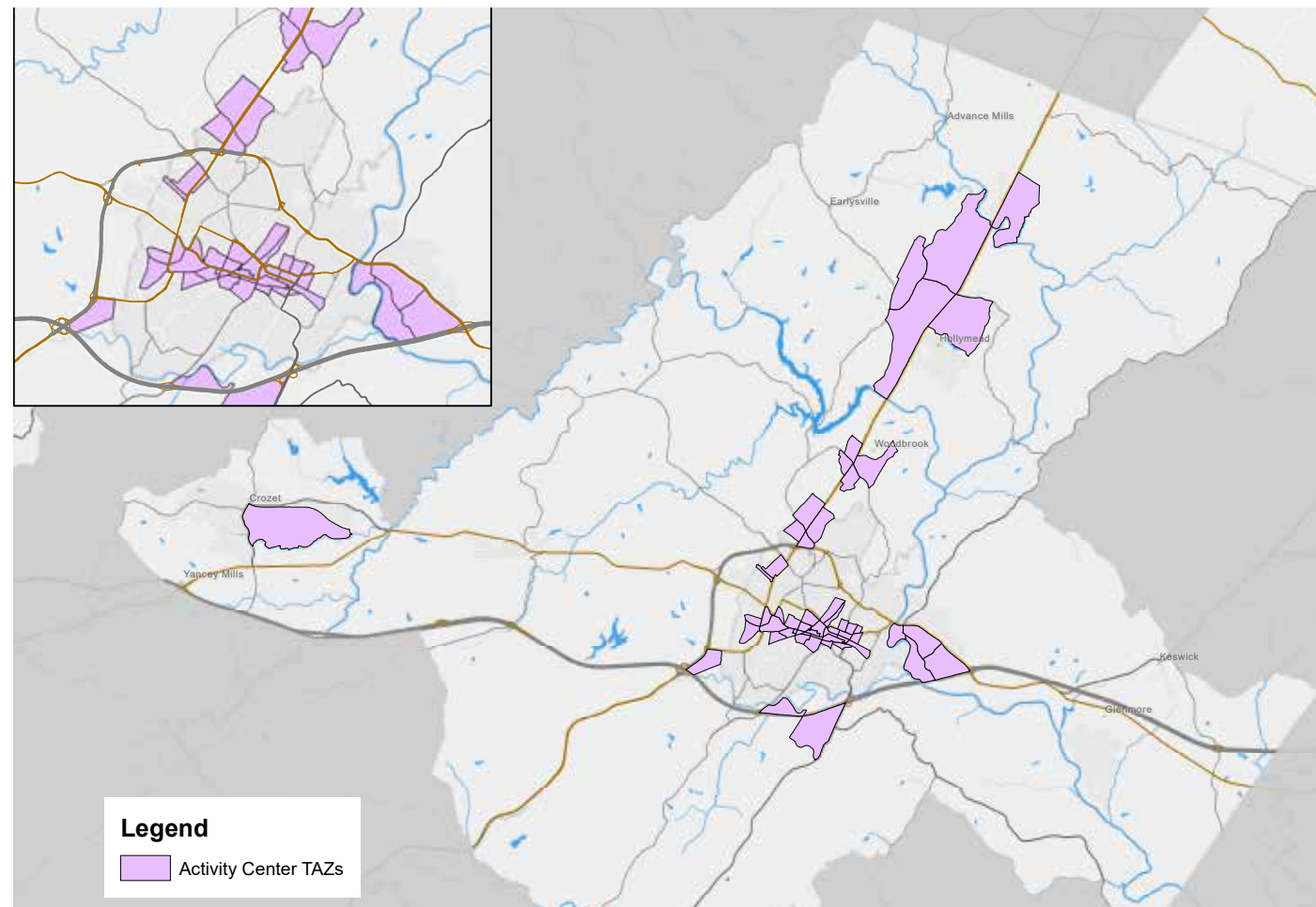
Safety Measures

The safety measures include a measure related to vehicular crashes and a measure regarding the amount of bicycle and pedestrian infrastructure that provides safe travel across the region.

» Crashes, adjusted by severity

The travel demand model estimates number of crashes using factors such as roadway speed and traffic volume. It estimates fatality crashes, injury crashes, and property-damage-only crashes, with this measure weighting those crashes using a standard calculation (fatality crashes multiplied by 540 and injury crashes multiplied by 10).

Identified Activity Centers (Figure 6-4)



» Bicycle and Pedestrian Network

Bicycle and pedestrian infrastructure is important for safe multimodal transportation in the region. For this measure, bicycle and pedestrian infrastructure that provides regional connections was identified and the length of this infrastructure was calculated.

Environment and Community Measure

One measure, non-SOV (single-occupancy vehicle) commute mode share, was used to evaluate the impact of each scenario on the environment and community. Multiple additional environmental- and community-related aspects are addressed in the Project Review information presented on the previous pages. Other measures also have notable environment and community benefits, including VMT per capita and multimodal access to activity centers.

» Non-SOV Commute Mode Share

The travel demand model calculates a transportation mode share for commute trips. This measure combines the estimated non-motorized and transit commute mode shares (percent of trips).

► Scenario Evaluation Process

The scenario evaluation effort followed a similar process to that completed for the 2040 LRTP. There are multiple benefits of evaluating groups of projects using this scenario evaluation method. One reason for this method is that inclusion of one project may decrease the need for another project, primarily in relation to calculating roadway capacity and congestion. For example, creating a new roadway parallel to an existing roadway would decrease the benefits of widening the existing roadway. A second reason for the scenario evaluation method is to ensure that a variety of projects are identified as priorities so as to address the wide range of goals and objectives of the plan. If all projects were only assessed individually, the end result may only include bicycle and pedestrian projects, or might only include projects that have economic development benefits. The scenario evaluation process encourages decision-makers to consider projects with a range of benefits.

Creation of Scenarios for Round 1 (Figure 6-5)

Scenario A - Capacity

US 250/US 29 Bypass widening (R1)
US 250 widening - Shadwell (R2)
US 250 and Free Bridge widening (R5)
I-64 Truck Lanes (R16)

Scenario B - Connectivity

Berkmar Drive Extension (R11)
Sunset/Fontaine Connector (R12)
Eastern Avenue - Crozet (R13)
Hillsdale Drive to Rio Rd (R18)
Pantops Bridge (R19)

Current Smart Scale Apps (Included in all)

Hydraulic and 29 Area Projects (R3)
Fontaine/Bypass Interchange (R4)
West Main Street Multimodal (R6)

Starting the Scenario Evaluation

Once all potential projects had been identified, they were categorized into three scenarios for a first round of scenario evaluation. The projects included in each scenario are shown in [Figure 6-5](#) below. All scenarios included the projects that were SMART SCALE applications at the time. In addition, each scenario included only projects that were of a certain type. “Capacity” projects, which have a primary benefit of increasing roadway capacity and flow of vehicles, were included in Scenario A. “Connectivity” projects, which are new roadways providing multimodal transportation connections, were included in Scenario B. “Multimodal” projects, which increase transit, bicycle, or pedestrian infrastructure and include turn lanes or other relatively minor improvements for vehicles, were included in Scenario C. The primary purpose for the creation of these scenarios was to show the relative benefits of the different types of projects as evaluated by the scenario performance measures.

Scenario C - Multimodal

Route 20 (R7)
Rio Rd (R8)
Fifth/Ridge/McIntire (R9)
Avon Street (R10)
Old Lynchburg (R14)
Ivy Road - East (R15)
Ivy Road - West (R17)
Express Bus on US 29 Corridor (T1)
Commuter bus to Crozet (T2)
Bus route to Avon/Mill Creek (T3)
Increased bus service to Pantops (T4)
Fontaine Research Park bus route (T5)

Round 1 of Scenario Evaluation

Round 1 of the scenario evaluation was completed to show the relative benefits of the different types of projects as evaluated by the scenario performance measures. The results of the round 1 scenario evaluation are shown in Figure 6-6 below, with numeric values shown in Table 6-4 on the opposite page. All scenarios consider 2045 conditions. In the figure below, the bars show percentage improvement or worsening on each of the 10 measures, as compared to a scenario where no transportation improvements are made (2045 “no-build”).

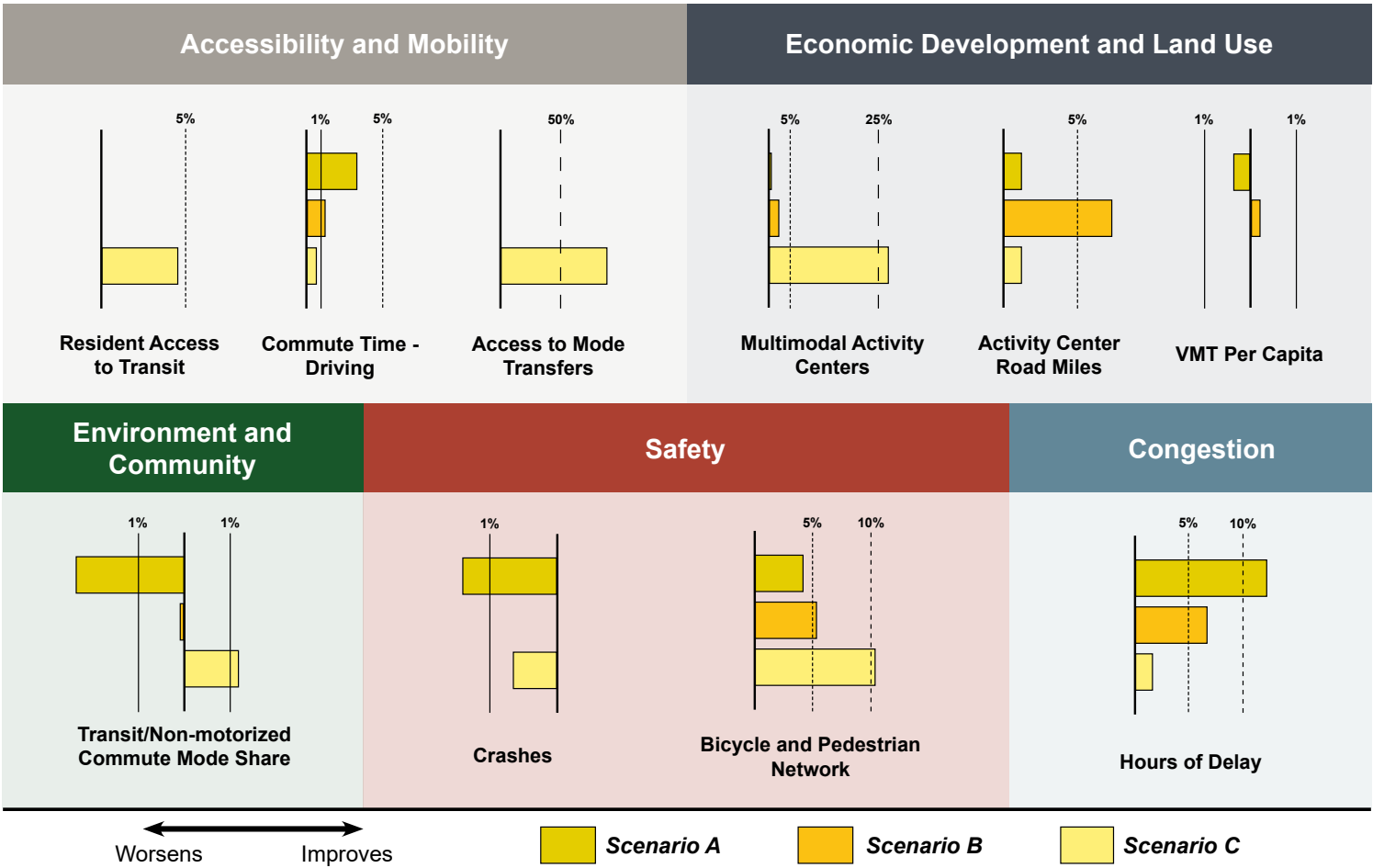
Many of the results from the round 1 evaluation were expected based on the project groupings chosen. Clearly the scenario with the multimodal projects, Scenario C, had more benefits than the other scenarios for the transit and multimodal measures. And logically, the scenario with roadway capacity projects, Scenario A, had notable benefits on the commute time and hours of delay measures. Scenario B, with projects that provided increased connectivity, showed benefits on many of the measures, with particular benefits in the economic development and land use measures. The results from round 1 of the scenarios continued to be valuable as reference when evaluating scenarios in rounds 2 and 3.

The round 1 analysis was completed in September, 2018 and presented to the MPO committees in September and at a public open house in October. Staff and the MPO Policy Board used the results of the round 1 analysis, the information provided by the project review pages, and the input received from the public and MPO committees to identify projects to include in round 2 of the scenario evaluation. Some projects were not included in any scenario in round 2, as it was determined they are not currently priority projects. The decisions for projects to include in Scenarios D and E, as well as projects to remove and projects to move to the vision list, are shown in Figure 6-7.

Creation of Scenarios for Round 2 (Figure 6-7)

Scenario D	Scenario E
Hydraulic and US 29 (R3) Bypass/Fontaine Interchange (R4) West Main Street multimodal (R6) Rio Road multimodal (R8) 5 th /Ridge/McIntire multimodal (R9) Avon Street multimodal (R10) Berkmar Drive Extension (R11) Old Lynchburg multimodal (R14) Express bus on Route 29 corridor (T1) Unconstrained bus service (T2, T3, T4) Hillsdale Drive to Rio (R18) Route 20 multimodal (R7) Sunset/Fontaine connector (R12) South Pantops Drive bridge (R19)	Hydraulic and US 29 (R3) Bypass/Fontaine Interchange (R4) West Main Street multimodal (R6) Rio Road multimodal (R8) 5 th /Ridge/McIntire multimodal (R9) Avon Street multimodal (R10) Berkmar Drive Extension (R11) Old Lynchburg multimodal (R14) Express bus on Route 29 corridor (T1) Unconstrained bus service (T2, T3, T4) US250 Shadwell (R2) US250 Free Bridge widening (R5)
Removed Projects	Projects for Visioning List
US 29/250 widening (R1) – Cost and need Fontaine Research Park Bus (T5) – Implementation by UVA	Eastern Ave Crozet (R13) Ivy Road multimodal – East (R15) Ivy Road multimodal – West (R17) I64 Truck Lanes (R16)

Round 1 Scenario Evaluation Graphic (Figure 6-6)



Round 1 Scenario Evaluation Results (Table 6-4)

Measure	Metric	Base year (2015)	2045 'no-build'	Scenario A Capacity	Scenario B Connectivity	Scenario C Multimodal
Congestion	Vehicle-hours of delay	7065	10668	9362	9952	10491
Access to Transit	Population near stop* with peak headway of 20 minutes or less	31267	41948	41948	41948	44218
	Population near stop* with peak headway of 20-45 minutes	23529	26625	26625	26625	29474
	Population near stop* with peak headway of more than 45 min	12153	15058	15058	15058	13370
	Poverty population living within 1/4 mile (2016)	13460	13492	13492	13492	13667
	Minority population living within 1/4 mile (2016)	23734	23680	23680	23680	24076
	Age 65+ population living within 1/4 mile (2016)	6221	6034	6034	6034	6252
	LEP population living within 1/4 mile (2016)	595	598	598	598	606
Commute time	Average commute time - driving	11.6	12.9	12.5	12.8	12.8
Access to mode transfers	# of park-and-ride spaces	272	360	360	360	609
	# of bike rack spaces at transit stops	93	95	95	95	247
Bus, bike and pedestrian network within activity centers	# of local bus transit stops* within (or immediately adjacent to) activity center TAZs	146	148	148	148	200
	# of express bus transit stops* within (or immediately adjacent to) activity center TAZs	0	0	0	0	13
	Length of bike facilities within (or immediately adjacent to) activity center TAZs	29.7	38.1	39.6	42.0	41.5
	Length of pedestrian facilities within (or immediately adjacent to) activity center TAZs	117.5	123.0	123.6	126.5	125.9
Roadways within activity centers	Miles of road that are within (or immediately adjacent to) activity center TAZs	47.6	51.2	51.8	54.9	51.8
VMT per capita	VMT per capita	27.2	32.8	32.9	32.7	32.8
Safety/Crashes	Number of Fatality crashes	15	19	19	19	19
	Number of Injury crashes	1157	1433	1469	1432	1447
	Number of Property damage only crashes	2625	3291	3332	3307	3343
Bike/Ped network	Length of regional bicycle paths and lanes	46.7	55.4	59.5	60.2	64.5
	Length of regional sidewalks and paths	106.6	113.0	115.9	117.2	121.4
Non-SOV Mode Share	% of trips non-motorized	4.60	4.77	4.65	4.77	4.76
	% of trips transit	0.33	0.33	0.33	0.33	0.41

*excludes stops that serve only peak-hour (commuter) routes

Rounds 2 and 3 of Scenario Evaluation

As shown in Figure 6-7 on page 75, Scenarios D and E share many projects in common. With the projects that were unique to each scenario, Scenario D included multiple connectivity projects while Scenario E included two projects that would increase vehicle capacity and add bicycle and pedestrian improvements. The results of this evaluation are shown in Figure 6-8 and Table 6-5. The results indicated that Scenario D was better than Scenario E in all ways except for commute time and congestion mitigation, where the benefits from Scenario D were similar to the benefits from Scenario E.

Following round 2 of the scenario evaluation, there was considerable discussion about the project options being suggested for the Free Bridge area. Specifically, City of Charlottesville staff were concerned about public support for either expanding the number of lanes on Free Bridge

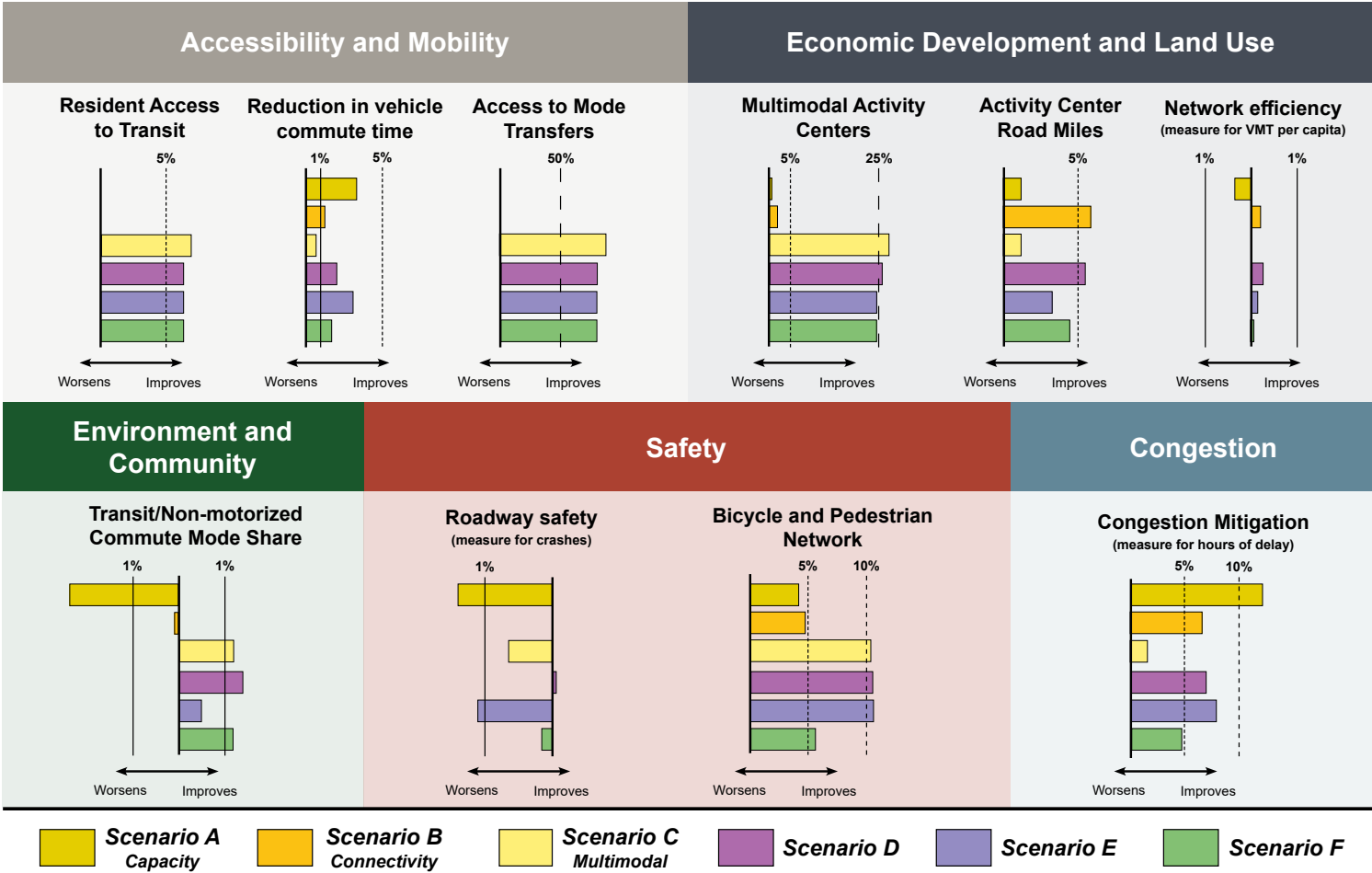
or constructing a new bridge parallel to Free Bridge. Given this, the MPO Technical committee suggested not moving forward with either of these alternatives in future scenarios. Instead, the committee proposed that the LRTP suggest an additional study of the area with an emphasis on improving transit service and multimodal capacity. This study was considered a new project, given the project ID R20, and would be a follow up to the Free Bridge Congestion Relief study completed in 2015 by the TJPDC. The MPO Policy Board agreed with this suggestion, and the new Free Bridge area study was included in Scenario F, which was evaluated in round 3.

Scenario F included many of the same projects included in Scenario D, with some removed to further narrow down the region’s priority projects. Scenario F included the following projects:

- » Hydraulic and US 29 Area Projects (R3)
- » Fontaine/Bypass Interchange (R4)
- » West Main Street Multimodal (R6)
- » Fifth/Ridge/McIntire Multimodal (R9)
- » Avon Street Multimodal (R10)
- » Berkmar Drive Extension (R11)
- » Eastern Avenue (Crozet) (R13)
- » Hillsdale Drive to Rio Road (R18)
- » Free Bridge area multimodal capacity study (R20)
- » Express Bus on US 29 Corridor (T1)
- » Commuter bus to Crozet (T2)
- » Bus route to Avon/Mill Creek (T3)
- » Increased bus service to Pantops (T4)

The results of the evaluation of Scenario F are also shown in Figure 6-8 and Table 6-4. The removal of multiple multimodal projects and the Free Bridge area projects led to Scenario F having a lower benefit than Scenario D in multiple measures, including congestion mitigation and bicycle and pedestrian network. Given the lower cost compared to other scenarios, Scenario F was seen as a good combination of projects with valuable benefits in nearly every performance measure.

All Scenarios Evaluation Graphic (Figure 6-8)



All Scenarios Evaluation Results (Table 6-5)

Measure	Metric	Base year (2015)	2045 'no-build'	Scenario A Capacity	Scenario B Connectivity	Scenario C Multimodal	Scenario D	Scenario E	Scenario F
Congestion	Vehicle-hours of delay	7065	10668	9362	9952	10491	9922	9818	10168
	Population near stop* with peak headway of 20 minutes or less	31267	41946	41948	41948	46421	46131	46131	46131
Access to Transit	Population near stop* with peak headway of 20-45 minutes	23529	26629	26625	26625	31066	31068	31068	31068
	Population near stop* with peak headway of more than 45 min	12153	15059	15058	15058	9261	9261	9261	9261
	Poverty population living within 1/4 mile (2016)	13460	13492	13492	13492	13667	13608	13608	13608
	Minority population living within 1/4 mile (2016)	23734	23680	23680	23680	24076	23941	23941	23941
	Age 65+ population living within 1/4 mile (2016)	6221	6034	6034	6034	6252	6141	6141	6141
	LEP population living within 1/4 mile (2016)	595	598	598	598	606	601	601	601
	Average commute time - driving	11.6	12.9	12.5	12.8	12.8	12.7	12.5	12.7
Commute time	# of park-and-ride spaces	272	360	360	360	609	579	579	579
	# of bike rack spaces at transit stops	93	95	95	95	247	239	239	239
Access to mode transfers	# of local bus transit stops* within (or immediately adjacent to) activity center TAZs	146	148	148	148	200	191	191	191
	# of express bus transit stops* within (or immediately adjacent to) activity center TAZs	0	0	0	0	13	13	13	13
	Length of bike facilities within (or immediately adjacent to) activity center TAZs	29.7	38.1	39.6	41.3	41.5	43.4	41.8	41.7
	Length of pedestrian facilities within (or immediately adjacent to) activity center TAZs	117.5	123.0	123.6	125.9	125.9	128.0	126.0	126.3
Bus, bike and pedestrian network within activity centers	Miles of road that are within (or immediately adjacent to) activity center TAZs	47.6	51.2	51.8	54.2	51.8	54.0	52.9	53.5
	VMT per capita	27.2	32.8	32.9	32.7	32.8	32.7	32.7	32.8
Roadways within activity centers	Number of Fatality crashes	15	19	19	19	19	19	19	19
	Number of Injury crashes	1157	1433	1469	1432	1447	1431	1462	1436
	Number of Property damage only crashes	2625	3291	3332	3307	3343	3304	3316	3315
Safety/Crashes	Length of regional bicycle paths and lanes	46.7	55.4	59.5	59.6	64.5	64.5	64.9	60.2
	Length of regional sidewalks and paths	106.6	113.0	115.9	116.8	121.4	121.6	121.3	117.6
Bike/Ped network	% of trips non-motorized	4.60	4.77	4.65	4.77	4.76	4.78	4.74	4.77
	% of trips transit	0.33	0.33	0.33	0.33	0.41	0.40	0.39	0.39
Non-SOV Mode Share									

*excludes stops that serve only peak-hour (commuter) routes

Results of Scenario Evaluation Process

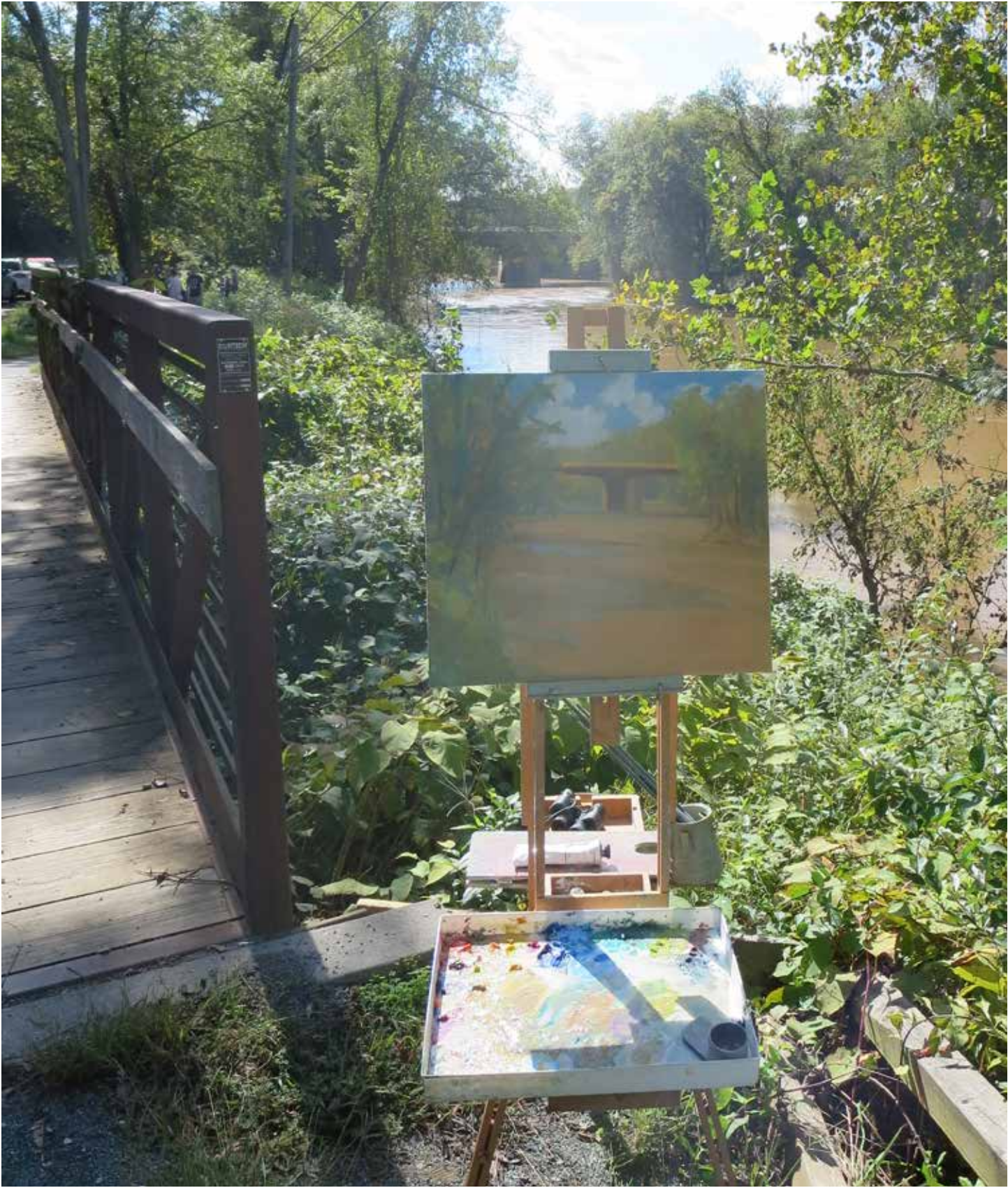
All projects, and the scenarios in which they were evaluated, are shown in Table 6-6 below. The scenario evaluation process, and associated public input and MPO Policy Board and committee discussions, led to a relative prioritization of projects. The projects considered highest priority for the region are those that were included in Scenario F. Unfortunately, some of these projects may struggle to receive funding through SMART SCALE or similar funding streams. Given these challenges, the region should pursue all possibilities to fund the priority projects while also making sure to take advantage of any opportunities to fund other projects. Local funding may also need to play a more major role in improving the local transportation network.

Project List and Scenario Evaluation (Table 6-6)

ID	Project Name	Round 1			Round 2		Round 3
		A	B	C	D	E	F
R1	US 29/250 Bypass widening	x					
R2	US 250 widening - Shadwell	x				x	
R3	Hydraulic and US 29 - all projects	x	x	x	x	x	x
R4	Bypass/Fontaine Interchange	x	x	x	x	x	x
R5	250 Free Bridge widening	x				x	
R6	West Main Street multimodal	x	x	x	x	x	x
R7	Route 20 multimodal			x	x		
R8	Rio Road multimodal			x	x	x	
R9	Fifth/Ridge/McIntire multimodal			x	x	x	x
R10	Avon Street multimodal			x	x	x	x
R11	Berkmar extension		x		x	x	x
R12	Sunset/Fontaine connector		x		x		
R13	Eastern Ave connector		x				x
R14	Old Lynchburg multimodal			x	x	x	
R15	Ivy Road East multimodal			x			
R16	I-64 truck lanes	x					
R17	Ivy Road West multimodal			x			
R18	Hillsdale Drive to Rio Rd		x		x		x
R19	South Pantops Drive Bridge		x		x		
R20	Free Bridge area capacity evaluation with bike + ped and transit						x
T1	Express Bus on US 29 Corridor			x	x	x	x
T2	Commuter Bus to Crozet			x	x	x	x
T3	Bus Route to Avon/Mill Creek			x	x	x	x
T4	Increased Bus service to Pantops			x	x	x	x
T5	Fontaine Research Park Bus route			x			
T6	Commuter Service from Valley						

Conclusion

The project and scenario evaluation completed as part of the LRTP process provided information about benefits and potential negative impacts of the projects being considered. The information was presented to both the public and the MPO committees to gather feedback on the projects. The process led to identification of priority projects for the region, with the understanding that this prioritization may not lead to more immediate funding of projects given the competitive nature of most available funding.



Rivanna River and Free Bridge, Photo: TJPDC
Painting: Gray Dodson, *River After the Storm*, oil on canvas, 2018 FLOW River Arts Festival

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[Figure 7-1:](#) Regional Bicycle and Pedestrian Network

► Overview

The LRTP is a comprehensive process that identifies needs for many elements of the transportation system. Chapter 7 evaluated the benefits of roadway and transit projects and this chapter will provide information about intersections, bicycle and pedestrian improvements, and bridge needs. These aspects were separated from the roadway and transit analysis for multiple reasons, including that some funding is dedicated to one type of project. There are also challenges associated with measuring the impact of various types of improvements. For example, the travel demand model used to estimate the congestion impact of roadway and transit projects is not able to calculate the impact of intersection or bike/ped improvements. Nonetheless, the transportation network is one system and any decision should consider all aspects of the network to ensure maximum performance of the system and good quality of life for residents of the region.

► Intersections

Intersections are a central concern in the MPO, as intersections are primary areas of congestion, locations where many crashes occur, and barriers to bicycle and pedestrian travel. Given this, VDOT and the localities are continuously evaluating conditions at intersections and working to identify improvements that increase safety and multimodal flow through intersections. This LRTP process compiled a list of intersections that have been identified by VDOT or the localities as important locations for improvements. These intersections are provided in Chapter 8.

► Bridges

Like intersections, bridges are continuously evaluated by VDOT and the localities to ensure safe travel now and in the future. This LRTP includes the information that VDOT has collected regarding bridge condition, and the MPO will continue to monitor these conditions as part of the national performance measures. A list of bridges that are currently identified as being in poor or fair condition, or otherwise needing improvement, is provided in Chapter 8. Chapter 8 also contains a list of bridge improvement projects that are already funded.

► Regional Bicycle and Pedestrian Network

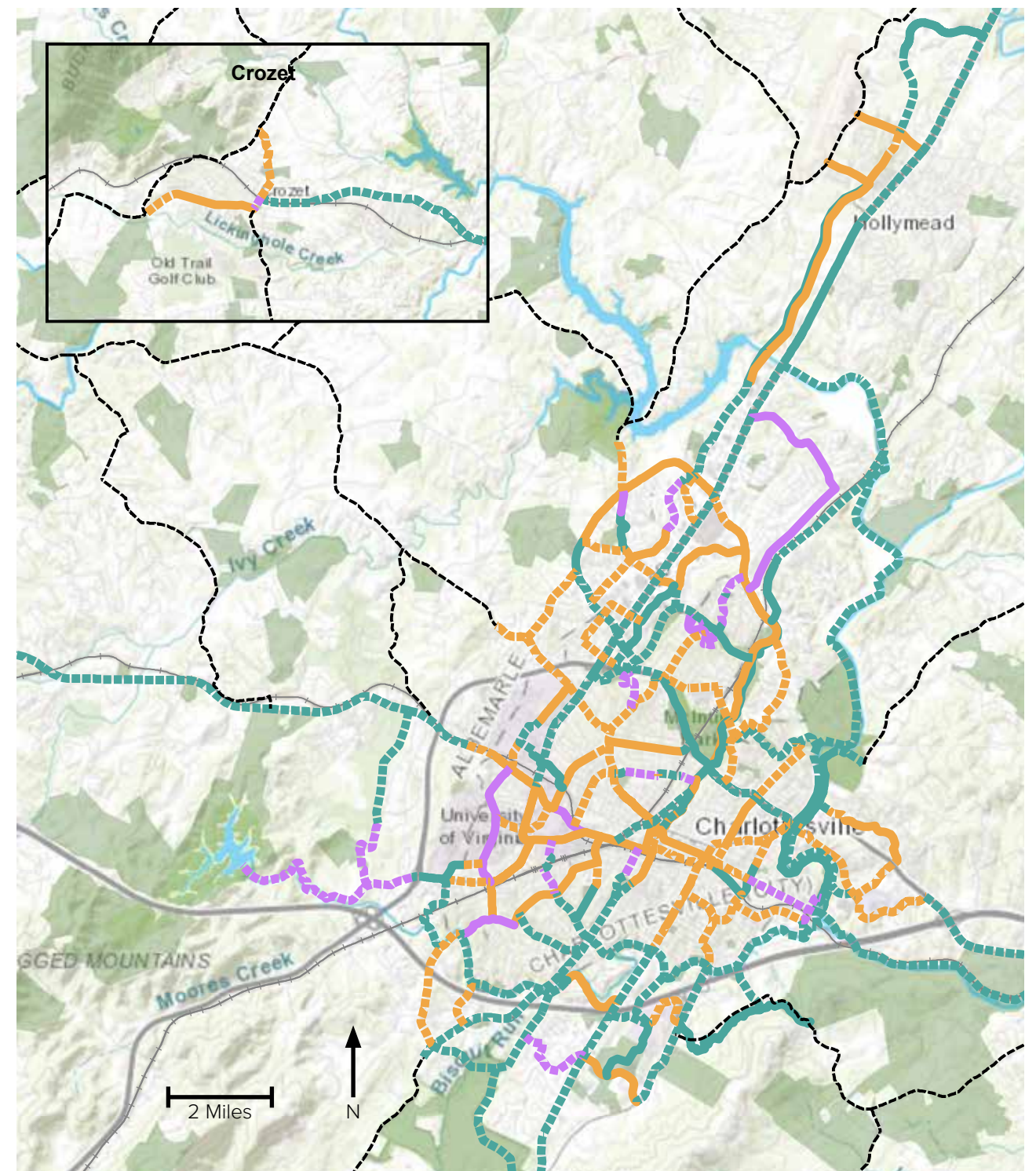
In 2019, the MPO adopted the Jefferson Area Bicycle and Pedestrian Plan to provide a regional vision for implementation of regional bicycle and pedestrian infrastructure. A map showing existing and proposed infrastructure is shown in Figure 7-1. While the Bicycle and Pedestrian Plan identified a large number of corridors and projects, it was not an attempt to compile all potential projects. As such, local efforts will identify additional bicycle and pedestrian needs within neighborhoods and between neighborhoods.

Initial cost estimates indicate that over \$200 million worth of investment will be needed to construct the corridors identified in the plan. To guide this investment, the plan prioritized projects into three tiers. As shown in Chapter 8, all projects recommended by the Jefferson Area Bicycle and Pedestrian Plan are included in this LRTP. Many of the top tier projects are included in the constrained bicycle and pedestrian section of the LRTP, with the remainder included on the vision list.



► Conclusion

The LRTP is a compilation of many efforts to provide a comprehensive understanding of the region's transportation system. Evaluation completed by VDOT, the localities, and other MPO efforts, was brought together in the LRTP to identify the region's priority projects.



Regional Bicycle and Pedestrian Network (Figure 7-1)

ABOUT THIS MAP: This map depicts the corridors identified as the regional bicycle and pedestrian network. An interactive version of this map is [available online](#).

FEATURES

- Parks and Conservation
- Lakes and Rivers
- Railroads
- Proposed Bike Lane and Sidewalk
- Existing Bike Lane and Sidewalk
- Proposed Shared Road and Sidewalk
- Existing Shared Road and Sidewalk
- Proposed Shared Use Path
- Existing Shared Use Path
- Rural Corridors

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- [Table 8-2:](#) Funded Roadway and Intersection Projects
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- [Table 8-11:](#) Bicycle and Pedestrian Vision List Continued
- [Table 8-12:](#) Bicycle and Pedestrian Vision List Continued

► Overview

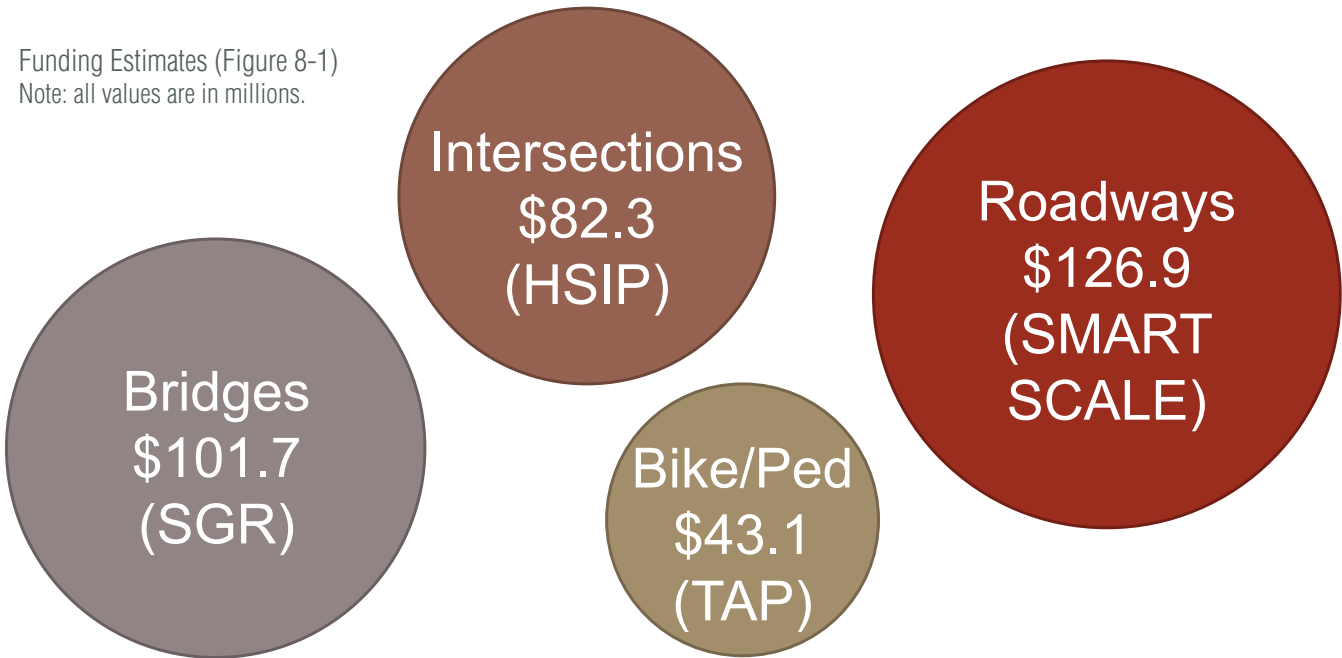
As explained in Chapter 4, a primary requirement for the LRTP is the creation of constrained lists of projects, based on estimates of future funding. Estimating future funding has become more challenging in recent years, particularly since Virginia has moved to a competitive method of distributing major funding, SMART SCALE. The inclusion of a project in the constrained list of this LRTP has less impact than in the past, as each project needs to compete for state and federal funding regardless of whether it is in the constrained list or the vision list. Nonetheless, the constrained and vision lists are an essential component of this LRTP and identify projects that the region desires to receive state and federal funds to construct.

As indicated in Chapter 4, transportation projects in the region were split into 5 categories for evaluation and inclusion in the constrained and vision lists. These categories are:

- Roadway projects that improve safety and flow for those using vehicles, as well as improving bicycle, pedestrian and transit infrastructure.
- Transit projects that increase transit service in the region.
- Intersection projects that improve safety and flow for all transportation modes at intersections.
- Bicycle and pedestrian projects that create safe and desirable infrastructure for bicycling and walking.
- Bridge projects that rehabilitate or replace bridges to ensure the region’s bridges remain safe and in good condition.

► Funding and Cost Estimates

MPO staff worked with VDOT staff to create estimates, shown in [Figure 8-1](#), for the amount of state and federal transportation funds that the region will receive before 2045. For two categories, intersections and bicycle and pedestrian projects, staff used the same method that was used in the previous LRTP. For these categories, the amount of money currently programmed for each type of project in the TIP (FY2018-2021) was used to estimate annual yearly funding. The primary funding source associated with bicycle and pedestrian improvements is the Transportation Alternatives Program (TAP), although other programs fund bicycle and pedestrian improvements. Likewise, the Highway Safety Improvement Program (HSIP) is the primary, but not only, program that funds intersection improvements. The estimate for future bridge funding came directly from VDOT, which provided an estimate for State of Good Repair (SGR) funding. The most challenging category to estimate was the roadway category, corresponding to SMART SCALE funds. This estimate was created based on the region’s performance in the completed rounds of SMART SCALE, rounds 1 and 2. The amount of money allocated per year from each round was calculated and averaged for the two rounds. This value was used for the first projected year, but was reduced for each following year, using VDOT estimates regarding a decrease in funding over time. Appropriate estimates for transit funding are not available due to ongoing changes to the methods used by DRPT for distributing transit capital and operating funds.



Project cost estimates were created in coordination with VDOT staff. Most project costs were estimated using the VDOT planning-level cost estimation tool, with other project costs being taken from previous studies and escalated to a construction year of 2020. Transit operating costs are dynamic and can change due to travel patterns, demand and other factors. Therefore, while transit projects are an important element of the LRTP operating estimates cannot be accurately provided.

► Funded Projects

Each year the Virginia Commonwealth Transportation Board (CTB) creates a funding plan for projects for the next six years, referred to as the Six-Year Improvement Program (SYIP). The funded projects in the MPO area have been identified, with bridge projects listed in [Table 8-1](#), roadway and intersection projects described in [Table 8-2](#), and bicycle and pedestrian projects described in [Table 8-3](#).

Funded Bridge Projects (Table 8-1)

UPC	VDOT Structure #	Description	Purpose	Total Cost
110001	1024	Crozet Ave over Lickinghole Creek	Bridge Rehabilitation	\$2,210,000
111779	6401	Fontaine Ave Extended over Morey Creek	Bridge Replacement	\$3,500,000
111378	6255	Red Hill Road over North Fork Hardware River	Bridge Rehabilitation	\$2,210,000
75878	1801	9th Street over Water Street and Railroad tracks (Belmont Bridge)	Bridge Replacement	\$24,787,000
110891	1808	US 250 Bypass over Rugby Ave	Bridge Rehabilitation	\$2,488,000
110892	1809	US 250 Bypass over US 29 Business	Bridge Rehabilitation	\$3,848,000
110890	8004	Melbourne Road over Norfolk Southern Railroad tracks	Bridge Rehabilitation	\$2,441,000
111776	6261	Old Ivy Road over US 29/250 Bypass	Bridge Rehabilitation	\$3,038,000
110000	6042	Fray's Mill Road over Marsh Run	Bridge Rehabilitation	\$1,600,000
110893	1810	US 250 Bypass over Norfolk Southern Railroad tracks	Bridge Rehabilitation	\$1,303,000
	6013	Dickerson Road over North Fork Rivanna River	Bridge Rehabilitation	

Funded Roadway and Intersection Projects (Table 8-2)

UPC	Name	Description	Purpose	Total Cost
111727	US 29 and I-64 (Exit 118) Improvements	Add left turn lanes from Southbound US 29 to Eastbound I-64 ramp to address weave issues on I-64.	Improve safety and traffic flow	\$1,000,000
109397	Rio Mills and Berkmar Dr Connector Road	Create new 2-lane roadway, with a sidewalk and a shared use path, between Rio Mills Road and Berkmar Drive Extended.	Increase network connectivity	\$3,800,000
109551, 110381	Emmet Street Streetscape	Improve bicycle, pedestrian, and transit infrastructure and facilities between University Ave and Arlington Blvd. Upgrade traffic signals and improve landscaping.	Increase multimodal capacity and safety	\$28,313,000
109484	Fontaine Ave Streetscape	Improve bicycle, pedestrian, and transit infrastructure and facilities between the City boundary and Jefferson Park Ave. Improve landscaping and reimagine access management.	Increase multimodal capacity and safety	\$11,700,000
109480	East High Street Streetscape	Improve bicycle, pedestrian, and transit infrastructure and facilities on Market Street, 9th Street NE, and East High Street. Upgrade traffic signals, landscaping and way-finding signage.	Increase multimodal capacity and safety	\$5,638,000
111733	Route 20 and Proffit Rd Intersection	Reconstruct intersection of Route 20 (Stony Point Road) and Route 649 (Proffit Rd) to improve safety and traffic flow.	Improve safety and traffic flow	\$4,000,000
111796	Emmet and Barracks Intersection	Add additional turn lanes at intersection, improve pedestrian crossings, construct new bicycle and pedestrian facilities along Barracks Rd to Hilltop Road.	Increase multimodal capacity and safety	\$8,641,000
111814	I-64 Exit 124 DDI	Construct a diverging diamond interchange (DDI) at the interchange of I-64 and US 250 (Exit 124).	Improve safety and traffic flow	\$18,389,000
111813	US 29 and Fontaine Ave Ramp	Add a choice lane to the Northbound Route 29 ramp to address weave issues at the Fontaine Ave interchange north of I-64.	Improve safety and traffic flow	\$2,630,000
113385	Library Ave Extension to Parkside Village	Create new 2-lane roadway, with bicycle and pedestrian facilities, that extends Library Ave to connect to High St and Hilltop Street.	Increase network connectivity	\$4,987,000
113176	West Main Street Phase 1	Improve bicycle, pedestrian, and transit infrastructure and facilities between Ridge St and 6th Street NW. Upgrade traffic signals and landscaping.	Increase multimodal capacity and safety	\$12,588,000
113177	West Main Street Phase 2*	Improve bicycle, pedestrian, and transit infrastructure and facilities between 6th Street NW and 8th Street NW. Upgrade traffic signals and landscaping.	Increase multimodal capacity and safety	\$12,689,000
	US 250 and Route 20 Intersection*	Reconstruct the US 250 (Richmond Road) and Route 20 (Stony Point Road) intersection to improve safety and operations. Project includes new sidewalks and crosswalks.	Increase multimodal capacity and safety	\$8,800,000
	5th Street SW Corridor Improvements**	Reconstruct the intersection of 5th Street with Cherry Ave, Ridge Street, and Elliot Ave to reduce congestion, improve safety, and accommodate bicyclists, pedestrians, and transit. Improvements will extend to the intersection of Ridge Street and 5th Street, where upgrades will also be made.	Increase multimodal capacity and safety	\$6,103,034
	Preston Ave and Grady Ave Intersection**	Realign Preston Avenue and create a consolidated signalized intersection of Preston Avenue, 10th Street, and Grady Avenue. Provide multi-modal transportation improvements to increase safety and enhance operations for all users.	Increase multimodal capacity and safety	\$6,220,466

*Recommended for funding through SMART SCALE, but not yet approved by the CTB

**At the time of LRTP adoption, one of these two projects was going to be recommended for SMART SCALE funding

Funded Bicycle and Pedestrian Projects (Table 8-3)

UPC	Name	Description	Purpose	Total Cost
107547	Bypass Commuter Trail	New shared use path parallel to the US 250 Bypass between Meadowbrook Heights Road and Hydraulic Road	Bicycle and pedestrian connectivity	\$969,000
113183	Commonwealth Drive/Dominion Drive Sidewalks	Add sidewalks on Commonwealth Drive and Dominion Drive between Hydraulic Road and US 29	Pedestrian connectivity	\$3,336,000
113917	Monticello Ave and 2nd Street SE Intersection	Improve pedestrian and bicycle safety and accessibility through curb extensions, ADA crosswalks, and bicycle boxes	Bicycle and pedestrian connectivity	\$338,000
113915	Monticello Ave and Ridge Street Intersection	Improve pedestrian and bicycle safety and accessibility through curb extensions, ADA crosswalks, and bicycle boxes	Bicycle and pedestrian connectivity	\$210,000
113919	Cherry Ave and Ridge Street Intersection	Improve pedestrian and bicycle safety and accessibility through curb extensions, ADA crosswalks, and bicycle boxes	Bicycle and pedestrian connectivity	\$265,000
113861	Washington Park/Madison Ave connector trail	New shared use path connecting Madison Ave through Washington Park	Bicycle and pedestrian connectivity	\$75,000
113916	10th Street NW and Grady Ave Intersection	Improve pedestrian safety and accessibility through curb extensions, ADA crosswalks, and a rectangular rapid flashing beacon (RRFB)	Pedestrian connectivity	\$291,000
113918	Preston Ave and Harris Street Intersection	Improve pedestrian safety and accessibility through curb extensions, ADA crosswalks, and additional sidewalk at the median	Pedestrian connectivity	\$246,000
113508	Cale Elementary School Bike/Ped Improvements	New sidewalks between Cale Elementary and Avon Street with new pedestrian crossing of Avon Street	Safe Routes to Schools	\$512,000
113507	Greer/Jouett Bike/Ped Improvements	New shared use path connecting the Greer Elementary School and Jouett Middle School Campus to the existing bicycle and pedestrian facilities at the intersection of Hydraulic Road and Lambs Road and to Albemarle High School	Safe Routes to Schools	\$710,000
113186	Berkmar Drive Bicycle and Pedestrian Improvements	New shared use path or enhanced sidewalk from Hydraulic Road to Hilton Heights Road to connect to the new shared use path on Berkmar Drive Extended	Bicycle and pedestrian connectivity	\$2,690,000
113592	Meadow Creek Valley Trail	New shared use path bridge across Meadow Creek	Bicycle and pedestrian connectivity	\$375,000
109609	5th Street Hub and Trails	New shared use path connecting to new parking that provides access to the path	Bicycle and pedestrian connectivity	\$600,000

► Constrained and Vision Lists by Category

Following the roadway and transit evaluation described in Chapter 6 and the compilation of other evaluation described in Chapter 7, final project lists were created and reviewed. The MPO Committee reviewed the lists at multiple meetings in early 2019, and presentations were also made to the Charlottesville and Albemarle Planning Commissions. The decision was made to include all projects that came from the recent Hydraulic Area Plan in the constrained lists, as shown in [Table 8-4](#) below. The Hillsdale Drive to Rio Road project and the remaining phases of the West Main Street multimodal project were also included in the constrained roadway list. All other priority roadway and intersection projects are included in [Tables 8-5 and 8-7](#), and priority transit projects are included in [Table 8-6](#). All projects listed here should be considered equally eligible for any federal, state, or local funding, given the uncertainty related to funding sources and likelihood that different projects will be eligible and competitive for different funding sources. The region’s priority bridge projects are listed in [Table 8-8](#).

Constrained Roadway and Intersection Lists (Table 8-4)

Constrained Roadway Project List			Estimated Cost (CY2020) \$	
Project ID	Project Name	Jurisdiction	Constrained Amount	Total calculated project Cost
R3-a	Hydraulic and US 29 Intersection	Both	\$ 15.9	\$ 79.1
R3-b	Angus Rd overpass, Hillsdale Extension, 250 Ramp Relocation		\$ 50.5	\$ 50.5
R3-e	Zan Road Bridge		\$ 39.3	\$ 39.3
R6	West Main Street multimodal	Charlottesville	\$ 11.9	\$ 11.9
R18	Hillsdale Drive to Rio	Albemarle	\$ 9.3	\$ 9.3
		TOTAL	\$ 126.9	

Constrained Intersection Project List			Estimated Cost (CY2020) \$	
R3-a	Hydraulic and US 29 Intersection	Both	63.2	79.1
R3-c	District Ave Roundabout		8.4	8.4
R3-d	Hillsdale Roundabout		10.7	10.7
		TOTAL	82.3	

Roadway Vision List (Table 8-5)

L RTP Project ID	Project Name	Jurisdiction	Cost* (in millions)
R2	US 250 widening - Shadwell	Albemarle	\$ 19.9
R4	Bypass/Fontaine Interchange	Albemarle	\$ 19.2
R5	US 250 and Free Bridge widening	Both	\$ 39.5
R7	Route 20 multimodal	Albemarle	\$ 6.7
R8	Rio Road multimodal	Albemarle	\$ 13.3
R9	Fifth/Ridge/McIntire multimodal	Charlottesville	\$ 16.9
R10	Avon Street multimodal	Both	\$ 14.5
R11	Berkmar Drive Extension	Albemarle	\$ 12.5
R12	Sunset/Fontaine connector	Albemarle	\$ 17.7
R13	Eastern Avenue (Crozet)	Albemarle	\$ 8.5
R14	Old Lynchburg multimodal	Albemarle	\$ 8.7
R15	Ivy Road multimodal - East	Albemarle	\$ 2.4
R16	I-64 truck lanes	Albemarle	\$ 43.8
R17	Ivy Road multimodal - West	Albemarle	\$ 4.5
R19	South Pantops Drive Bridge	Both	\$ 31.4
R20	Free Bridge Area Capacity Study	Both	\$ -
C1	Elliot Avenue between Ridge Street and Avon Street	Charlottesville	\$ -
C2	Preston Avenue between 10th Street NW and McIntire Road	Charlottesville	\$ -
C3	10th Street NW between Wertland Street and Preston Avenue	Charlottesville	\$ -
C4	East High Street between 9th Street and Locust Avenue	Charlottesville	\$ -
A1	US 250 between I-64 and Free Bridge, improvements described in Pantops Master Plan	Albemarle	\$ -
Total			\$ 259.5

*All cost estimates are for FY20 construction year

Transit List (Table 8-6)

Project ID	Project Name	Jurisdiction	Cost
T1	Express Bus on US-29 Corridor	Both	PE-only \$1.0*
T2	Bus service to Crozet	Both	N/A**
T3	Bus Route to Avon/Mill Creek	Both	N/A**
T4	Increased Bus service to Pantops	Both	N/A**
T6	Transit service to the Shenandoah Valley	Both	N/A**

*A study is needed to identify the appropriate infrastructure and other improvements that would make this service successful

** The primary cost for these services would be operational, while the L RTP primarily identifies capital and infrastructure costs

Intersection Vision List (Table 8-7)

Locality	Street 1	Street 2	Other Street(s)	Source
Albemarle	US 250	Crozet Avenue		Albemarle
Albemarle	US 29	Burnley Station Rd		Albemarle
Albemarle	US 250	Owensville Road		Albemarle
Albemarle	US 250	Tilman Road		Albemarle
Albemarle	US 29	Woodbrook Drive		Albemarle
Albemarle	Route 20	Route 53		Albemarle
Charlottesville	US 250 Bypass	Hydraulic Road		MPO
Charlottesville	Preston Avenue	10th Street NW		City of Charlottesville
Charlottesville	Preston Avenue	Grady Avenue		City of Charlottesville
Charlottesville	Preston Avenue	9th Street NW	Rose Hill Drive	City of Charlottesville
Charlottesville	Fontaine Avenue	Maury Avenue	Jefferson Park Avenue	City of Charlottesville
Charlottesville	Roosevelt Brown Boulevard	Cherry Avenue		City of Charlottesville
Charlottesville	Cherry Avenue	6th Street SW		City of Charlottesville
Charlottesville	Cherry Avenue	Ridge Street	5th Street, Elliot Ave	City of Charlottesville
Charlottesville	Elliot Avenue	Burnet Way	Burnet Street	City of Charlottesville
Charlottesville	5th Street SW	Oak Street		City of Charlottesville
Charlottesville	4th Street SW	Dice Street		City of Charlottesville
Charlottesville	Ridge Street	Oak Street		City of Charlottesville
Charlottesville	Monticello Avenue	Ridge Street		City of Charlottesville
Charlottesville	6th Street SE	Monticello Avenue		City of Charlottesville
Charlottesville	Avon Street	Monticello Avenue		City of Charlottesville
Charlottesville	9th Street	11th Street NE		City of Charlottesville
Charlottesville	9th Street	Grove Avenue		City of Charlottesville
Charlottesville	11th Street NE	Little High Street		City of Charlottesville
Charlottesville	10th Street NE	Little High Street		City of Charlottesville
Charlottesville	East High Street	8th Street NE		City of Charlottesville
Charlottesville	East High Street	7th Street NE		City of Charlottesville
Charlottesville	5th Street SE	Elliot Avenue		City of Charlottesville
Albemarle	US 250	Stoney Point Road		VDOT (PSI location)
Albemarle	Rio Road	Pen Park Ln		VDOT (PSI location)
Albemarle	Route 20	Key West Dr		VDOT (PSI location)
Albemarle	Ivy Road	Ivy Depot Road		VDOT (PSI location)
Albemarle	Route 53	Milton Rd		VDOT (PSI location)
Albemarle	US 250	State Farm Blvd		VDOT (PSI location)
Charlottesville	Elliot Avenue	Monticello Avenue		VDOT (PSI location)
Albemarle	US 29	Westfield Rd		VDOT (PSI location)
Albemarle	Old Lynchburg Road	5th Street		VDOT (PSI location)
Albemarle	US 250	Louisa Road		VDOT (PSI location)
Albemarle	US 250	Route 240		VDOT (PSI location)
Albemarle	Rio Road	Old Brook Road		VDOT (PSI location)
Albemarle	Rio Road	Northfield Road	Hillsdale Drive	VDOT (PSI location)
Charlottesville	Main Street	14th Street		VDOT (PSI location)

Bridge List (Table 8-8)

VDOT Structure Number	Locality	Street	Crossing	Condition
1120	Albemarle	US 250 (Richmond Rd)	Shadwell Creek	Poor
6224	Albemarle	Keswick Road	Carroll Creek	Poor
6229	Albemarle	Wheeler Road	Moores Creek	Poor
6230	Albemarle	Wheeler Road	Moores Creek	Poor
6258	Albemarle	Blair Park Road	Lickinghole Creek	Poor
8000	Charlottesville	Dairy Road	US 250 Bypass	Poor
1007	Albemarle	SR 20 (Scottsville Rd)	Stream	Fair
1049	Albemarle	US 250 (Ivy Rd)	Mechums River	Fair
1081	Albemarle	SR 22 (Louisa Rd)	Branch Carroll Creek	Fair
1117	Albemarle	US 250 (Richmond Rd)	Camp Branch	Fair
1118	Albemarle	US 250 (Richmond Rd)	Barn Branch	Fair
1139	Albemarle	US 250 (Monacan Trail Road)	Barracks Road	Fair
1154	Albemarle	US 29 (Seminole Trail)	North Fork Rivanna River	Fair
1164	Albemarle	US 29 (Monacan Trail)	Fontaine Avenue	Fair
1165	Albemarle	US 29 (Monacan Trail)	Fontaine Avenue	Fair
1170	Albemarle	SR 20 (Monticello Ave)	Moores Creek	Fair
1171	Albemarle	SR 20 (Monticello Ave)	Moores Creek	Fair
2043	Albemarle	I-64	SR 20 (Scottsville Rd)	Fair
2047	Albemarle	I-64	Rivanna River and Buckingham Branch RR tracks	Fair
2048	Albemarle	I-64	Rivanna River and Buckingham Branch RR tracks	Fair
2051	Albemarle	I-64	Private entrance	Fair
2065	Albemarle	I-64	SR 682 (Broad Axe Rd)	Fair
2066	Albemarle	I-64	SR 682 (Broad Axe Rd)	Fair
2067	Albemarle	I-64	US 29 (Monacan Trail Rd)	Fair
2068	Albemarle	I-64	Moores Creek and Norfolk Southern RR tracks	Fair
2069	Albemarle	I-64	Moores Creek and Norfolk Southern RR tracks	Fair
8006	Charlottesville	Copeley Road	Buckingham Branch RR tracks	Fair
8013	Charlottesville	Rugby Rd	Buckingham Branch RR tracks	Fair
8008	Charlottesville	Park Street	US 250 Bypass	Good
8007	Charlottesville	Locust Avenue	US 250 Bypass	Good

As explained in Chapter 7, the bicycle and pedestrian projects included in the LRTP come directly from the recently-completed Jefferson Area Bicycle and Pedestrian Plan. That plan prioritized projects into three tiers, with tier 1 being the highest priority projects. Many of the tier 1 projects were identified for inclusion in the bicycle and pedestrian constrained list, shown in [Table 8-9](#). All other projects identified in the plan were included in the vision list, shown in [Tables 8-10, 8-11, and 8-12](#). As with projects in the other categories, bicycle and pedestrian projects in all lists should be pursued as opportunities arise and as projects are identified to be competitive for funding.

► Conclusion

The LRTP process was beneficial for the MPO in many ways, including ensuring that deficiencies were identified and potential projects were evaluated and discussed. As required by FHWA and FTA, the MPO has created constrained project lists and identified additional projects included in vision lists. These lists will ensure coordinated decision-making by federal, state, and local officials in regards to important regional projects in the MPO in the upcoming years.

Bicycle and Pedestrian Constrained List (Table 8-9)

BPID	Location/Name	Type	Status	Final Tier	Length (miles)	Cost (Low)	Cost (High)	Barrier Cost	LRTP Cost
BP5	Avon St - Monticello Rd	BL		Tier 1	0.31	0.22	0.43		0.32
BP13	US250 - East of Park St	SUP		Tier 1	0.48	0.86	1.80		1.33
BP14	US250 - West of Park St	SUP		Tier 1	0.06	0.10	0.22		0.16
BP20	US29 - Fashion Square	SUP		Tier 1	1.26	2.26	4.73		3.50
BP23	Emmet St - South of US250	SUP		Tier 1	0.33	0.59	1.25		0.92
BP25	Emmet St - Barracks Shopping	SUP		Tier 1	0.55	0.98	2.05		1.52
BP29	Avon St - City Boundry	BL		Tier 1	0.40	0.29	0.56	0.88	1.31
BP30	Copeley Rd	BL		Tier 1	0.37	0.27	0.52		0.39
BP35	Whitewood Rd	BL		Tier 1	0.58	0.55	1.40		0.98
BP36	Greenbrier Dr - East	BL	EX SR	Tier 1	0.43	0.30	0.59		0.45
BP46	Long St	SUP		Tier 1	0.54	0.96	2.01		1.49
BP64	Biscuit Run - Connector	SUP		Tier 1	0.98	1.76	3.69		2.72
BP68	Rivanna River - US29 Connection	SUP		Tier 1	1.10	1.98	4.16		3.07
BP77	John Warner Pkway - Connector	SUP		Tier 1	0.06	0.12	0.24	2.00	2.18
BP78	US250 - Hydraulic crossing	SUP		Tier 1	0.74	1.32	2.77		2.04
BP80	Riverview Park - Crossing	SUP		Tier 1	0.61	1.09	2.29	2.45	4.14
BP95	Rockcreek Rd - Parallel	SUP		Tier 1	0.74	1.33	2.79		2.06
BP103	Meadow Creek - Hillsdale Dr Connector	SUP		Tier 1	0.26	0.46	0.97		0.72
BP116	Hydraulic Rd - East of Hillsdale Dr	SUP	EX SR	Tier 1	0.19	0.33	0.70		0.52
BP121	Broadway St	BL		Tier 1	0.96	0.92	2.32		1.62
BP122	Broadway St Ext	SUP		Tier 1	0.24	0.42	0.89		0.66
BP128	Meadow Creek - Hydraulic	SUP		Tier 1	0.90	1.61	3.37		2.49
BP129	Greenbrier Dr - West	BL	EX SR	Tier 1	0.13	0.12	0.31		0.22
BP130	Sunset Ave - Crossing	SUP		Tier 1	0.06	0.10	0.21	0.42	0.57
BP143	Old Lynchburg Rd	BL		Tier 1	0.63	0.76	2.19		1.47
BP147	Meadow Creek - Greenbriar Park	SUP		Tier 1	0.40	0.72	1.51		1.12
BP154	Stadium Rd	BL		Tier 1	0.25	0.18	0.34		0.26
BP157	9th St SW	BL		Tier 1	0.32	0.23	0.44		0.33
BP161	5th St Hub	SUP		Tier 1	0.54	0.96	2.02		1.49
Total									40.02

Column Descriptions

- BPID: ID number, corresponds to map
Location/Name: general project location
Type: SUP is shared use path, BL is bike lane and sidewalk, SR is shared road and sidewalk
Final Tier: the final prioritization tier from the Jefferson Area Bicycle and Pedestrian Plan (tier 1 is highest priority)
Length: length of the project in miles
Cost: low and high estimates for cost of the project (in millions), excluding bridges, tunnels or overcoming other barriers
Barrier Cost: initial estimate of cost (in millions) for necessary bridges, tunnels or other infrastructure that crosses major barriers
LRTP Cost: cost (in millions) used for LRTP constraining; calculated as barrier cost added to the average of the low and high costs

BPID	Location/Name	Type	Final Tier	Length (miles)
BP1	Ivy Rd - Bypass	SUP	Tier 2	0.89
BP2	E Market St - West	BL	Tier 2	0.61
BP4	Barracks Rd - City West	BL	Tier 2	0.52
BP6	Water St	BL	Tier 1	0.82
BP7	Ridge McIntire Rd - Downtown	BL	Tier 1	0.28
BP9	Dairy Rd	BL	Tier 3	0.52
BP12	High St - West	BL	Tier 2	0.56
BP15	High St - East	BL	Tier 2	0.37
BP16	Grove Rd	BL	Tier 3	0.80
BP18	US29 - County boarder	SUP	Tier 3	5.91
BP19	US29 - Rio Rd	SUP	Tier 1	1.15
BP21	Fontaine Ave - Interchange	SUP	Tier 2	0.78
BP22	Commonwealth Dr - North	SR	Tier 2	0.75
BP22	Commonwealth Dr - North	SUP	Tier 2	0.16
BP26	Pantops Bridge	SUP	Tier 1	0.12
BP27	Rte 20 - US64 Intersection	SUP	Tier 2	0.81
BP28	5th St	SUP	Tier 1	1.80
BP31	Preston Ave	BL	Tier 2	0.66
BP33	Meade Ave	BL	Tier 3	0.41
BP34	Ivy Rd - Ednam	SUP	Tier 3	1.85
BP37	McCormick Rd - West	BL	Tier 1	0.39
BP38	Rio Rd - US29	BL	Tier 1	0.40
BP39	Hydraulic Rd - East of Georgetown Rd	SUP	Tier 1	0.67
BP40	Barracks Rd - County	BL	Tier 2	0.94
BP41	Ivy Rd - East of Ivy	SUP	Tier 3	3.04
BP42	Three Nothed Rd	SUP	Tier 3	3.90
BP43	Hydraulic Rd - West of US29	SUP	Tier 1	0.31
BP44	US29 - Bypass	SUP	Tier 3	0.41
BP45	McCormick Rd - East	BL	Tier 1	0.51
BP47	Avon St Ext - County Boundary	SUP	Tier 1	0.74
BP48	Peter Jefferson Pkwy	BL	Tier 2	1.22
BP49	Berkmar Dr - South	BL	Tier 2	0.66
BP50	Commonwealth Dr - South	BL	Tier 2	0.76
BP52	Georgetown Rd	BL	Tier 3	1.09
BP53	Crozet Dr - North	BL	Tier 3	1.20
BP55	Ivy Rd - West of Ivy	SUP	Tier 3	3.58
BP56	Earllysville Rd	BL	Tier 3	0.67
BP58	US29 - Airport	SUP	Tier 3	1.27
BP59	McIntire Rd	SUP	Tier 1	0.43
BP60	Avon St Ext - US64 Crossing	SUP	Tier 1	0.84
BP61	Reservoir Rd	SR	Tier 3	2.82
BP62	US29 - Hydraulic	SUP	Tier 3	0.89
BP66	Rte 20 - South of US64	SUP	Tier 2	1.17
BP69	Southern Railway	SUP	Tier 2	1.96
BP70	Rivanna River - South of Pen Park	SUP	Tier 2	0.53

Column Descriptions

- BPID: ID number, corresponds to map
Location/Name: general project location
Type: SUP is shared use path, BL is bike lane and sidewalk, SR is shared road and sidewalk
Final Tier: the final prioritization tier from the Jefferson Area Bicycle and Pedestrian Plan
Length: length of the project in miles

Bicycle and Pedestrian Vision List Continued (Table 8-11)

BPID	Location/Name	Type	Final Tier	Length (miles)
BP71	Moores Creek - Quarry Park	SUP	Tier 2	0.67
BP72	Stribling Ave Ext	SUP	Tier 2	1.17
BP73	Carters Mountain Connector	SUP	Tier 2	0.64
BP74	Moores Creek - East of Monticello Rd	SUP	Tier 2	1.75
BP75	Moores Creek - Pollocks Branch	SUP	Tier 2	0.96
BP76	Highland Ave Ext	SUP	Tier 3	1.03
BP79	Moores Creek - Azalea Park	SUP	Tier 2	0.47
BP83	Melbourne Rd	BL	Tier 2	0.69
BP85	Carlton Rd	BL	Tier 2	0.57
BP86	5th St Ext - Old Lynchburg Rd	SUP	Tier 1	1.84
BP87	14th St NW	BL	Tier 2	0.59
BP88	Meadowbrook Heights Rd	BL	Tier 3	0.80
BP89	Rugby Rd - US250	SR	Tier 3	0.70
BP90	Sunet Ave Ext - North	BL	Tier 2	0.32
BP91	Rivanna River - Pen Park	SUP	Tier 3	1.65
BP92	Sunset Ave Ext - South	BL	Tier 2	1.34
BP93	Rugby Rd - Dairy Rd	BL	Tier 3	0.42
BP94	Biscuit Run - 5th St Connector	SUP	Tier 2	0.90
BP97	State Farm Blvd	BL	Tier 2	0.86
BP98	Town and Country Ln Ext - Stony Point	BL	Tier 3	0.29
BP99	Mill Creek Dr	SR	Tier 3	1.17
BP100	Riverview Park	SUP	Tier 2	0.41
BP101	Town and Country Ln Ext - Rivanna	SUP	Tier 3	0.15
BP102	Wakefield Rd	SR	Tier 3	0.39
BP102	Wakefield Rd	SR	Tier 3	0.32
BP102	Wakefield Rd	SUP	Tier 3	0.05
BP104	Bunker Hill Dr	SR	Tier 3	0.41
BP106	Tonsler Park	SR	Tier 2	0.40
BP106	Tonsler Park	SUP	Tier 2	0.36
BP107	Norfolk Southern Railroad	SUP	Tier 2	1.17
BP108	Madison Ave	BL	Tier 2	0.35
BP109	Allied St Ext	SUP	Tier 2	0.30
BP109	Allied St Ext	SUP	Tier 2	0.15
BP109	Allied St Ext	SR	Tier 2	0.42
BP109	Allied St Ext	BL	Tier 2	0.03
BP109	Allied St Ext	SR	Tier 2	0.17
BP110	Jarman Gap Rd	BL	Tier 3	0.67
BP112	Brandywine Dr	SR	Tier 3	0.21
BP113	Berkmar Rd - Airport	BL	Tier 1	0.41
BP115	Hydraulic Rd - East of US29	SUP	Tier 1	0.22
BP117	Holiday Dr	SUP	Tier 2	0.52
BP118	Angus Rd	BL	Tier 2	0.93
BP119	College Dr	BL	Tier 3	0.83
BP120	College Dr Ext	SUP	Tier 2	0.53
BP123	Brandon Ave	SR	Tier 2	0.57

Column Descriptions

BPID: ID number, corresponds to map
Location/Name: general project location
Type: SUP is shared use path, BL is bike lane and sidewalk, SR is shared road and sidewalk
Final Tier: the final prioritization tier from the Jefferson Area Bicycle and Pedestrian Plan
Length: length of the project in miles

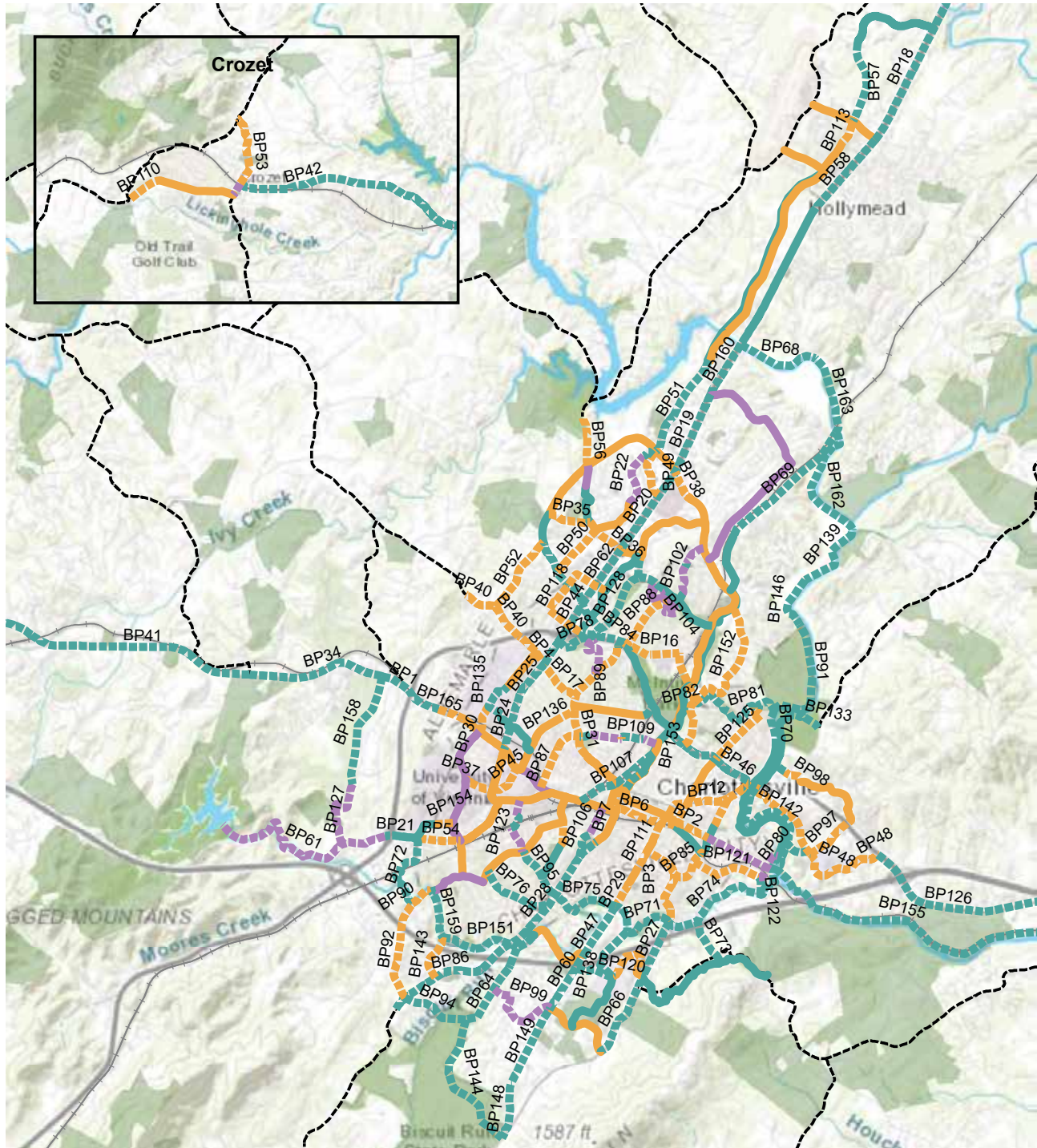
Bicycle and Pedestrian Vision List Continued (Table 8-12)

BPID	Location/Name	Type	Final Tier	Length (miles)
BP123	Brandon Ave	SUP	Tier 2	0.22
BP124	10th St NE	BL	Tier 2	0.34
BP125	Locust Ave	BL	Tier 3	1.01
BP126	Richmond Rd	SUP	Tier 3	4.36
BP127	Foxhaven Farm	SR	Tier 3	1.04
BP131	Moores Creek - East of Avon St	SUP	Tier 2	0.41
BP133	Darden Towe Park	SUP	Tier 2	0.52
BP134	Zan Rd	BL	Tier 2	0.62
BP135	Massie Rd - Copeley Rd	SUP	Tier 1	0.74
BP136	Rugby Rd - Preston Ave	BL	Tier 3	0.30
BP138	College Dr - US64 Crossing	SUP	Tier 3	0.80
BP139	Rivanna River - South Fork	SUP	Tier 3	1.05
BP140	South Pantops Dr	BL	Tier 2	0.90
BP141	New House Dr	BL	Tier 1	0.34
BP142	Rivanna River - Pantops	SUP	Tier 2	1.49
BP144	Biscuit Run - Park	SUP	Tier 3	1.96
BP145	Rivanna Rive - Darden Towe Crossing	SUP	Tier 2	0.08
BP146	Rivanna River - County Boundry	SUP	Tier 3	0.75
BP148	Avon St Ext - Rte 20	SUP	Tier 3	0.77
BP149	Avon St Ext - South of Mill Creek	SUP	Tier 2	1.13
BP150	Crozet Dr - South	SR	Tier 2	0.22
BP151	Moores Creek - 5th St Crossing	SUP	Tier 2	0.62
BP152	Rio Rd - Park St	BL	Tier 2	1.73
BP153	Park St	BL	Tier 2	0.65
BP155	Old Mills Trail	SUP	Tier 2	7.94
BP156	E Market St - East	SR	Tier 3	0.88
BP156	Riverside Ave Ext	SR	Tier 3	0.43
BP158	Foxhaven Farm - Ivy Connector	SUP	Tier 3	1.54
BP159	Moores Creek - Azalea Park Ext	SUP	Tier 2	0.65
BP160	US29 - Rivanna Crossing	SUP	Tier 1	0.92

Column Descriptions

BPID: ID number, corresponds to map
Location/Name: general project location
Type: SUP is shared use path, BL is bike lane and sidewalk, SR is shared road and sidewalk
Final Tier: the final prioritization tier from the Jefferson Area Bicycle and Pedestrian Plan
Length: length of the project in miles

Bicycle and Pedestrian Projects Map (Figure 8-2)

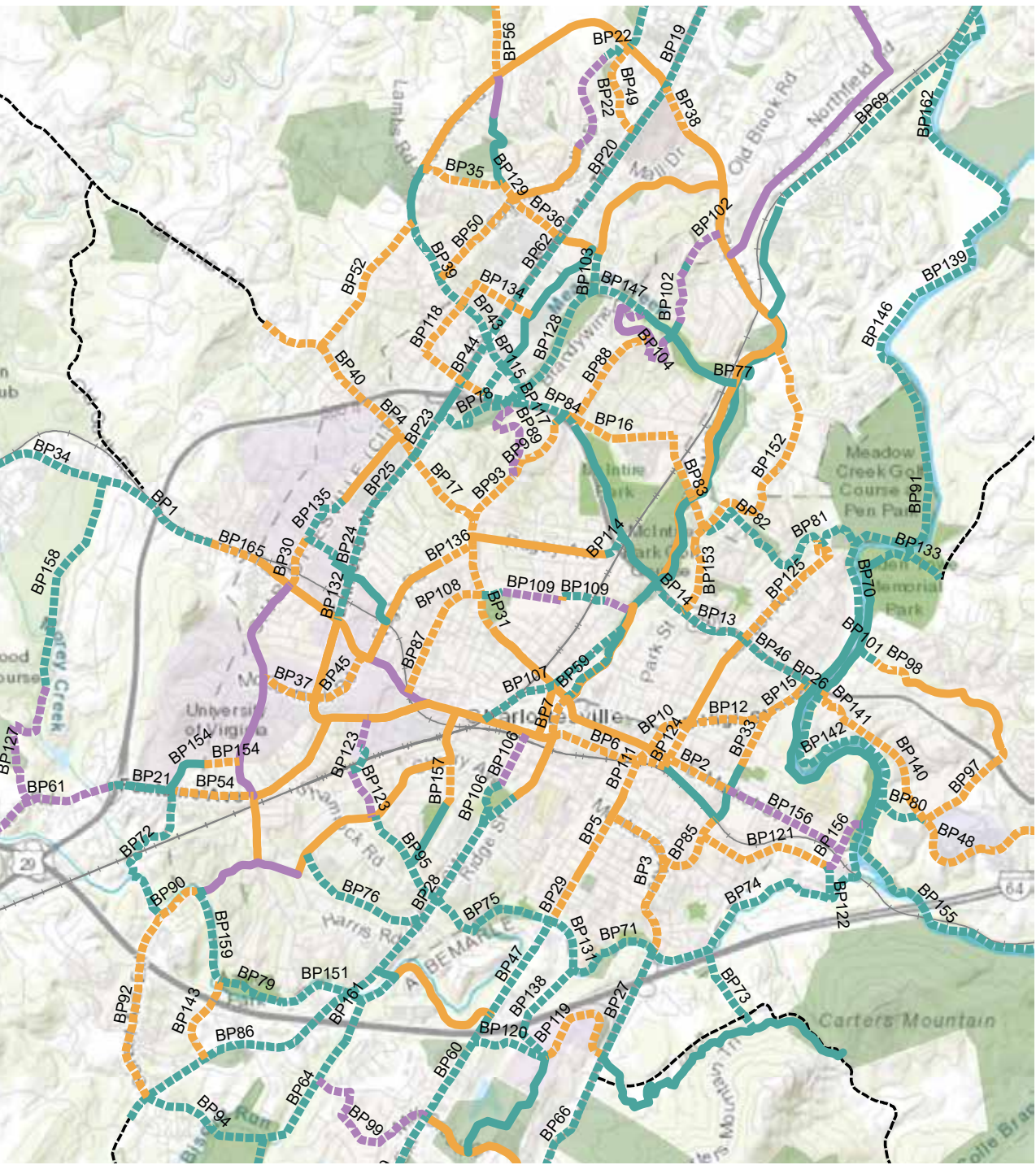


Jefferson Area Bike/Ped Plan Regional Corridors

ABOUT THIS MAP: This map depicts the corridors identified as the regional bicycle and pedestrian network. All projects are included in LRTP 2045 Vision lists.

- FEATURES**
- Parks and Conservation
 - Lakes and Rivers
 - Railroads
 - Proposed Bike Lane and Sidewalk
 - Existing Bike Lane and Sidewalk
 - Proposed Shared Road and Sidewalk
 - Existing Shared Road and Sidewalk
 - Proposed Shared Use Path
 - Existing Shared Use Path
 - Rural Corridors
 - BP ID Number

Bicycle and Pedestrian Projects Urban Map (Figure 8-3)



Jefferson Area Bike/Ped Plan Urban Map

ABOUT THIS MAP: This map depicts the corridors identified as the regional bicycle and pedestrian network. All projects are included in LRTP 2045 Vision lists.

- FEATURES**
- Parks and Conservation
 - Lakes and Rivers
 - Railroads
 - Proposed Bike Lane and Sidewalk
 - Existing Bike Lane and Sidewalk
 - Proposed Shared Road and Sidewalk
 - Existing Shared Road and Sidewalk
 - Proposed Shared Use Path
 - Existing Shared Use Path
 - Rural Corridors
 - BP ID Number

Appendix A: Project Review Pages

Project Review Template.....	n/a
Roadway Project Review Pages.....	R1-R19
Project Review Template.....	n/a
Transit Project Review Pages.....	T1-T5

Project Name

Project Description: includes project location and scope (roadway, transit, bike/ped), cost estimate if available, and any other essential information



Congestion

Projected change in
of vehicle-hours of
delay (model)



Transit Access

Change in transit
access measure



Bike/Ped

Length of bicycle
and pedestrian
improvements

Project Impacts

Environmental Design	Incorporates Complete Streets elements that aren't in measures (street trees, bus shelters, benches or other amenities). List potential elements included.
Environmental Impacts	Potential project impact on wetlands, floodplains, park lands, scenic rivers, land under conservation easement, and endangered species habitat. Quantative values presented, with qualitative description if necessary.
Social Impacts	Estimated number of individuals who are minority, in poverty, older than 65, or have limited English proficiency, and live within 500 feet of the project (1/4 mile from a stop for transit). Quantative values presented. Total population of the MPO area is approximately 118,000.
Historical Site Impacts	List of National Register of Historic Places (NRHP) sites potentially impacted by the project. Site information presented, with qualitative description if necessary.
Inter-regional corridors	Impact on corridors that are identified by VDOT as part of the National Highway System (NHS). Qualitative description.
Inter-regional transit	Impact on inter-regional transit. Qualitative description.
Maintenance and Safety	Project creates a new bridge or includes deficient bridge(s). Project includes location(s) that VDOT has identified as having a high potential for safety improvement (PSI).

US 250/US 29 Bypass widening

Widen the bypass from 4 to 6 lanes from I-64 (exit 118) to the interchange with Barracks Road.



Congestion

Reduces system delay
by about 520 vehicle-
hours (5%)



Transit Access

No Impact



Bike/Ped

No Impact

Project Impacts

Environmental Design	No Complete Streets elements included.
Environmental Impacts	Project has potential impact to 0.58 acres of floodplain and 0.08 acres of habitat for endangered species.
Social Impacts	Estimate of people who live within 500 feet of this project: 781 residents, 386 minority residents, 218 residents in poverty, 161 residents over age 65 and 28 people with limited-English proficiency. St. Anne's Belfield Lower School is adjacent to the project.
Historical Site Impacts	Potential direct impact: one potentially-eligible site (DHR ID: 007-5513) Adjacent sites: one NRHP site (DHR ID: 002-0923) and one site eligible for listing (DHR ID 002-0925).
Inter-regional corridors	Increases capacity on the US 29/US 250 bypass, which is designated as a Principle Arterial of the National Highway System (NHS).
Inter-regional transit	No direct impact on inter-regional transit.
Maintenance and Safety	Project corridor contains two bridges rated "poor" and 3 rated "fair". Project contains 0 intersections and at least one segment that VDOT has identified as being priority locations with potential for safety improvement (PSI).

US 250 widening - Shadwell

Widen US 250 from 2 to 4 lanes from I-64 (exit 124) to Milton Rd. Roadway would include a median and a multi-use path.



Congestion

Reduces system delay
by about 200 vehicle-
hours (2%)



Transit Access

No Impact



Bike/Ped

2.1 miles of new
bike and pedestrian
infrastructure

Project Impacts

Environmental Design	Potential for benches or other features along the multi-use path.
Environmental Impacts	Project has potential impact to 0.47 acres of floodplain and is adjacent to land under conservation easement.
Social Impacts	Estimate of people who live within 500 feet of this project: 114 residents, 20 minority residents, 5 residents in poverty, 36 residents over age 65 and 0 people with limited-English proficiency. Stone Robinson Elementary School is adjacent to the project.
Historical Site Impacts	Potential direct impact: one NRHP site (DHR ID: 002-5045) and one site eligible for listing (DHR ID: 007-5513) Adjacent sites: one NRHP site (DHR ID: 002-0050).
Inter-regional corridors	No direct impact on National Highway System (NHS) routes.
Inter-regional transit	No direct impact on inter-regional transit.
Maintenance and Safety	Project corridor contains one bridge rated “poor” and one rated “fair”. Project contains 2 intersections and at least one segment that VDOT has identified as being priority locations with potential for safety improvement (PSI).

Hydraulic and 29 Area Projects

Multiple projects, as identified by the Hydraulic/29 planning process. Improvements include: grade-separate intersection (GSI) at Hydraulic/29, roundabouts at Hydraulic/Hillsdale and Hydraulic/District, Hillsdale extension to bypass and reconstruction of bypass ramps, and construction of bridges over US 29 at Zan Road (overpass) and Angus Road (GSI).



Congestion

Reduces system delay
by about 100 vehicle-
hours (1%)



Transit Access

No Impact



Bike/Ped

0.9 miles of new
bike and 0.5 miles
of new pedestrian
infrastructure

Project Impacts

Environmental Design	Project will include bus stops, with shelters as necessary. Street trees, benches and other amenities could be included.
Environmental Impacts	No potential impacts have been identified for this project.
Social Impacts	Estimate of people who live within 500 feet of this project: 1400 residents, 837 minority residents, 405 residents in poverty, 146 residents over age 65 and 60 people with limited-English proficiency.
Historical Site Impacts	No potential impacts have been identified for this project.
Inter-regional corridors	Increases capacity on US 29, which is designated as a Principle Arterial of the National Highway System (NHS).
Inter-regional transit	No direct impact on inter-regional transit.
Maintenance and Safety	Project will not impact existing bridges, and will construct multiple new bridges. Project contains 3 intersections and at least one segment that VDOT has identified as being priority locations with potential for safety improvement (PSI).

Fontaine/Bypass Interchange

Improve traffic flow and safety at the Fontaine/Bypass interchange through creation of a diverging diamond interchange (DDI). The project will provide bicycle and pedestrian infrastructure for crossing the bypass.



Congestion

Negligible modeled
impact



Transit Access

No Impact



Bike/Ped

0.3 miles of new
bike and pedestrian
infrastructure

Project Impacts

Environmental Design	No Complete Streets elements included.
Environmental Impacts	Project has potential impact to 0.003 acres of habitat for endangered species and 0.09 acres of land under conservation easement.
Social Impacts	Estimate of people who live within 500 feet of this project: 69 residents, 39 minority residents, 14 residents in poverty, 9 residents over age 65 and 3 people with limited-English proficiency.
Historical Site Impacts	No potential impacts have been identified for this project.
Inter-regional corridors	Increases capacity for the interchange of US 29 Business and the US 29/US 250 bypass, which are both designated as Principle Arterials of the National Highway System (NHS).
Inter-regional transit	No direct impact on inter-regional transit.
Maintenance and Safety	Project contains, but would not impact, two bridges rated “fair”. Project contains 0 intersections and 0 segments that VDOT has identified as being priority locations with potential for safety improvement (PSI).

US 250 and Free Bridge widening

Widen Free Bridge and the adjacent segment of US 250 (from St. Clair Ave to Flow Volkswagen) from 4 lanes to 6 lanes. Project involves construction of a bicycle and pedestrian bridge adjacent to Free Bridge.



Congestion

Reduces system delay
by about 270 vehicle-
hours (3%)



Transit Access

No Impact



Bike/Ped

0.8 miles of new
bike infrastructure,
with pedestrian
improvements

Project Impacts

Environmental Design	No Complete Streets elements included.
Environmental Impacts	Project has potential impact to 0.30 acres of wetlands, 1.30 acres of floodplain and crosses a scenic river.
Social Impacts	Estimate of people who live within 500 feet of this project: 282 residents, 57 minority residents, 18 residents in poverty, 49 residents over age 65 and 1 person with limited-English proficiency. Burnley-Moran Elementary School and Hilltop Child Care Center are adjacent to the project.
Historical Site Impacts	No potential impacts have been identified for this project.
Inter-regional corridors	Increases capacity on US 250, which is designated as a Principle Arterial of the National Highway System (NHS).
Inter-regional transit	No direct impact on inter-regional transit.
Maintenance and Safety	Project contains 1 bridge rated “good”. Project contains 0 intersections and at least one segment that VDOT has identified as being priority locations with potential for safety improvement (PSI).

West Main Street Multimodal

Reconstruct the West Main Street streetscape, including corridor and intersection changes that improve traffic safety and flow, transit stops, bicycle lanes, and sidewalks



Congestion

No modeled impact



Transit Access

No change to transit
access measure



Bike/Ped

Bike lane and sidewalk
improvements

Project Impacts

Environmental Design	Plan includes many Complete Streets elements, including improved bus shelters, street trees, benches, and other streetscape amenities.
Environmental Impacts	No potential impacts have been identified for this project.
Social Impacts	Estimate of people who live within 500 feet of this project: 1192 residents, 654 minority residents, 556 residents in poverty, 117 residents over age 65 and 12 people with limited-English proficiency.
Historical Site Impacts	Potential direct impact: one NRHP site (DHR ID: 104-0083) and one eligible site (DHR ID: 104-0076) Adjacent sites: one NRHP site (DHR ID: 104-0213), three eligible sites (DHR ID: 104-0018, DHR ID: 104-0231, DHR ID: 104-5099) and one potentially eligible site (DHR ID: 104-5088)
Inter-regional corridors	Improves conditions on Business 250, which is designated as a Principle Arterial of the National Highway System (NHS).
Inter-regional transit	Directly improves access to the primary inter-regional train station (Amtrak) and bus station (Greyhound) in the region.
Maintenance and Safety	Project contains 1 bridge rated “good”. Project contains 0 intersections and 0 segments that VDOT has identified as being priority locations with potential for safety improvement (PSI).

Route 20 Multimodal

Make upgrades that improve safety, traffic flow, and multimodal infrastructure on Route 20 from Mill Creek Drive to Route 53.



Congestion

No modeled impact



Transit Access

No Impact



Bike/Ped

0.9 miles of new
bike and pedestrian
infrastructure

Project Impacts

Environmental Design	No Complete Streets elements included.
Environmental Impacts	Project has potential impact to 1.51 acres of floodplain and 0.22 acres of park land.
Social Impacts	Estimate of people who live within 500 feet of this project: 104 residents, 9 minority residents, 21 residents in poverty, 110 residents over age 65 and 1 person with limited-English proficiency.
Historical Site Impacts	Potential direct impact: one NRHP site (DHR ID: 002-5045).
Inter-regional corridors	No direct impact on National Highway System (NHS) routes.
Inter-regional transit	No direct impact on inter-regional transit.
Maintenance and Safety	Project contains 1 bridge rated “good”. Project contains 1 intersection and at least one segment that VDOT has identified as being priority locations with potential for safety improvement (PSI).

Rio Rd Multimodal

Make upgrades that improve safety, traffic flow, and multimodal infrastructure on Rio Road from John Warner Parkway to Park Street.



Congestion

No modeled impact



Transit Access

No Impact



Bike/Ped

1.35 miles of new bike and 1 mile of new pedestrian infrastructure

Project Impacts

Environmental Design	No Complete Streets elements included.
Environmental Impacts	Project has potential impact to 0.22 acres of floodplain.
Social Impacts	Estimate of people who live within 500 feet of this project: 556 residents, 100 minority residents, 45 residents in poverty, 95 residents over age 65 and 3 people with limited-English proficiency. Charlottesville Catholic School and Charlottesville Waldorf School are adjacent to the project.
Historical Site Impacts	No potential impacts have been identified for this project.
Inter-regional corridors	No direct impact on National Highway System (NHS) routes.
Inter-regional transit	No direct impact on inter-regional transit.
Maintenance and Safety	Project contains 1 bridge rated “good”. Project contains 1 intersection and at least one segment that VDOT has identified as being priority locations with potential for safety improvement (PSI).

Fifth/Ridge/McIntire Multimodal

Make upgrades that improve safety, traffic flow, and multimodal infrastructure on the Fifth/Ridge/McIntire corridor from the US 250 bypass south to the city/county line.



Congestion

No modeled impact



Transit Access

No Impact



Bike/Ped

0.5 miles of new bike infrastructure

Project Impacts

Environmental Design	No Complete Streets elements included.
Environmental Impacts	Project has potential impact to 2.6 acres of floodplain, 0.03 acres of habitat for endangered species, and 0.39 acres of park land.
Social Impacts	Estimate of people who live within 500 feet of this project: 2705 residents, 1300 minority residents, 687 residents in poverty, 300 residents over age 65 and 36 people with limited-English proficiency. Barrett Early Learning Center, Salvation Army Child Care, and Jackson-Via Elementary are adjacent to the project.
Historical Site Impacts	Potential direct impact: one NRHP site (DHR ID: 104-0025) and two potentially eligible sites (DHR ID: 007-5513 and DHR ID: 104-5088) Adjacent sites: five NHRP sites (DHR ID: 104-0072, DHR ID: 104-0083, DHR ID: 104-0081, DHR ID: 104-0273, and DHR ID: 104-5091)
Inter-regional corridors	Improves conditions on the Fifth Street/Ridge Street corridor, which is designated as a Principle Arterial of the National Highway System (NHS).
Inter-regional transit	No direct impact on inter-regional transit.
Maintenance and Safety	Project contains 1 bridge rated “good”. Project contains 0 intersections and at least one segment that VDOT has identified as being priority locations with potential for safety improvement (PSI).

Avon Street Multimodal

Make upgrades that improve safety, traffic flow, and multimodal infrastructure on Avon Street from Mill Creek Drive to Palatine Ave. Would include a bicycle and pedestrian bridge across I-64.



Congestion

No modeled impact



Transit Access

No Impact



Bike/Ped

1.3 miles of new
bike and pedestrian
infrastructure

Project Impacts

Environmental Design	No Complete Streets elements included.
Environmental Impacts	Project has potential impact to 0.13 acres of floodplain.
Social Impacts	Estimate of people who live within 500 feet of this project: 614 residents, 204 minority residents, 87 residents in poverty, 67 residents over age 65 and 5 people with limited-English proficiency.
Historical Site Impacts	No potential impacts have been identified for this project.
Inter-regional corridors	No direct impact on National Highway System (NHS) routes.
Inter-regional transit	No direct impact on inter-regional transit.
Maintenance and Safety	Project contains 2 bridges rated “good” and would construct a new bridge. Project contains 0 intersections and 0 segments that VDOT has identified as being priority locations with potential for safety improvement (PSI).

Berkmar Drive Extension

Extend Berkmar Drive from current extent to Lewis and Clark Drive. Would include 2 lane roadway with bicycle and pedestrian infrastructure.



Congestion

Reduces system delay
by about 70 vehicle-
hours (1%)



Transit Access

No Impact



Bike/Ped

1 mile of new bike
and 0.8 miles of
new pedestrian
infrastructure

Project Impacts

Environmental Design	No Complete Streets elements included.
Environmental Impacts	No potential impacts have been identified for this project.
Social Impacts	Estimate of people who live within 500 feet of this project: 95 residents, 23 minority residents, 7 residents in poverty, 4 residents over age 65 and 0 people with limited-English proficiency.
Historical Site Impacts	No potential impacts have been identified for this project.
Inter-regional corridors	No direct impact on National Highway System (NHS) routes.
Inter-regional transit	No direct impact on inter-regional transit.
Maintenance and Safety	Project doesn't contain any existing bridges and may construct at least one new bridge. Project contains 0 intersections and 0 segments that VDOT has identified as being priority locations with potential for safety improvement (PSI).

Sunset/Fontaine Connector

Construct a new roadway from Sunset Avenue Extended to Fontaine Avenue, including improvements to Stribling Avenue. Would include 2 lane roadway with bicycle and pedestrian infrastructure.



Congestion

Negligible modeled
impact



Transit Access

No Impact



Bike/Ped

0.8 miles of new
bike and pedestrian
infrastructure

Project Impacts

Environmental Design	No Complete Streets elements included.
Environmental Impacts	Project has potential impact to 0.13 acres of floodplain, 0.10 acres of wetlands and 0.01 acres of habitat for endangered species.
Social Impacts	Estimate of people who live within 500 feet of this project: 303 residents, 129 minority residents, 87 residents in poverty, 11 residents over age 65 and 4 people with limited-English proficiency.
Historical Site Impacts	No potential impacts have been identified for this project.
Inter-regional corridors	No direct impact on National Highway System (NHS) routes.
Inter-regional transit	No direct impact on inter-regional transit.
Maintenance and Safety	Project doesn't contain any existing bridges and would construct at least one new bridge. Project contains 0 intersections and 0 segments that VDOT has identified as being priority locations with potential for safety improvement (PSI).

Eastern Avenue (Crozet)

Extend Eastern Avenue South to US 250. Would include new or upgraded 2 lane roadway with bicycle and pedestrian infrastructure.



Congestion

Negligible modeled
impact



Transit Access

No Impact



Bike/Ped

0.57 miles of new
bike and pedestrian
infrastructure

Project Impacts

Environmental Design	No Complete Streets elements included.
Environmental Impacts	Project has potential impact to 0.35 acres of floodplain.
Social Impacts	Estimate of people who live within 500 feet of this project: 131 residents, 16 minority residents, 7 residents in poverty, 13 residents over age 65 and 1 person with limited-English proficiency.
Historical Site Impacts	No potential impacts have been identified for this project.
Inter-regional corridors	No direct impact on National Highway System (NHS) routes.
Inter-regional transit	No direct impact on inter-regional transit.
Maintenance and Safety	Project doesn't contain any existing bridges and would construct a new bridge. Project contains 0 intersections and 0 segments that VDOT has identified as being priority locations with potential for safety improvement (PSI).

Old Lynchburg Multimodal

Make upgrades that improve safety, traffic flow, and multimodal infrastructure on Old Lynchburg Road from Singleton Lane to the City/County line.



Congestion

No modeled impact



Transit Access

No Impact



Bike/Ped

1.4 miles of new bike and 1.5 miles of new pedestrian infrastructure

Project Impacts

Environmental Design	No Complete Streets elements included.
Environmental Impacts	Project has potential impact to 0.96 acres of floodplain and 0.16 acres of park land.
Social Impacts	Estimate of people who live within 500 feet of this project: 1146 residents, 671 minority residents, 433 residents in poverty, 50 residents over age 65 and 39 people with limited-English proficiency.
Historical Site Impacts	No potential impacts have been identified for this project.
Inter-regional corridors	No direct impact on National Highway System (NHS) routes.
Inter-regional transit	No direct impact on inter-regional transit.
Maintenance and Safety	Project corridor contains two bridges rated “good”. Project contains 1 intersection and at least one segment that VDOT has identified as being priority locations with potential for safety improvement (PSI).

Ivy Road Multimodal - East

Make upgrades that improve safety, traffic flow, and multimodal infrastructure on Ivy Road from Canterbury Road to Old Ivy Road.



Congestion

No modeled impact



Transit Access

No Impact



Bike/Ped

0.8 miles of new
bike and pedestrian
infrastructure

Project Impacts

Environmental Design	No Complete Streets elements included.
Environmental Impacts	No potential impacts have been identified for this project.
Social Impacts	Estimate of people who live within 500 feet of this project: 269 residents, 156 minority residents, 85 residents in poverty, 41 residents over age 65 and 12 people with limited-English proficiency. St. Anne's Belfield Upper School is adjacent to the project.
Historical Site Impacts	Potential direct impact: one potentially-eligible site (DHR ID: 007-5513).
Inter-regional corridors	Improves conditions on US 250 Business, which is designated as a Principle Arterial of the National Highway System (NHS).
Inter-regional transit	No direct impact on inter-regional transit.
Maintenance and Safety	Project corridor contains one bridge rated "poor". Project contains 0 intersections and at least one segment that VDOT has identified as being priority locations with potential for safety improvement (PSI).

I-64 Truck Lanes

Widen I-64 from 4 to 6 lanes from exit 118 to exit 114.



Congestion

Negligible modeled
impact



Transit Access

No Impact



Bike/Ped

No Impact

Project Impacts

Environmental Design	No Complete Streets elements included.
Environmental Impacts	Project has potential impact to 0.88 acres of floodplain.
Social Impacts	Estimate of people who live within 500 feet of this project: 109 residents, 11 minority residents, 2 residents in poverty, 27 residents over age 65 and 1 person with limited-English proficiency.
Historical Site Impacts	No potential impacts have been identified for this project.
Inter-regional corridors	Increases capacity on I-64, which is an Interstate that is part of the National Highway System (NHS).
Inter-regional transit	No direct impact on inter-regional transit.
Maintenance and Safety	Project corridor contains 3 bridges rated “good”. Project contains 0 intersections and at least one segment that VDOT has identified as being priority locations with potential for safety improvement (PSI).

Ivy Road Multimodal - West

Make upgrades that improve safety, traffic flow, and multimodal infrastructure on Ivy Road from Kirtley Lane to Canterbury Road.



Congestion

No modeled impact



Transit Access

No Impact



Bike/Ped

1.5 miles of new
bike and pedestrian
infrastructure

Project Impacts

Environmental Design	No Complete Streets elements included.
Environmental Impacts	No potential impacts have been identified for this project.
Social Impacts	Estimate of people who live within 500 feet of this project: 72 residents, 4 minority residents, 1 resident in poverty, 33 residents over age 65 and 0 people with limited-English proficiency.
Historical Site Impacts	Adjacent sites: two NRHP sites (DHR ID: 002-0003 and DHR ID: 002-0919)
Inter-regional corridors	No direct impact on National Highway System (NHS) routes.
Inter-regional transit	No direct impact on inter-regional transit.
Maintenance and Safety	No direct impact on bridge maintenance. Project contains 0 intersections and at least one segment that VDOT has identified as being priority locations with potential for safety improvement (PSI).

Hillsdale Drive to Rio Rd

Construct a new road to realign Hillsdale Drive to connect with Rio Rd near the Putt Putt Place intersection. Would include 2 lane roadway with bicycle and pedestrian infrastructure.



Congestion

Reduces system delay
by about 230 vehicle-
hours (2%)



Transit Access

No Impact



Bike/Ped

0.4 miles of new
bike and pedestrian
infrastructure

Project Impacts

Environmental Design	Project may improve bus stops/shelters, and could include other Complete Streets elements.
Environmental Impacts	No potential impacts have been identified for this project.
Social Impacts	Estimate of people who live within 500 feet of this project: 346 residents, 141 minority residents, 30 residents in poverty, 94 residents over age 65 and 3 people with limited-English proficiency.
Historical Site Impacts	No potential impacts have been identified for this project.
Inter-regional corridors	No direct impact on inter-regional corridors.
Inter-regional transit	No direct impact on inter-regional transit.
Maintenance and Safety	No direct impact on bridge maintenance. Project contains 0 intersections and 0 segments that VDOT has identified as being priority locations with potential for safety improvement (PSI).

South Pantops Drive Bridge

Construct a new bridge and roadway to connect High Street to South Pantops Drive. Would include a 2 lane roadway and shared-use path.



Congestion

Reduces system delay
by about 140 vehicle-
hours (1%)



Transit Access

No Impact



Bike/Ped

0.3 miles of new
bike and pedestrian
infrastructure

Project Impacts

Environmental Design	No Complete Streets elements included.
Environmental Impacts	Project has potential impact to 1.29 acres of floodplain, 0.10 acres of wetland, and crosses a scenic river.
Social Impacts	Estimate of people who live within 500 feet of this project: 128 residents, 31 minority residents, 10 residents in poverty, 22 residents over age 65, and 1 person with limited-English proficiency.
Historical Site Impacts	No potential impacts have been identified for this project.
Inter-regional corridors	Increases capacity adjacent to US 250 Business and parallel to US 250, which are both designated as a Principle Arterials of the National Highway System (NHS).
Inter-regional transit	No direct impact on inter-regional transit.
Maintenance and Safety	Project does not contain any existing bridges, and would construct a new bridge. Project contains 0 intersections and 0 segments that VDOT has identified as being priority locations with potential for safety improvement (PSI).

Project Name

Project Description: includes project location and scope (roadway, transit, bike/ped), cost estimate if available, and any other essential information



Congestion

Projected change in
of vehicle-hours of
delay (model)



Transit Access

Change in transit
access measure



Bike/Ped

Length of bicycle
and pedestrian
improvements

Project Impacts

Environmental Design	Incorporates Complete Streets elements that aren't in measures (street trees, bus shelters, benches or other amenities). List potential elements included.
Environmental Impacts	Potential project impact on wetlands, floodplains, park lands, scenic rivers, land under conservation easement, and endangered species habitat. Quantative values presented, with qualitative description if necessary.
Social Impacts	Estimated number of individuals who are minority, in poverty, older than 65, or have limited English proficiency, and live within 500 feet of the project (1/4 mile from a stop for transit). Quantative values presented. Total population of the MPO area is approximately 118,000.
Historical Site Impacts	List of National Register of Historic Places (NRHP) sites potentially impacted by the project. Site information presented, with qualitative description if necessary.
Inter-regional corridors	Impact on corridors that are identified by VDOT as part of the National Highway System (NHS). Qualitative description.
Inter-regional transit	Impact on inter-regional transit. Qualitative description.
Maintenance and Safety	Project creates a new bridge or includes deficient bridge(s). Project includes location(s) that VDOT has identified as having a high potential for safety improvement (PSI).

Express Bus on US 29 Corridor

Create an express bus service, potentially BRT, along the US 29 corridor from downtown, through UVA, to the airport and Rivanna Station. Buses run every 15 minutes.



Congestion

Negligible modeled impact



Transit Access

Increases transit access measure by 2.6%



Bike/Ped

None

Project Impacts

Environmental Design	Bus stops would have new benches, shelters, and other amenities.
Environmental Impacts	No potential impacts have been identified for this project.
Social Impacts	Estimate of people who live within 1/4 mile of bus route stops: 7787 residents, 4020 minority residents, 2657 residents in poverty, 890 residents over age 65 and 103 people with limited-English proficiency.
Historical Site Impacts	No potential impacts have been identified for this project.
Inter-regional corridors	Increases multimodal capacity on US 29, which is designated as a Principle Arterial of the National Highway System (NHS).
Inter-regional transit	Provides new or improved service to the primary inter-regional airport, train station (Amtrak) and bus station (Greyhound) in the region.
Maintenance and Safety	No direct impacts on deficient bridges or locations with a high potential for safety improvement (PSI).

Commuter bus to Crozet

Commuter bus service from downtown, through UVA, to Ivy and Crozet.
Peak-hour service only, buses run every 30 minutes.



Congestion

Negligible modeled
impact



Transit Access

No impact on transit
access measure.



Bike/Ped

None

Project Impacts

Environmental Design	Some bus stops are likely to have new or improved benches, shelters, or other amenities.
Environmental Impacts	No potential impacts have been identified for this project.
Social Impacts	Estimate of people who live within 1/4 mile of bus route stops: 5150 residents, 2732 minority residents, 2073 residents in poverty, 544 residents over age 65 and 45 people with limited-English proficiency.
Historical Site Impacts	No potential impacts have been identified for this project.
Inter-regional corridors	Improves multimodal capacity on US 250 Business, which is designated as a Principle Arterial of the National Highway System (NHS).
Inter-regional transit	Provides new or improved service to the primary inter-regional train station (Amtrak) and bus station (Greyhound) in the region.
Maintenance and Safety	No direct impacts on deficient bridges or locations with a high potential for safety improvement (PSI).

Bus route to Avon/Mill Creek

Create new route from downtown, along 5th Street, through 5th Street Station, along Avon St., along Mill Creek Drive, and north on Rte 20 to PVCC. Buses run every 30 minutes.



Congestion

Negligible modeled
impact



Transit Access

Increases transit
access measure by
1.6%



Bike/Ped

None

Project Impacts

Environmental Design	Some bus stops are likely to have new or improved benches, shelters, or other amenities.
Environmental Impacts	No potential impacts have been identified for this project.
Social Impacts	Estimate of people who live within 1/4 mile of bus route stops: 8418 residents, 3657 minority residents, 1872 residents in poverty, 985 residents over age 65 and 89 people with limited-English proficiency.
Historical Site Impacts	No potential impacts have been identified for this project.
Inter-regional corridors	No impact on corridors that are identified by VDOT as part of the National Highway System (NHS).
Inter-regional transit	No impact on inter-regional transit.
Maintenance and Safety	No direct impacts on deficient bridges or locations with a high potential for safety improvement (PSI).

Increased bus service to Pantops

Add new route to provide additional service across Free Bridge. Change Route 10 alignment. Buses on both routes run every 30 minutes.



Congestion

Negligible modeled
impact



Transit Access

Increases transit
access measure by
3.4%



Bike/Ped

None

Project Impacts

Environmental Design	Some bus stops are likely to have new or improved benches, shelters, or other amenities.
Environmental Impacts	No potential impacts have been identified for this project.
Social Impacts	Estimate of people who live within 1/4 mile of bus route stops: 4900 residents, 1237 minority residents, 686 residents in poverty, 837 residents over age 65 and 29 people with limited-English proficiency.
Historical Site Impacts	No potential impacts have been identified for this project.
Inter-regional corridors	Increases multimodal capacity on US 250 Business and US 250, which are both designated as a Principle Arterials of the National Highway System (NHS).
Inter-regional transit	No impact on inter-regional transit.
Maintenance and Safety	No direct impacts on deficient bridges or locations with a high potential for safety improvement (PSI).

Fontaine Research Park bus route

Extend UTS route to provide service from UVA to Fontaine Research Park.
Buses run every 10-30 minutes.



Congestion

Negligible modeled
impact



Transit Access

Increases transit
access measure by
0.5%



Bike/Ped

None

Project Impacts

Environmental Design	Some bus stops are likely to have new or improved benches, shelters, or other amenities.
Environmental Impacts	No potential impacts have been identified for this project.
Social Impacts	Estimate of people who live within 1/4 mile of bus route stops: 4090 residents, 2675 minority residents, 2351 residents in poverty, 114 residents over age 65 and 37 people with limited-English proficiency.
Historical Site Impacts	No potential impacts have been identified for this project.
Inter-regional corridors	Increases multimodal capacity on the US 29 Business corridor, which is designated as a Principle Arterial of the National Highway System (NHS).
Inter-regional transit	No impact on inter-regional transit.
Maintenance and Safety	No direct impacts on deficient bridges or locations with a high potential for safety improvement (PSI).

Appendix B: Public Participation Record of Input

Comments Submitted at MPO Policy Board Meetings.....B1-B2

Comments Submitted at Public Hearings.....B3-B4

► Comments Submitted at MPO Policy Board Meetings

Information regarding the LRTP was provided to the MPO Policy Board at most regular meetings between September 2017 and May 2019. Additional MPO Policy Board meetings were held in October 2018, February 2019, and April 2019. Every MPO Policy Board meeting includes a time for public comments at both the beginning and end of the meeting. All public comments directly related to the LRTP, as captured in the minutes for each meeting, have been provided below.

» March 27, 2019

Donna Chen asked whether charging stations for hybrid and electric cars is being factored into the LRTP. She said they will be important in the future of transportation.

» January 23, 2019

Sean Tubbs with the PEC [Piedmont Environmental Council] noted that the projects submitted from the area did not score very well on SmartScale. He noted that he realized that funding is low, but the planning is still important. He also noted he was pleased to see that the Free Bridge and the I-64 corridor are on the visioning list.

» September 26, 2018

Sean Tubbs from the Piedmont Environmental Council spoke about two projects on the LRTP that he hoped would remain on the vision list. The first is the Sunset/Fontaine connector and the second is the South Pantops connector bridge.

» July 25, 2018

[Following presentation of information at the meeting regarding use of the regional travel demand model.]

Sean Tubbs from the Piedmont Environmental Council said he was looking forward to learning more about the transit models. The PEC thinks it is important that the public understand the interaction between transit and these models. He also said they are looking to increase bus ridership. He went on to say that he would like to find a way to secure funding for the proposed bus system from Harrisonburg to Charlottesville. Last September, the Policy Board was briefed on a study on that route and it found that 1,200 people commute from the valley into Charlottesville each day. He said that is a significant

number. He understands that funding for the pilot program was not successful this year, but urged the Board to continue to find sources for provide this option in the future and to keep the idea alive. He said he would be curious to know what the model would look like if it were modeled with the latest software.

He urged the Board to look at the 2045 model with a larger regional population, a larger urbanized population as the process of the LRTP continues, particularly if there is a possibility of adding Fluvanna or Greene County into the MPO.

[The responses to this comment included:]

Ms. Mallek responded to Mr. Tubbs saying that the MPO has made the offer to Greene county to join, but they declined the offer.

Mr. Signer said there should be a consideration for a bus route between Waynesboro/Staunton to Charlottesville.

Mr. Hudson said staff have been thinking about expanding to Fluvanna and Greene counties and the modeling area does include some areas that may be in the MPO in the future.

» May 23, 2018

Morgan Butler from the Southern Environmental Law Center (SELC) addressed two items:

1. Attachment C & D of the staff reports in the (Long Range Transportation Plan) LRTP updates. Attachment C is a list of measures which will be used to evaluate effectiveness of the overall scenarios of projects and Attachment D will be used to evaluate the effectiveness of the individual projects. Mr. Butler pointed out that both use roadway level of service and hours of delay. He reminded the Board that those two measures have been subject to “push back” in recent years because they focus so heavily on moving cars and moving them quickly. That is fine for highways, but when talking about urban areas in the city or county, there should be more emphasis on multi-modal transportation and safer streets, not just necessarily results of moving more cars. He expressed that the values used to evaluate success may undercut the transportation goals for the city and the county.

He suggested to look at Smart Scale for the congestion category, and notably, rather than use level of service, Smart Scale uses “person through-put” which include other modes of travel and not just vehicles.

Similarly, rather than used vehicle hours of delay, Smart Scale uses person hour of delay which is a broader measure that uses all modes of travel.

Mr. Butler stated he thought it would be worth considering using the Smart Scale measures, or similar ones, in the LRTP to gauge congestion – if not to replace the measures in the LRTP, then at least to supplement them.

[The responses to this comment included:]

Mr. zumFelde noted that he did not think the model can calculate person delay instead of vehicle delay, per Mr. Butler’s concern earlier in the meeting.

» March 28, 2018

[Following presentation of information at the meeting regarding proposed performance measures for scenario evaluation.]

One of Mr. Sheffield’s students asked if the LRTP measure re: bike and pedestrian safety would take different demographics into account and will the infrastructure work for all ages. He is concerned about the safety for all cyclists.

Mr. zumFelde said the report looks at paths and bike lanes. He said paths are incentivized because they are counted separately as both bike and pedestrian infrastructure, so in that way it would be counted as a measure twice. He noted that in the broader bike/ped planning, Staff will be looking how protected and unprotected bike lanes are assessed. Mr. zumFelde said he welcomed feedback.

Ms. Schwing suggested that maybe there could be a weighting of some sort. Ms. Galvin added that she did not want to discourage multi-modal street design.

Mr. zumFelde said he was open to hearing how to do that assessment.

Travis Pietila, a CTAC representative and an employee at the SELC, first thanked the Staff for all their work on the LRTP. He expressed a concern that under the Environmental and Community Impacts measure, there is nothing touching on the environmental and historic resource impact. In the current long-range plan, there were measures that did that. There are also places in Smart Scale that do measure that. He expressed it would be important to include that information in the narrative for the current LRTP.

Mr. Proctor noted that last round of Smart Scale, the projects had a buffer of 300 feet on both sides. They measured anything that was around the area and the it was scored from there.

Ms. Galvin said it will be important to include that information.

Mr. zumFelde said one of the goals of the LRTP is to include that kind of information in a narrative of the scenario measures.

Ms. Galvin reiterated the importance of gathering information on who has put their input on projects. Mr. Sheffield emphasized the importance of that information beyond just the MPO. Ms. Mallek noted it would be critical to “go to where they are” – schools, neighborhoods, grocery stores, etc.

» July 26, 2017

Morgan Butler from the Southern Environmental Law Center addressed the environmental goals & objectives in the LRTP. The second objective under the Environment and Community objectives, he recommended that it read, “enhance or avoid impacting the environment...” not just minimizing the impacts on the environment.

► Comments Submitted at Public Hearings

Two public hearings were held during MPO Policy Board meetings to request comments on the draft LRTP document. The spoken comments are provided below.

» April 24, 2019

Morgan Butler from the Southern Environmental Law Center thanked the staff for the hard work done on the LRTP and for the engagement with the public. He noted that it can be a difficult process to get the public to engage, but said it is so important to do so. He went on to say “there are notable improvements in the draft 2045 plan as compared to the 2040 plan, most importantly, the 2045 draft better emphasizes the use of multi-modal facilities (public transit, bike network, and sidewalks). While roads remain a key part of our daily lives, making these alternative options more accessible and convenient is critical to ensure we are meeting the needs of all of our residents while supporting a more environmentally-sustainable transportation system. We also applaud the important high-level changes taking place that will transform transportation in the years to come. One of these is climate change. We are glad the draft recognizes the urgent need to reduce our transportation systems out-sized contribution to regional green-house gas emissions by expanding multi-modal options and better coordinating transportation planning and land-use planning. In other words, ensuring that you can get where you need to go without always having to hop into a car. The draft also recognizes the need to ensure our transportation system should be resilient to the effects of climate change with more intense storms and more severe flooding. We are glad the draft raises climate change, but we encourage you to expand on the discussion in the final version to include a larger focus on our future planet. The draft also recognizes the many uncertainties stemming from changing transportation technology, such as the growth of ridesharing services, electric vehicles and e-scooters, and autonomous vehicles. This shifting landscape will undoubtedly require constant and careful planning including traffic and travel projections. Finally, the shifting of the traffic recommended projects, we continue to support making solutions for the Hydraulic/Route 29 a top priority. As you are well aware, the recent investments in the Route 29 Solutions helped to greatly improve safety and travel conditions along this road. Of the 29/Hydraulic/250 bypass

triangle as a key piece of the puzzle, the community has already done a great deal of work with VDOT to identify and develop a set of recommended projects there. The exact form and sequence of some of those projects are always subject to additional tweaking, so we agree with the approach taken in the draft, including placeholders for them on the constrained list while also keeping some of the project descriptions general enough to allow some wiggle room going forward. That said, we do want to ask whether the project consists of extending the left-turn lane from the 250 bypass eastbound onto Hydraulic Road needs to be specifically mentioned and included on the constrained list to make sure that project will be eligible for any federal funding that may be forthcoming. In closing, that you, again, for your hard work on the plan and the opportunity to comment.”

Neal Williamson from the Free Enterprise Forum said he shared Mr. Butler’s comments on much of what he had to say especially about the manner in which staff has brought this forward. “The document is a better document. It is a challenge to work in this environment – it is my third LRTP – and it is definitely much better than when I got into this business. That being said, I agree with Councilor Galvin’s request to have the total vision plan costed. I also recognize the challenge of that. It is something I applaud VDOT for, which is project-year dollars. ‘We don’t ever think it is going to get built, so what project year should we use?’ I would suggest footnoting it, creating a 10-year project-year dollars. I believe they need to be inflated by that realm. We also would appreciate, probably not for this iteration but the next one, the project pages should include the SMART SCALE metrics, which are clearly important. I specifically believe that economic development should be called out in the project pages. It is a critical part of what transportation does, and I think that the roadways supporting economic development are critical. I agree with Mr. Butler about the 29/Hydraulic interchange in the projects, and his comments are much more thought out than mine, but I think the manner in which you are proceeding is correct. We do not believe that the LRTP is a place for a climate change treatise, but that is where Mr. Butler and I can differ. Finally, I appreciate the opportunity to speak and I really do applaud the hard work.”

» May 22, 2019

Travis Pietila of CTAC and from the Southern Environmental Law Center (SELC) spoke at the meeting. Speaking as the Chair of CTAC, he said he appreciated the hard work that went into the LRTP over the past two years and commended Staff for incorporating suggestions from the CTAC members throughout the process.

He went on to say, speaking as a member of the SELC, that the SELC appreciate the increased emphasis on multi-modal in this plan because it is clearly a priority for the community. While he knows there is still a long way to go, this draft better reflects it as a priority. He said they also appreciate the draft plan better incorporating climate change, including both the need to reduce our own contribution to reducing greenhouse gas emissions and also planning a more resilient transportation system for our community.

He continued by saying they also appreciate the fact that the plan addresses some of the important changes that are taking place in how we move about in our community, including the emergence of Uber, Lyft, e-scooters, autonomous electric vehicles, and micro-transit. He noted that these are all changing the landscape of transportation and that it was vital to stay on top of those changes.

Finally, he noted they do support the prioritization of the Hydraulic/29 in this plan. He encouraged the Board to continue to explore a variety of solutions for that intersection that will both works and can be funded.

Appendix C: VDOT Performance Based Planning and Programming

Pavement and Bridge Performance Measures	EA8-11
Highway System Performance	EA12-14
Congestion Mitigation and Air Quality Program Performance Measures	EA15-17

Appendix E, Addendum 3: Performance Based Planning and Programming – Pavement and Bridge Performance Measures

Performance Targets

In accordance with the requirements of MAP-21 and the FAST Act, Virginia has established pavement and bridge condition performance targets as reported in Virginia's Baseline Performance Period Report for 2018-2021¹. This report, submitted to FHWA in October 2018, satisfies the federal requirement that State DOTs submit a Baseline Performance Period Report to FHWA by October 1st of the first year in a performance period. Performance measures for pavement condition are required for the National Highway System (NHS), while bridge condition requirements relate to structures identified as part of the National Bridge Inventory on the NHS. The pavement condition measures and established performance targets for the 2018-2021 performance period are indicated in Table 1 below.

Table 1: Pavement Condition Measures and Performance Targets

Interstate Pavement Condition Measures²	CY 2018-2019 Two Year Target	CY 2018-2021 Four Year Target
Percentage of Pavements in Good Condition	N/A ³	45.0%
Percentage of Pavements in Poor Condition	N/A ³	3.0%
Non-Interstate NHS Pavement Condition Measures⁴	2018-2019 Two Year Target	2018-2021 Four Year Target
Percentage of Non-Interstate Pavements in Good Condition	25.0%	25.0%
Percentage of Non-Interstate Pavements in Poor Condition	5%	5.0%

Bridge condition measures and established performance targets for the 2018-2021 performance period are indicated in Table 2 below.

¹ Virginia's Baseline Performance Period Report data is through December 2017.

² Interstate condition measures are based on four distresses: International Roughness Index (IRI), cracking, rutting, and faulting.

³ During this first performance period, States are not required to establish 2-year targets for interstate pavements; however, Virginia has chosen to establish performance targets and are 45.0% and 3.0% for percentage of pavements in good and poor condition, respectively.

⁴ During this first performance period, Federal requirements for Non-Interstate NHS pavement condition and performance targets are based on a single distress, IRI. However, Federal guidance outlined in a September 27, 2018 Memorandum on State DOT Targets for Non-Interstate NHS Pavement Measures allows for the use of full distress data when reporting Non-Interstate NHS performance targets. Given the availability of full distress data, Virginia has chosen this approach and reported performance targets for Non-Interstate NHS pavements based on all four distresses. This allows for consistency in assessing the condition and setting performance targets for both Interstate and Non-Interstate NHS pavements.

Table 2: NHS Bridge Condition Measures and Performance Targets

NHS Bridge Condition Measures	CY 2018-2019 Two Year Target	CY 2018-2021 Four Year Target
Percentage of Deck Area of NBI Bridges on the NHS in Good Condition	33.5%	33.0%
Percentage of Deck Area of NBI Bridges on the NHS in Poor Condition	3.5%	3.0%

Background/History

Virginia's history of monitoring asset conditions and utilizing performance information to determine investment strategies based on available funding levels spans over 10 years for pavements and bridges.

VDOT maintains a comprehensive inventory of all pavement and bridges on the state-maintained network. This inventory, which includes location, maintenance responsibility, ownership, and current condition or inspection information, serves as the foundation for life cycle planning, performance forecasting, maintenance and rehabilitation needs estimation, as well as prioritization of work to maximize asset life given available funding. Condition information is also important for communicating with external stakeholders, including the general public.

VDOT's commitment to responsible Transportation Asset Management (TAM) practice is demonstrated through VDOT's annual condition data collection programs and its establishment and publication of network level pavement and bridge performance goals. VDOT's current condition measures and performance goals have been in place for many years and are fully integrated into VDOT's budgeting process and investment strategies.

The federal pavement and bridge performance measures apply to a limited portion of the network for which VDOT is responsible (less than 15% of all lane miles and 18% of the bridge inventory).

Connection to Other Performance Based Planning Documents

VTrans, the state's long-range multimodal plan, provides the overarching vision and goals for transportation in the Commonwealth. The long-range plan provides a vision for Virginia's future transportation system and defines goals, objectives, and guiding principles to achieve the vision. It also provides direction to state and regional transportation agencies on strategies and policies to be incorporated into their plans and programs. The most recent approved long-range multimodal plan is VTrans2040.

Performance management, specifically as it relates to pavements and bridges, is included in the VTrans2040 Vision, Goals & Objectives, and Guiding Principles as noted below:

- Guiding Principle 5: Ensure Transparency and Accountability, and Promote Performance Management - Work openly with partners and engage stakeholders in project development and implementation, and establish performance targets that consider the needs of all communities, measure progress towards targets, and to adjust programs and policies as necessary to achieve the established targets.
- Goal D: Proactive System Management - maintain the transportation system in good condition and leverage technology to optimize existing and new infrastructure.
 - Objectives:
 - Improve the condition of all bridges based on deck area.
 - Increase the lane miles of pavement in good or fair condition.

Virginia's federally required Transportation Asset Management Plan (TAMP) presents pavement and bridge inventory and conditions, along with the Commonwealth's performance objectives, measures, and associated risks as they relate to the federal requirements. Asset funding, investment strategies, forecasts, goals, and gaps are also included. The TAMP is specific to the NHS and provides the Commonwealth's Transportation Asset Management (TAM) processes and methodology to meet federal requirements. Pavement and bridge projects included in the STIP are consistent with Virginia's reported TAM processes and methodology.

The program of projects in the STIP are directly linked to the pavement and bridge objectives outlined in VTrans2040 and the TAMP through the strategies and actions that are priorities in Virginia.

Funding for Pavement and Bridge Projects

There are two key funding sources for pavement and bridge projects, the Highway Maintenance and Operations Fund (HMOF) and State of Good Repair (SGR) program funds. The pavement and bridge funding is used for differing projects from routine maintenance to reconstructive work. Funds are allocated to pavement and bridge projects based on an annual needs assessment process supported by a data-driven prioritization and selection process. The prioritization process is the same for the various funding sources; however, the [State of Good Repair](#) program funds are designated for deteriorated pavements and structurally deficient bridges.

The SGR program requires funds be distributed proportionality between VDOT and localities, based on assessed needs. More details, including the requirements for pavements and bridges, and the SGR prioritization process methodology, can be found at: [State of Good Repair for Bridges](#) and [Local Assistance Funding Programs](#).

VDOT has developed a robust asset management program, placing maintenance of the transportation network at the forefront of VDOT's investment decisions. This commitment to responsible asset management practice is demonstrated through VDOT's annual collection of condition data on pavements and bridges along with its establishment and publication of network-level pavement and bridge performance targets. For more than a decade, VDOT has

monitored pavement and bridge conditions using performance information (measures and targets) to determine investment strategies based on available funding levels.

In the annual needs assessment process, VDOT assesses 100% of the pavement network on Virginia's Interstate and Primary systems and approximately 20% of the Secondary system. In 2016, VDOT assessed 100% of the Secondary pavement network to create a condition baseline. The pavement condition data is compiled, analyzed and reviewed to report the optimized needs at a roadway system and district level. VDOT's pavement program selects resurfacing projects, in relation to needs, and optimizes the timing of projects through a data-driven pavement management system.

For bridges, VDOT follows national standards in performing safety inspections and determining general condition of the structures. Condition assessments are performed by certified safety inspection personnel. The inspection program requires a qualified inspector to complete a "hands-on" review of the structure or bridge during each inspection. By federal regulation, VDOT is required to conduct detailed inspections of NBI structures at intervals not to exceed 24 months. VDOT uses BrM software to store bridge condition and inventory data for each structure and to program, schedule, and track bridge and structure inspections. The data collected during inspections allows VDOT to use a proactive approach to maintenance. Preventive maintenance and timely intervention repairs are performed to avoid and slow deterioration that leads to greater rehabilitation or replacement cost. Virginia's bridge maintenance program is large and complex, so in order to direct its efforts more easily, performance targets have been developed.

VDOT uses a prioritization process when determining funding for the pavement and bridge programs and prioritizes work ranging from preventative maintenance to replacement. The prioritization processes take into account similar factors such as condition, cost effectiveness, maintenance history, and traffic volumes. While the systematic prioritization processes are a guide to assist in funding projects, districts direct the work performed as the local experts.

How do Pavement and Bridge Projects get selected for Inclusion in the STIP?

As noted above, the funding to meet Virginia's pavement and bridge objectives and targets is allocated to projects in the CTB-approved SYIP and is consistent with VTrans2040. Each spring, the public is invited to comment on projects included in the draft SYIP prior to CTB approval. Since the SYIP is the foundation for the STIP, the program of projects in the STIP demonstrates support to achieve Virginia's pavement and bridge performance objectives and targets and is consistent with Virginia's TAMP.

Appendix E, Addendum 4: Performance Based Planning and Programming – Highway System Performance

Performance Targets

In accordance with the requirements of MAP-21 and the FAST Act, Virginia has established performance targets for three reliability performance measures to assess the Highway System Performance. All three measures are included in Virginia’s Baseline Performance Period Report for 2018-2021 which was submitted to FHWA in October 2018. This report satisfies the federal requirement that State DOTs submit a Baseline Performance Period Report to FHWA by October 1st of the first year in a performance period and establishes baseline performance as of December 31, 2017.

Performance of the NHS is measured by the level of travel time reliability. The travel time reliability performance measures and performance targets for the 2018-2021 performance period are indicated in Table 1 below.

Table 1: National Highway System Travel Time Reliability Performance Measures and Targets

NHS Travel Time Reliability Performance	CY 2018-2019 Two Year Target	CY 2018-2021 Four Year Target
Percent of Person Miles Traveled on the Interstate That Are Reliable	82.2%	82.0%
Percent of Person Miles Traveled on the Non-Interstate NHS That Are Reliable	N/A ¹	82.5%

The assessment for freight reliability is based on the truck travel time reliability index. The truck travel time reliability performance measure and performance targets for the 2018-2021 performance period are indicated in Table 2 below.

Table 2: Freight Reliability Performance Measure and Targets

Truck Travel Time Reliability Performance	CY 2018-2019 Two Year Target	CY 2018-2021 Four Year Target
Truck Travel Time Reliability Index	1.53	1.56

The Commonwealth Transportation Board (CTB) approves the performance measures and targets developed for Virginia’s surface transportation network. Such targets, including those for Highway System Performance, are linked to the goals and objectives in Virginia’s long-range transportation plan, or VTrans.

¹ During this first performance period, States are not required to establish 2-year targets for the Non-Interstate NHS reliability measure.

Connection to Other Performance Based Planning Documents

VTrans, the state's long-range multimodal plan, provides the overarching vision and goals for transportation in the Commonwealth. The long-range plan provides a vision for Virginia's future transportation system and defines goals, objectives, and guiding principles to achieve the vision. It also provides direction to state and regional transportation agencies on strategies and policies to be incorporated into their plans and programs. The most recent approved long range multimodal plan is VTrans2040.

VTrans2040 identifies the most critical transportation needs in Virginia to ensure the overarching transportation goals in the long-range plan are achieved. The screening process was informed by a data-driven approach that considers highway system performance measures and targets in addition to other performance indicators.

Performance management, as it relates to the reliability of the NHS and freight, is included in the VTrans2040 Vision, Goals & Objectives, and Guiding Principles as noted below:

- Guiding Principle 4: Consider Operational Improvements and Demand Management First – Maximize capacity of the transportation network through increased use of technology and operational improvements as well as managing demand for the system before investing in major capacity expansions.
- Goal A – Economic Competitiveness and Prosperity: invest in a transportation system that supports a robust, diverse, and competitive economy.
 - Objectives:
 - Reduce the amount of travel that takes place in severe congestion.
 - Reduce the number and severity of freight bottlenecks.
 - Improve reliability on key corridors for all modes.
- Goal B – Accessible and Connected Places: increase the opportunities for people and businesses to efficiently access jobs, services, activity centers, and distribution hubs.
 - Objectives:
 - Reduce average peak-period travel times in metropolitan areas.
 - Reduce average daily trip lengths in metropolitan areas.
 - Increase the accessibility to jobs via transit, walking and driving in metropolitan areas.

Additionally, the Virginia Freight Element (VFE), a component of VTrans2040, discusses freight system trends, needs, and issues. The VFE also includes freight policies, strategies, and performance measures that guide Virginia's freight-related investment decisions.

Projects included in the STIP are directly linked to the Highway System Performance objectives outlined in VTrans2040 and associated needs analysis, and the VFE through the strategies and actions that are priorities in Virginia.

Funding for Highway System Performance Projects

SMART SCALE, Virginia's data-driven prioritization process for funding transportation projects, considers the potential of a project to improve reliability. In order to be considered for SMART SCALE, a project must first meet a need identified in VTrans2040, thus strengthening the connection between the planning and programming processes. Congestion mitigation, safety, accessibility, economic development, environment, and land use are the factors used to score SMART SCALE projects. Freight considerations are included in the economic development factor.

The FAST Act established a National Highway Freight Program, including a freight-specific funding program to highlight the focus on freight transportation needs. Projects eligible for National Highway Freight Program (NHFP) funding must contribute to the efficient movement of freight on the National Highway Freight Network (NHFN) and be included in the VFE. VDOT uses NHFP funding to construct freight beneficial projects identified through the SMART SCALE process.

SMART SCALE screening and scoring results, along with public feedback and CTB guidance, are used to develop the SYIP.

Other projects selected for funding are subject to program specific prioritization processes approved by the CTB. All funding (federal, state, and other sources) for transportation projects are allocated to projects in the CTB approved SYIP.

How do Highway System Performance Projects Get Selected for Inclusion in the STIP?

As noted above, the funding for all transportation projects, including funding for projects to meet Virginia's NHS system performance and freight movement targets is allocated to projects in the CTB approved SYIP, and is consistent with VTrans2040 and the VFE. Since the SYIP is the foundation of the STIP, the program of projects in the STIP demonstrates support to achieve Virginia's NHS and Freight Reliability performance objectives and targets.

Appendix E, Addendum 5: Performance Based Planning and Programming – Congestion Mitigation and Air Quality Program Performance Measures

Performance Targets

In accordance with the requirements of MAP-21 and the FAST Act, Virginia has established performance measures for the Congestion Mitigation and Air Quality Program (CMAQ) as reported in Virginia’s Baseline Performance Period Report for 2018-2021¹. This report, submitted to FHWA in October 2018, satisfies the federal requirement that State DOTs submit a Baseline Performance Period Report to FHWA by October 1st of the first year in a performance period.

The CMAQ Program traffic congestion and on-road mobile source emissions performance measures and targets for the 2018-2021 performance period are indicated in Tables 1 and 2 below. The Northern Virginia region is the only area subject to the CMAQ performance measures. VDOT closely coordinated with the National Capital Region Transportation Planning Board (TPB, of the Metropolitan Washington Council of Governments (MWCOC)), the District Department of Transportation, and the Maryland Department of Transportation in developing the target setting methodology and measures and establishing performance targets.

Table 1: Traffic Congestion Performance Measures and Targets

CMAQ Program	Performance Measures	Federal Fiscal Year 2018-2019 Two Year Target	Federal Fiscal Year 2018-2021 Four Year Target
Traffic Congestion ²	Annual Peak Hour Excessive Delay (PHED) Per Capita	N/A ³	26.7 Hours
	Mode Share - Percent of Non-SOV Travel on the NHS	36.9%	37.2%

Table 2: Total Emissions Reduction Performance Measures and Targets

CMAQ Program	Type of Emissions	Federal Fiscal Year 2018-2019 Two Year Target	Federal Fiscal Year 2018-2021 Four Year Target
Total Emissions Reduction ⁴	Nitrogen Oxides (NOx)	3.744	4.230
	Volatile Organic Compounds (VOCs)	1.721	1.985

¹ Virginia’s Baseline Performance Period Report data is through December 2017.

² Traffic Congestion performance targets are applicable only to Northern Virginia.

³ During this first performance period, States are not required to establish 2-year targets for PHED.

⁴ Total Emissions Reduction performance targets are applicable only to the Virginia portion of the Washington, DC-MD-VA 8-hour ozone nonattainment area.

The Commonwealth Transportation Board (CTB) approves the performance measures and targets developed for Virginia's surface transportation network. Such targets, including those for the CMAQ Program, are linked to the goals and objectives in Virginia's long-range transportation plan, VTrans).

Connection to Other Performance Based Planning Documents

VTrans, the state's long-range multimodal plan, provides the overarching vision and goals for transportation in the Commonwealth. The long-range plan provides a vision for Virginia's future transportation system and defines goals, objectives, and guiding principles to achieve the vision. It also provides direction to state and regional transportation agencies on strategies and policies to be incorporated into their plans and programs. The most recent approved long-range multimodal plan is VTrans2040.

Performance management, specifically as it relates to the CMAQ Program, is included in the VTrans2040 Vision, Goals & Objectives, and Guiding Principles as noted below:

- Goal A – Economic Competitiveness and Prosperity: invests in a transportation system that supports a robust, diverse, and competitive economy.
 - Objectives:
 - Reduce the amount of travel that takes place in severe congestion.
 - Reduce the number and severity of freight bottlenecks.
 - Improve reliability on key corridors for all modes.
- Goal E – Healthy Communities and Sustainable Transportation Communities: support a variety of community types promoting local economies and healthy lifestyles that provide travel options, while preserving agricultural, natural, historic and cultural resources.
 - Objectives:
 - Reduce per-capita vehicle miles traveled.
 - Reduce transportation related NOx, VOC, PM and CO emissions.
 - Increase the number of trips traveled by active transportation (bicycling and walking).

The program of projects in the STIP are directly linked to the CMAQ Program performance goals and objectives outlined in VTrans2040 through the strategies and actions that are priorities in Virginia.

Funding for CMAQ Program Projects

The CMAQ Program is designed to help States and local governments meet the requirements of the Clean Air Act. To be eligible for CMAQ funds a transportation project or program must reduce congestion and improve air quality for nonattainment or maintenance areas.

In the Northern Virginia region the Northern Virginia Transportation Authority (NVTA), a regional governmental body established to plan, prioritize, and fund regional transportation

projects, coordinates the annual programming of federal CMAQ projects. Recommendations for programming are provided through the Regional Jurisdiction and Agency Coordinating Committee (RJACC) with final approval given by the CTB. Projects recommended for CMAQ programming go through an application process and must include an air quality benefit calculation, and a resolution of support from the respective governing bodies.

SMART SCALE, Virginia's data-driven prioritization process for funding transportation projects, considers congestion mitigation and the environment. In order to be considered eligible for SMART SCALE, a project must first meet a need identified in VTrans2040. Congestion mitigation, safety, accessibility, economic development, environment, and land use are the factors used to score SMART SCALE projects. The measures associated with the environment scoring factor are consistent with the CMAQ Program performance measures. SMART SCALE screening and scoring results, along with public feedback and CTB guidance, are used to develop the SYIP. All funding (federal, state, and other sources) for transportation projects are allocated to projects in the CTB approved SYIP.

How do Projects Get Selected for Inclusion in the STIP?

As noted above, the funding to meet Virginia's CMAQ Program objectives and targets is allocated to projects in the CTB approved SYIP, and is consistent with VTrans2040. Since the SYIP is the foundation for the STIP, the program of projects in the STIP demonstrates support to achieve Virginia's traffic congestion and on-road mobile source emissions performance measures and targets.