Chapter 3

TRANSPORTATION & THOROUGHFARE PLAN

INTRODUCTION

The Transportation Plan

The purposes of this Transportation Plan (Plan) are to identify Spotsylvania County's future transportation needs, serve as a resource for the County's citizens and the development community, and provide a base for the development and implementation of local, regional and statewide transportation plans. It is the intent of this Plan to provide a comprehensive examination of the existing transportation network and appurtenant facilities. This Plan seeks to maintain an efficient transportation system utilizing available and expected resources. The overarching goal of this Plan is to maintain functional and effective transportation systems that keep pace with growth in the future. This Plan provides guidance for shaping the future of transportation in Spotsylvania County.

The Thoroughfare Plan

The recommendations for improvements to the road network in Spotsylvania County as set forth in this Plan consist of several new facilities and the need for improvements to existing facilities. The Plan has a horizon year of 2040. With traffic volumes consistently on the increase locally, the improvement and maintenance of the existing network is of utmost importance, while new facilities will be needed in order to provide capacity for future traffic volumes and increase connectivity. New roads can have a positive impact on existing roads stressed by traffic volumes without adequate capacity by providing a "pressure relief" to better distribute traffic and provide alternative routes for traffic movement. For identified new "concept roads" it is important to note that depicted alignments are conceptual in nature and that no engineering to determine the optimal location has taken place.

Improvements to existing roads are meant to address level of service deficiencies resulting from increasing traffic volumes conflicting with existing road capacity. These tend to result in necessity for addition of new lanes through road widening and intersection improvement projects. Additionally, where capacity isn't being addressed in the form of road widening projects, safety improvements have been targeted along a number of roads, especially outside of the Primary Development Boundary (intended for rural, agricultural and forestal uses and character) in instances where roads would benefit from realignment, more generous travel lane widths and shoulder improvements. As populations grow county-wide it is important to recognize the importance of improved roadways even if capacity isn't necessarily being expanded. Many of these rural roads are also traversed with truck traffic from local timbering operations, agricultural machinery, and towed boat traffic in the area of Lake Anna.

Road corridor based transportation alternatives are addressed as part of the Thoroughfare Plan planned widening and improvement projects as a means to reduce road based demands by including provision of bicycle and pedestrian friendly transportation routes. The Trailways Master

Plan located in Chapter 3A serves as a master plan for bicycle and pedestrian based transportation alternatives. The Trailways Master Plan also directly corresponds to provision of recreational trails considering parks and recreation level of service standards as established in Chapter 4.

The recommended improvements including new concept roads, roadway, interchange and intersection improvements are shown on The Thoroughfare Plan Map with a description of each improvement listed in The Thoroughfare Plan - Project List. Both appear within this Chapter.

Thoroughfare Plan Project Prioritization

Complementary to this Comprehensive Plan update, within the last two years the County Thoroughfare Plan projects have been input into a prioritization scoring list that consider multiple factors as described below.

The prioritization method was developed by Kimley-Horn and Associates for FAMPO initially in 2008 to score projects in the FAMPO Long Range Transportation Plan, the methodology is based the collective experience of other Metropolitan Planning Organizations and localities.

Projects are ranked based on six (6) categories. The categories are;

- Congestion
- Safety
- Environmental Impacts
- Public Support
- Implementation
- Smart Growth

Points are assigned to each of the categories to obtain a total score. The score is weighted with the primary emphasis on two categories; Congestion and Safety. These two categories make up 60% of the total number of points a project can achieve. A perfect score is 100 points.

Congestion scoring is based on the Spotsylvania County Travel Forecasting Model which determines Level of Service based on the following Volume/Capacity Relationship (See Table 1 below). The lower the volume/capacity that is achieved with the improvement, the greater the number of points assigned.

Table 1: Level of Service Volume/Capacity Relationship

Facility Type	A	B	C	D	E	F
Freeway Ramp	< 0.26	0.27-0.42	0.43-0.63	0.64-0.79	0.80-1.00	> 1.00
Multi-lane Arterials	< 0.28	0.29-0.47	0.48-0.66	0.67-0.79	0.80-1.00	> 1.00
2-lane Arterials	< 0.05	0.06-0.17	0.18-0.32	0.33-0.48	0.49-0.91	> 0.92
Collectors, Local Roads						

Safety is scored and based on a projects ability to mitigate geometric deficiencies such as horizontal and vertical alignment, inadequate width or shoulders, or sharp curves and on its crash rate.

The remaining points are assigned to the project based on environmental impacts; whether it impacts wetlands, historical or archaeological sites or the neighborhood community in general, Public/community support; whether the project has local, regional or national support, funding; whether dollars have been assigned to the project or some plans are available; and Smart Growth; whether the project provides intermodal access and promotes sustainable growth. These four factors make up the other 40% of the projects score.

A complete summary of FAMPO's Highway Project Prioritization Methodology can be found **HERE**.

In Spotsylvania County, the prioritization schedule has been broken into two unique project lists identifying top tier prioritization for road projects within the Primary Development Boundary, and identification of top tier projects outside of the Primary Development Boundary. Considerate of the County's large rural areas and rural populations the two tier prioritization system is aimed at drawing a distinction between rural needs and more urbanized area needs. Considered together, often times rural road needs appear subordinate to road needs within more urbanized areas within the Primary Development Boundary resulting in identified rural roads projects appearing continuously throughout numerous Thoroughfare Plan update cycles without any implementation. The prioritization methodology intends to better highlight top tier rural roads needs instead of "burying" them amongst the high priority needs within urbanized areas where traffic volumes, levels of service and population density drive warrant for such improvements. As opposed to the Primary Development Boundary where road improvements tend to have multiple focuses including safety and maintaining level of service standards due to capacity issues, the rural roads projects in many cases are not aimed at capacity enhancements but tend to be more focused on safety related improvements such as wider travel lanes (more leeway for large vehicles), added shoulders, straightening curves, better sight distances. For instance, identified road improvements and intersection improvements along Lawyers Road near Lake Anna have been chiefly aimed at addressing safety issues in that area.

Transportation project scoring and prioritization helps focus implementation and fundraising efforts to address projects of most need and then moving on to next need projects. For reference only, a copy of the prioritization tables as of September, 2019 have been included in the Appendices, specifically Appendix B. It is good to note that these tables are not intended to remain static within the planning period and are subject to potential change. The tables are working documents to be used outside of the Comprehensive Plan. Amendments to the prioritization tables such as acknowledgement of acquired funding that results in scoring amendments are not intended to require a Comprehensive Plan amendment. As noted above, they have been placed as a reference resource only within this Plan. The prioritization tables include details concerning funding status as well (through September, 2019).

CODE OF VIRGINIA REQUIREMENTS

The Code of Virginia requires the study of transportation needs and their incorporation in comprehensive plans. Section 15.2.2223 requires coordination of plan amendments that will substantially affect transportation on state controlled highways with the Virginia Department of Transportation. Following staff review and update and work sessions held with the County Transportation Committee and Planning Commission, the draft Transportation Plan was routed to the VDOT Fredericksburg District Office for review in September, 2019. Following the initial VDOT review and County submittal of revisions on December 20, 2019, the VDOT-Fredericksburg District finalized their review with no additional comments, on March 25, 2020.

Section 15.2-2223 stipulates that the Plan shall designate the "general or approximate location, character, and extent of each feature, including any road improvement and any transportation improvement". It requires that each locality develop a transportation plan that "designates a system of transportation infrastructure needs and recommendations that include the destination of new and expanded transportation facilities and that support the planned development of the territory covered by the plan." The transportation resources may include roadways, pedestrian and bicycle facilities, railways, bridges, waterways, airports, and public transportation. The code requires that maps of improvements and costs accompany the plan, and that the plan be consistent with the Commonwealth's Statewide Transportation Plan and the Six-Year Improvement Program. Section 15.2-2224 requires the study and documentation of road and other transportation improvements and their cost. Section 15.2-2232 requires that corridors of statewide significance are shown in the plan. The section also states that the plan shall control the general or approximate location of transportation facilities and that no street or connection to an existing street shall be constructed, established, or authorized unless it is shown on the plan or has been approved by the Planning Commission as being substantially in accord with the adopted Comprehensive Plan.

RELATIONSHIP TO STATE AND REGIONAL PLANS

The results of the 1990 Census of Population led to the designation of the greater Fredericksburg area as an Urbanized Area by the Census Bureau. With this status came the federal requirements for a 3-C (continuing, comprehensive, and cooperative) transportation planning process and the establishment of the Fredericksburg Area Metropolitan Planning Organization (FAMPO). In order to receive federal funding for eligible projects the local governments of Spotsylvania, Stafford and the City of Fredericksburg must work together as the MPO to carry out transportation planning activities. The MPO is part of the George Washington Region (GW Region), including Spotsylvania, Stafford, King George, and Caroline County and the City of Fredericksburg. The Commonwealth of Virginia and the Federal Government play significant roles in determining whether or not the region's transportation network is adequate to meet current or future conditions and funding of identified needs based on those conditions.

There are a number of transportation plans for Spotsylvania County, the FAMPO region, and the Commonwealth of Virginia. The various plans are: VTrans2040: An Update to Virginia's Multimodal Long-Range Transportation Policy Plan, 2035 Virginia Surface Transportation Plan, Virginia Statewide Rail Plan, the FAMPO 2045 Long Range Transportation Plan (LRTP), FAMPO Transportation Improvement Program (TIP), the Six-Year Improvement Program (SYIP) for Interstates and Primaries (SYIP), and the Secondary Six-Year Plan. Each of these plans is a subset of this Transportation Plan. As each of these plans are revised, the Spotsylvania County Thoroughfare Plan (located within the Transportation Element of the Comprehensive Plan) will serve as the Plan from which projects are prioritized, selected and moved to the funding stage of development.

The VTrans2040 plan and Six-Year plans are available for review **HERE**. While not all of the transportation projects identified within the Six-Year Improvement Program are individually noted in this Comprehensive Plan, the Plan is consistent with those projects on the SYIP, available **HERE**. The FAMPO plans referenced above are available for review **HERE**.

Specific transportation improvement plans and studies are identified below. These plans have been incorporated by reference as an integral part of the Transportation Plan.

Corridor Studies and Project Implementation

VDOT and FAMPO maintain active online resources for tracking local and regional transportation projects and studies, and their details. Fredericksburg regional projects, searchable by status and locality through the VDOT website can be found **HERE.** The FAMPO link to major projects summaries can be found **HERE.** FAMPO Transportation Study information is **HERE.** The Spotsylvania County Transportation webpage includes links to various Transportation Programs, Studies and Documents as well as a link to the VDOT Statewide Road Projects Map, **HERE.** These resources show efforts underway to improve the local transportation system.

Lafayette Boulevard Corridor Study

An initial study was completed in October, 2009 by FAMPO, the corridor study focused on major highway improvements to the Lafayette Boulevard (U.S. Route 1 Business) corridor between U.S. Route 1 in Spotsylvania and Sophia Street in Fredericksburg. It documents existing conditions, provides recommendations, and identifies a plan for implementing corridor improvements consistent with the Thoroughfare Plan and Pedestrian accommodations. In early 2019, FAMPO initiated the Lafayette Boulevard Multimodal Study to look at lower cost highway and transit improvements and bicycle/pedestrian improvements for the same Lafayette Boulevard corridor area covered in the initial. Results for the transit and bicycle/pedestrian component of this study effort are expected by January, 2020 and the highway component for the study is expected by Spring, 2020.

I-95 Jackson Gateway Access Study

In December, 2008 the Fredericksburg Area Metropolitan Planning Organization (FAMPO) established a technical study work group composed of representatives from the Federal Highway Administration (FHWA), VDOT, Spotsylvania County, FAMPO, and Kimley-Horn with the goal to improve traffic safety and operations on the Interstate 95 mainline, interstate ramps, and intersecting arterial roadways such as US 1 and US 17. The group evaluated fourteen possible alternatives that were separated into three categories: a single interchange, a new interchange, and a split interchange. From these, a preferred alternative was selected and an Interchange Modification Report (IMR) was developed. The preferred alternative was selected because it was compatible with the Spotsylvania County Comprehensive Plan, demonstrated the highest capacity and lowest amount of congestion, had less impact on existing and future businesses, and was estimated at the lowest construction cost.

I-95 Exit 126 Interchange Modification Report (IMR) and Planning Study

In 2014, Kimley-Horn prepared an Interchange Modification Report (IMR) for the I-95 Exit 126 interchange in partnership with FAMPO, Spotsylvania County, VDOT, and the Federal Highway Administration (FHWA). The study included key information concerning traffic growth assumptions and future trip generation from four new large developments; Southpoint Landing,

Heritage Woods, Jackson Village, and Alexander's Crossing. Three alternatives were developed. These included; alternative 1 (deceleration lanes and new off-ramp lanes on I-95 and dual left-turn lanes at the off-ramp and US 1), alternative 2 (a new one-lane I-95 southbound off ramp referred to as the J-Ramp) and alternative 3 (which include all of alternative 1 and dual free-flow right turn lanes at the off-ramp and US 1, and an additional southbound through lane on US 1).

US 1 Corridor Study

As of September, 2019, VDOT has been working with consultants to develop a framework for the US 1 Corridor Study within Spotsylvania County. With a 2030 design year assumption, the goals of the Study include: access management improvements (consolidation of access points, traffic movement restrictions); safety; traffic operations (intersection operational improvements); incident management (I-95 relief valve). Study deliverables are expected in 2020 and are intended to outline improvements that may eventually be incorporated into the Spotsylvania County Comprehensive Plan's Transportation Element. The geographic focus of the study is the US 1 Corridor extending from Commonwealth Drive to the Caroline County line. This is an area of the County that has been chiefly been identified for mixed use and employment center development. Part of the study area extending along Route 1 from Massaponax to Thornburg is known as the "Jackson Gateway". "Jackson Gateway", this area of the Route 1 Corridor has been envisioned as an "economic driver" for the County in the future. This Study is well timed in that the full potential of the Jackson Gateway area has not yet been realized. Many areas remain undeveloped or underdeveloped along the corridor presently. This study proactively plans for the necessary improvements along the corridor that will ultimately complement business attraction and retention to the area going forward. County Planning staff expects that any recommended projects resulting from the Study would be incorporated into the Comprehensive Plan as a Transportation Element Specific Comprehensive Plan amendment within the coming years, or as part of the next five-year update cycle.

Route 3 Arterial Management Plan

The Route 3 Arterial Management Plan dated April 11, 2016 consists of an approximate 9.6 mile corridor section of Route 3 from Gordon Road (626) to Route 20. The study details access management standards for development along Route 3, signalization, cross-over closings, and cross-over improvements to enhance safety and traffic flow. The improvements would be triggered by development along the corridor. This Plan is used as a reference document when reviewing applications for development along the corridor.

Route 606 Corridor Study

The Route 606 Corridor Study dated March 27, 2015 consists of an approximate 0.75 mile corridor section of Route 606 from the I-95 interchange to approximately 800' west of Route 1. Key areas of concern include the southbound I-95 ramp, intersections with Route 1 and Dan Bell Lane, and

commercial entrances. The study includes access management standards to ensure traffic flows safely and efficiently between I-95 and Route 1 and includes a roundabout and divided roadway plan.

Massaponax Corridor Study

In August, 2006 the Board of Supervisors authorized the hiring of the firm of Michael Baker, Inc. to perform a Corridor Study which included the area of Jefferson Davis Highway (Route 1) and Interstate 95 with the Harrison Road intersection as the northern limit of the study and the Morris/Mudd Tavern Road intersection as the southern limit. The study area also included Mills Drive (Route 17).

The study evaluated existing and future conditions at intersections within the study area and developed alternatives to address needed improvements within the corridor. These included details on traffic signal spacing, locations of limited access routes, limits, and typical road sections for four, six, and eight lane sections of Route 1 to accommodate build out of the proposed land use plan.

In addition to these tasks, the study also evaluated improvements to both the 126 Interchange in Massaponax and the 118 interchange in Thornburg. The study investigated the feasibility of a new interchange (Jackson Gateway Interchange) between the two existing interchanges taking into consideration the planned hospital (at the time) and at the same time minimizing impacts to wetlands and existing development. Many of the recommendations resulting from the Massaponax Corridor Study have progressed over time to result in substantive projects pursued for implementation. The Study envisioned a number of improvements that were included in the County Thoroughfare Plan and have since progressed, including:

- Spotsylvania Exit 126 Interchange reconstruction concept design
- A new connector road linking Route 1 to Route 17
- Thornburg Exit 118 Interchange replacement
- New connector road linking Spotsylvania Avenue to Germanna Point Drive

It is good to acknowledge that some of the design and alignment details have changed over time as land use and development changes have occurred since the Study's release. Factors such as engineering, cost, land use and development change, design alternatives, project support all impact the ultimate "real world" project that results. The Study still merits mention as a fundamental guiding source of recommended transportation improvements for the Interstate 95 and Route 1 corridor from which planned, implemented, and for future implementation projects have their roots.

The Massaponax Corridor Study is dated September, 2007.

Route 1 & 208 Corridor Study

The corridor study dated December, 2018 was a comprehensive evaluation of Route 1 & 208 to account for the growth in the area and improve the mobility and safety of all road users. The study focused on Routes 1 and 208 within the context of the broader land corridor bounded by two limited access roadways, I-95 (to the east), and Route 17 (to the south). A total of nine (9) intersections were evaluated: Route. 17 and Germanna Point Drive; Spotsylvania Avenue and Market Street; Route 1 and Market Street; Spotsylvania Avenue and Mine Road; Route 1 and Mine Rd/Hood Drive; Route 208 and Hood Drive; Route 208 and Southpoint Parkway/Rollingwood Drive; Route 1 and Courthouse Road/Lafayette Boulevard; and Lafayette Boulevard and Falcon Drive/Mall Drive. The study included the evaluation of a possible roadway connection between Germanna Point Drive and Spotsylvania Avenue. It assessed the potential for reducing congestion on Route 1, and provided conceptual plans, cost estimates, and environmental assessments. The study was funded in part through the Virginia Department of Transportation (VDOT) Revenue Sharing Program.

Route 2 & 17 Corridor Study

The corridor study dated December, 2018 was a comprehensive evaluation of Business Route 2 & 17 from the Caroline County Line to the City of Fredericksburg. It examined opportunities for accommodating future growth, addressing current traffic congestion and mobility, and potential opportunities to improve safety. It provided opportunities to maximize alternate modes of transportation and provide more efficient routes for local circulation. The study also addressed the feasibility of connecting two Industrial Parks within the City of Fredericksburg and the County. The focus of the study was on the Route 2 & 17 roadway within the context of the broader land corridor bounded by the Rappahannock River (to the east) and the CSX railroad (to the west). The study included an evaluation of the six (6) signalized intersection on Route 2/17, Benchmark Road and the intersection of Lansdowne Road and Shannon Park. The study was funded in part through the Virginia Department of Transportation (VDOT) Revenue Sharing Program.

VDOT STARS Study: I-95 Northbound at Exit 126

The purpose of this study is to identify improvements at the Route 1 and Interstate 95 interchange that will mitigate existing congestion and safety issues. The study was prepared by Kimley-Horn and delivered in final form in July, 2018.

The goals of the STARS (Strategically Targeted and Affordable Roadway Solutions) Program are to develop comprehensive, innovative transportation improvements to relieve congestion bottlenecks and create projects that improve critical traffic and safety challenges to be programmed in the VDOT Six-Year Improvement Program.

The report documents the existing and future conditions, the alternatives analyzed, and the preferred alternative, the planning level cost estimate, and preliminary conceptual design.

This project was conducted in two phases: 1) design concept development to specifically determine if a second northbound Route 1 left-turn lane could be constructed under the I-95 bridge at the northbound I-95 signalized intersection, and 2) traffic analysis to document the future year no-build and build results within the study area, primarily focusing on the Rt. 1 at I-95 ramp signalized intersection.

VDOT STARS Study: Route 1 Corridor Study from Mine Road to Market Street

This section of roadway is heavily congested and contains the greatest number of crashes along Jefferson Davis Highway (US Route 1). It experiences an annual average growth rate of 2%. The approximately 0.9- mile study corridor is comprised of two (2) signalized intersections and one non-signalized intersection. As a Corridor of Statewide Significance (CoSS) and part of the National Highway System (NHS) this corridor plays an important role in incident management along the 1-95 corridor. The purpose of the study is to identify operational and safety improvements along the corridor.

Under the supported Alternative 2 scenario, results of the study would result in intersection improvements at the intersection of Route 1 and Mine Road, "Connector Road" (Part of Market Street Extended) and Hood Drive intersection, and a new intersection of a proposed "Connector Road" extending from Hood Drive to the Route 1 intersection.

VDOT Interstate 95 Corridor Improvement Plan Study

In 2019, VDOT conducted a study of potential I-95 improvements for the approximately 180 miles stretch of I-95 in Virginia. This study primarily focused on mainline improvements and interchange safety improvements that benefit I-95 mainline traffic operations and multimodal improvements, e.g., transit, vanpools, commuter parking, and TDM. The study did not consider new interchanges or modifications to existing interchanges which do not benefit I-95 mainline traffic operations. The study results will be used to prioritize I-81 Bill interstate funding that will become available for the I-95 corridor by late 2020. Spotsylvania's stretch of I-95 is included in the State's I-81 Bill I-95 segment from the Prince William County line to the North Carolina line. Starting in FY-21, it is estimated that at least $40 million/annually will be available. In Spotsylvania, widening I-95 from 6 to 8 lanes between Exit 130 to Exit 126 has been identified by the study as a recommended improvement. New Commuter bus service from Massaponax to Northern Virginia/DC and new commuter parking at Exit 118 were also listed as recommended improvements.

AIR QUALITY ASSESSMENT

Transportation conformity is a way to ensure that Federal funding and approval goes to those transportation activities that are consistent with air quality goals.

Conformity applies to transportation plans, transportation improvement programs (TIPs), and projects funded or approved by the Federal Highway Administration (FHWA) or the Federal Transit Administration (FTA) in areas that do not meet or previously have not met air quality standards for ozone, carbon monoxide, particulate matter, or nitrogen dioxide.

These areas are known as "nonattainment areas" or "maintenance areas," respectively. Regulations governing transportation conformity are found in Title 40 of the Code of Federal Regulations (40 CFR Parts 51 and 93).

In August, 2018, VDOT released a final air quality conformity analysis for the Fredericksburg Area Metropolitan Planning Organization financially constrained fiscal year 2018-2021 Transportation improvement Program and 2045 Long Range Transportation Plan. The conformity analysis was conducted for compliance with the federal transportation conformity rule (40 CFR Parts 51 and 93) and the corresponding state conformity regulation (9 VAC 5-151). The conformity assessment includes Spotsylvania County as part of the Fredericksburg region. Results of the analysis found a recommendation for a finding of conformity with all applicable requirements of the conformity rule.

Per the Virginia Department of Environmental Quality (DEQ) Section 174 of the Clean Air Act requires that areas of the Commonwealth that do not comply with ozone or fine particulate matter ($PM_{2.5}$) national ambient air quality standards (NAAQS) form lead planning organizations (LPOs). LPO members are elected officials from the localities in the nonattainment area and representatives of the Virginia Department of Transportation (VDOT), the Virginia Department of Rail and Public Transport (VDRPT), and the metropolitan planning organizations within the nonattainment area. Other people, such as private citizens and representatives of industry, military installations, and environmental groups, may also participate in the LPOs in an advisory capacity.

The purpose of the LPO in a nonattainment area is to assist in carrying out planning requirements for that area. Planning activities can include examining baseline emissions levels to determine necessary control strategies, examining transportation needs for future growth, and if necessary, creating plans for EPA review and approval to bring the area into attainment with the air quality standards. The extent of the planning requirements depends on the classification of the nonattainment area and the severity of the air pollution problem. The George Washington Air Quality Committee (GWAQC) has been established within the GW Region, including Spotsylvania County. For air quality, emissions modeling is required to be vetted in consultation with the LPO. Per FAMPO, Involvement of the VDEQ staff representative for that Committee in the local inter-agency consultation process for conformity is considered to fulfill that requirement.

The final report for the area can be found through the FAMPO website **HERE**.

Improving traffic flows and reducing traffic delays (less time on the road) through improvements to the transportation system and expanded mobility options via transportation alternatives all contribute to efforts to reduce vehicle emissions and improve air quality. Technological advancements through alternative energy sources to reduce emissions or expanded fuel efficiency also play an integral role.

TRANSPORTATION ALTERNATIVES

The principal modes of transportation within Spotsylvania County include vehicular, rail, transit, bicycle, and pedestrian. The vehicle-oriented roadway system is the most extensive transportation facility in the County by a wide margin and is directly affected by local land use decisions. The Thoroughfare Plan lists roadway improvements needed to maintain the system at acceptable levels of service. The focus of this section is on multi-modal transportation alternatives and concepts that lessen demand or increase capacity/safety of the roadway system at a relatively low cost. Provision of transportation alternatives are also critical to social equity and consideration of disadvantaged populations. Accessibility for Disadvantaged populations follows this Transportation Alternatives portion of the Transportation Plan.

In addition to addressing capacity improvements and transportation alternatives to achieve improved levels of service on County roads, AM and PM Peak hour traffic impacts are amplified locally due to significant out-commuting in the AM of County residents to employment located outside of the County, and return trips home during the PM. The US Census Bureau, 2016 American Community Survey found that nearly 62% (61.9%) of Spotsylvania County residents have employment outside their County of residence. Reduction in the prevalence of out-commuting in the County with increased employment availability within the County across a number of industries is beneficial. Reduced commute times and road miles travelled during AM and PM Peak hours would be beneficial to County residents, promote spending within the community as opposed to out of County during working hours (gasoline sales, lunches, etc.) and result in reduced burdens on local transportation infrastructure.

In 2019, the Fredericksburg Regional Alliance released an updated the Fredericksburg Region Commuter Workforce Study. The study was prepared by the University of Mary Washington Center for Business Research for the Fredericksburg Regional Alliance, George Washington Regional Commission and GO Virginia. 2019 Estimates found an estimated 83,117 people commuted outside the region in the first quarter of 2019. Of that regional total, 40,808 persons originated in Spotsylvania County. Far fewer persons commuted to Spotsylvania County from outside of the region (18,273), or commuted within the region to Spotsylvania County (22,145). The study estimates Spotsylvania County has a net loss of population who commute outside of the region on a daily working day basis of -22,535 persons. The top commuting destinations for Spotsylvania residents commuting outside of the Fredericksburg Region are most heavily directed toward northern Virginia and Washington DC. Smaller populations commute to the west and south (toward Richmond). As a whole, regionally approximately 216,848 people regularly commuted to (17.5%), outside of the region (38.3%), or within the Fredericksburg Region (44.2%). These commuting patterns put a strain on local roadways especially noticeable during peak commute times. Simply, regionally there are many vehicles on the roads all focused on commuting at similar times.

2018 estimates of commuter travel modes found overwhelmingly that commuters tend to use their own vehicles and drive alone (car, truck, or van). In Spotsylvania County, 52,379 persons drove alone to their place of employment. This was followed secondly by carpooling (8,605), public transportation (1,676), walking (426), other means (777), and lastly home based workers (2,967). As a means to reduce traffic loads on local roads, efforts to promote and expand transportation alternatives such as carpools, public transportation, walking or bicycling, and expanded locally based employment opportunities, will all help reduce local traffic burdens. Transportation efficiencies improvements including expanded use of Transportation Alternatives also reduce collective vehicle emissions with resulting improvements to air quality (smog reduction) with corresponding environmental and health benefits.

Transportation Demand Management

Transportation Demand Management (TDM) is a congestion relief strategy. The idea of TDM is to move as many people as possible through the use of techniques that minimize peak demands on the transportation system. These include alternative modes of transportation, flexible work schedules, and mixed-used development where proximity to live, work, play opportunities reduce necessity for lengthy on road travel. Those modes consist of high-occupancy-vehicle (HOV) lanes on the interstate system, ridesharing, park and ride lots, van pools, public and private transit, telecommuting, and provisions for walking and bicycling.

Investments in TDM are particularly stressed as regional needs within VTRANS 2040 where additional mode choice options and capacity and operational enhancements are necessary to reduce local traffic burdens. These TDM needs have been identified for improvements to roadways for vehicular travel, passenger rail, freight rail, bicycle and pedestrian connectivity and other transportation alternatives. Improving local transportation will not be achieved solely via continuous capacity enhancements on local roadways.

Transportation System Management

Transportation System Management (TSM) is the terminology given to represent minor improvements to the transportation system that enhance performance. TSM improvements typically consists of minor intersection and road improvements that afford a safer and more efficient road network. TSM improvements include, but are not limited to, implementation of turn lanes, acceleration/deceleration lanes, traffic signals, signal timing, intersection lighting, pavement marking, signage, horizontal/vertical grade improvements, drainage improvements, median installations, intersection realignments, roundabouts, intelligent transportation systems (ITS), and access management.

As the County continues to grow and develop, emphasis needs to be placed on identifying and implementing TSM projects that can be addressed through federal, state, and local funding. As developments occur within the County they too should address not only major transportation

improvements necessary to mitigate their impact, but also address any TSM improvements that will enhance the safety and operation of the road network directly impacted by the development.

Rail

Virginia's rail network is a valuable asset for the Commonwealth of Virginia. It provides an efficient means of moving freight and passengers both within and through the Commonwealth. By diverting freight and passenger traffic from road to rail, Virginia's rail network relieves congestion, saves lives, improves air quality, helps grow the economy, and complements the Virginia highway network while reducing capital and maintenance expenditures.

The Virginia Department of Rail and Public Transit (DRPT) compiles rail inventory, capacity, economic impacts data, and statewide rail planning as part of the Virginia Statewide Rail Plan. The Plan was last updated in 2017 and provides many additional resources considering the state of rail and rail planning in Virginia **HERE**.

Information concerning passenger and freight rail services in Spotsylvania County has been presented below. Additionally, the Spotsylvania County based Rappahannock Rail Museum has been included in this local rail profile in the interest of tourism, historic resource interpretation, and education.

Rail: Passenger Service

Commuter rail service to Northern Virginia and Washington, D.C. is provided by Virginia Rail Express (VRE), a semi-public agency. VRE is the tenth largest commuter rail agency in the U.S. and is a transportation partnership of Northern Virginia Transportation Commission and the Potomac & Rappahannock Transportation Commissions. Off Crossroads Parkway, south of U.S. Route 17 the VRE began passenger service to a new passenger rail station opened on November 16, 2015. Prior to the 2015 station opening in Spotsylvania County, the City of Fredericksburg downtown passenger rail station was the chief means of access to VRE service locally for Spotsylvania residents. The Spotsylvania station has 1,500 parking spaces for rail and commuter use, a small restroom, and a 700-foot platform with canopy. Presently the station serves VRE ridership exclusively. Since 2015, VRE boardings at the Spotsylvania Station have increased based on boarding survey data collected since station inception. Ridership has increased 17% since the Spotsylvania station opening in 2015. An October 3, 2018 survey of passenger boardings found a total of 789 passengers riding the rail from the Spotsylvania station generally between the hours of 5am and 7:30am distributed amongst eight VRE train arrivals at the station platform. The subsequent October, 2019 survey found a slight increase, up to 801 daily riders from the Spotsylvania Station.

The Spotsylvania Station is the southernmost station on the VRE system. The system serves points north, including the City of Fredericksburg, northern Virginia and Washington DC. Destinations served and the 2019 VRE schedule can be found in Table 2 below. This has been included for reference only and is subject to potentially change through the planning period.

Table 2: VRE Service Schedule

VRE Service Fredericksburg Line

← →

Train Number	Spotsylvania	Fredericksburg	Leeland Road	Brooke	Quantico	Rippon	Woodbridge	Lorton	Franconia / Springfield	Alexandria	Crystal City	L'Enfant	Union Station
300	4:54 a.m.	5:05 a.m.	5:12 a.m.	5:18 a.m.			5:40 a.m.			6:07 a.m.	6:16 a.m.	6:24 a.m.	6:32 a.m.
302 S	5:04 a.m.	5:15 a.m.	5:22 a.m.	5:28 a.m.	5:40 a.m.	5:49 a.m.	5:56 a.m.	6:03 a.m.	6:11 a.m.	6:23 a.m.	6:32 a.m.	6:40 a.m.	6:48 a.m.
304	5:20 a.m.	5:31 a.m.	5:38 a.m.	5:44 a.m.	5:56 a.m.	6:05 a.m.	6:12 a.m.	6:19 a.m.	6:27 a.m.	6:39 a.m.	6:48 a.m.	6:56 a.m.	7:04 a.m.
306 S	5:34 a.m.	5:45 a.m.	5:52 a.m.	5:58 a.m.	6:10 a.m.	6:19 a.m.	6:26 a.m.	6:33 a.m.	6:41 a.m.	6:53 a.m.	7:02 a.m.	7:10 a.m.	7:18 a.m.
308	6:00 a.m.	6:11 a.m.	6:18 a.m.	6:24 a.m.	6:36 a.m.	6:45 a.m.	6:52 a.m.	6:59 a.m.	7:07 a.m.	7:19 a.m.	7:28 a.m.	7:36 a.m.	7:44 a.m.
310 SB	6:20 a.m.	6:31 a.m.	6:38 a.m.	6:44 a.m.	6:56 a.m.	7:05 a.m.	7:12 a.m.	7:19 a.m.	7:27 a.m.	7:39 a.m.	7:48 a.m.	7:56 a.m.	8:04 a.m.
312 B	7:05 a.m.	7:16 a.m.	7:23 a.m.	7:29 a.m.	7:41 a.m.	7:50 a.m.	7:57 a.m.	8:04 a.m.	8:12 a.m.	8:24 a.m.	8:33 a.m.	8:41 a.m.	8:49 a.m.
314 SB	7:33 a.m.	7:44 a.m.	7:51 a.m.	7:57 a.m.	8:09 a.m.	8:18 a.m.	8:25 a.m.	8:32 a.m.	8:40 a.m.	8:52 a.m.	9:01 a.m.	9:09 a.m.	9:17 a.m.

S Special schedules for holidays and snow days.

Recognizing the potential draw of a new passenger rail station in Spotsylvania County along with historic trends of a large resident population commuting north for employment opportunities in northern Virginia and Washington, DC, the County identified the rail station area as well suited for higher density, higher intensity development with a mixed land use designation. This land use designation in the Crossroads area first appeared in the 2008 Comprehensive Plan and has been maintained in the spirit of creating a transit oriented development for easy access for VRE commuter trains. The area has nearby Fire/Rescue services with the recently opened Station 11 along Crossroads Parkway. Higher density residential and mixed use developments have been approved via rezoning in proximity to the Rail Station, consistent with the land use designations in the area including Crossroads Station (Rezoning R11-0004 incl. commercial and apartment development); Wheatland Townhomes (Rezoning R14-0007 incl. 105 SFA Units). Eventually, as the area grows and accessibility from the station is enhanced, the County may well benefit from a more two-way service that would bring travelers to the County for work opportunities and travel/ tourism opportunities.

Image 2: VRE Passenger Service Train at the Crossroads VRE Station

VRE also operates a maintenance and storage yard within Spotsylvania County off Crossroads Parkway just south of the VRE Station. The Spotsylvania maintenance yard for the VRE line is located just south of the Commuter rail station. The facility was recently expanded to include a

new storage track and a 33,000 square foot addition to the Service and Inspection building. See Image 3 below.

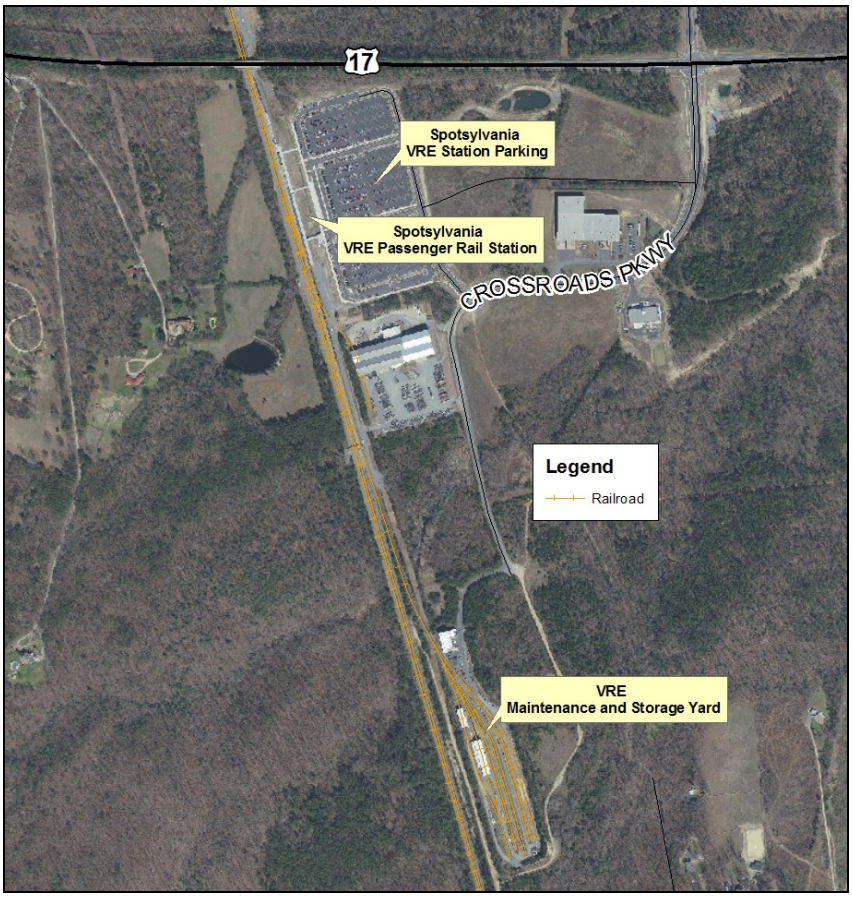

Image 3: Spotsylvania County VRE Operations

AMTRAK service traverses the County and provides additional rail passenger transportation options for passengers within the region with access up and down the east coast and through the entire national AMTRAK system. Within the region, AMTRAK service is available exclusively through Fredericksburg's downtown passenger rail station. VRE and AMTRAK share tracks owned and operated by freight rail carrier CSX Transportation, one of two Class I freight railroads in Virginia.

To address corridor congestion resulting from shared freight and passenger rail services, VRE, CSX and the Virginia Department of Rail and Public Transportation (DRPT) constructed a third track between Crossroads Parkway and Mine Road in Spotsylvania County to more efficiently accommodate passenger and freight rail traffic in the rail corridor, known as the Richmond, Fredericksburg and Potomac Rail (RF&P) Corridor within the region. VRE's long range plan includes completing triple tracking of the CSX main line between Spotsylvania and Alexandria and expanding service with additional peak and mid-day service.

RF&P Rail Corridor enhancements including addition of additional capacity via construction of a third track through the County complements efforts to further enhance passenger rail services along the east coast by adding High Speed Rail as part of the Washington, DC to Richmond Southeast High Speed Rail project (known as DC2RVA) whose project partners include the Virginia Department of Rail and Public Transit, U.S. Department of Transportation, Federal Railroad Administration. According to the DC2RVA team, increased congestion and demands on the rail corridor are linked to population growth, freight growth, Interstate 95 congestion driving additional rail demand, air travel congestion, limited existing capacity in the corridor infrastructure, opportunity to expand and enhance TDM alternatives, and air quality benefits.

According to the project partners leading the high speed rail initiatives, across the Country, the U.S. Department of Transportation has designated 10 high speed rail corridors in addition to the Northeast Corridor. The Washington, D.C. to Richmond project is the critical link connecting two high speed rail corridors on the East Coast, which are:

- **Washington, D.C. – Richmond, VA – Charlotte, NC**: In 1992 the U.S. Department of Transportation designated the Southeast High Speed Rail Corridor connecting Charlotte, NC, Richmond, VA, and Washington, D.C. This corridor designation has been extended south to Northern FL through subsequent actions of the Department.

- **Boston – New York – Washington, DC:** The Northeast Corridor is the only high speed rail service at present in the U.S. It is also the busiest passenger rail line in the U.S. by ridership and service frequency. Amtrak operates a 150 mph train service known as "Acela" in this corridor.

The Purpose of the DC2RVA project is to increase the capacity between Washington, D.C. and Richmond to deliver higher speed passenger rail, improve conventional speed passenger rail, expand commuter rail, and accommodate growth of freight rail service in an efficient and reliable multimodal rail corridor. This Project will enable passenger rail to be a competitive transportation choice for intercity travelers between Washington, D.C. and Richmond and beyond. The Project extends 123 miles along an existing rail corridor owned by CSX Transportation from the Long Bridge in Arlington, VA, to Centralia, VA in Chesterfield County, south of Richmond. DRPT has recommended specific rail infrastructure improvements and service upgrades to deliver higher speed passenger rail, improve conventional speed passenger service, expand commuter rail, and accommodate growth of freight rail service in the corridor. These recommendations are subject to review and approval by the Federal Railroad Administration (FRA) and the Commonwealth Transportation Board (CTB).

In May, 2019, the US Department of Transportation, Federal Railroad Administration and the Virginia Department of Rail and Public Transportation issued the Tier II Final Environmental Impact Statement and Final Section 4(f) Evaluation concerning the DC2RVA project. For Spotsylvania County, recommendations result in expanded capacity along the existing RF&P Corridor. Third track rail capacity expansion improvements are already in place in Spotsylvania County between the County line with the City of Fredericksburg to the Crossroads VRE station in Spotsylvania County. Plans would extend the third rail south beyond the Spotsylvania Crossroads VRE station. Capacity improvements would result in no changes to the Spotsylvania Crossroads VRE station.

The Washington to Richmond segment will provide the critical link between the Northeast Corridor and the rest of the Southeast High Speed Rail Corridor. Spotsylvania County and its citizens have been involved in review and comment concerning service and alternatives throughout the Environmental Impact Statement process. For more information regarding the DC to Richmond Southeast High Speed Rail project, visit the project website **HERE**.

Prospects for passenger rail service were greatly expanded in December, 2019 with the announcement of Virginia's acquisition of 350 miles of rail right-of-way, 225 miles of track and intended construction of a new Long Bridge over the Potomac River, adding capacity to the current Long Bridge that operates at 98% capacity during peak hours. The new Long Bridge will include dedicated tracks for passenger rail service. Presently passenger rail is shared and subordinate to freight rail along the corridor. Additional rail capacity will be added in northern Virginia. Announced changes to the rail corridor within the next ten (10) years include doubling Amtrak train service through Virginia, hourly Amtrak service between Richmond and Washington D.C., and expanding VRE service by 75% along the I-95 corridor with added weekend service (including the VRE's Fredericksburg Line). Service frequency along VRE's Fredericksburg Line (including the Spotsylvania VRE Station) is expected to increase from eight to thirteen round trips on weekdays by 2030. Weekend VRE service is initially projected to include a minimum of two northbound trains originating at the Spotsylvania station with two return trips in the afternoon or evening. The capacity and service enhancements have been projected to remove 5 million cars and 1 million trucks from Virginia highways annually. These improvements are expected to greatly enhance both interstate and intrastate passenger rail service and should further boost Spotsylvania's Crossroads VRE area mixed use node (per the future land use map).

Rail: Freight Service

Freight rail offers a number of benefits to the transportation system including but not limited to: fuel efficiency and emissions versus truck traffic; ability to move large quantities of goods from ports and distribution hubs to market; avoided truck trips along road corridors resulting in reduced traffic volumes and wear and tear upon roadways.

Spotsylvania County's RF&P Rail Corridor is part of a significant freight and passenger rail route along the east coast of the United States. The corridor has been experiencing increasing demands and rail traffic volumes. As noted prior, the rail corridor serves a dual use for passenger train and freight rail transportation. According to the Virginia DRPT, demand for freight movement through and within the corridor is growing as economic activity and population increase. Ongoing expansion of Virginia's deep water ports, rail-dependent industries, and intermodal facilities further increases the need for efficient shipment of freight. According to the Virginia DRPT's 2017 Virginia Statewide Rail Plan, the mining and extraction industry sector has been the leading source of freight tonnage in the Virginia freight rail system however the sector is not projected to grow

through 2040. Agriculture and manufactured goods however are expected to nearly double their tonnage in all freight movements through 2040.

Table 3: 2017 DRPT Virginia Railway Plan RF&P Corridor Summary

Subdivision:	RF&P Subdivision
Owner	CSX
Operator	CSX
Line Heritage	Richmond, Fredericksburg & Potomac Railroad (RF&P)
Subdivision Route / Mileage	Washington, District of Columbia-Greendale (Richmond), Virginia; 109 miles
FRA Track Class	Class 4
Track Configuration	2-4 main tracks
Maximum Authorized Speed Freight	40-60 mph freight
Maximum Authorized Speed Passenger	70 mph passenger
Wayside Signals	Centralized Traffic Control (CTC) and Automatic Train Control (ATC)
Method of Operation	Centralized Traffic Control (CTC) and Automatic Train Control (ATC)
Maximum Allowable Gross Weight	286,000 lbs.
Clearances	Cleared for trailers (TOFC), double-stacks (COFC), and autorack railcars (20' 2" Above Top of Rail)
Current Traffic Density (2015) in Million Gross Tons	116 MGT
Average Number of Trains per Day	47.1
Train Types	• Intermodal, general manifest, and bulk freight trains • Amtrak long-distance and intercity passenger trains • Virginia Railway Express commuter trains
Industrial Leads	Dahlgren Branch: Dahlgren Junction-Sealston, Virginia; approximately 10 miles; 286,000 lbs. maximum allowable gross weight
FRA Excepted Track	N/A

The extent of freight rail service and rail side accessibility within Spotsylvania County is limited as Spotsylvania County does not have an extensive network of rail traversing the County. CSX is the only freight rail operator in the County operating along a single rail corridor in the northeastern corner of the County. The rail corridor within the County extending from the City of Fredericksburg line to the Caroline County line is approximately 9 miles in length of which approximately 5.7 miles are located within the County's designated Primary Development Boundary. Within the Primary Development Boundary staff notes large stretches of the rail corridor have already been developed, are bordered by protected Civil War Battlefield lands by the National Park Service (Fredericksburg Battlefield) and Civil War Preservation Trust (Slaughter Pen Farm), or limited by significant natural resources including wetlands, steep slopes, resource protection areas. From a

land use perspective, the areas within the Primary Development Boundary are where higher intensity uses including industry and distribution centers are envisioned. Some of these industrial and distribution prospects may require or benefit from rail service as part of their site selection process as a necessary element of their manufacturing and distribution chain. The Spotsylvania Department of Economic Development has confirmed that rail served sites are not often sought locally by economic development prospects but they do occur on occasion and represent very real opportunities for economic development and local employment benefits as well as tax revenue generation and positive spin off economic activity within the community. Considering the prospect of freight rail and economic development prospects, the mapped Exhibit 1 below was created to identify all parcels of 50 or more acres located within 1/4th and 1/2 mile of the rail corridor or rail spurs not already built out or protected via conservation easement or preservation ownership. The analysis shows the land inventory in relation to the 2013 adopted Primary Development Boundary.

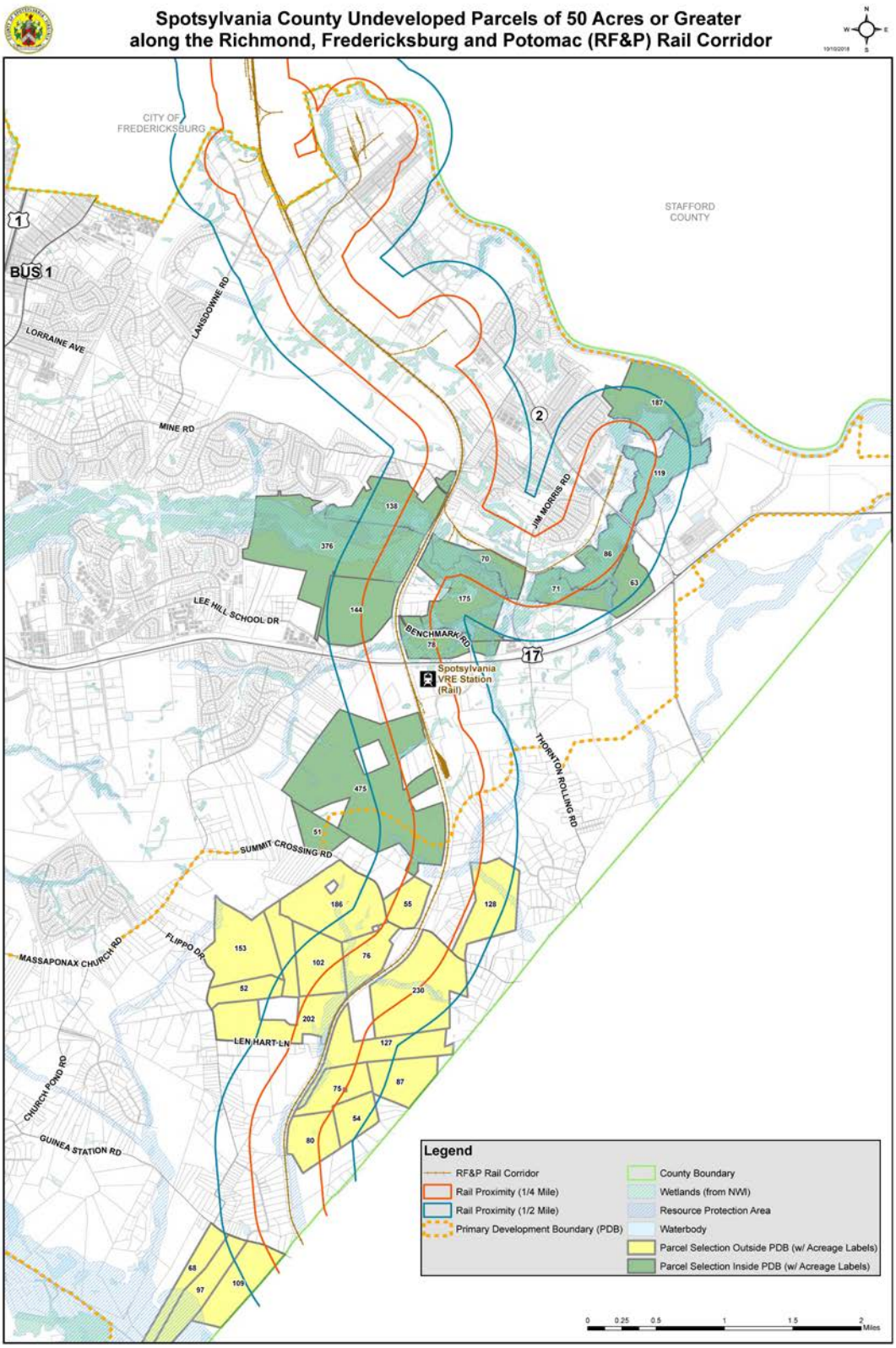

Exhibit 1: Large Parcels in Proximity to Rail Corridor

Presently four rail spurs provide feeder rail into the mainline rail corridor within the County, including: (1) Bowman Center Spur serving industrial center users and the Rappahannock Railroad Museum; (2) Shannon Drive, serving industrial property; (3) Urban Systems Development Property (former General Motors Plant), including idX Virginia plant; (4) Ruffins Pond spur serving Culpeper Wood Preservers. Within the planning period, two of the four rail spurs may to scale back in usage or cease to exist as viable rail spurs due to development impacts or land use trend changes in immediate proximity to the spurs. Tentative plans for development of the "back 40 acres" behind the idX Virginia plant would shorten the rail spur and shifts in land use around the Bowman Center appear to be reducing rail viability there. Such reductions further limit the inventory of sites available for rail ready service.

Rail: History, Education and Interpretation

The Rappahannock Rail Museum (RRM) is located at 11700 Main Street in the Bowman Center off Routes 2/17. The RRM provides railroad-related education to the public, including information about railroad lines and related events in the region, as well as the preservation of historical railroad equipment in the greater Spotsylvania and Fredericksburg areas. The Spotsylvania County Department of Economic Development and Tourism confirms this is a popular tourism destination for the County. Visitors are welcome to tour the museum Saturdays from 9 a.m. to noon. From Mid-March through October (and other Saturdays weather permitting), visitors are welcomed aboard the maintenance of way train ("little yellow train") for short rail excursions to not only learn, but experience how rail workers in the mid 1900's commuter to work sites. All train rides are subject to crew availability, weather, commercial rail activity and other factors beyond RRM's control. The RRM is supported solely through donations and volunteers.

Following a two-year effort, in September, 2018 the museum celebrated an expansion that includes model train exhibits in the HO, O. and N scale layouts as well as exhibit of additional memorabilia from local collections.

Additional information about the RRM can be found **HERE**, or contact the Spotsylvania County Economic Development & Tourism office at (540) 507-7205.

Motor Freight

VTRANS 2040 conducted an analysis of regional freight accessibility. Per VTRANS and as logic would say, in addition to railways, US Route 1/I-95 corridor is the major corridor for freight movement throughout the region. Accessibility of freight origins to these roadways is dependent primarily on the proximity of the origin to highway access ramps. Most activity centers in the region are within an eight-minute drive from a major arterial ramp. VTRANS 2040 notes that an average of 98% of the dollar value of all goods that are moved through the region move by truck. Only 1% of the total dollar value of goods are moved by rail through the region. Such a high dependence on road based freight transport further contributes to the regional traffic burden.

VTRANS acknowledges need for capacity and operational improvements of the local rail corridor to enhance rail reliability that could reduce dependence on road based, motor freight options.

The location of warehouses and distribution centers is another important factor in the level of freight accessibility for the region. As VTRANS 2040 observes, most warehouses and distribution centers in the Fredericksburg Region are clustered around the I-95/US Route 1 corridor in and around the City of Fredericksburg. Most areas adjacent to the I-95/US Route 1 corridor are within a 22-minute drive to warehouses and distribution centers. From a land use and operational efficiency standpoint, nearness to major freight corridors for complementary warehousing and distribution uses is an important land use planning consideration. The closer they are to their chief transportation routes into and out of the region helps speed their efficiency and marketability of sites while lowering the extent of freight impacts on roadways inland, away from these corridors. The Future Land Use Chapter is established to help guide land use recommendations and can play an important role defining areas "best suited" for freight based operations.

Freight Planning- Generally

The FAMPO 2045 Long Range Transportation Plan has identified a number of Regional Freight Movement Needs. Needs were identified within FAMPO's designated regional freight network. Within Spotsylvania County, the following improvements identified in Table 4 below have been identified in the 2045 LRTP for Freight:

Table 4: Regional Freight Movement Improvements Needs for Spotsylvania County

Jurisdiction	Project Name	Termini	Description
Fredericksburg/ Spotsylvania	Shannon Drive Extension	From the end of Shannon Drive to the end of Belman Rd	2-lane extension
Spotsylvania	Lansdowne Road and Shannon Drive Intersection Improvements	0.25 miles from intersection in each direction	TBD in Rte. 2/U.S. 17 Bus. Study (Spotsylvania)
Spotsylvania	U.S. 1 and Hood Drive /Mine Road Intersection Improvements	0.25 miles from intersection along Hood Drive and U.S. 1	TBD in Rte. 208/U.S. 1 Study (Spotsylvania)
Spotsylvania	U.S. 1 and I-95 NB Entrance Ramp Intersection Improvements	.25 miles south along U.S. 1 from intersection, .75 miles down NB I-95 entrance ramp	TBD in VDOT STARS Study
Fredericksburg	Route 2 and Beulah-Salisbury Drive Intersection Improvements	0.25 miles from intersection along Beulah-Salisbury	Right turn lane from Beulah-Salisbury Dr to Dixon St
Spotsylvania	Route 2 and Lansdowne Road Intersection Improvements	0.25 miles from intersection in each direction	TBD in Rte. 2/U.S. 17 Bus. Study (Spotsylvania)
Spotsylvania	Route 2 and Joseph Mills Drive Intersection Improvements	0.25 miles from intersection in each direction	TBD in Rte. 2/U.S. 17 Bus. Study (Spotsylvania)
Spotsylvania	Route 2 and Benchmark Road Intersection Improvements	0.25 miles from intersection in each direction	TBD in Rte. 2/U.S. 17 Bus. Study (Spotsylvania)
Spotsylvania	Route 2 and Jim Morris Road Intersection Improvements	0.25 miles from intersection in each direction	TBD in Rte. 2/U.S. 17 Bus. Study (Spotsylvania)
Spotsylvania	Route 2 and U.S. 17 Intersection Improvements	0.25 miles from intersection in each direction	TBD in Rte. 2/U.S. 17 Bus. Study (Spotsylvania)
Spotsylvania	Route 2 Widening	From .1 miles north of Beulah-Salisbury Drive to U.S. 17	Widen to 4 lanes divided with bike/ped accommodations

Aviation

There are two airports in the George Washington Region that provide general aviation service. First, Shannon Airport is significant to the local transportation system as it serves as a gateway for VIPs and business men and women working in the area. Shannon Airport is located in Spotsylvania County, on Tidewater Trail (Route 2). Shannon Airport is classified as a Non-Reliever General Aviation- Community airport as per the Virginia Department of Aviation. The classification is described as serving the needs of businesses and recreational users but often serve a more limited market area than the regional airports. They provide services such as aircraft rentals, flight instruction and AvGas fuel. In 2016, there were 93 aircraft based at the Shannon Airport. Statewide of the 49 non-reliever general aviation airports, the Shannon Airport had the third highest number of based aircraft (93), behind only Culpeper Regional (127) and Winchester Regional (105).

Based on the Virginia Department of Aviation's 2018 report entitled "Virginia Airport System Economic Impact Study" Spotsylvania County based Shannon Airport is responsible for the creation of approximately 69 jobs which represent approximately 2.5 Million dollars in wages and approximately $6.8 million in total economic activity. The Shannon Airport has not been identified by the Federal Aviation Administration (FAA) as a National Plan of Integrated Airport Systems (NPIAS) airport as of their 2016 designations. As a result, the airport has not been forecasted by the FAA for future activity (total volume of operations). NPIAS designation provides eligibility for airports to receive federal funding for airport infrastructure development and improvements. More information regarding the FAA NPIAS can be found **HERE**.

The FAMPO 2045 LRTP notes there are no plans to expand the airport because the adjacent geography prevents it. There is a highway located to the north (Tidewater trail) and a railroad directly to the south (RF&P). Staff notes the airport is bounded on the east by the 200-acre Slaughter Pen Farm, under battlefield protection easement by the Civil War Trust. An existing, developing industrial park is to the west. Improvements to the airport going forward are expected to be for onsite facilities improvements and operational efficiencies. The airport does intend on improving facilities and expanding in place however by maximizing site efficiency. In order to further improve airport operations and attract more users to the site, in 2020 airport officials have identified a number of offsite transportation projects that warrant consideration within the planning period. The elevation of Tidewater Trail in relation to the nearby airport runway terminus has been identified as problematic. Recommendations include seeking to lower the elevation of the road by 4' to 5' to ensure passing vehicular and truck traffic remain below the airport runway grade. At present, truck traffic especially interferes with the runway horizon there. Additionally, accessibility to the airport via Shannon Airport Circle is not ideal. Lacking a more substantial means of access, the current configuration also inhibits wayfinding to the airport. The airport lacks right turn lane and a left turn lane from Tidewater Trail. The current access road is narrow and carries traffic not only to and from the airport but also from nearby businesses including the United Way, Wawa, Zentech. Airport officials have envisioned that a new access road may be viable, extending between Shannon Park Drive and the airport, providing the potential for a new and improved point of access for all the aforementioned businesses. The existing point of access would either be closed or limited to a right-in, right-out format only, benefitting traffic along the Tidewater Trail corridor by reducing conflict points and enhancing safety along the corridor as a result. This Plan recommends continued exploration of this alternative access route.

Secondly, the Stafford Regional Airport is located in Stafford County off of exit 136 and Centreport Parkway. The Stafford Regional Airport is classified as a General Aviation- Reliever airport. Such airports are described as general aviation airports located in metropolitan areas that serve to reduce congestion at nearby commercial service airports by providing comparable landside and airside facilities to general aviation operators. As of 2016, there were 68 aircraft based at Stafford Regional Airport.

Statewide the 2018 study notes an overall decrease in the number of certificated active airmen; down 43,000 (-7%), and aircraft; down approximately 13,000 (-6%) from 2010 to 2015 utilizing general aviation airports. However, during the same period increases have been noted for active wing turboprop (350 or 4%), active wing turbojet (1,950 or 17%) and active rotorcraft (700 or 11%).

The complete Virginia Department of Aviation's 2018 Virginia Airport System Economic Impact Study can be located online **HERE**.

There is no commercial service classified airports within the GW Region. Outside of the GW Region, there are major commercial airports that provide both air freight and passenger services to the larger area for both domestic and international passengers. Two are located in the Washington, D.C. area, including Washington Reagan National Airport- approximately 64 miles to the northeast, and Washington Dulles International Airport- approximately 80 miles to the northwest. 60 miles to the southeast is the Richmond International Airport. Per VTRANS 2040, the Fredericksburg Region is located within a one-hour drive to three freight airports, Richmond International, Reagan National, and Dulles International.

To the southwest, the Charlottesville Albemarle Commercial Service Airport- approximately 60 miles, has seen growth in popularity, with a 51% increase in passenger enplanements between 2010 and 2016 as per the Virginia Department of Aviation's 2018 study. An increase in larger aircraft landings is a contributing factor.

More distant, the Baltimore-Washington International (BWI) Airport- approximately 100 miles to the northeast, is also accessible within the greater region via Interstate 95 or Route 301 as primary routes as well as Amtrak passenger rail service from the Fredericksburg passenger rail station to the BWI station with shuttle service to the terminal.

Airport Protection Overlay District

Consistent with requirements of the Code of Virginia Sect. 15.2-2294, the Spotsylvania County Zoning ordinance has an established Airport Protection Overlay District considerate of its one County based airport, the Shannon Airport. As per County Zoning Code Sect. 23-7.7.1, the Airport Protection Overlay District is established to provide for the safe use of Shannon Airport by creating additional regulation of the use of land surrounding the airport, in addition to existing zoning districts, which will protect over flying aircraft from conflicts with land uses, objects, and natural foliage on the ground; and, to protect the safety of air navigation around the airport by limiting the height of structures and foliage under the four (4) approach paths to the airport and generally within nine thousand (9,000) feet of the runway surfaces. Anything above the established height limitations could obstruct aircraft using the airport, create a safety hazard to airport operations, and unnecessarily endanger people, property and land use activities in the vicinity of the airport. Standard zoning height limitations and land use regulations alone are insufficient to provide the required protection for air navigation, according to Federal specifications.

Aviation: History, Education and Interpretation

Like Rail discussed in the previous section, Aviation is highlighted local attraction with focus on aviation history, education and interpretation for residents and tourists at the Shannon Air

Museum. The museum is located on the grounds of the Shannon Airport and was founded in the 1970s. Throughout the year the museum displays their rare collection of vintage aircraft, numerous aviation related exhibits and hosts a variety of aviation related events and festivals.

Additional information about the Shannon Air Museum can be found at their website **HERE**.

Commuter Bus Services

FREDericksburg Regional Transit (FRED) provides local linkages to area commuter lots and VRE passenger rail services at the Fredericksburg VRE and Amtrak station. Within Spotsylvania County, Route VS1/VS2, connects two park and ride lots along Plank Road (including Gordon Road commuter lot and Salem Church Crossing commuter lot) with VRE service from downtown Fredericksburg. Per the FY2018 - FY2027 Fredericksburg Regional Transit Development Plan, activity is dispersed fairly evenly between the two lots. Overall activity is higher in the afternoon and evening. This route serves six trains in the morning and seven trains in the afternoon and evening. The first run leaves Gordon Road Commuter lot at 4:35 a.m. and the last run of the day returns to Gordon Road at 8:45 p.m. The route is timed to meet VRE trains and runs Monday through Friday. Reporting 2015 figures, the Regional Transit Plan noted 37,677 total one-way passenger trips utilizing Route VS1/VS2.

Per the Regional Transit Development Plan, additional VRE feeder service has been targeted to include the Spotsylvania VRE Station. Plans would provide feeder service from the planned park and ride lot near Cosner's Corner along the Route 1 corridor with stops in close proximity to residential core areas en route to the station. Annual ridership is estimated to be 32,000 in FRED's target year of 2021 for the VRE feeder service rollout to Spotsylvania. Spotsylvania County transportation staff has also included additional VRE feeder service with the County Smart Scale round 4 projects that would provide additional VRE feeder service from the Route 208 commuter lot off Houser Dr. to the Fredericksburg Train Station that will meet all VRE trains in the morning and afternoon in the future.

Additionally, the Martz Group Virginia provides service from the various park and ride lots in Spotsylvania County to destinations in the greater Washington, D.C. Metro area, as well as Richmond.

The Martz commuter buses stop at the following locations within the FRED service area:

- Route 17 and Falls Run Drive commuter lot, located at 633 Warrenton Road (Stafford County)
- Route 3/Salem Church Road commuter lot, located at 4250 Plank Road (Spotsylvania County)
- Route 208 Park and Ride, located at 10800 Hood Drive (Spotsylvania County)
- Route 610 North Lot – North Commuter lot, located on Staffordboro Boulevard in Stafford.

I-395/95 Commuter Choice Program

In 2019, the Commonwealth of Virginia initiated the I-395/95 commuter choice program with the Northern Virginia Transportation Commission serving as the administrator. This program provides dedicated funding from the I-395 Express Lane project for Transit and TDM improvements for the I-395/95 corridor from the Washington, DC line to Exit 126 in Spotsylvania. See Exhibit 2 for eligible localities in Virginia. Projects must provide some benefit to I-395 Express lane users in order to be eligible for program funding. Eligible types of projects include:

1. New or enhanced local bus service
2. New or enhanced commuter bus service
3. Park and ride lot(s) and access
4. Roadway improvements (Corridor management & ITS)
5. Transportation System Management (TSM)/Transportation Demand Management (TDM)
6. Vanpooling/Carpooling

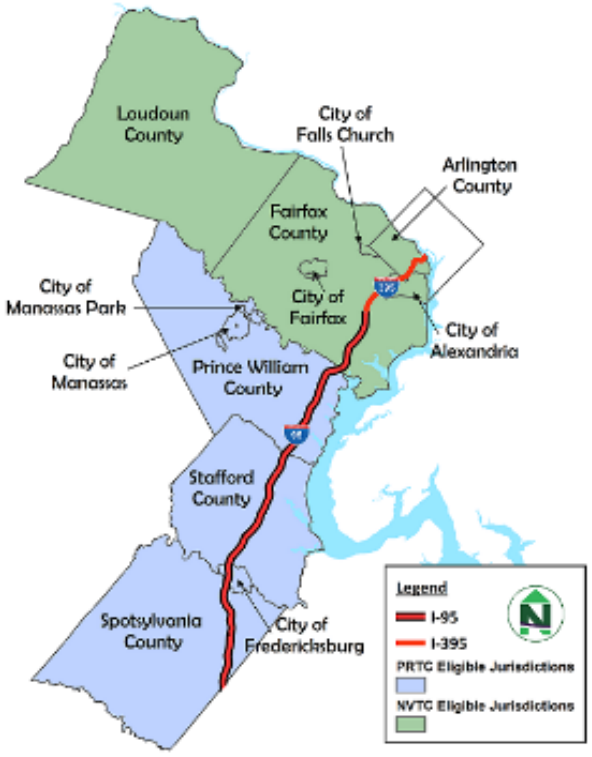

Exhibit 2: Eligible Jurisdictions

The amount of funding available was $15 million per year for the first year in FY-20 with a modest escalation of this amount expected on an annual basis in the future. The first round of projects was approved by the Commonwealth Transportation Board in October, 2019. The application period for the second round of projects will begin in Fall, 2020. Potential eligible projects in Spotsylvania County in the future include new express bus service from the Rte 3 Corridor or Massaponax to Northern Virginia/DC, local feeder bus to AMTRAK/VRE, new or enhanced commuter lots, and I-95/Rte 1 corridor management, ITS, TSM, or TDM improvements.

Park and Ride Lots

There are four (4) Virginia Department of Transportation (VDOT) operated park and ride lots in Spotsylvania County and one (1) additional expected within the planning period. One is located on the south side of Route 3 at Salem Church Road (Route 639), which has approximately 670 parking spaces. This is a lighted park and ride lot that includes transit service, and bicycle racks. A second lot is located at the corner of Route 3 and Gordon Road (Route 627). The lot was expanded from 600 spaces to 1,061 spaces in 2015. In addition to the additional parking spaces, the $7.2 million improvement project added: A dedicated High Occupancy Vehicle (slugging) pickup and drop off area; bus lane and bus parking bay; second entrance to the lot accessible from Harrison Road; pedestrian sidewalk connecting the lot with surrounding commercial development. The third park and ride lot in Spotsylvania County is located on Houser Drive off Route 208, which has 823 spaces. This is a lighted park and ride lot that includes transit service access. The fourth is a new 1,500 space lot opened in 2015 with the opening of the new Spotsylvania VRE Passenger Rail station just south of Route 17 off Crossroads Parkway. This is a lighted park and ride lot that includes passenger rail station access, bathroom facility, transit service, and bicycle racks.

Following the results of a 2005 Commuter Lot study combined with County growth and demands upon the existing park and ride lots, the County set a transportation objective in the 2008 Comprehensive Plan seeking the development of a new lot in the Massaponax area. A 2010 screening of potential locations resulted in a favorable recommendation of a location that had been identified as a viable alternative site in the 2005 study at Route 1 and Commonwealth Drive. The project has progressed since that time to site evaluation, engineering, design, and the project has been fully funded via VDOT Smart Scale with a projected opening in 2021. The lot will have approximately 700 parking spaces. Amenities will include parking lot lighting, bus and ridesharing loading areas, bicycle racks, and Route 1 frontage shared use path for future connectivity to adjoining developments and the Spotsylvania Parkway Trail system. This site is located in the midst of residential, commercial, industrial uses, and large mixed use areas with approved projects including Jackson Village, Heritage Woods, Alexanders Crossing.

On October 3, 2018 a commuter lot utilization survey was conducted for all four of the existing commuter lots within the County. Results of that survey are below:

Table 5: Existing Commuter Lot Inventory

Commuter Lot	# Spaces	# Used	Utilization
Route 3 - Old Salem Church	672	371	55%
Route 3 - Gordon	1052	388	37%
Courthouse/Houser	805	406	50%
VRE Spotsylvania Station	1486	711	48%

Though lot utilization varies from day to day it appears there is not presently a warrant in the foreseeable future for additional capacity beyond what's expected within the next couple years with a new Commonwealth Drive lot at Route 1. Beyond the current inventory of commuter lots and looking to potential new geographic areas to serve as noted prior in reference to the VDOT Interstate 95 Corridor Improvement Plan Study, a new commuter lot is being considered at exit 118 (Thornburg). This lot would be expected to serve a future market currently well removed from the existing inventory of commuter lots in the County.

There are a variety of factors that could change commuter lot utilization over time. One influencing factor is geographical convenience and shifts in commuter behavior. The opening of the Spotsylvania VRE station and commuter lot expanded ease of access for VRE ridership within the County and added commuter parking capacity to an area of the County that had not had a nearby commuter lot previously. With expected population growth forecasted to continue there is value in continued monitoring of commuter lot usage trends to assure adequate capacity based on demand is provided.

Vanpooling

A vanpool is a group of commuters who have joined together to ride to and from work. The Potomac and Rappahannock Transportation Committee established the "Vanpool Alliance" in October of 2013 organizing 207 vans. In 2019, the Vanpool Alliance identifies numerous regional benefits associated with higher occupancy commuting options. With a focus on vanpools, regional benefits include reduced traffic congestion, lower commuting costs (allowing several users to split costs by vanpool as opposed to driving alone costs of gasoline, maintenance, insurance, tolls, etc.), improved air quality (higher occupancy vehicles equates to fewer cars on the road and less total emissions), quality of life, and business benefits.

As of Fall, 2018 the Vanpool Alliance has 665 vans and 56 vendors operating in the region. 49% of the Vanpool Alliance fleet originate from Spotsylvania County. The region receives 5307 federal funds based on transit vehicle-miles, passenger miles and other factors. Multiple agencies have established ridesharing services in the region including Department of Rail & Public Transportation (DRPT) and GWRideConnect which assists commuters who are seeking vanpools. The region's vanpool program is one of the most successful of its type in the United States. Per feedback received in October, 2018, GWRideConnect supports the largest vanpool fleet in the State (350 vanpools supported with an average 4,200 daily users). Of the 350 reported, 107 vanpools

originate from Spotsylvania County. More information regarding GWRideConnect can be found **HERE**.

Ridesharing

GWRideConnect is the Transportation Demand Management (TDM) Agency operated by the George Washington Regional Commission (GWRC) that serves the residents of the region. GWRideConnect promotes ridesharing and TDM techniques to assist citizens seeking transportation options to their workplaces and other destinations. It is the goal of the program to promote, plan and establish transportation alternatives to the single occupant vehicle, improving air quality, reducing congestion and improving the quality of life for the citizens.

GWRideConnect is the recognized source for TDM and transportation information and assistance in the George Washington Region. The program offers a free ride matching program in addition to a wide variety of transportation options and solutions connecting citizens to available carpools, vanpools, commuter buses, slug lines, Fredericksburg Regional Transit and the Virginia Railway Express.

GWRideConnect Program Services Includes 11 Work components:

- Ride matching
- GWRideConnect Website
- Follow Up and Database surveys
- Vanpool Formation
- Advantage
- Carpool Formation
- Transit Options Promotion and Support
- Advertising and Promotion
- Commuter Lots
- Employer/Realtor/New Resident Outreach
- TDM, Bike and Pedestrian Promotion

High Occupancy Toll (HOT) Lanes

High occupancy toll roads were built between exit 152 in Prince William County and exit 143 in Stafford County in 2014, with a revised and extended merge area just south of the Garrisonville Road exit opening in 2018. New toll roads are in the process of being built along the Interstate 95 corridor from the exit 143 area of north Stafford County down to Route 17 in south Stafford County to increase capacity to I-95. A new I-95 Interchange just north of the Welcome Center in Fredericksburg is in the planning stage as well. This will result in additional capacity being added to the Rappahannock River Crossing. These improvements are regionally significant and expected to benefit commuter populations within the larger area including Spotsylvania County.

In 2009, the George Washington Toll Road Authority was established which encompasses the City of Fredericksburg and the Counties of Spotsylvania and Stafford for the purposes of alleviating highway congestion, promoting highway safety, expanding highway construction, increasing the utility and benefits and extending the services of public highways, including bridges, tunnels and other highway facilities, both free and toll, and otherwise contributing to the welfare of the Commonwealth and the George Washington Region. The Authority is governed by a ten-member board of directors. Three members are appointed from each of the original participating localities from among their elected officials, and one member is a designee of the Commissioner of the Virginia Department of Transportation.

Local Bus Service

FREDericksburg Regional Transit (FRED) provides local transit services to the County through a partnership in which the County funds a portion of the service after federal and state grant funding has been applied to funding the service planned for the County. FREDericksburg Regional Transit (FRED) operates bus routes in Spotsylvania County providing weekday services, except holidays. Routing and scheduling is coordinated by FRED and subject to change potentially as demand warrants or as new stop locations are identified. Within Spotsylvania County, FRED recently completed (January 2020) a major investment with the construction of the Lee's Hill Transfer Center (Pictured in Image 4 Below).

Image 4: New Lee's Hill Transfer Station

This new transfer center accommodates 5 buses safely in staggered bus stalls to safely load/ unload passengers, a 20'x10' shelter with a bench, trash receptacle, bike rack, and solar lighting inside to illuminate the shelter to provide additional safety. This new transfer station allows routes in the City of Fredericksburg (F2 and F3) and Spotsylvania (S1, S4, and S5) to meet every hour to allow passengers to transfer to other buses to reach destinations in other locations in the region.

Per the Fredericksburg Regional Transit Development Plan (2018-2027), the need for a transfer center at the Lee's Hill bus transfer stop was identified by FRED as new development occurred in the Market Street/ Spotsylvania Avenue area. As part of the development agreement, the developer agreed to provide a strip of land adjacent to the parking area of the Rappahannock Goodwill Industries building to be used as a bus transfer location. The Site Plan (ST18-0053) for this transfer location was approved January 9, 2019. In addition to significant improvements at the Lee's Hill transfer site, FRED has identified need for infrastructure improvements at bus stop locations throughout the system, focusing especially on high volume boarding locations. Considerate of waiting time, inclement weather, personal physical limitations, FRED has identified need for additional shelters and benches at stop sites. Such improvements help the rider experience. These are viable infrastructure improvements that enhance accessibility to local fixed route bus service for all users including disadvantaged populations.

Expansion of service to include weekend transit is also being considered. Within Spotsylvania County, Routes S1 and S5 have been identified as candidate routes for weekend services. Feeder service is also being explored from park and ride lot(s) in the Cosner's Corner area to the Spotsylvania VRE Station. This multi-modal initiative expands accessibility and is positive. For more information regarding FRED local bus service including routes, fares, schedules, and other related news within FRED's Spotsylvania County and the Fredericksburg regional network can be found at FRED's website **HERE**. FRED tracks route ridership for all its fixed routes. Ridership figures for FRED routes in Spotsylvania County (as provided by FRED) have been provided below in Table 6:

Table 6: FRED Ridership

Spotsylvania County Ridership 2014-2018						
	Route	**2014**	**2015**	**2016**	**2017**	**2018**
	VS1	21,687	19,449	9,812	10,003	8,405
	VS2	16,008	13,275	8,164	7,623	6,262
	S1	21,064	20,189	18,317	15,794	12,606
	S1B	15,233	14,291	12,884	11,196	9,025
	S4	15,448	14,682	13,992	12,339	10,908
	S5	25,862	23,636	20,598	18,997	17,154
	Total	115,302	105,522	83,767	75,952	64,360

Route Description	
VS1/VS2	Morning and afternoon/evening service between the Gordon Road commuter lot and downtown VRE station
S1/S1B	Spotsylvania Towne Centre to Lee's Hill Center @ Spotsylvania Avenue
S4	Lee's Hill Center to Courthouse Village
S5	Lee's Hill Center to Germanna CC via Cosner's Corner shops & Spotsylvania Hospital

As exhibited in the table above, ridership within the County has been on a downward trend since 2014. All routes within the County have seen ridership declines of varying degrees since 2014. There are a number of possible reasons for declines in ridership. FRED acknowledges national trends in ridership declines, noting the most frequent cited reasons for declines are:

- Increased automobile ownership spurred by a strong economy and low interest rates
- Moderate gas prices
- Increased tele-commuting and flex-time
- The rise of transportation network companies like Uber and Lyft
- Changes in travel patterns
- Service reliability issues
- Service reductions
- Fare increases

Addressing the last three issues (reliability, service, fares) from FRED's perspective, they would not seem to apply. Since FRED has been able to accurately track on-time performance, reliability numbers have remained steady or improved. FRED has not reduced service (except for the termination of service in Caroline County). Per FRED, "As a rule we provide hourly service; the most often registered suggestion from our customers is for more frequent service and longer hours and additional days. And we have held fares level at $1.25 per boarding for the last three

years and at $1.00 per boarding the four previous years; our fares are comparable to those of other transit agencies."

Regarding changes in travel patterns, FRED ridership in the County drastically declined after the opening of the Spotsylvania VRE station. Some customers who had used FRED VRE Express service to travel to the Fredericksburg station are now driving to the Spotsylvania station where there is plenty of close-by parking.

It is hard to point to any one of the other four reasons as the primary factor affecting ridership declines within the FRED system. They all contribute to some extent.

The Fredericksburg Regional Transit Development Plan notes "the trend over the past few years is downward, even as the population has grown. There may be ways to re-deploy the current resources so that ridership improves." Per FRED, there is no magic formula and no single criterion applied to determine warrant new or expanded service. FRED uses the Transit Development Plan to identify emerging demographic and development trends that suggest where new or expanded services might be warranted and where to invest in facilities or other amenities. Additionally, FRED meets regularly with County Transportation and Planning staff to better understand where developments will be taking place and how transit can be incorporated into plans, Transportation proffers, etc. Similarly, FRED meets with developers to discuss how service might be incorporated into their plans. Information is shared with the Public Transit Advisory Board (PTAB), which includes representatives of the Planning departments of our partner jurisdictions and has a committee that focuses on how we might better serve traditionally underserved communities (we are aware of the VTRANS work in this regard). Every year FRED polls the PTAB for recommendations on where we might consider adjusting our services in the coming year.

FRED does not plan or undertake service adjustments or investments in a vacuum. Because of the way they are financed with a mix of Federal, State and local funds, the County and other partner jurisdictions must serve as the impetus for any new or expanded service. FRED cannot attract Federal and State funding (which covers roughly 60 percent of FRED's operating expenses and nearly 90 percent of capital expenses) unless local jurisdictions agree to provide matching funds. This requirement means that FRED can only implement services that the County desires and is willing to provide the local match for.

Teleworking/Telecommuting Centers

Teleworking, also known as telecommuting, means using information technology and telecommunications to replace work-related travel and therefore reduce peak hour commute time traffic volumes that ultimately impact transportation levels of service. With teleworking, employees work at home or at a local telework center one or more days per week. Communication to office staff or clients is accomplished by phone, fax, e-mail, internet, teleconferencing, and/or videoconferencing. Telework is usually implemented by business and government agencies to improve services, reduce costs, reduce vehicle travel, or to help achieve other objectives.

Telework!VA is an organization that provides information on establishing and expanding telework programs for Virginia businesses. The program goal is to provide more opportunity for participation in teleworking. This program is administered by the Commonwealth of Virginia Department of Rail and Public Transportation (DPRT). More information about Telework!VA can be found on their website **HERE**.

Intelligent Transportation Systems (ITS)

The highway transportation system in Spotsylvania County involves three major elements: 1) vehicles, 2) roadway and 3) the driver. The major visual technique for relaying driver information are signals, static signs, changeable message signs, pavement makings, and driver information systems. Currently, there are a limited number of changeable message signs (CMS) along I-95 and which are becoming increasingly important in improving safety and operation of this corridor. In addition to the CMS signs there are a number of portable signs to relay information to motorists. Motorists are increasingly using GPS navigational software like Waze, Here We Go, Google Maps, MapQuest, Sygic, and NavIT. There are a number of stationary advance presence detection along the interstate used to collect information used by the I-95 Traffic Control Center located in Arlington, Virginia.

Trailways Master Plan- Bicycle and Pedestrian System

The Spotsylvania County Trailways Master Plan was initially adopted by the Spotsylvania County Board of Supervisors on February 22, 2011 as a standalone transportation alternatives and parks and recreation amenities plan. The Trailways Plan was developed with careful attention paid to community input and existing trailways plans at the national, state, regional, and local levels. The plan proposes an integrated system of off road greenway trails as well as roadway based improvements to serve multiple non-motorized transportation users including bicycle, pedestrian, equestrian, and others with a focus on creating safer transportation conditions while expanding recreational opportunities for citizens and tourists to enjoy Spotsylvania County's numerous historic, cultural, scenic, recreational, and commercial/ service attractions located throughout the County.

The Trailways Plan was developed acknowledging that full build-out of the trailways system with all amenities will not take place immediately. This is a flexible, living plan and will be subject to future developments and economic conditions, as the community evolves. Levels of interest, available funding, and community support factors may fluctuate over time and so may the rate at which implementation is feasible.

In the interest of assuring the Trailways Master Plan does not become outdated or inconsiderate of opportunities that may arise from changes elsewhere within other elements of the Comprehensive Plan, in 2019, the critical elements of the plan were reviewed, updated, and incorporated into the Comprehensive Plan in Chapter 3A. Abandonment of the standalone plan in favor of inclusion as a Comprehensive Plan Sub-Chapter better positions it for continued monitor, pursuit, and review and update consistent with the 5 year review and update cycle. Otherwise

staff has found there tends to be little impetus to update standalone plans that may become outdated or proactively amended to reflect new opportunities or routing alternatives. The revised and updated Trailways Plan addresses sidewalks, and recreational/commuter trails intended to create an interconnected network of trails cognizant of provision for transportation alternatives as well as established Parks and Recreation Level of Service Standards and trail deficits expected to grow to 159 miles by the year 2040 based on projected population growth.

ACCESSIBILITY FOR DISADVANTAGED POPULATIONS

For the purpose of the Comprehensive Plan, disadvantaged populations are inclusive of low income, elderly and disabled populations. These are populations that may have challenges due to income based and/or physical or health related limitations that inhibit access to critical services and conveniences within the community including but not limited to: medical care facilities, pharmacies, supermarkets, personal services, social services, financial institutions, employment opportunities, social networking events, places of worship or cultural institutions. Land use and transportation systems planning that promote enhanced accessibility and mobility for disadvantaged populations are complementary to Comprehensive Plan affordable housing goals, and the goals considerate of elderly and disabled populations within the County expressed elsewhere within the Plan. Efforts to enhance accessibility for disadvantaged populations is a critical element of social equity within the Plan.

Accessibility Challenges Today

With the assistance of the Spotsylvania County Department of Social Services, Healthy Generations Area Agency on Aging (HGAAA) (formerly known as the Rappahannock Area Agency on Aging) was contacted to provide "real world" perspective on the current state of accessibility for disadvantaged populations in Spotsylvania County and the greater region. HGAAA is one of more than 600 Area Agencies on Aging in the United States. HGAAA provides both direct and contracted services in the George Washington Planning District (PD16) including the City of Fredericksburg and Counties of Caroline, King George, Spotsylvania, and Stafford, Virginia. The mission of the staff, Board of Directors, and Advisory Council of HGAAA is to enhance the quality of life for all older citizens. HGAAA provides home and community based services to support the continued independence, safety, and health and wellness of our senior population.

It's good to note that the County's 65 and over population grew nearly 35% (34.6%) between 2010 and 2018 based on 2010 US Census figures and 2018 American Community Survey estimates. This age group represented the most significant absolute change in population within the County, adding 20,814 persons between 2010 and 2018. Population growth within the County was followed by those aged 45-64 with 11,724 additional persons, representing a 9.4% growth rate for that age bracket since 2010. These population growth trends locally represent a trend of rising demand for senior services, including accessibility. Need for accessibility is amplified when

considering the United Way ALICE (Asset Limited, Income Constrained, Employed) report (released in Spring, 2017) that found 57% of seniors within the County (as of 2015 data) fell below the ALICE threshold and where therefore financially challenged to afford basic goods and services, including transportation.

Per HGAAA, funding for their Mobility Options Program comes through a Federal Transit Administration (FTA) Section 5310 grant, Enhanced Mobility for Seniors and Persons with Disabilities. The grant is applied for through the Virginia Department of Rail and Public Transportation each year in coordination with Rappahannock Area Community Services Board. This grant funds three initiatives, including: replacement of rolling stock (vehicles), Mobility Management, and through operations funding it supports the Mobility Options Program, specifically door-to-door transportation service. Mobility services have been expanding over the last few years to accommodate, 7 part-time drivers and 1 full-time driver which equate to nearly 7,000 door-to-door trips within the Planning District in FY18. Transportation is provided to seniors over the age of 60 and persons with disabilities to a myriad of destinations including non-emergency medical appointments (non-Medicaid recipients), essential shopping trips, personal trip to the bank, post office, hair salon, Social Security Office, etc. However, services offered do not begin to meet the demand, in Spotsylvania County in particular. Additionally, funding for the Mobility Options Program from DRPT for FY2020 has been reduced almost 50%. This has resulted in a reduction of staff drivers available to provide these trips, and subsequently a reduction in the number of trips that can be provided. Reduced funding resulting in negative impacts to service inevitably results in degraded accessibility for elderly and disabled populations within the County, especially those who have little to no other options.

When assistance cannot be provided by HGAAA, the Mobility Options Program includes provision of an updated inventory of available transportation options in the area. Per the July, 2019 Transportation Resource Guide, the following Mobility options have been identified with service in the region (See Table 7):

Table 7: Transportation Resources

GW REGION TRANSPORTATION RESOURCES
NON-PROFITS/ GOVERNMENT AGENCIES
American Cancer Society Road to Recovery Program
AMTRAK
Bay Transit (Northern Neck)
Disabled American Veterans (DAV)
FREDericksburg Regional Transit (FRED)
George Washington Regional Commission GWRideConnect
Virginia Railway Express (VRE)
Virginia Department of Medical Assistance Services (DMAS)
PRIVATE FOR-PROFIT VENDORS
Advanced Life Support Transportation (ALS)
Angel Rides Inc.
ATK Transportation
Bright Day Transit Services
EL Divine Home Healthcare
JDS Transportation
LifeCare Medical Transport
MVP Transports
VIP Medical Transportation
Wisdom Ride
TAXI CABS
Aero Cab
CCS Taxi
Global Cab Inc.
Virginia Hilldrup Taxi Services
Yellow Cab of Fredericksburg
TRANSPORTATION NETWORK COMPANIES
LYFT
UBER
Source: July, 2019 Healthy Generations Transportation Resource Guide

HGAAA operates an additional transportation program that is available to Agency Senior Café Participants. This service provides rides for those participants to get to and from congregate meal sites two/three times per week and is supported through Older Americans Act funds received through the Department of Aging and Rehabilitative Services.

For accessibility, FRED usage is encouraged but often it is not a viable option for many in the community. Vehicles are often difficult to board for individuals with walkers, canes, limited mobility, and service animals. Limited service hours, routes, and limited deviations also create

barriers. In addition, a lack of supporting infrastructure in the form of sidewalks, curb-cuts, crosswalks, and bus shelters make accessing FRED even more difficult for the disabled and aging populations within the region as a whole.

There are unmet needs for access within Spotsylvania County per HGAAA. There are inadequate resources in place to effectively address demand. Within the Primary Development Boundary, many persons in need appear to be in close proximity to FRED Transit routes but cannot utilize the bus due to a multitude of reasons, not the least of which is convenience and physical limitations. Currently 344 Spotsylvania County residents are listed in the HGAAA client database. The client database continues to grow. HGAAA been able to assist approximately 29% of those residents, however Spotsylvania County residents' trips make the largest portion of ridership at 49%. From HGAAA's experience, families are unable to meet the needs of aging relatives, and family members with disabilities because they work. Transportation intensive requests, e.g. physical therapy, cardio therapy, speech therapy, dialysis, cancer treatments, employment opportunities, education opportunities are unable to be accommodated through their program. In these cases, callers are referred to the inventory (table above). The lack of a comprehensive resource to address transportation needs of elderly and disabled populations and resulting findings show the fractured nature of services, lack of adequate resources to meet demand, and struggle to secure reliable transportation for such populations. Per HGAAA, while the inventory is a great tool, it lacks cost effective options other than the Mobility Options Program. There simply aren't any to be had.

Need exists throughout the County but is focused in more suburban areas due to population density. HGAAA continues to look for funding opportunities and public/ private partnership in the hopes of expanding the program to be able to meet more needs. The next grant cycle for Section 5310 funding will begin in the fall after the release of DRPT's regional Coordinated Human Services Mobility Plan updates. DRPT is aware of the needs of small urban and rural areas across Virginia but is struggling with insufficient federal funding to meet the needs in these areas with no allowance of transferring unused funds from large urban areas. The requests have been larger than the funds available for both Section 5310 replacement vehicles and operating funds. DRPT has also been contacted by programs in some areas without Mobility Managers about the availability of funds for these new programs. Because of the lack of funding, DRPT has made changes to the guidance and reduced funding to only direct program expenses that support the funded project. They further encourage sub-recipients to look for external funding partners.

Regarding services being delivered to one's door, Meals-on-Wheels does deliver locally but only within a four-mile radius from Mary Washington Hospital. HGAAA offers a home-delivered meal program to area residents 60 and older that are completely homebound. Individuals interested in the service will go through an assessment process as funding for this program is also limited. Currently the Agency is delivering to 18 Spotsylvania residents who meet the criteria. There is emerging technology based platforms such as Amazon and DoorDash for the order and fast delivery of various goods. Instacart offers online order based same day delivery of groceries and goods partnered with a number of grocery stores and retail vendors in the region. Elderly and disabled populations have historically been found to be unable to utilize technology to access such platforms, or generally have a mistrust of 'online purchases'. This discovery is in part due to

exploring Uber and Lyft as transportation options for target populations. As the presence of these Transportation Network Companies grows in the Fredericksburg Region it would be helpful to find a way to work with these organizations to facilitate more transportation access for our aging and disabled populations. Currently HGAAA is working on a funding application for the Mary Washington and Stafford Hospital Community Benefit Fund to expand the Mobility Options Program.

Rural Access

Transportation access in rural areas especially (outside of the County Primary Development Boundary) can be a challenging and/or costly endeavor due to lack of available transportation alternatives and/or necessity of vehicle ownership, if physically and financially feasible. Rural areas typically lack an abundance of nearby employment and services whereby requiring greater travel distances to reach them. These areas may lack the critical density necessary to support certain fixed transportation services such as a public bus route. Though population density is lower in the Berkeley and Livingston Districts, as a percentage of their populations, they have higher percentages of persons aged 65 and older, disabled, and low income per regional American Community Survey data presented recently by the George Washington Regional Commission in 2019. These areas also lack proximity to fixed-route transit services such as FRED Bus. In August, 2019 as part of the development of the Virginia Transportation Plan update (VTRANS) the Office of Intermodal Planning and Investment (OIPI) presented regional analysis' results identifying disadvantaged populations beyond ¼ mile access to fixed-route transit service. Fixed route transit service to these areas was acknowledged as not viable however, not having the density thresholds to support fixed route service.

If vehicle ownership is an option, lengthier travel distances to jobs, goods and services result in greater vehicle "wear and tear" and fuel expenditures, associated vehicle upkeep costs that "cut into" a limited budget. County-wide based on 2015 data reported in the statewide 2017 ALICE Study of Financial Hardship report by the United Way show at total 47% of all households can be classified as households in poverty or within the ALICE threshold. ALICE households are households that earn more than the Federal Poverty Level, but less than the basic cost of living for the state. Per the report, "ALICE households are working households; they hold jobs, pay taxes, and provide services that are vital to the Virginia economy, in a variety of positions such as retail salespeople, laborers and movers, customer service representatives, and office workers." "ALICE households vary in size and makeup; there is no typical configuration. In fact, contrary to some stereotypes, the composition of ALICE households mirrors that of the general population. There are young and old ALICE households, those with children and those with a family member who has a disability". As such the ALICE population in many ways reflects the disadvantaged populations being considered for transportation accessibility. These represent households under financial stress who have seen costs to afford basic necessities increase without adequate income gains from low wage jobs during the study years of 2007-2015 as reported in the study. Transportation costs are considered one element of basic necessity and while those costs have remained

relatively unchanged as reported, significant cost increases in housing, child care, food, health care, tax burdens on low wage earnings, etc. have further strained resources for families. These costs often leave little to no room for basic necessities, "rainy day fund" savings or non-essential; discretionary consumer spending.

VTRANS 2040 recognizes accessibility challenges within Spotsylvania County, especially outside of the Primary Development Boundary. Accessibility to employment (number of jobs within 45 minutes) via auto, transit, and pedestrian means are not ideal. In these areas, proximity to major roads results in accessibility improvements as they provide more direct line access to major activity centers.

Outside of the Primary Development Boundary, the land use element considers provision of "neighborhood commercial" in rural and agricultural areas. Agricultural, tourism, and forestry based businesses are also complementary in such areas. The goal is not to promote proliferation of urban sprawl into the countryside but to provide goods and services (and nearby employment opportunities) in close proximity to the rural populations meant to be served. This alone helps reduce the transportation and accessibility burden on disadvantaged populations within the County. As a benefit to the transportation network, the effect is also a reduction in total vehicle miles travelled and cross-county traffic volumes. Such land use provisions within the Comprehensive Plan are complementary to provision of access for disadvantaged populations. Private sector investment has historically been the driving force behind provision of rural goods and services within the County. Such development proposals in rural areas that are aimed at providing a direct goods and services benefit to rural populations should be considered to provide a transportation and access benefit to disadvantaged populations.

Availability of affordable housing in many areas simply does not go "hand in hand" with where the jobs are located. Low income workers are often faced with commuting long distances between locations where housing may be more affordable and where employment exists. This adds traffic burdens on local roads and increases transportation related costs for disadvantaged populations. Planning for and supporting provision of affordable housing near employment rich areas, in mixed use higher density areas, near multi-modal opportunities helps proactively reduce accessibility burdens.

Urban and Suburban Access

Within the Primary Development Boundary, transportation accessibility is best achieved when multimodal transportation options are available nearby. Due to higher densities and a variety of uses, these areas tend to me much more viable for fixed route transit services such as FRED Bus. Mixed Use walkable areas with multi-model transportation options that place goods and services and employment opportunities within close proximity to affordable housing and/or housing designed for the needs of disabled or elderly populations are best suited to provision of accessibility for disadvantaged populations. Throughout the Primary Development Boundary

efforts should be made to enhance the system of sidewalks and trails, close gaps within existing systems, and provide safe road crossing locations. When considering how FRED passengers access the bus system for instance, per the Fredericksburg Regional Transit Development Plan, "walking is by far the method most used (72%), followed by driving alone (7%) and using another bus (6%)." Vehicle ownership based one-dimensional transportation systems are not favorable. Rather, multi-modal opportunities should be supported including the preservation and expansion of transportation alternatives in the community. Transportation alternatives have been identified as beneficial to reducing traffic volume burdens on roads but they are also crucial tools for enhancing access for disadvantaged populations within the County. FRED ridership survey results noted in the Fredericksburg Regional Transit Development Plan found that the majority of respondents worked full time (46%), followed by 21% with part-time employment. FRED bus service does consider enhanced accessibility for disabled and limited mobility persons through its route deviation service. Per the Fredericksburg Regional Transit Development Plan, FRED's route deviation service is designed to allow for vehicles to travel off of regular service fixed routes (up to ¾ mile, no more than three minutes, and safe to traverse) to pick up or discharge a passenger who may find it difficult to access designated bus stops. Passengers who need to use this service are instructed to register with FRED by completing a deviated stop request form. Once approved, riders who need an off-route pick-up or drop-off are instructed to call FRED 24 hours in advance. There is no requirement for users of FRED's route deviation service to provide any evidence of a disability or limited mobility. Each of FRED's revenue vehicles is equipped with wheelchair lifts to accommodate people with disabilities.

The County is currently exploring potential opportunities to extend FRED service. Areas being considered include the Rte 208 corridor to the Spotsylvania Courthouse Village Area, the Rte 1 corridor to Massaponax and Thornburg, the Rte 2/17 corridor from the City to the Bowman Center area, and the Lafayette Boulevard corridor from the City to the Rte 208 PNR lot. These areas have all seen development interest in the last few years and has been identified as core areas for mixed use and employment center type development. Both land use designations prime the area as a good location for providing service to disadvantaged populations. With transportation infrastructure upgrades such as extension of the FRED bus system and bike/ped network, mixed land use designations promoting a walkable mix of uses, and employment opportunities nearby, these areas can provide the type of environment where low income populations can seek nearby employment opportunities and look to increase earning potential.

In August, 2019 as part of the development of the Virginia Transportation Plan update (VTRANS) the OIPI presented regional analysis' results identifying disadvantaged populations beyond ¼ mile access to fixed-route transit service. Within the Primary Development Boundary, disadvantaged populations where fixed route service was identified as potentially viable included the Tidewater Trail (Route 2) corridor extending from the City of Fredericksburg to the New Post mixed use area. FRED Bus Service Route F4 extends as far as the River Club Shopping Center with connections into the City of Fredericksburg including downtown Fredericksburg, Fredericksburg Train Station, and Mary Washington Hospital. Future service extension towards Route 2 and 17 are worthy of exploration as development continues down the corridor.

TRANSPORTATION ANALYSIS TOOL

Transportation Impact Analysis

Traffic Impact Analysis is a study used to estimate impacts of growth and how the transportation network would function once a proposed land use change or development takes place. Depending upon the impacts the analysis can involve VDOT, Spotsylvania County or other government agencies. If the impact is substantial and generates 5,000 new trips per day, equals the existing traffic on a residential road or is within 3,000 feet of connection to a major VDOT highway then VDOT requires a 527 TIA and takes the lead role in scoping the parameters of the study. Spotsylvania County has established additional requirements which are as follows;

- A trip generation threshold is crossed
- A development is proposed within a critical corridor
- A rezoning or land use request is inconsistent with the comprehensive plan
- A development has regional significance
- Or the County Traffic Engineer determines that the development warrants a study

The Table below includes Land Use Size Thresholds for Spotsylvania County and the impact analysis, site issues, or other analysis that is required or appropriate for a TIA.

Table 8: Requirements for Various Types of Traffic Impact Studies

TASK	TRIP THRESHOLD	
	County Traffic Impact Study	527 Impact Traffic Study
Trip Generation	100 Peak Hour or 750 + Daily	400 Peak Hour or 5,000 + Daily
Pre-application or scoping meeting	✓	✓
Impact Analysis Requirement		
Existing conditions analysis LOS at site	✓	✓
Sight distance evaluation	✓	✓
Opposing driveway locations	✓	✓
Existing conditions at nearby intersections	✓	✓
Study area & future road summary	✓	✓
Comparison of trip generation uses	*	
Trip generation for specific uses.	✓	✓
Trip distribution analysis.	✓	✓
Background traffic growth.	✓	✓
Future conditions analysis (LOS) at nearby intersections	✓	✓
Design Year Analysis (6 years beyond Build)		✓
Mitigation identification.	✓	✓
Site Issues		
Evaluate number, location, and spacing of access points	✓	✓
Evaluate access design, queuing, etc…	✓	✓
Evaluate site circulation	*	✓
Other Analysis		
Accident history.	*	*
Gap analysis at unsignalized intersections	*	*
TDM/TSM mitigation measures.	*	✓
Evaluate impacts on travel model	*	

Key

✓ = required

* = may be appropriate on a case by case basis

Travel Demand Forecast Model

Travel demand forecasting models are the major means for the development of a long-range transportation plan. The model is designed to calculate the number of trips, connect their origins and destinations, and identify the roadways or transit routes most likely to be used in completing a trip. Models are used to determine where future transportation problems are likely to occur by identifying congested roads. Once identified the model can test the ability of the highway network or transit system to address those problems.

In 2006, Spotsylvania County developed its first travel demand forecasting model in order to update the County's Thoroughfare Plan and quantitatively evaluate Future Land Use projections. The Spotsylvania Travel Demand Forecasting Model covers the entire Fredericksburg Area Metropolitan Planning Organization (FAMPO) region: the Counties of Caroline, King George, Spotsylvania, and Stafford, and the City of Fredericksburg. The Spotsylvania model was developed based on the FAMPO Travel Demand Forecasting Model.

In 2018, the model was updated with a base year of 2015 to take advantage of the new travel surveys and other information. The update included changes to the road network, population, dwelling units, employment, and household data. The travel demand forecasting model contains a set of mathematical relationships that estimate the total number of trips made by residents and employees in the County on a typical weekday. The model estimates the patterns of origins and destinations between and within all parts of the County and the Fredericksburg metropolitan area. It estimates the proportion of trips that travel by auto and applies auto occupancy factors. The final step is to determine the roads used by each trip on its way from its origin to its destination. This is calculated assuming that each driver attempts to find the quickest path, taking into account expected congestion. The summation of those trips over all the roadway segments produces the total daily traffic volume.

The Spotsylvania County Travel Demand Forecasting Model consists of 1,659 Traffic Analysis Zones (TAZ's). The zone boundaries are based on Census geography, property lines, natural topography, roads, and other features. The TAZ's are points where traffic enters and exits the real roadway system. The number and size of these zones are extremely important in determining the model's accuracy and what roads can be modeled. The County desired a high level of accuracy and wanted the model to represent roads down to the Collector Road level, including many of the Local roads. This allows the County to also use the model to evaluate large mixed use developments as well as long range transportation plans.

The model also estimates 2040 land use at the TAZ level and the 2040 highway network reflects the current Comprehensive Plan. The model is used to evaluate land use changes proposed through the Comprehensive Plan process as well as through rezoning and special use applications. The model can also be used to evaluate future road improvement scenarios.

FUNCTIONAL CLASSIFICATIONS

The roadway functional classification system is a network of roadways grouped into classes each defined according to its purpose with respect to transportation. The system is based on guidelines by the Federal Highway Administration (FHWA). The basic purpose of a given road can be defined as a function of mobility and access. For instance, a high level facility such as an interstate or major arterial are typically characterized as having greater travel speeds as well as greater traffic volumes. On these roadways, the main travel purpose is mobility. Low level facilities such as collector or local roads on the other hand, generally tend to carry fewer vehicles traveling at lower speeds. The main function of these roadways is more related to access. The classification for roads

in the County is important because in order to be eligible for Federal funding a roadway must be classified as a collector road or higher.

There are six (6) functional classifications for roads: Freeways/Interstates, Principal Arterials, Minor Arterials, Major Collectors, Minor Collectors and Local Roads. The transportation network in Spotsylvania County is organized by these classifications and matches those used by the Travel Demand Forecast Model. Spotsylvania County follows the latest adopted VDOT Functional Classifications. A map depicting VDOT's 2014 Functional Classifications can be found within this Chapter. VDOT is the official source for such classifications and any future amendments to them that may occur within the Planning Period. The latest VDOT Functional Classifications apply and can be found online **HERE**.

The definition, in part, of each roadway classification is as follows:

Freeways/Interstates are multi-lane highways with limited access at grade-separated interchanges. They are designed to carry high traffic volumes at high speeds linking one state to another for interstate travel and commerce. Typical right of way widths range from 250 feet to 400 feet.

Principal Arterials are highways designed to carry high speed/high volume traffic. Access is generally controlled through at-grade signalized crossings and grade-separated crossings at major intersections. These facilities are most often limited-access roadways intended to carry inter-county traffic and typically link cities and towns. Typical right of way widths range from 110 feet to 200 feet.

Minor Arterials are highways designed to carry high volume traffic at moderate speeds with general access through at-grade crossings and grade-separations at major/high volume intersections. These facilities are controlled-access roadways intended to carry mostly intra-county traffic while still linking cities and towns. Typical right-of-way widths range from 90 feet to 200 feet.

Major Collectors are highways designed to carry moderate speed/moderate volume traffic. These roads serve as major links between arterial roads and tend to serve more local traffic. The typical right-of-way width range is from 90 feet to 120 feet on major collectors.

Minor Collectors are highways designed to carry moderate speed, relatively low volume traffic. Minor collectors are more local serving and connect local streets with other collectors, as well as arterials. Typical right-of-way widths range from 60 feet to 90 feet.

Local Roads include those roads that provide access within residential and commercial areas. These roads are local serving in nature and connect residential and commercial areas with collector roads. In rural areas local roads convey traffic to the collector roads and are in many

cases farm-to-market roads that do not meet modern design standards. Typical right-of-way widths for local roads range from 50 feet to 100 feet.

In each of the classifications described above the right-of-way widths will tend to vary to make allowances for bikeways, pedestrian facilities, bus stops, etc. as well as actual design speed.

CORRIDORS OF STATEWIDE SIGNIFICANCE

Corridors of Statewide Significance (CoSS) are multimodal connections to the Commonwealth's major activity centers. They are critical to the movement of people and goods between regions of Virginia and through the state. The CoSS were originally developed under VTrans2025 and validated during the VTrans2035 Update process. The Commonwealth Transportation Board (CTB) is charged with developing criteria for prioritizing the CoSS and conducting studies of the corridors. Corridors identified as CoSS demonstrate all of the following characteristics:

- Multiple modes and/or an extended freight corridor,
- Connection among regions, states and/or major activity centers,
- High volume of travel, and
- Unique statewide function and/or fulfillment of statewide goal

The purpose of identifying and designation CoSS is "to provide a multimodal vision for the corridors to guide localities in their land use and transportation plans. Without guidance, local decisions could degrade a corridor's ability to move people and goods, causing bottlenecks and problems that are costly to fix, and undermine economic and quality of life goals. As Virginia continues to grow, it must take steps now to ensure the right balance of development, transportation capacity, and natural resources. The real value of the CoSS is the identification of strategies within each corridor as the first step in ensuring these corridors are invested in and protected for the future benefit of the entire Commonwealth". There are three tiers of CoSS: National Corridors, Commerce and Mobility Corridors, and Statewide Corridors. These systems are defined by the dynamics of total population, travel patterns, and intermodal and economic potential of the corridor within and outside of Virginia.

Two CoSS traverse Spotsylvania County:

1. *Coastal Corridor (Route 17), Corridor A,* locally includes U. S, Route 17 as it passes through the County, is designated as a Commerce and Mobility Corridor. In whole includes Route 17, Local Transit Services, Port of Virginia (indirect access), Port of Richmond, Rappahannock River, Norfolk Southern Heartland Corridor, Norfolk Southern Coal Corridor, CSX National Gateway Corridor, CSX Coal Corridor, Amtrak, 12 airports, including 2 commercial airports (Newport News-Williamsburg Airport and Norfolk International Airport), Greyhound bus stations, Fredericksburg area VRE (Passenger Rail) accessibility.

Spotsylvania County includes portions of the Coastal Corridor Segment A2 and A3.

Key Functions:

- Major I-95 alternative to shore destinations and through traffic
- Freight corridor
- Tourism access to Northern Neck and Middle Peninsula

Summary of VTRANS 2040 Needs- A2 Segment (Spotsylvania County):

- Safety issues at interchange of US 17/US 1/I-95
- Reliability issue at US 17 and I-95 south of Fredericksburg
- Congestion issue on US 17 between US 1 and I-95 south of Fredericksburg

Summary of VTRANS 2040 Needs- A3 Segment (Spotsylvania County):

- Congestion issue on US 17/US 1 between US 17 and I-95 south of Fredericksburg
- Slow speeds and safety concerns at interchange of I-95/US 17 and US 3
- Congestion issue on US 17/I-95 between VA Route 3 and US 17/US 17 Business west of Fredericksburg
- Reliability issue on I-95 from US 17 south of Fredericksburg to VA Route 3

Findings of the VTRANS 2040 CoSS assessment of the Coastal Corridor can be found **HERE**.

2. *Washington to North Carolina Corridor (I-95)*, Corridor K, Major corridor components include I-95. I-395, I-495, I-85, I-195, I-295, Routes 1 and 301, WMATA Blue and Yellow Lines, Local Transit Services, Virginia Railway Express, Ports of Alexandria and Richmond, James River, CSX National Gateway Corridor, Park-and-Ride, Amtrak, Dulles International Airport, Ronald Reagan Washington National Airport, Richmond International Airport, other general aviation facilities, Greyhound bus.

   Spotsylvania County is within Segment K3 of the Washington to North Carolina Corridor.

   Key Functions:

   - Commuter Corridor in Northern Virginia and Richmond Areas
   - Through Traffic (“Main Street” of East Coast)
   - Freight Corridor (trucks, CSX Rail Lines)
   - Military Access (Pentagon, Quantico, Ft. Belvoir, Ft. AP Hill, Ft. Lee, etc.)
   - Multimodal Corridor (VRE, Amtrak, Express Bus, HOV/HOT Lanes)
   - Link to Maryland, Washington, D.C., and Capital Beltway from Points South

   Summary of VTRANS 2040 Needs- A2 Segment (Spotsylvania County):

   - High-growth commercial area near VA 3 forecast to be congested by 2025
   - Limited availability/connections to transit modes at park-and-ride lots

- I-95 at Exit 118- Planned growth in the area may exacerbate congestion issues
- Reliability issue on I-95 between Exit 126 (US 1/US 17) and Rappahannock River
- Reliability issue at US 1 and Harrison Road
- Congestion issue on US 1/US 17 at junction with I-95 south of Fredericksburg
- Congestion issue at US 1 and Harrison Road in Fredericksburg
- Congestion issue at US 1 and Massaponax Church Road south of Fredericksburg

Findings of the VTRANS 2040 CoSS assessment of the Washington to North Carolina Corridor can be found **HERE**.

A summary of Six Year Improvement Program projects within CoSS in Spotsylvania County are summarized in Table 9 below. The projects are also included in the Spotsylvania County Thoroughfare Plan.

Table 9: CoSS Projects

Corridors of Statewide Significance (CoSS) Projects in the Six Year Improvement Program			
State Project #	**Description**	**Route**	**VDOT UPC**
0620-088-182	Harrison Road East (Rte 620 & Rte 1 Intersection Improvements)	1/620	51845
0606-088-622	Route 606 bridge replacement over I-95 and roadway improvements	I-95/606	100829
0606-088-653	Reconstruction of Mudd Tavern Road (complements Route 606 I-95 Bridge replacement)	I-95/606	105463
0606-088-654	Reconstruction of Mudd Tavern Road (complements Route 606 I-95 Bridge replacement)	I-95/606	105464

TRAFFIC SAFETY

As noted in the FAMPO 2045 LRTP, "the dramatic rise in population has strained transportation infrastructure pushing the Region's roadway system to capacity. Traffic congestion and safety issues on the interstate, primary, and portions of the secondary road system throughout the urbanized area are plentiful and growing worse and are beginning to impact even the rural localities more and more each year…When demand for a given transportation facility outstrips available capacity for that facility, congestion occurs. It can affect all modes of travel, including highway passenger and freight vehicles, freight rail, commuter rail, metro rail, bus, air traffic and airport ground traffic, ports and waterways."

Growth over time has outpaced the ability to improve roadways to the extent necessary to significantly improve local levels of service and road safety. Based on data presented in the FAMPO 2045 LRTP sourced from the Virginia Department of Motor Vehicles (DMV), between 2012 and 2016, Spotsylvania averaged approximately 12 highway fatalities per year. During the same time, the County's average number of annual crashes based on Virginia DMV data was nearly 2,100. Identification and implementation of improvement projects and for problematic

intersections and road segments experiencing elevated crash activities is critical to improving design and capacity based factors that may be associated with crash activity. Additionally, continued pursuit of alternative modes of transportation and efforts to expand their use helps reduce roadway congestion, improves levels of service, reduces frequency of vehicle conflict, and reduces the volumes of vehicles that may otherwise be at risk of crash on local roads.

HURRICANE EVACUATION

Though infrequent, the region is susceptible to the threat of Hurricane activity and its resulting impacts on personal property, health and welfare, and the transportation system. Within Spotsylvania County the Virginia Department of Emergency Management has identified the Route 17 corridor from the Caroline County line to Interstate 95 as part of the Peninsula Evacuation Route. This evacuation route extends to the coastal Virginia areas including major population centers at Hampton Roads, Newport News, Norfolk, and Virginia Beach. Impacts of evacuation events can be far reaching and strain the transportation system. Aside from pure traffic volume based slowdowns, emergency related power outages can cause significant deficits in demands at critical facilities including but not limited to: public safety buildings; facilities or businesses providing or selling food, water, fuel, lodging; emergency medical care facilities. Lack of operational facilities due to power failure further compound the impact of emergencies and evacuation, including impacts to the transportation system. With the support of the 2017 George Washington Regional Commission Regional Hazard Mitigation Plan, this plan seeks to improve travel conditions associated with designated Hurricane Evacuation Routes and Corridors of Statewide Significance within the County.

TRANSPORTATION GOALS AND STRATEGIES

An overarching goal with specific goals and strategies has been developed to provide direction and rationale for decision making related to transportation in Spotsylvania County. *The overarching goal is to develop a sustainable transportation network that supports the County's Comprehensive Plan and achieves a level of service that promotes safe and efficient operation and movement of people and goods.* The goals and strategies form the foundation for the planning and development of Spotsylvania County's transportation system.

Goal 1: Maintain acceptable Levels of Service on public roads.

Strategies:

1. Achieve no less than a "D" Peak Hour Level of Service on 90% of County secondary roads within the Primary Development Boundary as shown in the Thoroughfare Plan. In the Primary Settlement District, levels of service are lower to encourage development and redevelopment to densities and intensities that maximize use of the existing infrastructure.
2. Achieve no less than a "D" Peak Hour Level of Service on the VDOT Primary Street System.
3. Achieve no less than a "C" Peak Hour Level of Service on 90% of County secondary roads outside of the Primary Development Boundary as shown on the Thoroughfare Plan. Levels of Service standards have been set higher in the rural area to ensure the rural character of the area is not degraded by development.
4. Continue efforts to pave those unpaved roads in the VDOT Secondary System.
5. The County should monitor secondary road links and intersection Levels of Service through a Traffic Count Program to supplement VDOT's existing Traffic Count Program.
6. Utilize the Travel Demand Forecast Model to project future Thoroughfare Plan needs.
7. Preserve and enhance capacity by improving access management, reducing signals, or signal phases, and implementing innovative intersection configurations.

Goal 2: Ensure that new development does not degrade Levels of Service and mitigates its impact on the transportation network.

Strategies:

1. Protect the transportation network from future congestion by:
    a) encouraging joint-use access points for multiple developments,
    b) ensuring connections within and between developments that offer alternative routing for traffic, but does not encourage cut-through traffic, and
    c) encouraging alternative land development and site design techniques such as mixed use and planned unit developments that provide residential, employment, and recreational opportunities connected by a network of internal streets.
2. Require the submission of Traffic Impact Analysis (TIA) in compliance with VDOT's 527 Process or for projects that meet the County TIA threshold.

3. Development proposals, especially for non-destination convenience based uses should include estimates of pass-by trips (traffic already on the road) associated with their use as not all traffic generation can be attributed to adding additional vehicle trips to the roads.
4. Only roadway facilities that are fully funded and programmed for implementation within the first 3 years of VDOT's Six Year Program or the County's CIP should be considered built and eligible for inclusion in a traffic analysis.
5. Large scale and mixed use developments should consider incorporating Transportation Demand Management (TDM) measures that reduce single occupancy vehicle trips.
6. The County should support alternative onsite transportation alternatives and recreational options such as transit, pedestrian and bicycle facilities that are able to, or will, connect to neighboring properties.
7. Discourage road sections allowing only single lane access in any direction without adequate travelway or shoulder width to allow other vehicles to pass in case of disabled vehicle, crash, stopped or pulled over vehicle. A single lane access constrained by a divided median is one example.

Goal 3: Promote alternative modes of transportation and multi-modal facilities to more effectively address demands on the transportation network.

Strategies:

1. Promote Transportation Demand Management measures, such as the rideshare program, which relieve congestion on major transportation routes and promote more efficient use of alternative transportation systems.
2. Promote design and construction of appropriate bicycle and pedestrian facilities meant to enhance safety and avoid conflicts with motorized vehicles.
3. Promote the design and construction of transportation facilities that consider the needs of persons with disabilities as well as the needs of an aging population.
4. Coordinate with a regional transit service to provide timely and efficient bus routes that meet the needs of local transit users.
5. Promote public transit access and enhancement with supporting infrastructure improvements in the form of nearby sidewalk/trail network, curb-cuts, crosswalks, and bus shelters at stop locations.
6. Plan for and support provision of affordable housing near employment rich areas, in mixed use high density areas, near multi-modal opportunities to proactively reduce accessibility burdens.
7. Recognize the accessibility benefits of provision of rural commercial and/or employment opportunities outside of the Primary Development Boundary to rural populations, especially to rural disadvantaged populations.
8. Explore opportunities to expand regional transit services to serve the Thornburg and New Post Areas.
9. Support capacity enhancements and efficiency improvements along the RF&P Rail corridor for freight and passenger transport.

10. Support protection, enhancement, expansion of rail spurs and sidings within the County along the RF&P corridor for the potential growth of freight service and rail reliant industries and their associated employment and economic activity benefits.

11. Support protection, enhancement, expansion of rail spurs and sidings within the County along the RF&P corridor for development complementary to passenger rail service such as transit oriented developments.

12. As a County within the GW Region, Spotsylvania County recognizes the importance of freight systems impacts on the local economy and traffic. The County will support and provide assistance implementing critical improvements efforts associated with the Regional Freight Plan.

13. Road improvement designs intended for the Tidewater Trail corridor should consider Shannon Airport guidance that supports lowering the road elevation by 4' to 5' in proximity to the nearby airport runway terminus.

14. As part of the upcoming update to the George Washington Regional Bicycle and Pedestrian Plan, work with the FAMPO Bicycle and Pedestrian Advisory Committee (BPAC) to develop a regional strategy and identify local policies for e-bikes and scooters. Policy recommendations may warrant inclusion in future iterations of the Comprehensive Plan.

Goal 4: Plan transportation facilities that are environmentally and aesthetically compatible with the character of the County and minimize adverse effects upon historic and environmental resources.

Strategies

1. Minimize negative physical impacts to existing residents and businesses in the planning and design of new transportation facilities.
2. Promote Context Sensitive Design (CSD) in the development of new and expanded roadway improvements. CSD involves developing a transportation facility that fits its physical setting and preserves scenic, aesthetic, historic, and environmental resources, while maintaining safety and mobility.

Goal 5: Plan future transportation facilities that are cost-effective and can be implemented in a timely fashion.

Strategy:

1. Develop and implement a financial plan to achieve the County's transportation system objectives. The Plan should identify all new and existing funding mechanisms, such as Revenue Sharing, to include private funding initiatives and public/private partnerships.

Goal 6: Prioritize transportation projects for consistent implementation and clear direction for development patterns.

Strategies:

1. Develop and implement a working prioritized list of future road projects to achieve the County's transportation system priorities and objectives.
2. The list should identify all proposed improvement projects, new connection points, lane improvement, turn lane/intersection improvements, traffic circles/roundabouts, interchange alternatives, etc. to be coordinated through the regional transportation network including FRED, FAMPO, VRE and surrounding localities for consistent development.
3. The list shall be a working document reviewed and approved by the Transportation Committee and the Spotsylvania County Board of Supervisors.
4. Any inclusions, exclusions and alterations in the priorities approved on the list will require Spotsylvania County Board of Supervisors approval.

Goal 7: Protect the function of Corridors of Statewide Significance and Hurricane Evacuation Routes from unnecessary gridlock created by vehicle abandonment, stranding, excessively long queues and backups, food and water shortages due to power failure at critical facilities.

1. Promote installation of onsite secondary power sources, generator ready hookups or backup generators at critical facilities including but not limited to: public safety buildings; facilities or businesses providing or selling food, water, fuel, lodging; emergency medical care facilities.