



# **Bicycle & Pedestrian Facilities Plan**



**June 4, 2019**

# Acknowledgements

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Gary Snellings, Chairman  
Mark Dudenhefer, Vice Chairman  
Meg Bohmke  
Jack Cavalier  
Wendy Maurer  
Cindy Shelton  
Tom Coen

## **Planning Commission**

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BOARD OF SUPERVISORS  
COUNTY OF STAFFORD  
STAFFORD, VIRGINIA

RESOLUTION

At a regular meeting of the Stafford County Board of Supervisors (the Board) held in the Board Chambers, George L. Gordon, Jr., Government Center, Stafford, Virginia, on the 3<sup>rd</sup> day of September, 2019:

<u>MEMBERS:</u>	<u>VOTE:</u>
Gary F. Snellings, Chairman	No
L. Mark Dudenhefer, Vice Chairman	Yes
Meg Bohmke	Yes
Jack R. Cavalier	Yes
Thomas C. Coen	Yes
Wendy E. Maurer	Yes
Cindy C. Shelton	Yes

On motion of Mr. Coen, seconded by Mrs. Maurer, which carried by a vote of 6 to 1, the following was adopted:

A RESOLUTION TO AMEND THE STAFFORD COUNTY COMPREHENSIVE PLAN PURSUANT TO VIRGINIA CODE §15.2-2229, BY ADOPTING A NEW DOCUMENT ENTITLED "BICYCLE AND PEDESTRIAN FACILITIES PLAN," DATED JUNE 4, 2019, AND BY AMENDING COMPREHENSIVE PLAN CHAPTER 2, "GOALS, OBJECTIVES AND POLICIES," AND CHAPTER 4.4.7, "BICYCLE AND PEDESTRIAN FACILITIES" TO INCORPORATE REFERENCES TO SUCH "BICYCLE AND PEDESTRIAN FACILITIES PLAN"

WHEREAS, the Board adopted the 2016-2036 Comprehensive Plan (Comprehensive Plan) on August 16, 2016; and

WHEREAS, Virginia Code § 15.2-2229 authorizes the Board to amend the Comprehensive Plan; and

WHEREAS, pursuant to Virginia Code §15.2-2229, the Planning Commission may prepare and recommend amendments to the Comprehensive Plan; and

WHEREAS, the Planning Commission prepared amendments to the Comprehensive Plan, including the document entitled "Bicycle & Pedestrian Facilities Plan," dated June 4, 2019 and the amendments listed in "Exhibit 'A' Bicycle and Pedestrian Facilities Plan – Comprehensive Plan Amendments May 15, 2019;" and

WHEREAS, the Planning Commission conducted a public hearing on such proposed amendments and provided its recommendations to the Board; and

WHEREAS, the Board carefully considered the recommendations of the Planning Commission and staff, and the public testimony, if any, received at the public hearing; and

WHEREAS, the Board finds that adoption of the proposed amendments to the Comprehensive Plan are consistent with good planning practices;

NOW, THEREFORE, BE IT RESOLVED by the Stafford County Board of Supervisors on this the 3<sup>rd</sup> day of September, 2019, that it be and hereby does amend the Stafford County 2016-2036 Comprehensive Plan, as last revised, by replacing the current Bicycle/Pedestrian Facilities Plan with the document entitled "Bicycle & Pedestrian Facilities Plan," dated June 4, 2019, and by amending Comprehensive Plan Chapter 2.2, "Goals, Objectives and Policies," and Chapter 4.4.7, "Bicycle and Pedestrian Facilities," as shown in "Exhibit 'A' Bicycle and Pedestrian Facilities Plan – Comprehensive Plan Amendments May 15, 2019," each which are attached hereto.

A Copy, teste:

  
Thomas C. Foley  
County Administrator

TCF:JH:bg

# 1.0 Introduction

Stafford County is currently the fastest growing county in the Fredericksburg area, and is among the fastest growing localities in Virginia. One reason for this rapid growth is that county residents have convenient access to commuter rail, Interstate 95, and other major roadways. Growth in the county has led to an increase in traffic, which in turn has led to greater demand for multi-modal transportation services. As density in the County has increased, it has become more practical for many residents to reach destinations such as schools, parks and shopping centers by foot or bicycle. While being in closer proximity to these destinations can facilitate pedestrian and bicycle use, the increased vehicle traffic can be a deterrent from a safety perspective. This is particularly the case in areas where there are inadequate facilities to safely accommodate pedestrians and cyclists.

The existing bicycle and pedestrian infrastructure in the County has primarily been provided through residential and commercial property development or road improvement projects. Many of these facilities provide connections to adjacent uses, or provide accommodations within neighborhoods, but may not be connected to nearby destinations such as schools, parks, shopping centers, and transit or commuter destinations. As a result, access by vehicle is often the only viable option.

The purpose of this plan is to identify locations for bicycle and pedestrian facilities in an effort to meet growing demand, to provide viable and safe alternatives to automobile transportation, to expand recreational opportunities, and to identify strategies and resources for providing these facilities. This will allow for more effective prioritization of projects, and maximize the use of limited available funds.

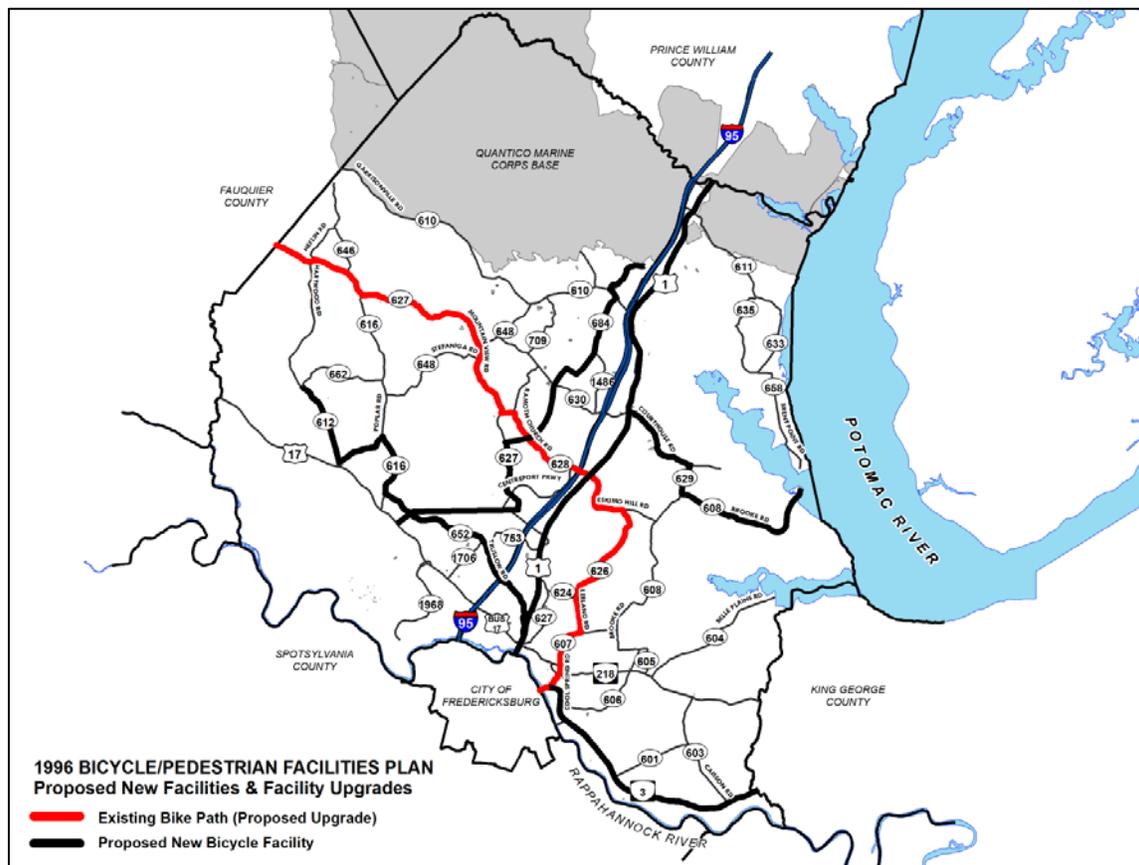
## 1.1 Background

### 1.1.1. Previous Plan

Stafford County's previous Bicycle and Pedestrian Facilities Plan was adopted in 1996. A Bicycle/Pedestrian Transportation System Committee was established to develop this plan. This was the first plan of this type to be adopted in the County. The plan provided general recommendations for different areas of the County, and included a Countywide facility map with recommendations for upgrades to existing bicycle and pedestrian accommodations as well as recommendations for new facilities. The plan provided specific route recommendations for major Countywide connectors, and general recommendations for improvements at the neighborhood level.

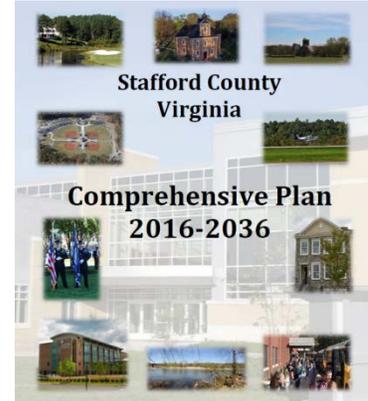
Recommendations of the 1996 Bicycle and Pedestrian Facilities Plan include:

- A Level of Service target of 1 mile of bicycle trails and 1 mile of hiking trails per 1,000 population
- Approximately 58 miles of new bicycle facilities and 24 miles of existing facility upgrades
- Improvements at specific intersections
- Revisions to the Subdivision and Zoning Ordinances to ensure that adequate bicycle and pedestrian facilities are provided
- Continued meetings of the Pedestrian/Bicycle Transportation Committee to advise the Board of Supervisors on matters relating to these facilities



### *1.1.2. Basis for Plan*

The 2016-2036 Comprehensive Plan was developed in compliance with Code of Virginia requirements. A component of the Comprehensive Plan is the Transportation Plan, which provides recommendations relating to many transportation facilities, including bicycle and pedestrian facilities. The current Transportation Plan provides some general recommendations for these facilities, but does not identify specific improvements or facility types. The updated Bicycle and Pedestrian Facilities Plan will be complimentary to the Transportation Plan and focus on facilities which accommodate pedestrians and cyclists.



The 2016-2036 Comprehensive Plan includes two action items relating to bicycle and pedestrian facilities. The two items are:

- TR2)(a) Update the Bicycle and Pedestrian Facilities Plan
- TR2)(b) Explore the potential for bicycle and pedestrian trails to be located in pipeline, electrical, or other easements

These two action items will be addressed with this plan update. A component of this plan is to evaluate the feasibility for bicycle and pedestrian facilities within utility corridors and railroad right-of-ways. This plan will also expand on the efforts previously undertaken by the Bicycle/Pedestrian Transportation System Committee in the development of the 1996 Bicycle and Pedestrian Facilities Plan.

## 1.2 Benefits of Bicycle and Pedestrian Facilities

Walking and cycling are among the most accessible recreational activities, and can be enjoyed by all demographics in both urban and rural locations. Due to the popularity and accessibility of walking and cycling, the provision of facilities can result in a wide range of benefits, including:

### Health Benefits

A more active population has positive implications for physical and mental health. The 2016 Benchmarking Report published by the Alliance for Biking and Walking analyzed American Community Survey (ACS) data and found that in states where walking and biking to work are more prevalent, health conditions such as diabetes, obesity and hypertension are less prevalent. Walking and cycling can also provide greater opportunities for social interaction.

### Safety Benefits

Many people walk or bike to destinations out of necessity or convenience in areas where there are inadequate facilities. Some cyclists will ride on roadways for recreational purposes even if adequate facilities are not present. These situations pose a risk for not only pedestrians and cyclists, but motorists as well. Dedicated bicycle and pedestrian accommodations provide separation from automobile traffic, reducing the likelihood of injuries or fatalities. These



facilities can also provide visual cues to the facility user and motorists to heighten the awareness of these users in potential conflict areas.

### Economic Benefits

Well-connected bicycle and pedestrian facilities can also be assets for local businesses and their employees, and can be a factor for businesses looking to establish operations in a jurisdiction. Facilities in and around neighborhoods can help attract buyers and benefit property values. Destination trails, such as recently completed Virginia Capital Trail between Richmond and Jamestown, can enhance tourism and contribute to local revenues. There can also be economic benefits for the facility user; for example, fuel/maintenance savings for those with a car, and as a safe means of transportation to work, shopping or other destinations for those without access to a car.

### Traffic Benefits

Connecting schools, parks, shopping centers, places of employment and transit hubs with pedestrian and bicycle facilities can lead to reduced vehicle trips and road congestion. This can help mitigate the effects of a growing population on the transportation network.

### Environmental & Recreational Benefits

Any trip that can be completed on foot or bicycle rather than by automobile will have positive impacts on environmental quality. Trails through natural areas and connections to parks, historic sites and other natural resources can enhance the County's recreational offerings and provide opportunities for environmental, historical and cultural interpretation.

## 1.3 Plan Development Process

This section outlines the tasks completed in preparing the Bicycle and Pedestrian Facilities Plan.

### Information Gathering and Analysis

In 2017, Planning & Zoning Department staff began gathering information relating to previous plans, current local and regional planning efforts, existing conditions, current or planned projects, and existing or planned population concentrations. This effort included the review of pedestrian/cyclists crash data, facility types, and the 2013 George Washington Region Bicycle and Pedestrian Plan, which provides regional recommendations for the City of Fredericksburg along with Stafford, Spotsylvania, King George, and Caroline Counties.

### Initial Route Recommendations

In 2017 through early 2018, Planning & Zoning staff met regularly with Public Works and Parks & Recreation staff to determine suitable local and regional routes throughout the County. This effort was completed primarily by reviewing previous recommendations, existing conditions, safety, and current/planned project data gathered in the initial plan development process. The effort also included some field verification of existing conditions and assessment of needs.

### Stakeholder & Public Input

Draft plan documents were shared with stakeholders and public for review and input throughout the plan development process. In June 2018, staff held a meeting with key stakeholders to solicit feedback on draft route recommendations, facility design, general plan content. In August 2018, staff conducted an online survey and hosted two public workshops. Preliminary recommendations were shared at the public workshops, and staff gathered additional input. Stakeholder and public input is summarized in Section 3.5, and detailed comments are provided in the Appendix.



### Draft Plan Completion

Staff finalized a draft plan in March 2019. The plan provides facility recommendations on a Countywide and neighborhood scale, and Goals and Objectives to guide decisions relating to the development of bicycle and pedestrian facilities. Implementation strategies were also developed to identify the necessary steps and possible resources to accomplish plan goals. These plan elements reflect input received through stakeholders and the public.

### Public Hearings

After making adjustments to the draft plan based on input received from the public, public hearings were held before the Planning Commission and Board of Supervisors. The final version of the plan reflects input received from the citizens, Commission, and Board.

## 1.4 User Characteristics

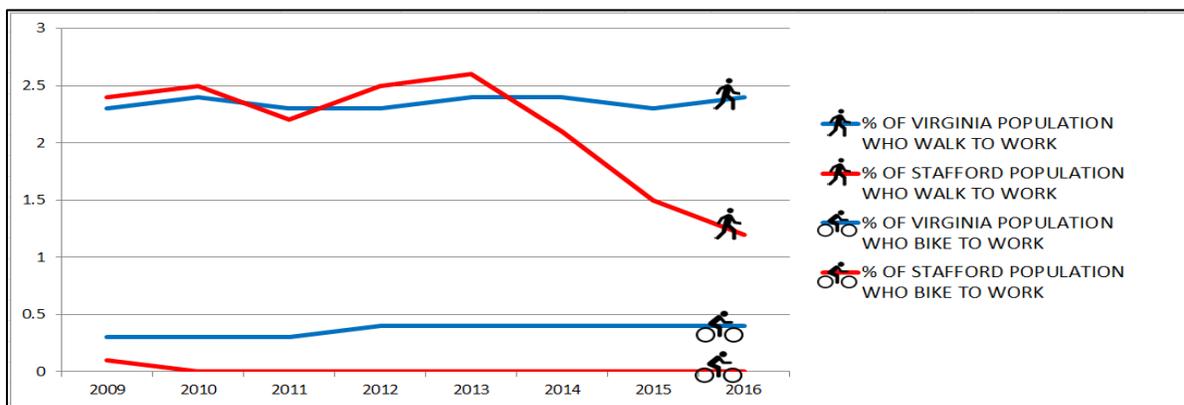
Different bicycle and pedestrian facility user types can have different needs based on multiple factors. This section provides an overview of demand for pedestrian and bicycle facilities, and outlines user types as well as facility needs for different types of users.

### 1.4.1. Facility Demand

Surveys consistently rank walking as one of the most popular recreational activities in the nation. A survey published by the Virginia Department of Conservation and Recreation (DCR) in 2017 identified trails as the second highest demand recreational resource in the George Washington regional planning district, slightly behind access to natural areas (which is also best achieved through the provision of trails). This survey also identified walking as a recreational activity with one of the highest participation rates.

Cycling is growing in popularity in Virginia and nationwide. A survey published by the League of American Bicyclists in 2016 analyzed American Community Survey (ACS) data, and found Virginia to be in the top 3 states for bicycle commuting growth. According to the report, the nation experienced a 46% growth in bicycle commuting between 2006 and 2016, and the growth in Virginia in that time span was around 100%.

The ACS provides data on commute times as well as the percentage of the population who walk or ride a bicycle to work.

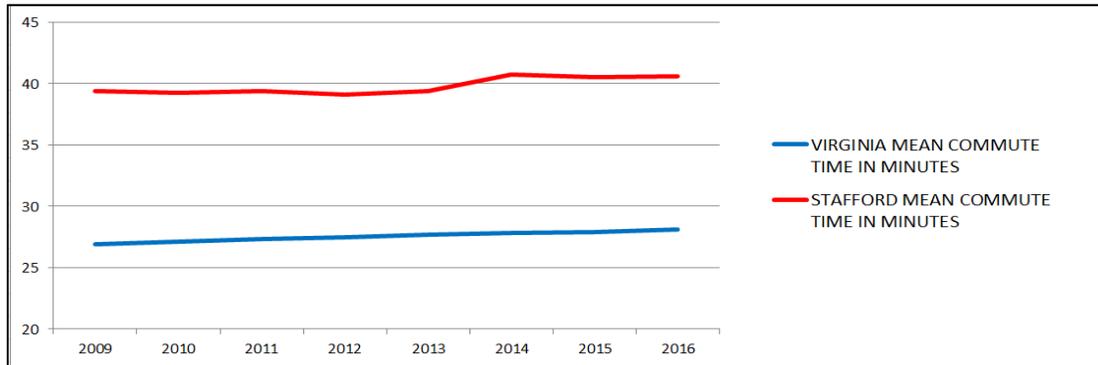


*Percentage of Virginia & Stafford Population Walking or Biking to Work (2009-2016 ACS Data)*

The graph above indicates that the percentage of Virginia residents commuting by foot or bicycle has remained somewhat steady over the past several years. In 2009, the percentage of Stafford County residents walking to work was close to the statewide percentage; however the percentage began to trend downwards in 2013. The percentage of Stafford residents bicycling to work has remained low throughout the 2009-2016 time frame.

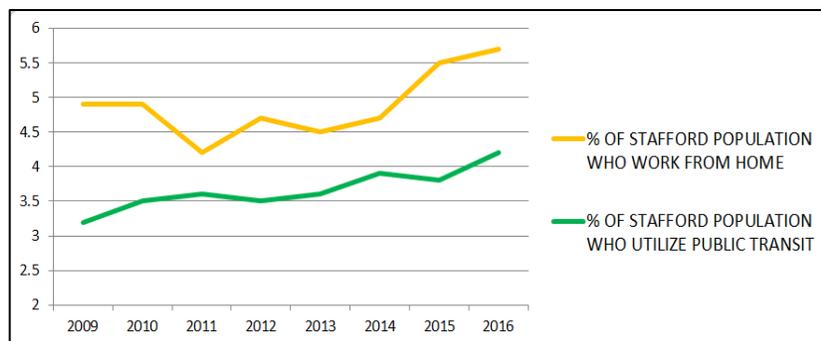
Mean commute times for Stafford County residents is around 12 minutes higher than for Virginia residents overall. Commute times can be impacted by many factors, the most obvious being the distance to one's workplace. In more urban settings, traffic can also significantly impact travel

times. In these areas, increased travel time due to traffic can lead to increased demand for multi-modal transportation opportunities.



Virginia & Stafford Mean Commute Time in Minutes – All Modes of Transit (2009-2016 ACS Data)

Commute times for Stafford residents and Virginia residents overall have remained somewhat steady with a slight increase from 2009-2016. The percentage of Stafford residents commuting by motor vehicle has also remained steady at around 88% throughout this time frame. This data suggests that there are other factors contributing to the decline in the percentage of population walking to work since 2013. This is possibly in part due to an increase in residents who utilize public transit or work from home since 2013.



Other potential contributing factors may be decreased safety of pedestrian routes with higher motor vehicle traffic, or a decreased sense of safety for facility users.

Walking or biking directly to work will remain impractical for the majority of the population due to the distance to the workplace. With this in mind, pedestrian and bicycle connections to nearby transit hubs such as bus stops, rail stations and park and ride lots will likely have the greatest impact for commuters.

### 1.4.2. User Types and Needs

#### Pedestrians

The majority of the existing facilities in Stafford County are designed for pedestrian-only use. These facilities mainly consist of sidewalks within neighborhoods and along primary and secondary roads in the more developed areas of the County. Facility needs for pedestrians can vary depending on the user types. Families with young children will favor facilities of adequate width and smooth surface for equipment such as strollers and scooters. This user group typically utilizes facilities for recreational purposes or for short destination trips to destinations near the home such as to a park or school.

Safety is a very important factor for this user group, and well buffered facilities along low speed and low volume roads will be preferable. Older children and teenagers are highly active and more likely to travel longer distances to reach a destination. This user group can act unpredictably and with a sense of invulnerability, and it is therefore important not only to design facilities with traffic safety in mind, but to increase awareness of motorists in areas of high pedestrian traffic. Adults are more aware of traffic and their surroundings, but still favor facilities that are adequately separated from vehicle traffic with clearly designated crossings.

#### Cyclists

Cycling is enjoyed by people of many different ages and abilities. Users may use bicycles as a means of transportation, exercise, and enjoyment.

A report by the Portland Office of Transportation established a categorization for people based on their biking habits. These four categories have been applied to numerous planning efforts, with the goal of identifying potential facility users and guiding facility placement and design.

These 4 categories are:

- *Strong and Fearless (Advanced)*

This group of cyclists are willing to bike in areas with limited or no bicycle facilities. They often prefer riding at high speeds, and are more comfortable negotiating vehicle traffic. These cyclists may frequently ride to certain destinations such as their workplace or a transit hub. Others may frequently ride for exercise and recreation. This group



tends to take more direct routes to destinations, and thus improvements to the existing street network is an effective way to accommodate their needs. These improvements could include bike lanes or wide shoulders. Shared-use paths can also accommodate advanced cyclists, however in more populated areas with higher pedestrian traffic there can be conflicts between advanced cyclists and pedestrians.

- *Enthusied & Confident (Intermediate)*

These cyclists are comfortable riding in areas that have bicycle facilities such as bike lanes. Appropriate improvements for basic cyclists can include bike lanes on low volume/low speed roads, buffered or protected bike lanes on busier roads, or a separate shared use pathway.



- *Interested & Concerned (Beginner)*

This group is interested in cycling, but may be deterred from doing so in many locations due to safety concerns. These cyclists are casual riders who are less comfortable negotiating vehicle traffic. They tend to ride shorter distances for recreational purposes. This group prefers facilities which are completely separated from vehicle traffic. This group includes children and pre-teens, who are less aware of their surroundings and may be unable to effectively negotiate traffic. These riders tend to take short trips within their neighborhoods or to nearby destinations such as parks and schools. This group prefers well separated facilities, or low volume/low speed residential streets. Appropriate improvements for these cyclists can include separate shared use paths, clearly designated street crossings, and signage along neighborhood roads to raise awareness of motorists. This is typically the largest category of users, which means that a significant portion of the population may benefit if safe and accessible facilities are provided.



- *No Way No How*

This group is not interested in cycling, regardless of the types of facilities available.

### Summary

As a general rule, pedestrians and cyclists want to use facilities that provide convenient access to nearby destinations, and provide adequate separation or protection from vehicles creating a sense of safety. Recreational users will also value those facilities which are scenic in nature or that provide access to parks and other natural or historic points of interest. Certain facilities will not be conducive for certain users. For example, a bike lane is unlikely to be used by a family with young children, a paved shoulder on a rural road would not be ideal for a beginner level cyclist, and indirect or meandering paths are more likely to serve recreational users. It is important to keep the factors in mind when planning for facilities, and for the facility to accommodate the likely users and fulfill unique needs of each location.

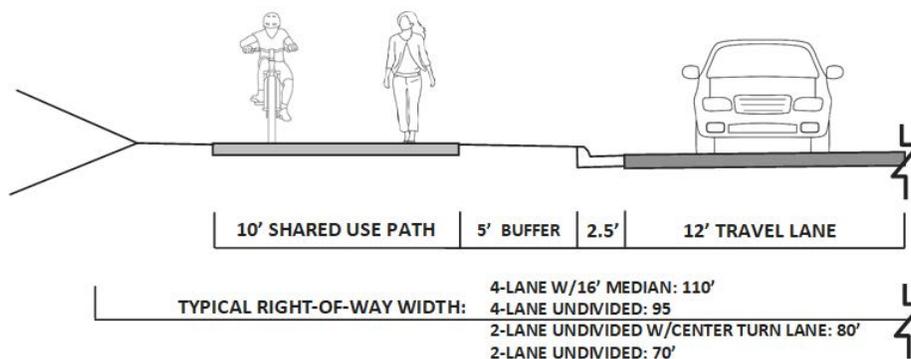
## 1.5 Facility Types

This section provides an overview of facility types, and outlines design considerations for different types of bicycle and pedestrian accommodations. In most cases, facilities are located within VDOT right-of-way along roads and would be subject to VDOT design requirements. These requirements are detailed in the Road Design Manual produced by VDOT. The information below is intended as a supplement to VDOT minimum requirements. These design standards represent typical layouts; however the ultimate configuration of facilities will be subject to factors such as available right-of-way, topography, and the location of utilities and other site conditions.

### Shared-Use Paths

Shared-use paths are facilities of adequate width to accommodate both pedestrians and cyclists. These facilities are separated from the roadway and include a buffer area in which road signage, utilities or landscaping is placed. In areas with high volumes of pedestrian and/or cyclists, shared-use paths may create conflicts between these different users. In these situations, the benefits of dedicated facilities for both pedestrians and cyclists should be considered.

Facilities along roadways should be paved and a minimum of 10 feet in width. These facilities may be provided on sides of the road, or on one side of road if adequate crossing opportunities are provided.

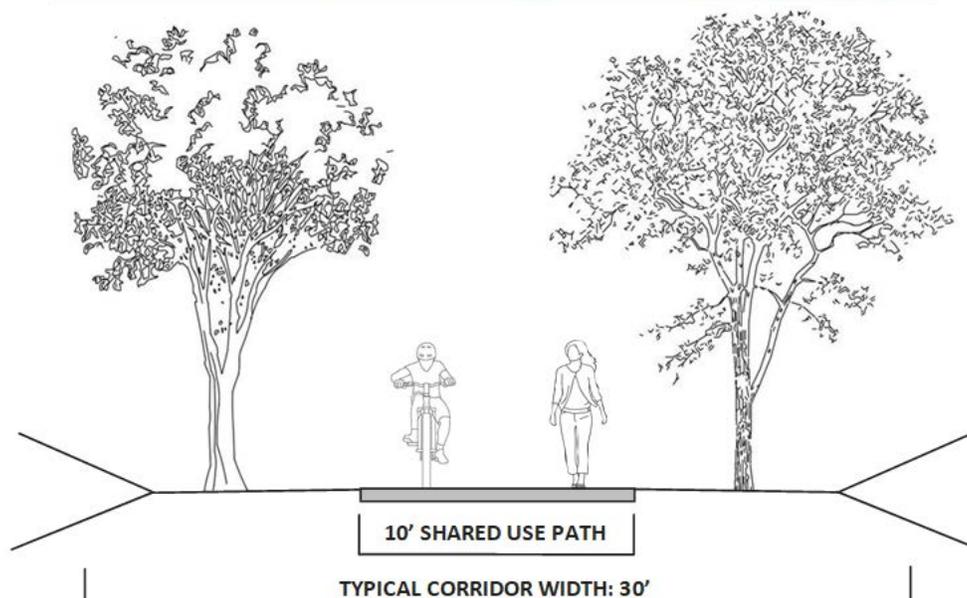


### Shared-Use Paths (off-road/scenic)

Shared-use paths are also common within parks and through natural corridors. These off-road facilities are typically oriented towards recreational users, as the routes are often indirect and scenic in nature. These paths may also feature steep slopes and varied surface types.

Off-road shared-use paths may be located in remote areas which are more difficult to access by motor vehicle. In these situations, special consideration should be given for emergency vehicle access. Regular vehicle access points should be provided along the route to ensure that emergency responders can reach individuals using the trail in a timely manner. These access points will also provide easier access for trail maintenance.

In order for pedestrians and cyclists to be safely accommodated, shared-use paths should be a minimum of 10 feet in width. These facilities should have a paved surface to accommodate the widest variety of users and to reduce maintenance demands. A compacted aggregate surface or natural surface may be appropriate in environmentally sensitive areas.



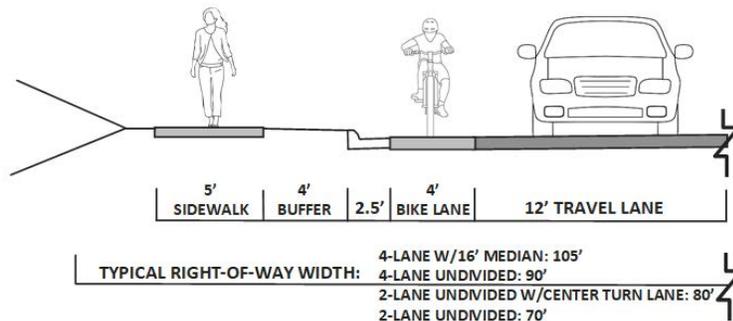
**Bike Lanes**

Bike lanes allow for greater separation between motorists and cyclists, but are not ideal in certain situations and for certain user types. Bike lanes along high volume and/or high speed roads can be ineffective at providing a sense of safety for the user. When bike lanes are implemented on these types of roads, a buffered bike lane or protected bike lane should be provided.

- *Buffered bike lane:*  
Provides additional space between vehicle travel lanes and the bike lanes. This is typically done with additional striping.
- *Protected bike lane:*  
Provides a physical barrier between vehicle travel lanes and bike lanes. Examples of barriers include plastic posts, curbs, and bollards.



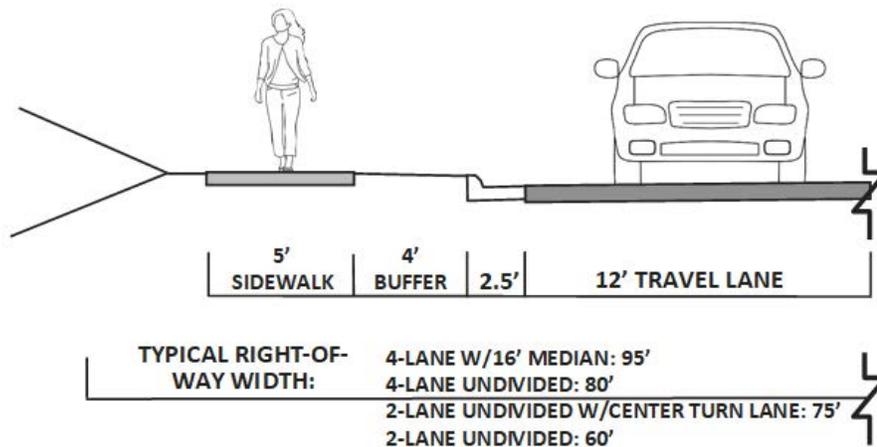
Bike lanes should be a minimum of 4 feet in width, with clear roadside identification signs and markings on the bike lane itself. These facilities should be provided on both sides of the road. Consideration should be given for bike lane maintenance, including the removal of debris. Trash, dirt and other debris from motor vehicles can collect in bike lanes and create a hazard for cyclists.



**Sidewalks**

Sidewalks are the most common facility for non-motorized travel. These facilities are typically around 5 feet in width, are located in more urbanized areas and are intended to accommodate pedestrians. Cyclists sometimes utilize these facilities as well, but this is often due to a lack of safe bicycle facilities.

Sidewalks should be 5 feet in width, and should be used in combination with dedicated bicycle facilities such as bike lanes where appropriate. Sidewalks should be provided on both sides of the road, and include a 4 foot buffer between the sidewalk and curb.

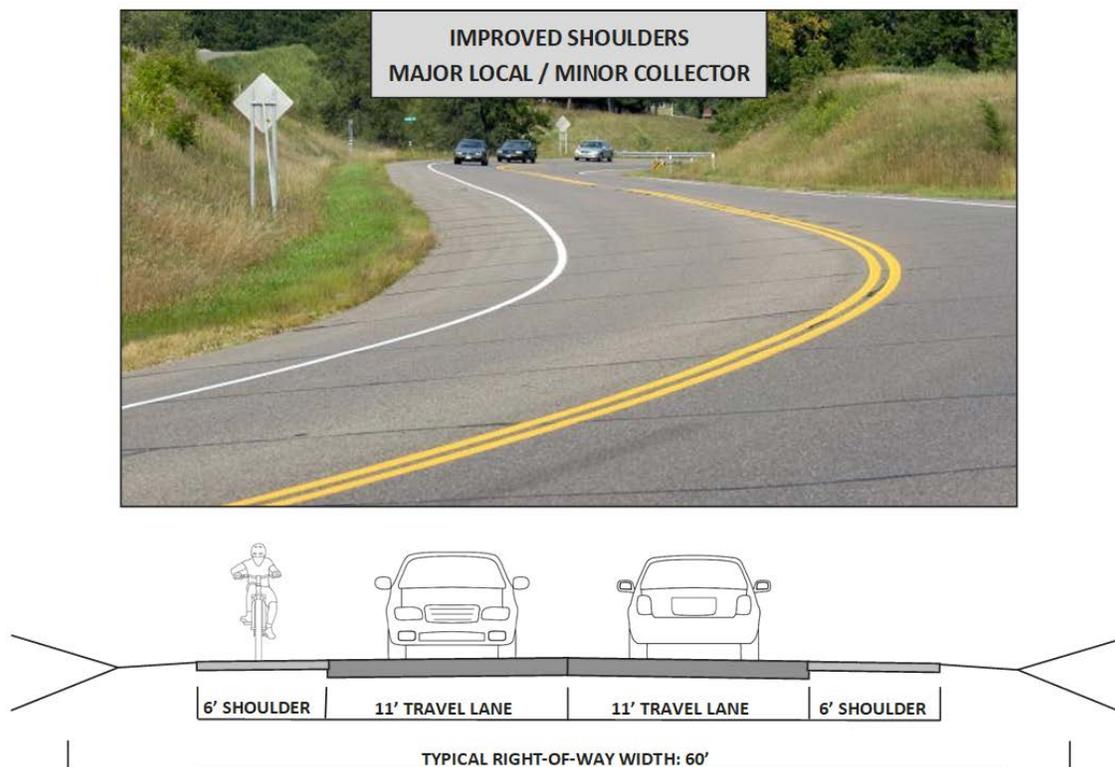


### Wide Shoulders

Shoulders are utilized on rural roads with roadside ditches as opposed to curb and gutter. For motorists, shoulders allow for emergency stopping as well as space for evasive maneuvering to avoid obstacles such as animals or an oncoming driver veering out of the lane. Shoulders also provide additional recovery space if a driver loses control of their vehicle. For emergency response vehicles, shoulders can provide space to pass other vehicles. For pedestrians and cyclists, shoulders provide separation from vehicle travel lanes. Wide shoulders can be an acceptable way of accommodating cyclists in rural areas, where the volume of cyclists is low and infrequent. It should be acknowledged that these types of facilities will only be appropriate for Group A (advanced) cyclists.

Many rural roads in Stafford County are without shoulders. Major local roads and minor collector roads without shoulders are identified in the Transportation Plan chapter of the Comprehensive Plan as in need of upgrades to meet current 2-lane road standards. These upgrades would include the addition of paved shoulders.

Shoulders should be paved and 6 feet in width, and should be located along both sides of the road. Wide shoulders should be considered the minimum improvement for major local roads and minor collector roads. The proposed wide shoulder improvements depicted in the Recommendations Chapter do not represent all roads in need of shoulders/2-lane upgrades; rather, the improvement needs depicted on the maps are intended to identify roadways that may best benefit rural area cyclists.



## Crossings

Well-designed and appropriately located bicycle and pedestrian crossings are a critical component of a safe and well-connected facility network. Crossing designs can take many forms depending on location, road classifications, lane configuration, traffic volume and other factors influencing risk exposure for pedestrians, cyclists and motorists.

- *Crosswalks:*

Crosswalks are typically designated with striping and signage, but can also be distinguished with pavers or decorative paving in certain locations so that they are more obvious to motorists. Crosswalks should be located across roads where traffic is controlled by a stop sign or traffic light. At intersections with traffic lights, pedestrian signal heads should be utilized.

When crossings are required across major roads, the provision of refuge islands within medians should be considered. Refuge islands provide a safe waiting area and allow for lanes to be crossed in multiple steps, which can reduce risk by allowing pedestrians and cyclists to focus on one vehicle movement direction at a time.



- *Separated grade crossings:*

Separated grade crossings are a useful means of accommodating safe passage across roads, railroads or environmental features. These facilities are costly to construct, and are typically utilized in areas with high pedestrian, bicycle, or motor vehicle traffic where there are no viable alternatives to safely accommodate users. Underpasses or tunnels are best implemented in conjunction with new road construction.



Pedestrian bridges, underpasses or tunnels are effective for crossing major roads in locations where there are no controlled intersections. They are also beneficial at large intersections where traffic volume, speed, roadway widths and/or traffic patterns make crossing via a crosswalk difficult and dangerous.

For off-road or scenic trails, pedestrian bridges and boardwalks are a common means of crossing wetlands, streams or other drainage areas. Depending on the location, these structures may need to be designed to support the load of motor vehicles to facilitate maintenance or emergency vehicle access to portions of the trail.

### ADA Compliance

The Americans with Disabilities Act (ADA) establishes design requirements for pedestrian and bicycle facilities to accommodate individuals with disabilities. ADA compliance often require the provision of ramps, minimization of slopes, and other features such as tactile warning surfaces and clearly marked crosswalks at street intersections. It is also important for these facilities to have a smooth, even surface and be clear of obstructions such as vegetation encroaching into the clear zone.

In some situations, it may not be practical or possible to provide accessible facilities that meet ADA guidelines. Off-road trails may traverse uneven and steep terrain, and may consist of uneven surface materials such as gravel. Space constraints or topographic challenges may also limit the ability to provide ADA compliant facilities along roadways in some locations. In these cases, alternative ADA compliant routes should be considered either in place of or in addition to non-ADA compliant routes.

### Signage & Marking

Adequate signage and road markings should be provided and maintained along pedestrian and bicycle routes. These are low-cost improvements that are easily implemented, and can have numerous benefits.

- *Safety:*  
Signage and road markings benefit safety by increasing awareness of pedestrians, cyclists and motorists. They also help ensure that users stay within designated travel lanes, cross at designated locations, and yield to other traffic.
- *Route identification and wayfinding:*  
Signs and road markings are important navigational tools, and allow routes to be identified and distinguished from other routes. Signs also provide opportunities for the unique branding of a trail route, which can establish name recognition and allow for easier navigation as well as support marketing and promotion of the facility. Signage for the East Coast Greenway is an example of how unique logos can be utilized to allow for easy route identification.
- *Shared-use road designation:*



Signage can also be used to designate certain low volume/low speed roads for bicycle use without the construction of dedicated bicycle facilities. These signs remind motorists that cyclists may be utilizing the route, and that users should share the roadway and yield appropriately. Shared-use roads can also be designated with a shared lane marking, or sharrow. These improvements should be used on appropriate secondary

roads as a low-cost means of providing connections. These may also be useful as an interim measure along routes where dedicated bicycle facilities are envisioned long-term.

### Support Facilities

Facilities such as bike racks, bike lockers, restrooms, showers, benches and water fountains support the use of a facility by enhancing convenience and user experience. These facilities can also make cycling more practical and appealing as a mode of transportation, particularly for commuters. Bike-share facilities are also gaining popularity, however their use is better suited for more urbanized and populated areas with a well-developed network of bicycle routes.



## 2.0 Goals & Objectives

Goals and objectives are intended to provide guidance for the development of facilities, strategies, and programs relating to bicycle and pedestrian accommodations. The recommendations of this chapter may be used in decision making for the placement, treatment, and prioritization of facilities.

### **Goal 1. Provide local bicycle and pedestrian facility connections that enhance access to major destinations and points of interest throughout the County.**

Objective 1.1. Establish routes between residential areas, schools, parks, and commercial areas.

Objective 1.2. Provide connections to mass transit nodes such as commuter rail stations, commuter parking lots, and bus stops.

Objective 1.3. Provide connections to waterways, unique environmental areas, and areas of historical and cultural significance.

Objective 1.4. Identify opportunities to fill gaps in the existing facility network.

Objective 1.5. Ensure that adequate local connections are provided to facilitate access to regional trail networks.

### **Goal 2. Provide facilities which enhance regional connectivity.**

Objective 2.1. Explore the use of existing utility easements and rail lines for the establishment of long distance bicycle and pedestrian facilities.

Objective 2.2. Identify natural corridors which could accommodate bicycle and pedestrian facilities.

Objective 2.3. Work with adjacent localities to identify opportunities to enhance bicycle and pedestrian connectivity between jurisdictions.

Objective 2.4. Coordinate with the regional bicycle planning efforts of the Fredericksburg Area Metropolitan Planning Organization.

Objective 2.5. Coordinate with regional trail organizations such as the East Coast Greenway and Potomac Heritage National Scenic Trail.

### **Goal 3. Provide facilities which enhance public safety and user experiences.**

Objective 3.1. Provide adequate signage to identify routes, improve wayfinding, and improve safety by increasing awareness.

Objective 3.2. Require signalized pedestrian crossings at major intersections.

Objective 3.3. Locate and design facilities such that conflicts with motor vehicle traffic are minimized to the greatest extent possible.

Objective 3.4. Locate and design facilities such that steep grades are minimized, and incorporate ADA compliant measures where possible.

Objective 3.5. Locate and design facilities in a manner that incorporates crime prevention through environmental design (CPTED) strategies.

Objective 3.6. Ensure that off-road paths include regular access points for emergency or maintenance vehicles.

Objective 3.7. Provide adequate bicycle storage facilities at destination points.

### **Goal 4. Establish an implementation strategy for the development of bicycle and pedestrian facilities.**

Objective 4.1. Consider the recommendations of the Bicycle and Pedestrian Facilities Plan when planning for roadway improvements and when reviewing zoning reclassification requests or other land use applications.

Objective 4.2. Encourage the construction of bicycle and pedestrian facilities in conjunction with private development projects.

Objective 4.3. Incorporate bicycle and pedestrian facilities in public development projects where appropriate. This may include parks and other public facilities, road improvements, new road construction, and utility projects.

Objective 4.4. Prioritize bicycle and pedestrian facility projects based on factors such as safety, gaps in the existing network, underserved areas, the timing of other planned infrastructure projects, and the recommendations of related planning efforts

Objective 4.5. Ensure that planned bicycle and pedestrian facilities are coordinated with Marine Corps Base Quantico and Stafford Regional Airport where appropriate.

Objective 4.6. Strengthen provisions in the Subdivision and Zoning Ordinances to ensure that adequate bicycle and pedestrian facilities are provided with development projects.

Objective 4.7. Establish design standards for bicycle and pedestrian facilities and encourage the design and construction of these facilities in accordance with this Plan.

Objective 4.8. Recommend the development of a maintenance plan for trails, which clearly indicates the parties responsible to maintain the facilities and what maintenance activities should take place in a given time period to keep the facilities in operating order.

Objective 4.9. Explore the cost of constructing and maintaining bicycle and pedestrian facilities and identify funding opportunities.

Objective 4.10. Coordinate with Economic Development to develop strategies for enhancing tourism and creating desirable environments for businesses and residents through trail development.

Objective 4.11. Generate support among local homeowners' groups, businesses, cycling groups, and individuals interested in the expansion of cycling and walking opportunities in the County.

Objective 4.12. Encourage the School Board, Parks and Recreation, Homeowners Associations, and local businesses to establish or expand bicycle safety programs.

Objective 4.13. Establish a public information and education program to raise awareness of pedestrian and bicycle facilities and to encourage their use.

## 3.0 Planning Considerations

In addition to factors outlined in the Introduction chapter, there are numerous considerations which have helped shape the recommendations of this plan. This chapter outlines these considerations.

### 3.1 Existing Conditions

#### Park Trails

Trails are provided within numerous park sites within the County including Curtis Park, Smith Lake Park, McDuff Park, Pratt Park, Brooks Park, Crow's Nest Preserve, and Government Island. These facilities are excellent recreational resources for local residents and visitors alike, and allow for unique experiences for nature observation, historical interpretation and fitness. Opportunities for non-motorized access to these park sites are often limited, requiring even nearby residents to use a vehicle to access these sites for walking.



#### Sidewalks

Many neighborhoods throughout the County include sidewalks. County Code requires that sidewalks be provided within neighborhoods which contain lots less than 0.66 acre in size. Constructing sidewalks within higher density neighborhoods was not always standard practice. Many neighborhoods such as Grafton Village, Clearview Heights, Ferry Farms, Aquia Harbour and Vista Woods predate the establishment of ordinance requirements for sidewalk construction. Retrofitting older neighborhoods with sidewalks is often a difficult and costly endeavor due to factors such as utility relocation, stormwater management and impacts on private properties. Since traffic on neighborhood streets is often low-speed and low-volume, pedestrians and cyclists are often able to walk or bike on the streets with relative safety. Safety in these situations can be enhanced by providing low-cost share the road signage and/or pavement markings to increase motorist awareness. The implementation of traffic calming measures can also help those neighborhoods without dedicated pedestrian or bicycle accommodations.

Sidewalks are also present along many commercial corridors. The recent upgrades to Garrisonville Road between Eustace Road and Onville Road included the construction of sidewalks. Many new commercial developments are required to construct sidewalks along major road frontages. Areas with older commercial developments are more likely to lack pedestrian infrastructure.



Many areas of the County have gaps in the sidewalk network due to the nature of development projects. When sidewalks are provided only within the frontage of individual developments, it can become difficult to create a well-connected facility network. These gaps may eventually be

closed with the construction of new residential or commercial developments or as part of a major road project; however they are often good candidates for county-initiated sidewalk projects. These gaps are “low-hanging fruit” that require little investment and have a big impact on the community.

### Bike Lanes

Currently the only bike lanes in Stafford are along Cool Spring Road, Deacon Road between White Oak Road and Leeland Road, and a short section of Leeland Road. Currently these roads are designated as part of US Bike Route 1. These bike lanes are not buffered or protected, meaning there are no physical barriers or striped buffer areas between the vehicle travel lanes and bike lanes. Bike lanes can be a practical facility in select locations and for certain types of riders. The use of bike lanes can be deterred if they are located along roads with high traffic volumes and/or traffic speed.



### Shared-Use Paths

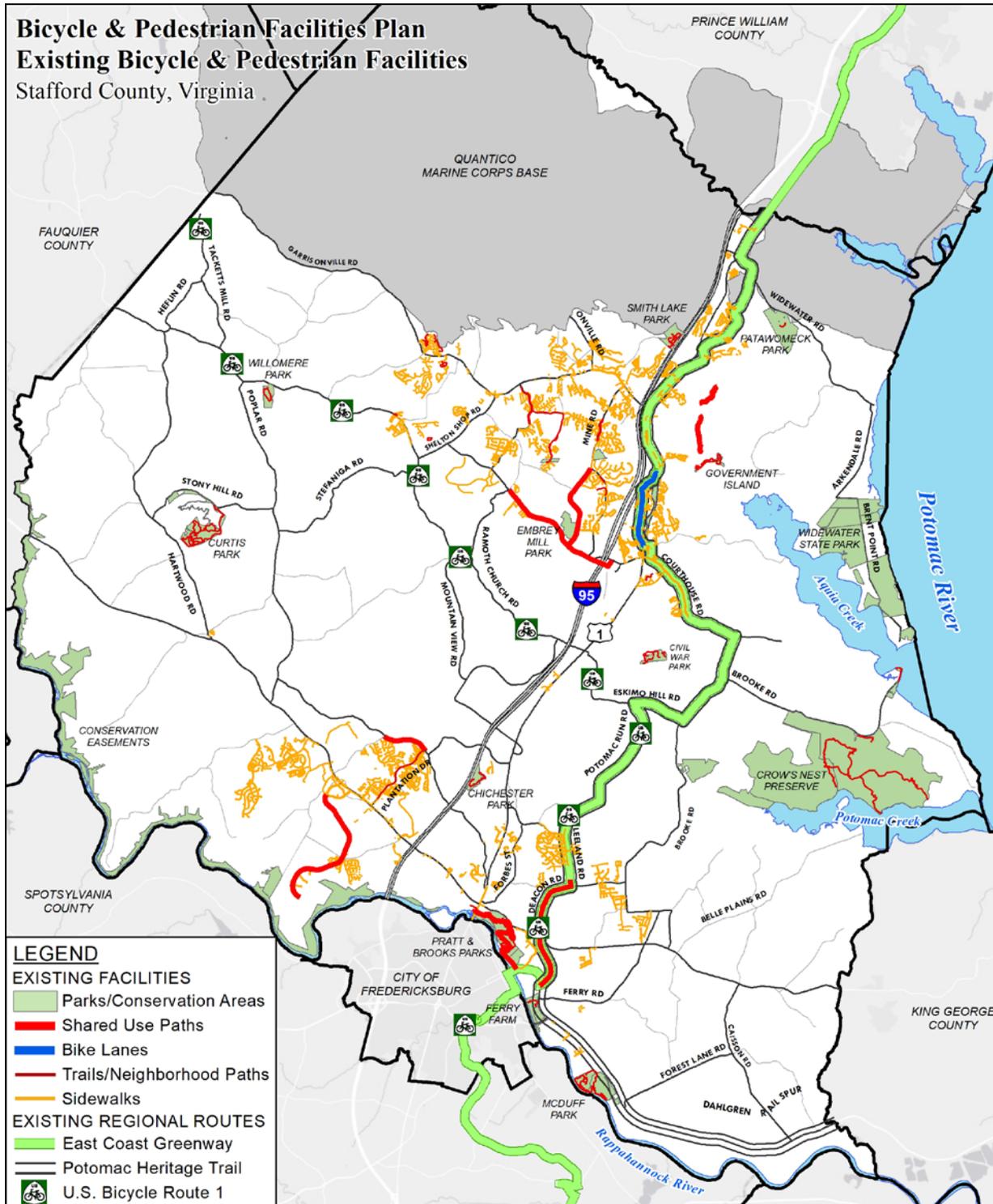
Shared-use paths, which are 8 feet or more in width, are currently constructed along Celebrate Virginia Parkway, the southern portion of Mine Road, and along a section of Truslow Road west of Plantation Drive. A shared-use path is also currently being constructed along Courthouse Road as part of the road widening project. These facilities are located along roads with curb and gutter, and include a grass strip separating the path from the roadway.

### Destination Trails

Destination trails are those with substantial length which provide access to multiple points of interest. These trails can become regional recreational tourism attractions and can benefit the local economy. The Belmont-Ferry Farm Trail is an example of a destination trail in the making. Currently this shared-use facility is constructed between River Road at Historic Port of Falmouth through Brooks and Pratt Parks and back to River Road just northwest of Chatham Manor. When completed, this 4-mile trail will extend along scenic vistas of the



Rappahannock River and will connect several historic, natural and recreational points of interest including Falmouth Village, Chatham Manor, and Ferry Farm.



## 3.2 Current Projects

### Trail Projects

The largest trail project currently underway in Stafford is the Belmont-Ferry Farm Trail. Phase 4 of the trail is currently under construction and will extend the trail along River Road to the Chatham Bridge. Future sections will extend the trail southeast to Ferry Farm. This facility could be enhanced in the future by extending trails along the Rappahannock River and providing safe pedestrian and bicycle connections between this facility and surrounding areas.

### Road Projects

There are several major road projects currently underway in Stafford County which will impact growth and mobility within the region. Interstate 95 is undergoing several changes, including the extension of high-occupancy/toll (HOT) lanes to Route 17 and the addition of three southbound lanes between Route 17 and Route 3. The Stafford interchange at Courthouse Road is also currently being replaced. This new interchange will include pedestrian and bicycle crossing accommodations on the north side which will tie into the new Park and Ride lot. The new interchange is projected to be complete by August 2020.



Other local road projects which will benefit pedestrian and/or bicycle safety/connectivity are summarized below.

### Under Construction

- *Courthouse Road Widening:*

Courthouse Road is currently being widened to a 4-lane divided configuration between Winding Creek Road and Interstate 95. This section of Courthouse Road will include a shared-use path on one side of the road, which will tie into the pedestrian/bicycle crossing at the new interchange. This project is projected to be complete by August of 2020.

- *Mine Road Extension:*  
Mine Road is currently being extended through the Embrey Mill development, between Embrey Mill Road and Austin Ridge Drive. The road extension will include an extension of the existing shared-use path located along the southern portion of Mine Road up to the Austin Ridge Drive intersection.
- *Brooke Road Improvements:*  
This project will reconstruct a 1.8 mile segment of Brooke Road. Improvements include horizontal and vertical realignment, typical section improvements (lane width, shoulder width, and roadside features), and sight distance improvements. 6-foot shoulders will be provided on both sides of the road, which will improve safety for cyclists and pedestrians along this section of Brooke Road.

#### Pre-Construction

- *Route 1/Courthouse Road Intersection:*  
This project will add turn lanes at the intersection, add medians to prevent left-out movements at several business entrances along Route 1, and will provide additional sidewalks along Route 1 and pedestrian crossing improvements at the intersection.
- *Reconstruction of the Chatham Bridge:*  
This improvement will include a 10-foot width protected shared-use path on one side of the new bridge. This will improve safety and enhance bicycle and pedestrian connectivity



between Stafford County and the City of Fredericksburg. The improvement will also tie into the Belmont-Ferry Farm Trail. This project is currently in the design phase and projected to be advertised for construction in early 2020.

## 3.3 Challenges

### 3.3.1. Safety

Safety is one of the biggest factors that deter pedestrians and cyclists from using facilities or roadways. The greatest safety risk for pedestrians and cyclists results from exposure to vehicle traffic. The availability of adequate bicycle and pedestrian facilities is a major factor influencing safety, and the behavior of pedestrians, cyclists, and motorists is also a significant factor. Causes for accidents can include a lack of awareness of surroundings, failure to following traffic laws, improper use of a facility, and walking or biking in areas without adequate bicycle and pedestrian accommodations. These conflicts are prevalent where pedestrians or cyclists cross busy or high speed roads.

#### Perception of Safety

The perception of safety for pedestrians and cyclists can sometimes be an issue in certain locations, such as in secluded, poorly lit or poorly maintained areas. Crime prevention through environmental design (CPTED) strategies, such as proper lighting and landscape design, can be employed to improve facility safety. Many CPTED strategies aim to increase natural surveillance of areas, which encourage use by the intended user as a means of discouraging undesirable behavior. One natural surveillance strategy is to design streets to increase pedestrian and bicycle traffic. Incorporating these strategies into trail design will increase facility use and improve user experiences.

#### Maintenance

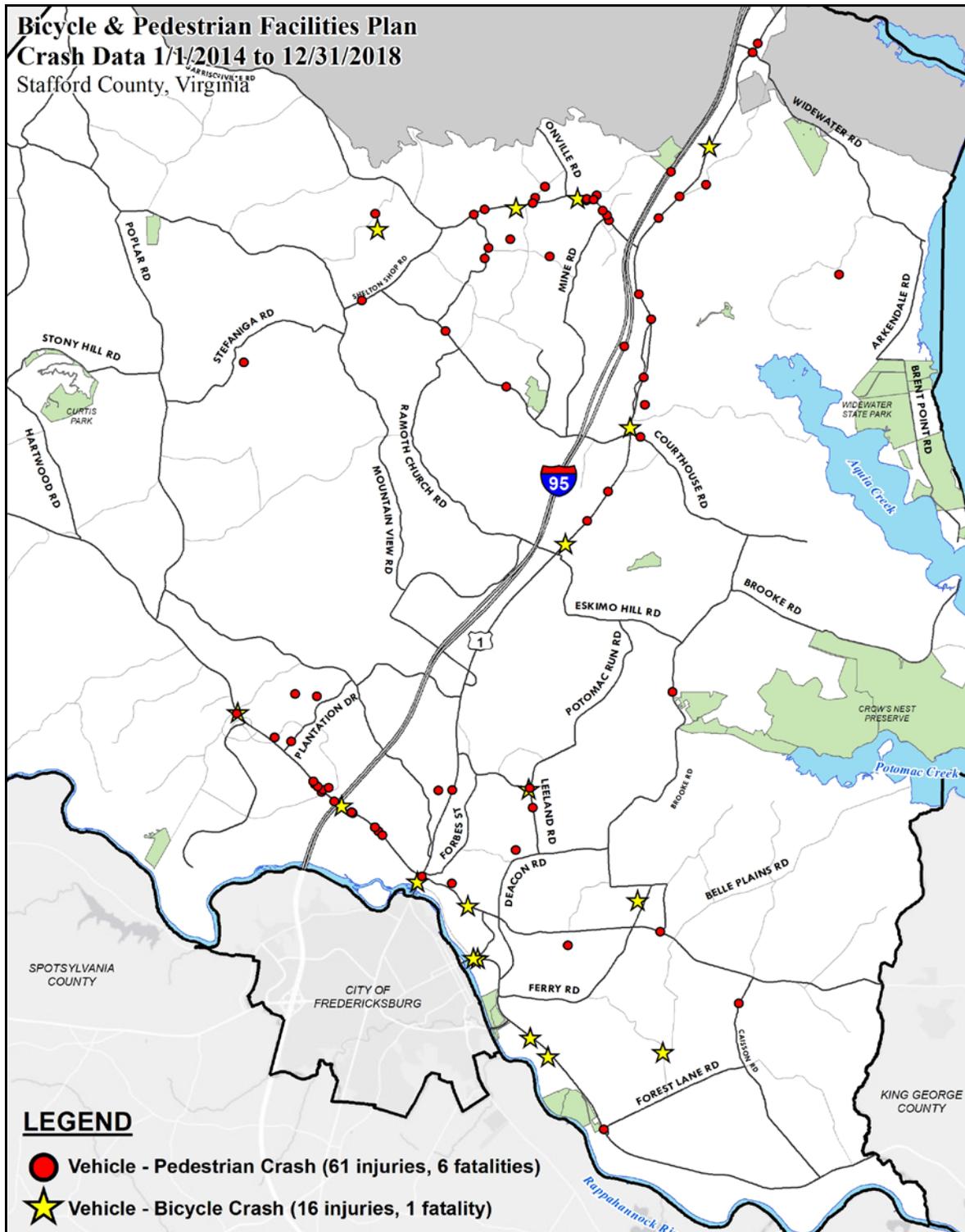
Facility maintenance is an important factor that influences pedestrian and cyclist safety. Poorly maintained pavement, road debris, and worn road markings can contribute to unsafe conditions. Neglected maintenance can negate the benefits of providing dedicated bicycle or pedestrian facilities. Regular maintenance reduces the likelihood of accidents, improves the perception of safety, and encourages use of a facility. Maintenance needs such as surface repair, vegetation control, restriping and cleaning or street sweeping should be considered for existing and planned facilities to ensure that the facilities are used to their fullest potential.



#### Crash Data

The map below depicts pedestrian-motor vehicle collisions (red circle) and bicycle-motor vehicle collisions (yellow star) in Stafford County from January 2014 to December 2018. The majority of recorded accidents in the county have occurred along the more heavily developed corridors; Route 610, U.S. Route 17, and U.S. Route 1. In this time frame, there have been 61 recorded pedestrian injuries and 6 fatalities. Bicycle-motor vehicle collisions have resulted in 16 recorded injuries and 1

fatality. This map provides insight into which areas of the county have high volumes of pedestrians and cyclists, and which areas should be prioritized for safety improvements.



### Summary

Providing dedicated and clearly designated facilities for pedestrians and cyclists can benefit safety for both the facility users and motorists. Well-designed facilities will allow for separation from vehicle traffic and will heighten the awareness of cyclists, pedestrians and motorists. The provision of these facilities reduces the likelihood that pedestrians or cyclists will utilize unimproved and dangerous roads for recreation or reaching destinations. Maintenance is a critical factor which will impact the success of a facility in the long term. Allocating resources for maintenance should be considered as important as allocating resources to construct a facility.

When considering new facilities or facility upgrades, priority should be given to those areas which experience a high number of accidents. Current data indicates high frequency of accidents along the commercialized segments of Garrisonville Road, Warrenton Road, and Route 1.

### *3.3.2. Facility Development Constraints*

This section outlines some of the constraints that impact a locality's ability to construct and maintain bicycle and pedestrian accommodations.

#### Fiscal Constraints

Limited funding is the biggest impediment to providing and maintaining bicycle and pedestrian infrastructure. These improvements are frequently seen as less of a priority compared to competing projects such as road and utility improvements. The cost of design and construction for these facilities can be substantial in some situations. For example, design and construction costs for Phase 6 of the Belmont-Ferry Farm Trail are estimated at around 2.7 million per mile. In the case of the Belmont-Ferry Farm Trail, 80% of these costs were covered through federally funded programs. There can also be ongoing costs to the County associated with facilities, particularly those that are located outside of VDOT maintained right-of-way.

Due to fiscal constraints, it is expected that the realization of the facilities envisioned in this plan will be largely dependent on:

- securing grants and other federal and state funding,
- incorporating bicycle and pedestrian facilities as a part of larger infrastructure projects such as road widening and utility work,
- constructing facilities as part of private development projects, and
- securing resources to address ongoing maintenance costs

#### Physical Constraints

Site conditions play a major role in the location and cost of bicycle and pedestrian facilities. For example, extensive grading and/or construction of retaining walls can increase project costs and property needs significantly.



Other conditions such as riparian areas and wetlands will impact the ability to provide facilities in certain areas. Impacts to these areas may be mitigated to some degree through the use of bridges and boardwalks. Pedestrian and bicycle crossing structures, along with environmental permitting, can have significant impacts on project costs. This is also true for projects requiring relocation of utilities, which is often a major cost when constructing projects along roads in more urbanized areas. For these reasons, pedestrian and bicycle improvements are often best integrated as part of larger commercial, residential, or infrastructure development projects where permitting, construction mobilization and site work is already taking place.

#### Property Needs

Property needs is another factor influencing the cost and impacts of bicycle and pedestrian projects. Facilities constructed along roads may involve acquisition of additional right-of-way, which can increase project costs considerably. Parks and other public land should be utilized to complete connections as much as possible. In some cases, off-road connections through privately owned land may be achieved through the use of public access easements. The use of utility easements for trail connections may also reduce impacts on property owners and reduce construction costs.

#### Summary

Funding is, and will continue to be, a major obstacle to developing and maintaining a cohesive network of pedestrian and bicycle facilities in Stafford County. Future County-initiated projects will be largely dependent upon the ability to secure grant funding or the ability to incorporate pedestrian and bicycle facilities into larger transportation improvement projects. Sensible selection of facility locations will also reduce construction costs and environmental impacts. Development constraints reinforce the benefits of project prioritization. Proposed facilities must be evaluated to ensure that funding is allocated to projects with the greatest public benefit. Projects must also be coordinated with other development projects such as road and utility improvements to the greatest extent possible.

## 3.4 Opportunities

### 3.4.1. County Assets

One important aspect of the Bicycle and Pedestrian Facilities Plan is to identify unique areas of the County which can be connected and complemented through the provision of pedestrian and bicycle facilities.

#### Natural Resources

Stafford County is situated along the Potomac River to the east and Rappahannock River to the south. Major tributaries such as Aquia Creek, Accokeek Creek and Potomac Creek characterize the landscape east of I-95. Other major bodies of water include Lake Mooney, Abel Lake, and Smith Lake. About 10% of the County's land area is comprised of wetlands, some of which are tidal. These areas serve important functions for water quality and are home to unique flora and fauna. There are several County parks which provide access to these natural resources, including Historic Port of Falmouth, Lake Mooney, Smith Lake, Curtis, Brooks, and Pratt Parks.



Widewater State Park is an 1,100-acre site located between the Potomac River and Aquia Creek. Future development of this park will include boat landings, trails, playgrounds, fishing access, campgrounds, picnic areas, and other passive recreational features. This park will become a major recreational destination in Stafford County as these facilities are developed.

Crow's Nest Natural Area Preserve consists of approximately 2,900 acres situated along Accokeek and Potomac Creeks just south of Widewater State Park. This park includes hiking trails and a canoe/kayak launch on Accokeek Creek. The natural resources at this park make it a compelling destination for passive recreation. Non-motorized access to the park is limited due to conditions on Brooke Road.



The City of Fredericksburg owns over 1,500 acres of riparian land along the Rappahannock River in Stafford County, from an area just west of US Route 1 to its western boundary with Fauquier County. The terrain is rugged, consisting primarily of steep slopes, and is protected by a conservation easement. The easement allows for passive recreation, and there are places where this land could be used for hiking trails. These trails could provide access to scenic vistas along the river, and water access for fishing or nature observation.

#### Historic and Cultural Resources

The County has a wide variety of historic sites which provide interpretive opportunities for the enjoyment of County citizens and visitors. Notable events in the County's history include the

mapping of environmental features and Native American settlements by John Smith in 1608, the establishment of Falmouth as a trading center in the 18<sup>th</sup> century, and occupation by federal troops during the Civil War. National Historic Landmarks in the County include Belmont, Ferry Farm, and the Aquia Episcopal Church. There are numerous other heritage resources which help tell the story of how the landscape and culture of Stafford County has evolved over time.



Government Island, a County park, features boardwalks and trails which allow visitors to explore portions of Aquia Creek and learn about the history of sandstone mining on the site. Pedestrian access to this park is facilitated along a powerline easement that extends north to the Aquia Harbour neighborhood. This is a good example of how trails can be co-located within major utility corridors. These corridors are linear and cleared of trees, which can allow for easier trail development.

### Sports Tourism Destinations

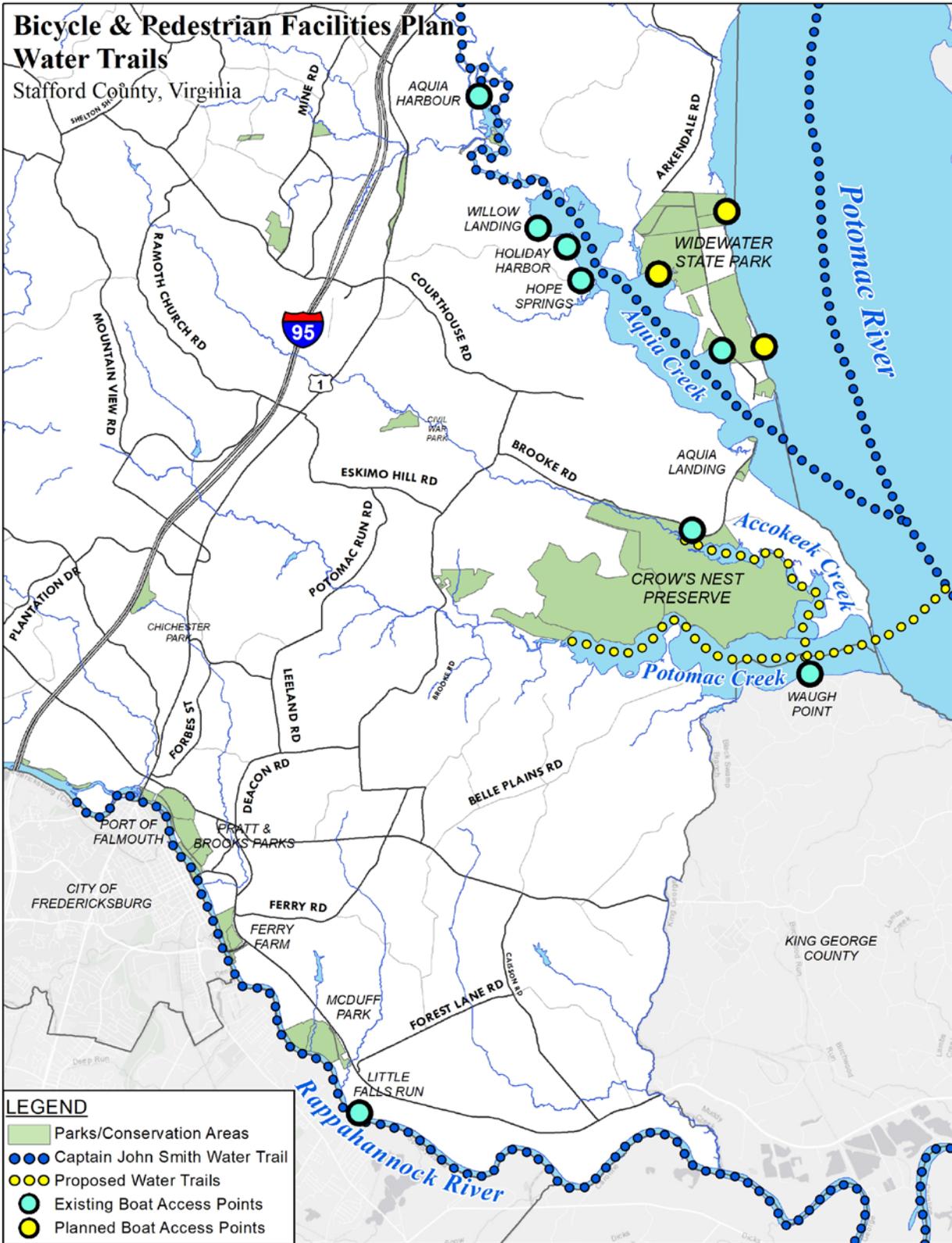
Stafford County is home to sports centers with regional significance. Embrey Mill Park features 6 synthetic fields which are utilized for local play and regional tournaments. The Jeff Rouse Swim and Sport Center, located on the same site, provides indoor recreational facilities and is a destination for training, fitness and competitions. These facilities are major sports tourism assets for Stafford County. Non-motorized access between these recreational destinations and nearby residential developments, retail, restaurants and hotels can enhance user experiences and create more attractive destinations for sports tourism.



### Water Trails

Water trails are navigable routes which connect points of interest and provide natural, historical and cultural interpretative opportunities. Water trails can be utilized for ecotourism, allowing recreational users to experience unique and fragile ecosystems in a low-impact manner. These routes begin and end at boat or small craft launch sites, and water trails often establish connections between multiple launch sites. These launch sites sometimes feature boat rental services, which presents opportunities to walk or bicycle to these sites to experience water trails.

The Captain John Smith Chesapeake National Historic Trail is a water trail which highlights the extensive explorations of John Smith in the Chesapeake Bay area between 1607 and 1609. The trail extends along the Potomac River, the Rappahannock River and Aquia Creek. The County could establish additional water trail routes along Potomac Creek and Accokeek Creek, which would tie into and compliment the Captain John Smith Trail. This would incorporate additional points of interest and route options for boaters, and would help showcase the natural and scenic assets at Crow's Nest Preserve.



### Regional Trails & Bike Routes

Also of particular relevance to this plan, there are three regional trail routes which run through the County:

- *East Coast Greenway (ECG):*

The East Coast Greenway is a 3,000 mile route running from Calais, Maine to Key West, Florida. The effort was initiated by a non-profit East Coast Greenway Alliance in 1991. The ultimate goal is to create a safe and accessible multi-use bicycle & pedestrian path connecting major cities, small towns and natural areas along the Eastern Seaboard. Currently, there is over 850 miles of protected greenway along the route. This plan proposes a realignment of the ECG route to an area with greater potential for development of shared-use facilities separated from vehicle traffic.



- *U.S. Bike Route 1:*

U.S. Bike Route 1 is one of many national long-distance bicycle routes in the United States Bicycle Routes System (USBRS). The USBRS was established in 1978 by the American Association of State Highway and Transportation Officials (AASHTO). U.S. Bike Route 1 follows a similar alignment to the East Coast Greenway, and also runs from Maine to Florida.



- *Potomac Heritage National Scenic Trail (PHNST):*

The Potomac Heritage Trail consists of 710 miles of existing or planned routes generally following the Potomac River corridor through Pennsylvania, Maryland, DC, and Virginia. The PHNST is an interwoven network of routes, and includes on-road segments which provide access to various trails and natural/historic points of interest. Segments designated in Stafford include the Government Island Trail, Belmont-Ferry Farm Trail, and Aquia Creek Water Trail.



### Existing Infrastructure Corridors

The most apparent land resources for the provision of bicycle and pedestrian facilities are existing public right-of-way along roadways, and existing public spaces such as parks. Certain railway corridors may be attractive for trail development; however, CSX currently does not permit parallel pedestrian/bicycle routes within the CSX property. CSX provides guidelines for the design of trail/railroad crossings and trails adjacent to CSX rights-of-way in a guide titled "Public Project Information for Construction and Improvement Projects that May Involve the Railroad". These guidelines should be followed when planning facilities adjacent to CSX property, or pedestrian/bicycle railroad crossings.

Other resources, such as utility corridors, may allow for cost-effective bicycle and pedestrian accommodations. Corridors such as Dominion Virginia Power property/easements and sewer

easements may be appropriate for trail development. Many of these corridors are relatively cleared and level, which lend themselves to these types of uses. Some areas, however, traverse steep topography or environmental features which can make trail development difficult. Utility corridors also often overlap developed properties, such as residential lots within neighborhoods. Due to these factors, only certain sections of utility easements may prove beneficial in the creation of pedestrian and bicycle connections. An example of a corridor with high potential is the power easement which generally runs parallel to Courthouse Road between Mountain View High School and the Hampton Oaks/Austin Ridge developments. This corridor connects multiple public facilities and neighborhoods, and primarily overlaps public lands and common areas controlled by homeowner's associations.

#### Construction and Maintenance Resources

While the cost of constructing and maintaining bicycle and pedestrian facilities can often be substantial, there are many resources which can be leveraged to assist in these efforts. For example, the majority of the funding for the Belmont-Ferry Farm Trail is provided through the Transportation Alternatives Program (TAP) and former Transportation Enhancement (TE) Program. Beyond grant funding, there are many other options which may help with construction and maintenance costs. A portion of these needs may be addressed through private development, private contributions or sponsorships, or through the work of volunteer groups. The Bicycle and Pedestrian Facilities Plan is an important resource in the pursuit of grant funding. The scoring criteria for grant funding may take into account whether or not the proposed facility is part of an adopted plan. The Plan also demonstrates that the facility is a component of a larger planned facility network.

#### Summary

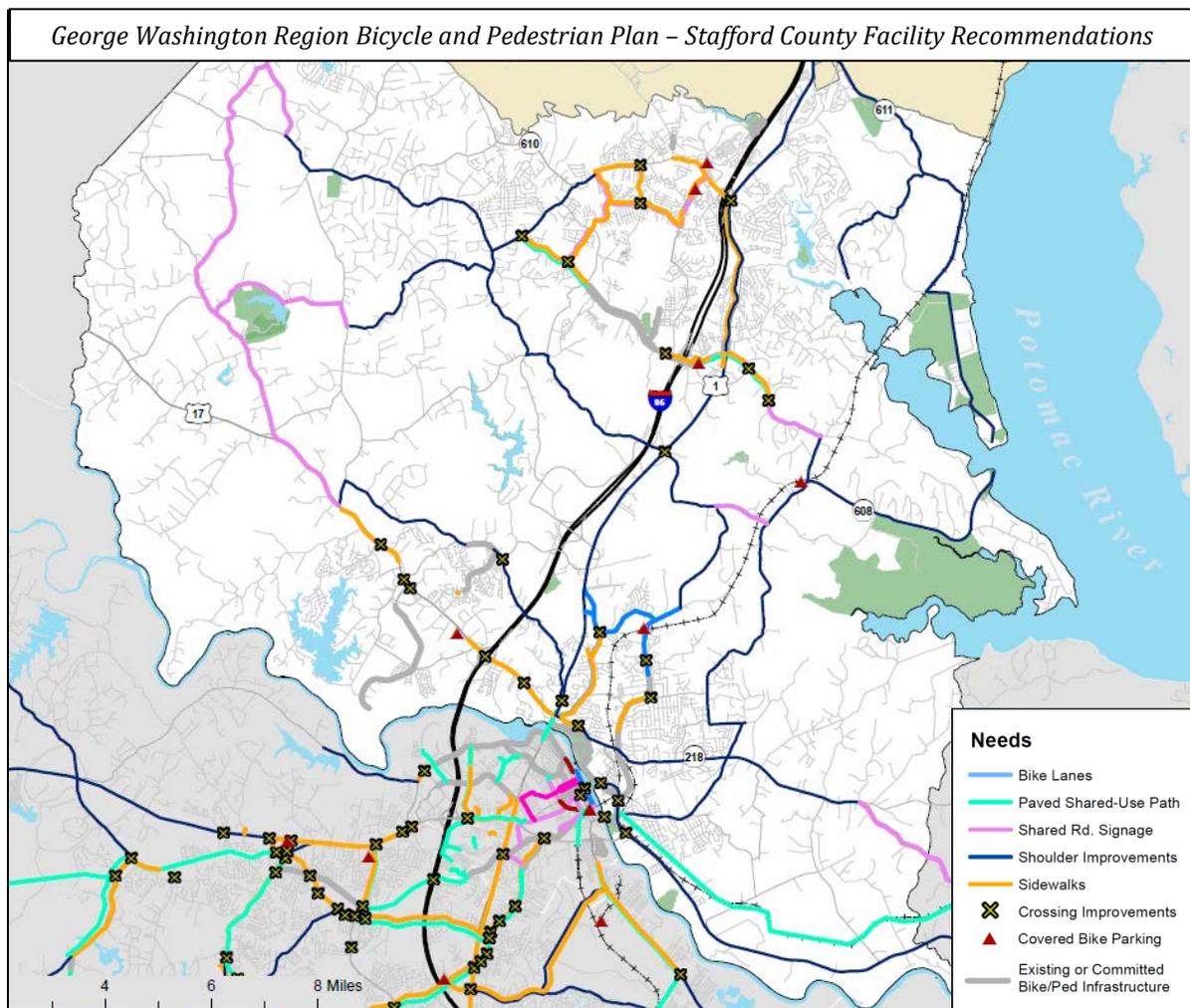
Stafford's variety of natural, historical and cultural resources creates opportunities to explore and experience these assets in unique ways. Parks provide interpretive opportunities for many sites, but a more complete user experience could be achieved by interconnecting these unique properties and by providing greater access to these resources. Many scenic locations in the County would be best explored by foot or bicycle. Trails which meander along the Rappahannock River, Potomac Creek and Aquia Creek could provide opportunities for nature observation and interpretation, and public access to these resources can be achieved through the use of low-impact trails.

Pedestrian and bicycle connections between historic sites could create the foundation for a history trail, where residents and visitors can learn about the places and events of Stafford's past. Pedestrian and bicycle facilities could be integrated into special planning areas to create spaces where the community can gather and interact. Providing facilities to support regional trail efforts such as the East Coast Greenway and Potomac Heritage Trail can promote recreational tourism and create opportunities to showcase what the County has to offer. These facilities can positively impact the quality of life for current County residents, and can be attractive amenities for prospective businesses and residents.

### 3.4.2. Local & Regional Planning Efforts

#### 2045 FAMPO Long Range Transportation Plan

The Fredericksburg Area Metropolitan Planning Organization (FAMPO) is an organization staffed through the George Washington Regional Commission (GWRC) and is tasked with conducting planning studies for the region. FAMPO recently adopted the 2045 Long Range Transportation Plan (LRTP) for the George Washington Region. The 2045 George Washington Region Bicycle and Pedestrian Plan, a component of the LRTP, provides facility recommendations for the City of Fredericksburg and Spotsylvania, Caroline, King George and Stafford Counties. These recommendations were developed based on input from the Bicycle and Pedestrian Advisory Committee (BPAC), which includes a representative from each jurisdiction. For Stafford County, the recommendations include a combination of bike lanes, shoulder improvements, shared road signage, sidewalks, and shared use paths along with road crossing improvements. The Plan recommends 148 miles of facilities and 50 crossings in the County with an estimated cost of around \$74,000,000. The Stafford County infrastructure map from this plan is provided below.



Stafford County's Bicycle and Pedestrian Facilities Plan is a separate planning effort, but Stafford's plan incorporates and expands upon many of the recommendations of the George Washington Region Bicycle and Pedestrian Plan. Stafford's plan has been developed to incorporate recommendations of adjacent localities. This will help ensure that connections between jurisdictions are established, and that the location and design of these facilities are agreed upon. Stafford County will continue to work with FAMPO/GWRC to ensure that planning efforts are coordinated to better achieve regional objectives.

#### Virginia Outdoors Plan

The Virginia Outdoors Plan is developed through the Virginia Department of Conservation and Recreation (DCR). This plan serves as the state's comprehensive guide for outdoor recreation and conservation. The current plan was published in 2013; however the plan is in the process of being updated. DCR conducts a survey every 5 years (Virginia Outdoors Demand Survey) to gauge public interest in various outdoor recreation activities. The survey conducted in 2011 indicates that trails, water access, and access to natural and historic areas are the outdoor activities in greatest demand.

Pertinent recommendations from the 2013 plan include:

- Develop a comprehensive trail system linking communities with destinations
- Provide more access to recreational waters
- Develop off-road routes in support of the East Coast Greenway
- Complete the South Stafford Bicycle Trail (Belmont-Ferry Farm Trail)

#### Parks Utilization Study

In January 2017, the Stafford County Parks, Recreation, and Community Facilities Department (PRCF) completed Phase II of their Parks Utilization Plan. This plan evaluated numerous types of recreational activities, including walking and bicycling. The plan notes that establishing non-motorized access to recreational areas is a priority, and emphasizes the many benefits of trails. The recommendations of the Bicycle and Pedestrian Facilities Plan would complement the recommendations of the Parks Utilization Plan.



#### Economic Development Strategic Plan

The Stafford County Department of Economic Development published the current Economic Development Strategic Plan in 2015. The purpose of the plan is to identify strategies to stimulate economic growth and create a more desirable community for businesses, residents and visitors. The plan notes that weaknesses in the County include transportation/congestion and underutilization of natural amenities such as waterfront areas. Opportunities identified include the development of the Courthouse area and leveraging of historic sites and waterfront amenities. Objectives of the plan include promoting mixed-use, walkable gateway areas and development of a unified and coordinated tourism plan.

A well-connected, safe network of bicycle and pedestrian facilities can help to enhance a sense of community and create desirable environments for residents and businesses. The development of long-distance routes connecting scenic and recreational points of interest would create recreational tourism opportunities. Creating a bicycle and pedestrian friendly County would help achieve the objectives of the Economic Development Strategic Plan.

### Stafford Planning Areas

The 2016 Comprehensive Plan for Stafford County identifies several planning areas where a significant amount of new development or redevelopment is expected to occur. The Targeted Growth Areas (TGAs) and the Courthouse Planning Area are of particular relevance for bicycle and pedestrian facility planning. The following is a summary of these two areas and their relationship to the recommendations of the Bicycle and Pedestrian Facilities Plan.

- *Targeted Residential Growth Areas (TGAs)*

TGAs are areas of the County where around 50% of future residential growth is recommended to be concentrated. These areas support urban and higher density suburban forms of development, and should include transit and pedestrian-oriented transportation facilities. The two largest TGAs are in the Courthouse area and Warrenton Road/Interstate 95 area. The provision of bicycle and pedestrian facilities should be emphasized in these areas. These facilities are particularly important in more densely developed and populated areas, as many destinations such as commercial areas, employment centers and public facilities may be reachable by foot or bicycle.

- *Courthouse Planning Area*

The Courthouse Planning Area includes land to the east and west of Interstate 95 along Courthouse Road. Stafford County is in the process of planning for a future downtown area within the eastern portion of the Courthouse Planning Area. The downtown area would be located at the southwest corner of Route 1 and Courthouse Road, just south of the government complex. Development of this downtown area will create a unique sense of place and help establish an identity for the County. This area would be pedestrian-oriented, and include dense mixed-use development and community gathering spaces. The area would serve as a gateway area in that it is strategically positioned by the new Stafford I-95 interchange under construction. Encouraging foot and bicycle traffic in this area will help create an active and vibrant downtown setting. Safe and accessible bicycle and pedestrian facilities should be provided within the downtown area, and these facilities should also extend out to adjacent neighborhoods to encourage non-vehicular access to the downtown area. These measures are critical in ensuring the success of this planned development.



### Stafford County Strategic Plan

In November 2018, Stafford County published a Strategic Plan entitled Stafford 2040. The goal of the Strategic Plan is to identify short term actions which would help ensure the long term vitality of the community. The strategic plan identifies seven overall strategic objectives for the County, and three-year priorities to achieve each objective. The objectives and priorities most relevant to the Bicycle and Pedestrian Plan are:



- Responsive Transportation System
  - Priority 2.1: Establish clear transportation priorities that improve safety and reduce congestion.
  - Priority 2.2: Develop a comprehensive funding strategy that establishes a dependable revenue source to maximize transportation improvements.
  - Priority 2.3: Research and identify other transportation alternatives to reduce congestion.
- The Heartbeat of Recreation, History, and Culture
  - Priority 3.2: Promote the County’s recreational, historical and cultural programs and facilities and obtain feedback on future improvements.
  - Priority 3.3: Evaluate the current process for connecting sports tourism to our other County amenities and engage the business community in developing recommendations for future improvements.

The goals and objectives of the Bicycle and Pedestrian Facilities Plan mesh nicely with the Strategic Plan. Bicycle and pedestrian facilities can have both direct and indirect positive impacts on many aspects of County operations. These facilities help create an attractive environment to live, work and play.

### VDOT STARS Program

VDOT administers a program referred to as STARS (Strategically Targeted and Affordable Roadway Solutions) with a goal of developing road safety and congestion solutions that can be programmed in the VDOT Six-Year Improvement Program (SYIP). A STARS study was recently completed for the Route 17 Business corridor. The results of this study include recommendations for pedestrian and bicycle improvements, including additional sidewalks and crosswalks. These more detailed area studies should be utilized when available to better plan and implement bicycle and pedestrian infrastructure.

### Stafford Comprehensive Road Evaluation

The Stafford County Public Works Department recently completed a Comprehensive Road Evaluation, which identified road improvement needs countywide. The study utilized a data driven scoring system to prioritize improvement projects based on factors such as existing road conditions, traffic volumes, and accident data. Recommendations from the study range from multiple-lane widenings for major roadways, to 2’ shoulder “wedge” upgrades for many secondary roads. Many of the highest priority roads identified in the study are also recommended for bicycle and/or pedestrian facility upgrades in this Plan. The results of the study should be utilized to assist with prioritization of bicycle and pedestrian improvements proposed in this Plan. Ideally, the recommendations of the Bicycle and Pedestrian Facilities Plan would be implemented with any future road improvement project; however, budget, property needs and other factors may

necessitate a more incremental approach to implementing roadway and bicycle/pedestrian facility improvements.

### Summary

The implementation of this plan should be coordinated with other related planning efforts and initiatives. This will help ensure that Stafford's bicycle and pedestrian facilities are well integrated into a regional facility network, and that the needs of different organizations and users are taken into consideration. Ultimately, this will allow for more effective utilization of available resources and will result in more successful, well-used facilities.

## 3.5 Community Input

Public input is a crucial component of planning for bicycle and pedestrian facilities. This input helps ensure that the implementation of the plan will have a significant positive impact in the community.

There have been several opportunities for the public and key stakeholders to provide input throughout the development of this plan. This input has guided facility location and design, and assisted with establishment of priorities. The various components of the community input process are summarized below.

### *3.5.1. Stakeholder Engagement*

Staff has identified key stakeholders for this effort, and their input has helped shape the plan. These stakeholders include:

- Adjacent localities – Prince William County, Fauquier County, King George County, Spotsylvania County, City of Fredericksburg
- State entities – Virginia Department of Transportation (VDOT), Virginia Department of Rail and Public Transportation (DRPT), Department of Conservation and Recreation (DCR)
- Stafford County entities – Public Schools, Parks & Recreation, Economic Development, Public Works, Fire & EMS, Sheriff's Office
- Regional planning organizations - George Washington Regional Commission (GWRC) / Fredericksburg Area Metropolitan Planning Organization (FAMPO)
- Regional trail organizations – East Coast Greenway, Potomac Heritage National Scenic Trail, Fredericksburg Trails Alliance
- Fredericksburg Area Business Association (FABA)
- Marine Corps Base Quantico planning staff
- Stafford Regional Airport Authority
- Local running & cycling clubs

Stakeholder engagement began early in the plan development process. A meeting was held in June 2018 where stakeholders provided input on plan content and draft routes. Staff used this input to refine recommendations in advance of public meetings. Staff continued to solicit input from stakeholders throughout the remainder of the plan development process.

### 3.5.2. Citizen Engagement

Citizen engagement began in August 2018, when staff posted an online survey and held two public workshops to share draft facility recommendations and gather input.

#### Public Workshops

The first public workshop was held on August 22<sup>nd</sup>, 2018 at the Howell Library. The second was on August 27<sup>th</sup>, 2018 at the North Stafford High School library. A total of 50 people attended the workshops. Staff shared draft facility route recommendations, as well as draft facility designs. Maps were available for citizens to mark desired routes and facility types. The workshops included a presentation which gave an overview of the plan and planning considerations.

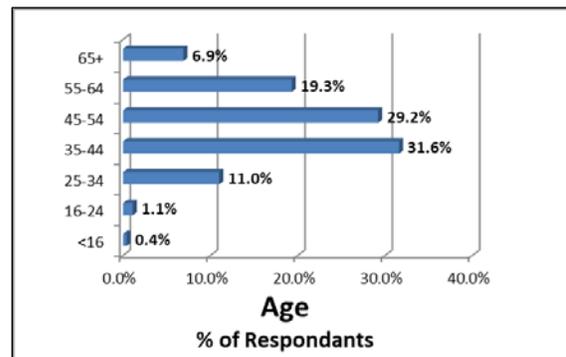


#### Community Input Survey

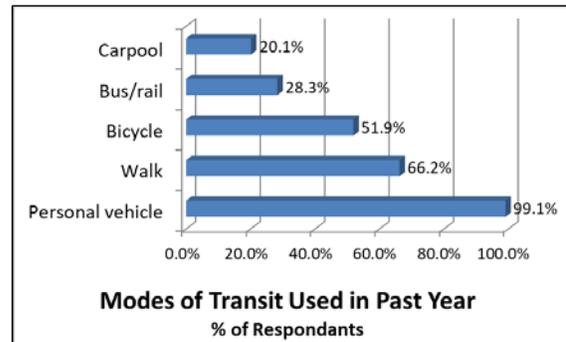
Staff posted an online survey to gather additional public input on planning considerations and facility recommendations. The survey was posted on August 14<sup>th</sup> and remained open through September 9<sup>th</sup> 2018.

Staff received a total of 538 survey responses. The input received allowed staff to better understand user types, walking & cycling habits, priority areas for improvement, and desired facility locations & design. Findings from the survey are summarized below.

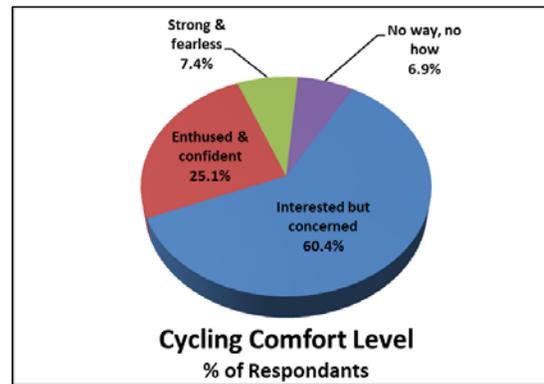
The median age of Stafford residents is around 35, however around 87% of survey respondents were 35 or older. The relatively few number of young respondents may mean that certain needs or priorities are not proportionally expressed in the results of this survey. For school age children, more weight may be placed on providing safe facilities between residential areas and schools or parks.



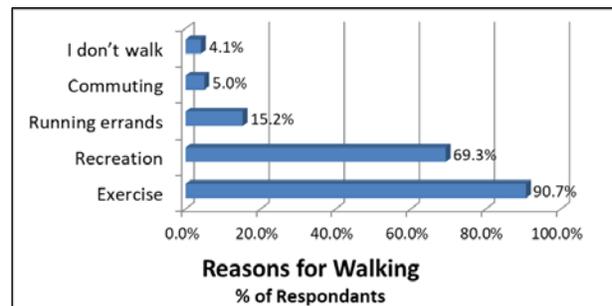
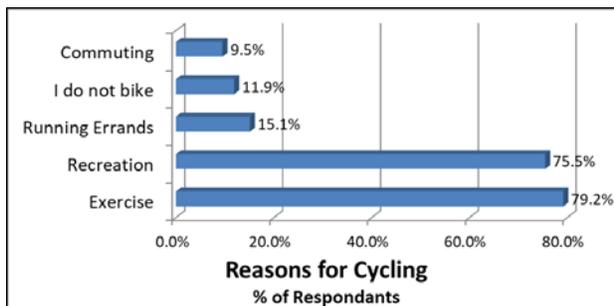
Staff asked citizens which modes of transportation they have used in the past year. Unsurprisingly, personal vehicles were at the top of the list. A substantial percentage also reported walking, biking, or using transit or ride sharing within the past year. This is an indication of the demand for bicycle and pedestrian facilities, and the benefits of connecting such facilities to transit hubs and commuter lots.



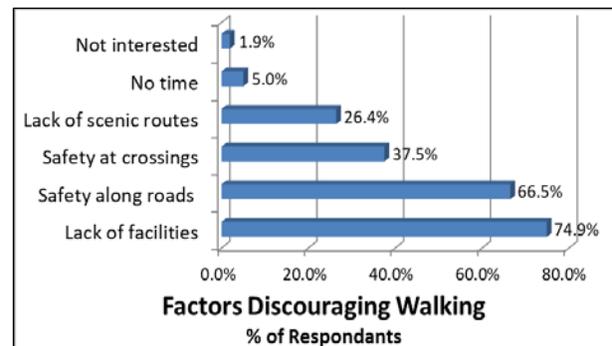
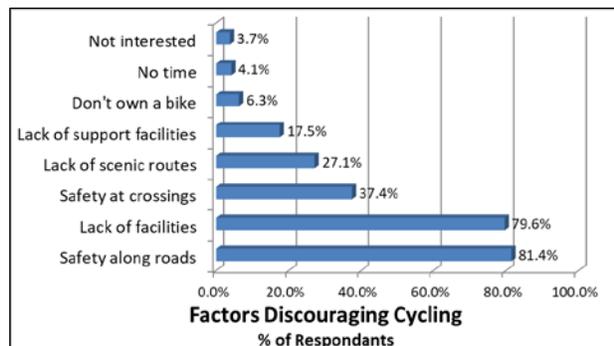
An understanding of bicycling comfort level of Stafford citizens is needed in order to effectively implement facilities that will be well used. Using the 4 categories of cyclists outlined in Chapter 1, respondents were asked to choose which best describes their cycling comfort level. Over 60% consider themselves “interested but concerned”, meaning they are most likely beginner cyclists who would bicycle more often if safe facilities separated from traffic were available. Around 25% consider themselves “enthused & confident”, meaning they are willing to use on-road facilities such as bike lanes or wide shoulders.



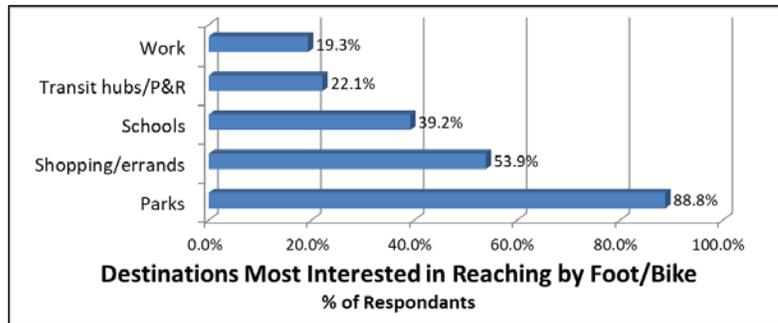
The reasons that respondents cited for cycling are similar to the reasons cited for walking, except that a greater percentage of respondents indicated that they do not ride a bike. Also, a greater percentage (11.9%) bicycle to work rather than walk (5%). The key reasons cited for both cycling and walking were exercise and recreation. This finding is reflected in other survey responses.



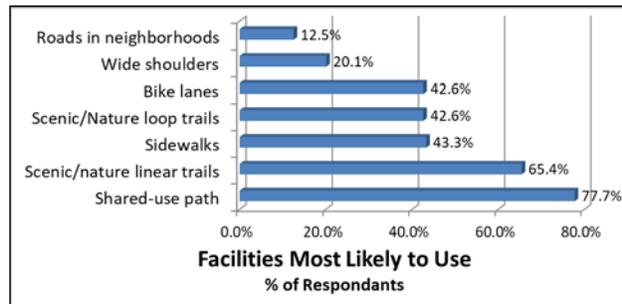
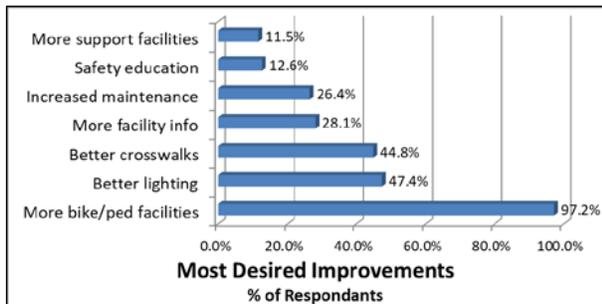
When asked what factors discourage cycling or walking, the responses were also similar between the two activities. The majority of respondents cited lack of facilities/gaps in facility network and safety along roads/at crossings as major factors keeping them from walking or biking. Over 25% also expressed that a lack of scenic/nature routes is a factor. Very few indicated that they are not interested or do not have the time. Some cited a lack of support facilities for cyclists, which could include things like bicycle racks or showers at destinations.



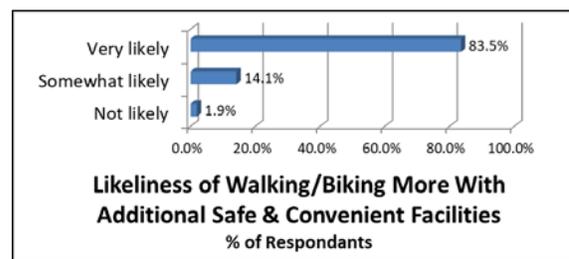
Survey respondents were asked to rank various destinations that they would like to reach by walking or cycling. Although only 1.5% of respondents are under 24 years old, parks and schools are among the top destinations for respondents. This emphasizes the demand for connections to public facilities. Over half of respondents indicated that connections to shopping areas are desirable. A significant percentage also cited transit hubs, park & ride lots, and the workplace as desired destinations.



Respondents were asked which types of improvements are most desired, and which types of bicycle or pedestrian facilities they would be most likely to use. In addition to more bicycle/pedestrian facilities, almost half of respondents indicated that improved lighting and crosswalks are needed. The types of facilities in greatest demand are shared-use paths and scenic/nature linear trails. Sidewalks, scenic/nature loop trails (such as within parks), and bike lanes also showed significant demand. With the exception of bike lanes, all of these top ranked facilities are separated from vehicle traffic. This is an indicator that the greatest benefit and highest use will be seen by providing facilities which are separated from the roadway.



Staff also asked if citizens would be likely to walk or bike more frequently if additional safe and convenient facilities were available. The results reinforce the idea that appropriately located, safe & well connected network of bicycle and pedestrian facilities can encourage physical activity and reduce vehicle trips.



Open response questions were also included in the survey, which allowed respondents to specify particular areas where improvements are needed and to provide general comments on the plan.

Major themes from the open response questions include:

- Additional facilities/improvements needed along major corridors such as Garrisonville Road, Warrenton Road, and U.S. Route 1
- Additional facilities/improvements needed on secondary roads such as Onville Rd, Flatford

Rd, Eustace Rd, and Leeland Rd

- Facilities needed along Brooke Rd to Crow's Nest Preserve
- Facilities allowing safe travel across I-95 are needed, specifically at the Garrisonville Road and Warrenton Road interchanges
- Need for improved connectivity with parks, schools, shopping centers, VRE stations, commuter lots, and adjacent localities such as the City of Fredericksburg
- Facilities desired within neighborhoods such as Vista Woods and Aquia Harbor
- Need for increased facility maintenance

### Summary

Many Stafford citizens welcomed the opportunity to share their thoughts on walking and cycling in the county. Citizens expressed many concerns regarding a lack of facilities in the County, and safety was of particular Concern. Citizens recognize that Stafford is rapidly growing, and a sense of urgency for the provision of these facilities was gleaned from the public input received. Survey results regarding cycling comfort level and desired facility types indicate that the majority of residents would be best served by facilities separated from the roadway, such as shared-use paths. Many respondents referenced the existing bike lanes along Cool Spring and Deacon Road, stating that they did not feel safe using the facilities. While on-road facilities are useful in certain areas, the low percentage of users willing to use them in urban areas may justify the provision of separated shared-use facilities. Populated areas with gaps in the facility network, or unsafe facilities, should be prioritized for improvements. Establishing safe connections to parks, shopping centers, and schools should also be a priority.

## 4.0 Facility Recommendations

The following is a series of maps depicting the proposed bicycle and pedestrian facility network in Stafford County. Major proposed routes are depicted in section 4.1 – Arterial Routes. Arterial routes are generally longer distance, could be utilized by cyclists, and provide connections to adjacent localities. Four large scale maps are provided in Section 4.2 – Neighborhood Facilities. These maps show arterial routes along with pedestrian-only routes (sidewalks). The large scale maps also include points of interest such as parks, schools, libraries, water access locations, and commuter/transit destinations.

### Interpreting Recommendations

The facility route recommendations on the following maps are intended to be general guidelines for facility placement. Final facility alignments are subject to change based on a number of factors, including environmental constraints, the timing of public and private development projects, and the availability of right-of-way, public land, or easements.

Proposed facilities are depicted on the maps as follows:



#### *Proposed Bicycle/Pedestrian Facilities (Shared Use Paths)*

This symbol indicates where dedicated facilities should be provided which accommodate both pedestrians and cyclists. A shared use path is the ideal facility in these locations; however, bike lanes combined with sidewalks may be a suitable alternative along roadways in some locations. This symbol is also used to represent proposed trails not aligned with roadways, such as trails along utility corridors and scenic or nature trails.



#### *Proposed Shoulder Improvements*

This symbol indicates road segments where paved shoulders should be provided. Paved shoulders are typically provided as part of 2-lane road upgrades in more rural areas. It is important to note that the majority of rural 2-lane secondary roads in Stafford County are slated to receive 2-lane upgrades in the future; however the proposed shoulder improvements depicted on the following maps identify road segments which are seen as the highest priority for rural area cyclists.



#### *Proposed Sidewalks*

This symbol is included on the neighborhood facilities maps, and depicts areas where pedestrian sidewalks should be provided.

Refer to the Introduction Chapter, section 1.5 for additional details on facility design.

Regional planned routes are depicted on the maps as follows. As proposed, many segments of these regional routes follow the same alignment. Consolidating the routes in this way will help to leverage limited resources to achieve common objectives.



*East Coast Greenway – Proposed Alignment*

This symbol represents the proposed alignment for the East Coast Greenway, which includes significant changes from the previously proposed route. The ideal facility along this route is a shared use path.



*Potomac Heritage Trail – Proposed Alignment*

This symbol represents the proposed alignment for the Potomac Heritage National Scenic Trail, which includes minor changes from the currently established route. The primary objective of the trail is to connect unique historic, natural and scenic locations along the Potomac River. Off-road or scenic bicycle and pedestrian facilities are preferable along this route. The Potomac Heritage Trail also includes spur routes along the main route, but for the purposes of this plan only the proposed main route has been identified.



*U.S. Bike Route 1*

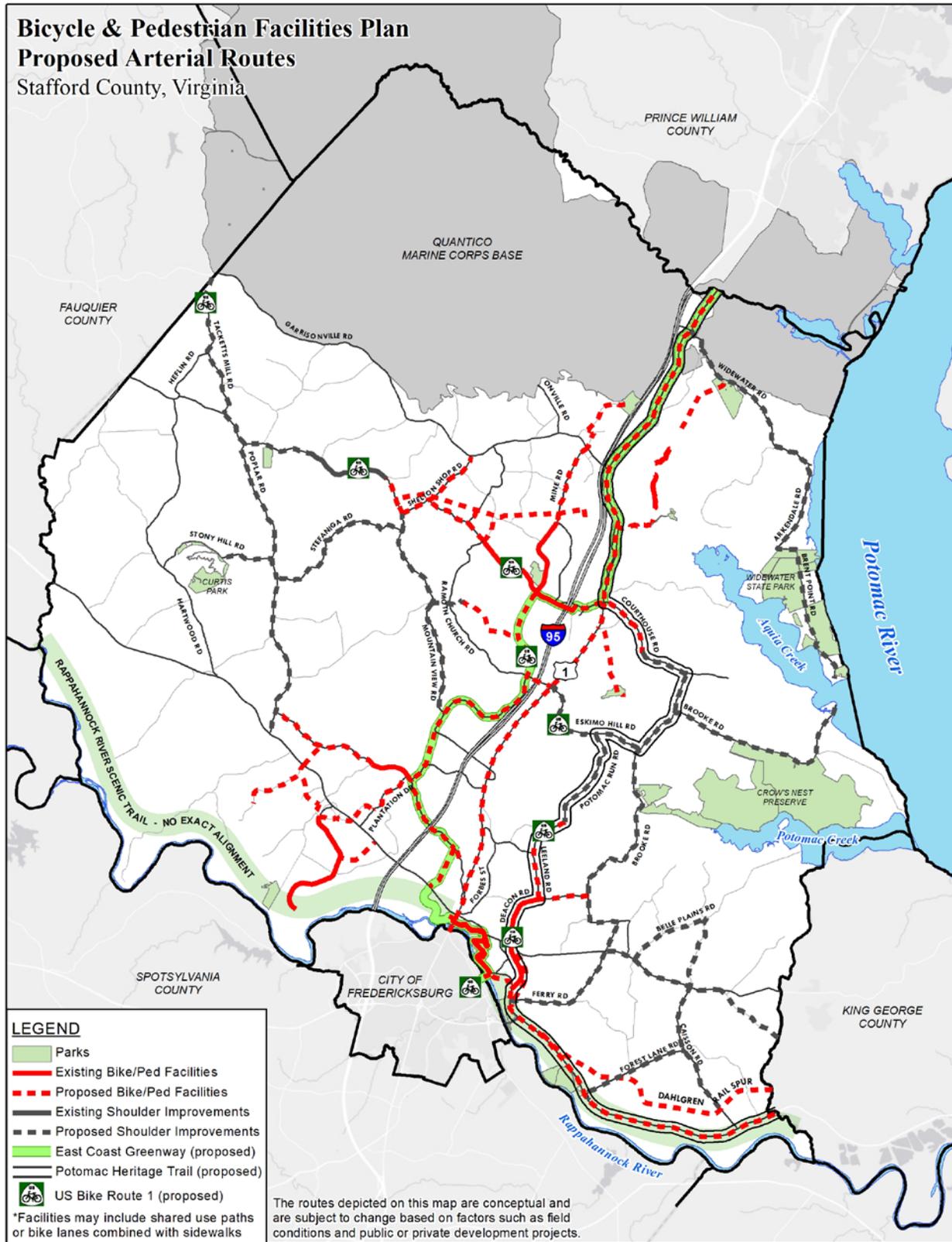
This symbol represents the proposed alignment for U.S. Bike Route 1, which includes minor changes from the currently established route. This is intended as a long-distance cycling route, and dedicated bicycle facilities are recommended. Shared-use facilities would also be appropriate along the route.



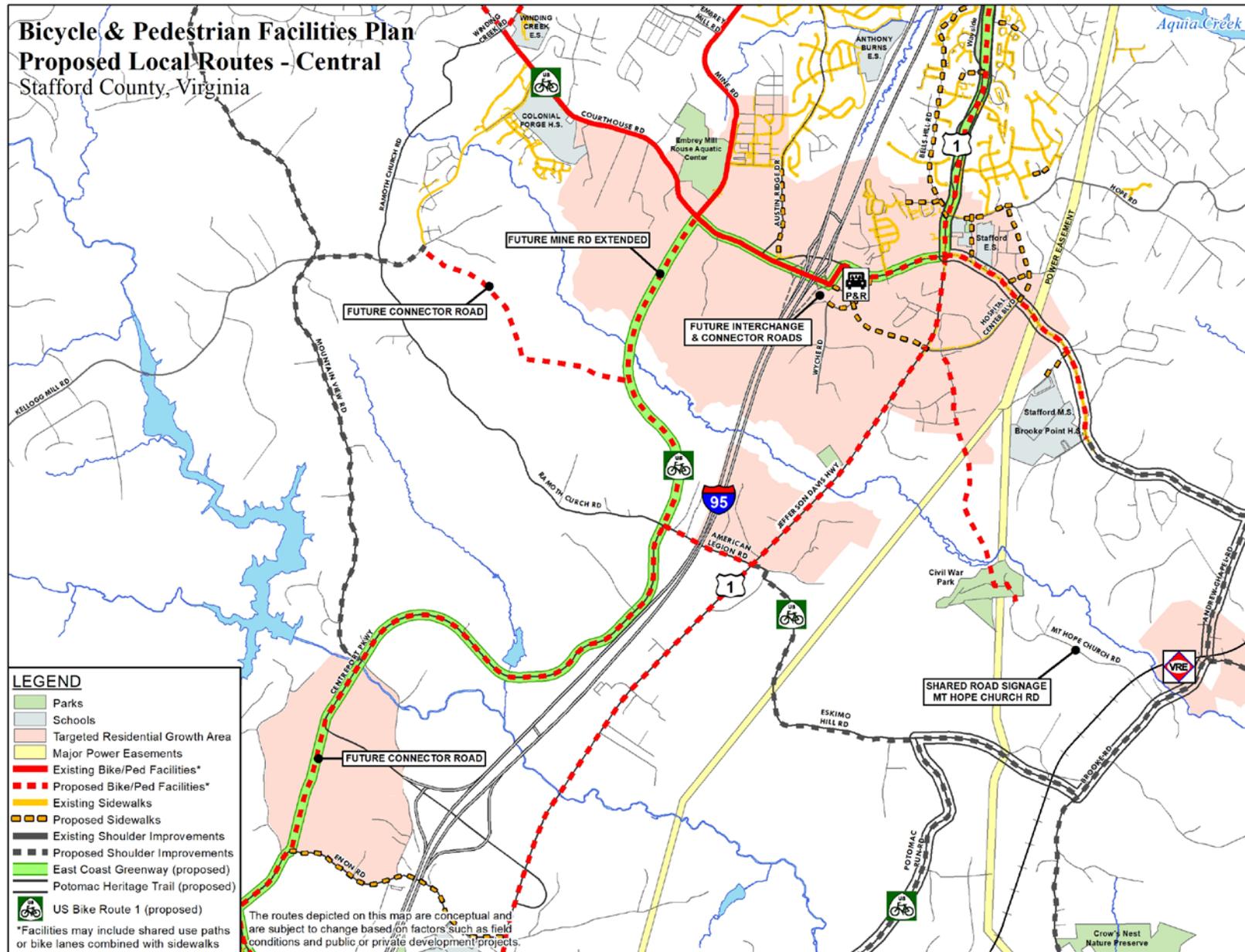
*Rappahannock River Scenic Trail*

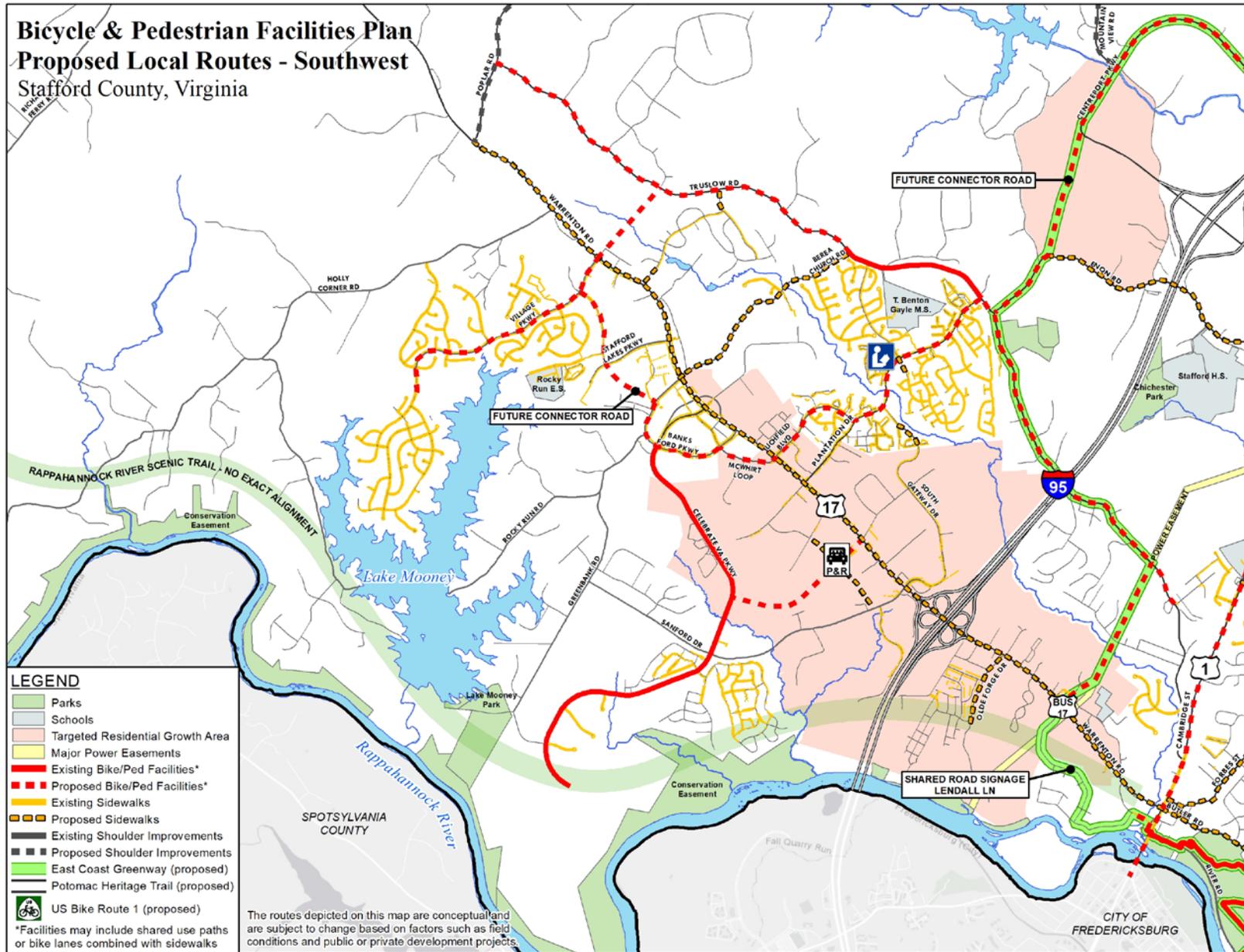
This proposed route is shown as a green transparent corridor along the Rappahannock River. The goal is to provide a scenic trail which allows pedestrians or cyclists to enjoy the river and adjacent riparian areas, while connecting points of interest near the river such as Falmouth Village, Lake Mooney, and other parks and historical sites. There is no specific alignment for the route at this time. The conservation land along the river owned by the City of Fredericksburg may allow for the development of a portion of this route.

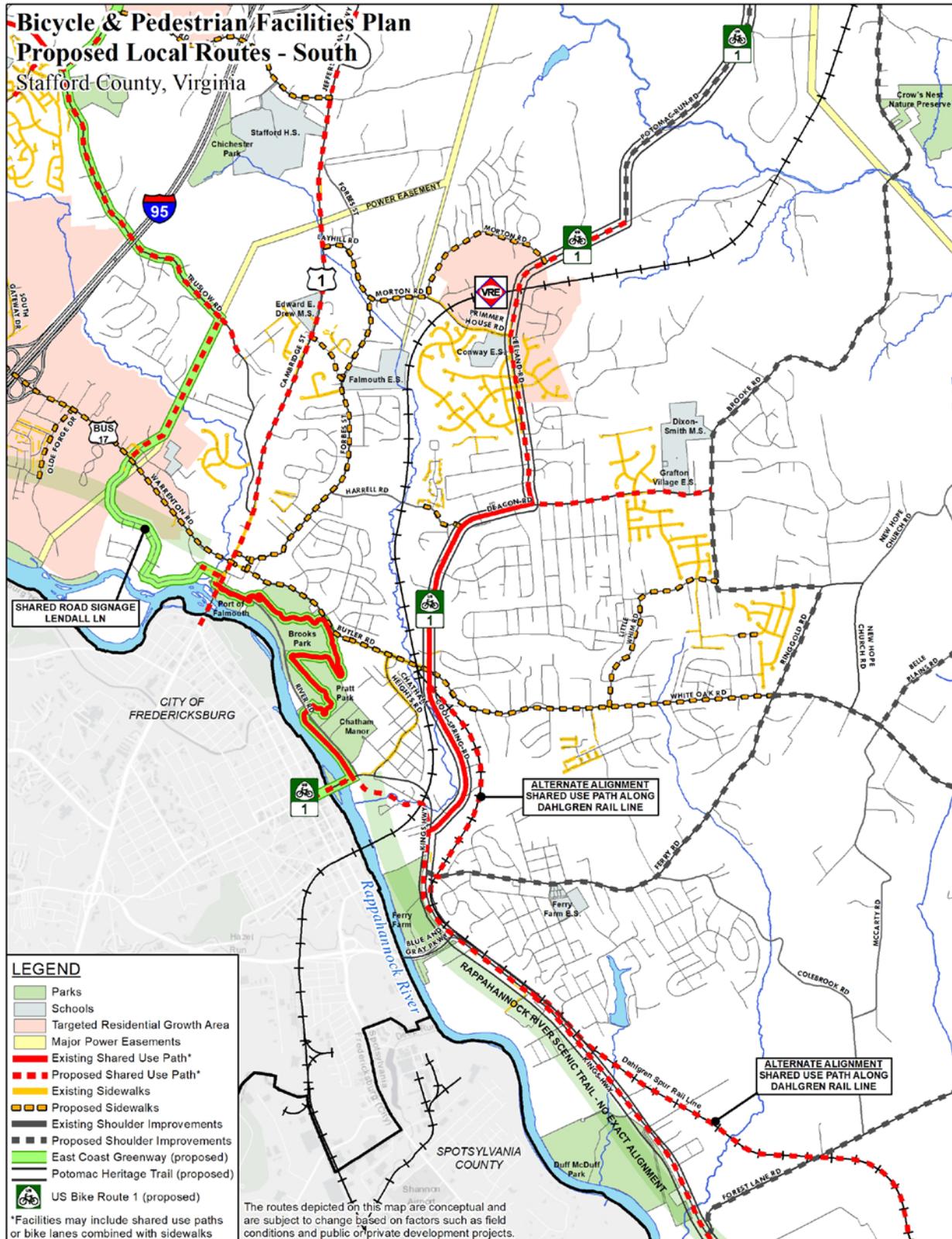
### 4.1 Arterial Routes











# 5.0 Implementation

## 5.1 Comprehensive Plan Amendments

The Bicycle and Pedestrian Facilities Plan is a component of the County’s Comprehensive Plan, and is related to other Comprehensive Plan elements such as the Land Use Plan and Transportation Plan. Certain amendments to the Comprehensive Plan will be necessary to ensure consistency between these plan elements. This will help ensure that the recommendations of the Bicycle and Pedestrian Facilities Plan are coordinated with other planning efforts.

### Recommended Amendments to the Comprehensive Plan 2016-2036 Document

- Reference the Bicycle and Pedestrian Facilities Plan in the Goals and Objectives section of the Comprehensive Plan
- Note the recommendations of the Bicycle and Pedestrian Facilities Plan within applicable Planning Area sections
- Reference this Plan within the Transportation Plan Chapter

## 5.2 County Code Amendments

The Stafford County Code of Ordinances governs uses within the County and establishes requirements for new developments. This helps ensure that development occurs in a consistent and cohesive manner. In regards to the provision of bicycle and pedestrian facilities, the Subdivision and Zoning Ordinances are of particular relevance. Certain ordinance amendments should be considered to strengthen requirements for incorporating bicycle and pedestrian facilities within new developments. Suggested changes to these ordinances are outlined below.

### Recommended Amendments to the Subdivision and Zoning Ordinances

- Currently, Ordinance Section 22-221 requires that pedestrian trails and/or bicycle lanes be provided where specified in the Comprehensive Plan. This language should be clarified to state that the agent may approve an alternative facility location or design. This will allow for adjustments based on site conditions or other limiting factors.
- The existing ordinance language is more focused on the provision of pedestrian facilities, with little language dealing with bicycle facilities. Consider incorporating language requiring the establishment of safe bicycle routes through developments and connecting with adjacent developments. This is particularly important for larger mixed-use developments such as those under the Planned Development (PD) and Recreational Business Campus (RBC) zoning districts.

## 5.3 Prioritization

There are numerous factors which play a role in facility prioritization. This Plan does not identify specific facilities which should be prioritized; however the factors listed below should be taken into consideration when determining the most critical facility needs.

### Safety

Improvements for safety should be a top priority when prioritizing new pedestrian and bicycle facilities. The crash data information provided in Section 3.3.1 should be evaluated to determine if additional facilities are needed in areas where most accidents are occurring. If the road and traffic conditions in these locations are not conducive for pedestrian and bicycle use, then nearby alternative routes should be identified and established to direct pedestrian and bicycle traffic away from conflict areas. Crash data should continue to be monitored as a means of prioritizing improvements and evaluating the effectiveness of improvements.

### Filling the Gaps

There are several areas in the County where existing pedestrian facilities can be connected through small and relatively inexpensive improvement projects. For example, a relatively short section of sidewalk along Flatford Road between Walpole Street and Parkway Boulevard would provide a connection between extensive sidewalk networks within the Park Ridge and Berkshire developments. This would also facilitate access to nearby schools and a library. These small cost-effective projects which return large benefits should be prioritized.

### Connecting Destinations

One of the major objectives of this Plan is to identify bicycle and pedestrian routes which will connect multiple destinations such as residential areas, parks, schools, transit centers, and retail centers. Routes which connect multiple points of interest and are accessible from more densely populated residential areas should be prioritized, as these routes are more likely to be heavily used.

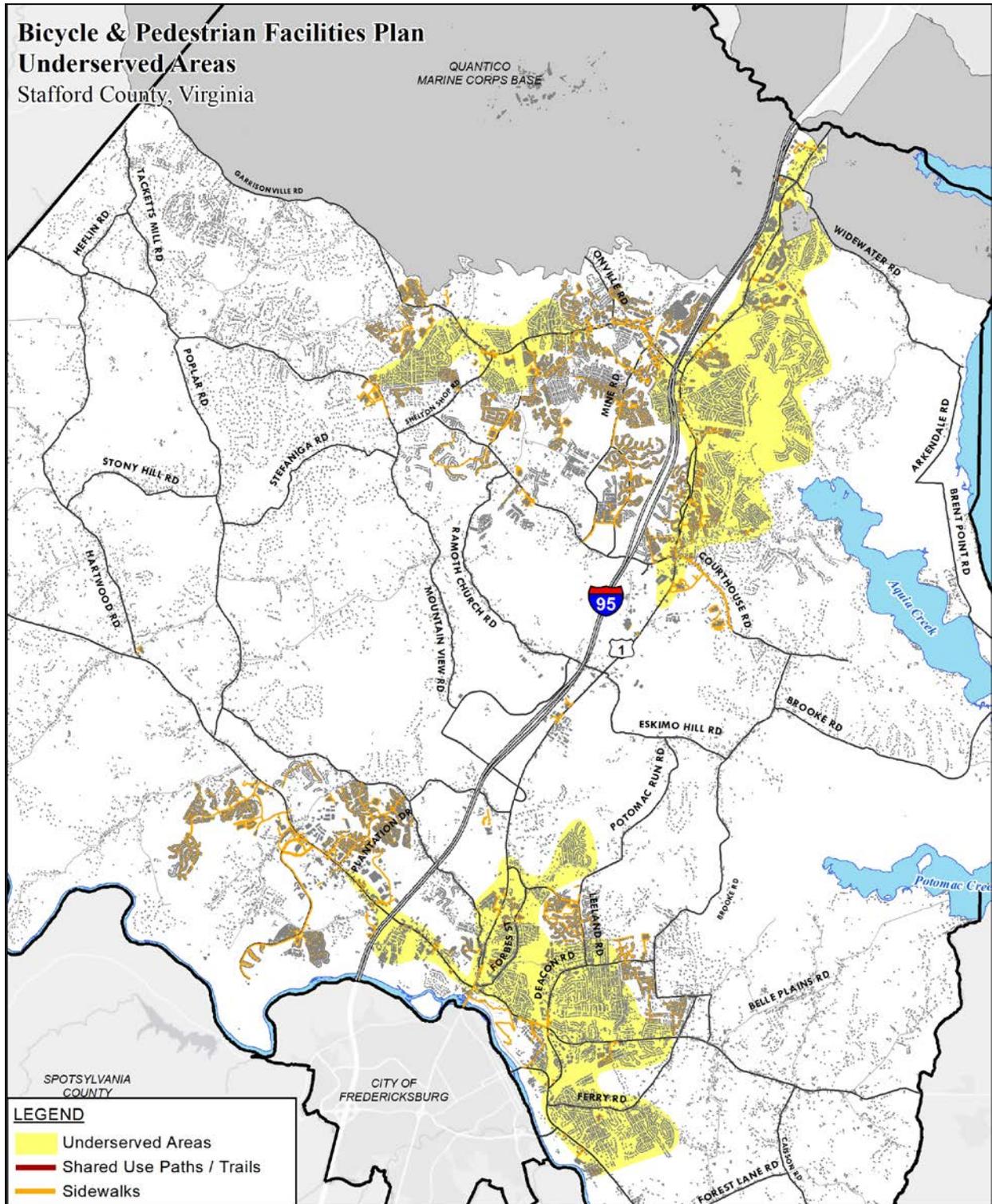
### Low-Income Areas

Many people walk or bike for recreation or convenience, but there are others that do so out of necessity due to lack of access to a motor vehicle. This is particularly the case in more urbanized areas, where residential areas are in relatively close proximity to retail and service businesses. Bicycle and pedestrian connections to public transit stops are also very important in these areas. These lower income areas of the County should be considered when prioritizing pedestrian and bicycle facility improvements.

### Underserved Areas

There are many densely developed residential and commercial areas within the County which do not have bicycle or pedestrian accommodations due to the age of the developments. These areas should be considered when prioritizing improvements. Examples of these areas include the U.S. 17 Business corridor and the more developed sections of U.S. Route 1, Butler Road/White Oak Road

and Kings Highway. The map shown here highlights areas of the County with significant residential density and commercial development, but little pedestrian infrastructure.



### Economies of Scale

There may be significant cost savings when incorporating bicycle and pedestrian improvements into other planned infrastructure projects such as road widenings or new road construction. For this reason, the recommendations of the plan should be considered when scoping upcoming infrastructure projects to determine if these facilities can be worked into the budget. This will affect the prioritization of bicycle and pedestrian projects to some extent, as they may be dependent on the timing of other infrastructure projects.

### Achieving Common Goals

The goals of this Plan are closely related to the goals of several other local and regional planning efforts, as identified in Section 3.4.2. Special consideration should be given to those projects which achieve common goals. For example, developing a destination trail of significant length, such as a segment of the East Coast Greenway, may enhance local connectivity between destinations, help achieve the broader goals of establishing a greenway, and support economic development and tourism.

Other studies such as the VDOT STARS study and Stafford Comprehensive Road Evaluation could be used to identify areas which should be prioritized for improvements. The Comprehensive Road Evaluation, for example, prioritizes road improvement needs based on factors such as traffic volume, safety, road conditions, and concerns from constituents. The recommendations from this evaluation could be used to prioritize those segments which are recommended for shoulder upgrades in the Bicycle and Pedestrian Facilities Plan.

## **5.4 Funding**

There are several potential funding sources available for the construction of bicycle and pedestrian facilities, as identified in Section 3.4.1. Due to competition for Federal and State funding sources, it is important to pursue funding for projects with the highest priority in accordance with the recommendations above.

### Federal Funding Sources

- Highway Safety Improvement Program (HSIP) – This program provides funding for road projects with a goal of significantly reducing fatalities and injuries on public roads. This includes improvements which benefit pedestrian and bicycle safety.
- Transportation Alternatives (TA) – This program is funded through a set-aside of the Surface Transportation Block Grant (STBG) Program funding. This program focuses on funding smaller-scale projects which enhance pedestrian and bicycle connectivity.
- Recreational Trails Program (RTP) – This is a federal matching (reimbursement) program for the construction of new trails and rehabilitation of existing trails.

### State Funding Sources

- Virginia SMART SCALE program – A highly competitive program which provides funding for road improvement projects based on factors such as safety, congestion mitigation, accessibility, environmental quality and economic development.
- Revenue Sharing program administered by VDOT, in which state funding is matched with locality funding dollar for dollar. Eligible work includes construction, reconstruction or improvements to roadways and may include sidewalks, trails and other bicycle or pedestrian facilities.

### Local Funding Sources

- Proffers – Proffer contributions towards Transportation and Parks & Recreation public facilities could be utilized for certain bicycle and pedestrian improvements.
- Transportation Impact Fees – Impact fees may be utilized to help fund road improvements.
- Bonding – This is a potential funding mechanism for projects but is limited due to debt capacity.

### Other Resources

- Private investment/sponsorships may assist with construction and maintenance of certain trail segments.
- Volunteers and local advocacy groups may assist with maintenance of nature trails.

## **5.5 Public Information and Involvement**

Public involvement played a crucial role in the development of this Plan, and should continue playing an important role moving forward.

### Benefits of an Informed and Engaged Public

- Helps ensure that scope and design of facilities satisfies the public need;
- Enhances public education, awareness and involvement;
- Helps leverage available advocacy and volunteer resources in the community;
- Provides continuous feedback regarding the effectiveness of the bicycle and pedestrian facility network and desired enhancements.

### Public Information and Involvement Strategies

- Develop a web page to serve as a conduit for sharing and receiving information relating to bicycle and pedestrian facilities. Elements of the web page should include:
  - information regarding planned, upcoming, under construction, and completed bicycle and pedestrian projects
  - mapping tools to explore the current and planned facility network
  - educational materials relating to safety, County resources and public involvement & volunteer opportunities
  - a form allowing the public to submit questions and comments regarding bicycle and pedestrian facility improvements or maintenance
- Establish points of contact in the County government to receive and process bicycle and pedestrian related comments and concerns, and to assist with public education and volunteer coordination.

- Maintain regular communication with key stakeholders to better disseminate information to the public.
- Work with County departments such as Parks and Recreation, Public Works, Community Engagement, and Economic Development to help distribute information relating to bicycle and pedestrian planning & projects, and to help promote facilities.