

CITY OF FALLS CHURCH,
VIRGINIA
BICYCLE MASTER PLAN

Connecting Communities

Adopted July 13, 2015

Introduction

People are increasingly choosing bicycles as an alternative or supplemental form of transportation to automobiles. At the national level, bicycle work trips have increased by a larger percentage than any other mode. Between 2000 and 2012, the number of people biking to work has increased from 488,000 to 786,000. The same trend is playing out at the regional level. According to the U.S. Census American Community Survey, the Washington Metropolitan Statistical Area (MSA) mode share for bicycle trips to work doubled from 0.3% in 2000 to 0.6% in 2012¹. Figure 1 shows that the increase in biking has been concentrated along Metro corridors and in denser areas of development. This trend in bicycle usage demonstrates a desire for infrastructure changes that support bicycling as a safe and viable option.

Studies of regional travel patterns show that many trips currently taken by other modes are well within reach of bicycle travel in terms of distance. Seventeen percent of all commute trips in the Washington region are less than five miles. The median automobile driver trip in the Washington region is four miles in length and one quarter of all automobile trips are less than 1.5 miles in length.²

¹ Note that Census data only counts people that bike to work three or more times per week. So the percentages reported do not capture people that bike to work once or twice a week.

² 2015 draft *Bicycle and Pedestrian Plan for the National Capital Region*

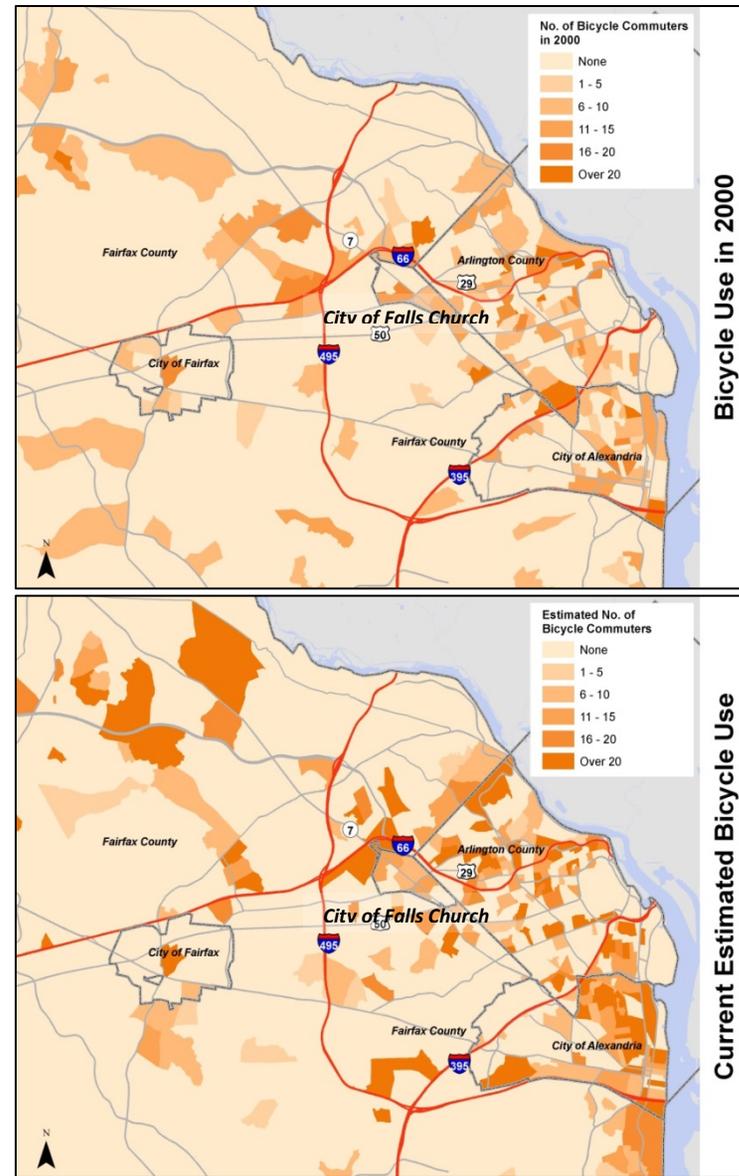


Figure 1: Growth in biking to work in Northern Virginia

Policy Guidance and Vision

The City's Comprehensive Plan serves as a guide for development of the City. The Plan covers many aspects of development, including transportation. The *Mobility for all Modes Plan* is the transportation component of the Comprehensive Plan. The *Mobility for all Modes Plan* includes an overarching vision statement to

Provide for the safe movement of people and goods within and through the City via a transportation network, offers choices in travel modes, supports economic activity, is sensitive to the environment, and provides equitable access for all residents, workers, and visitors.

Consistent with that vision, the Plan calls for, "Develop[ment of a] City-wide bicycle facilities plan to connect the City's commercial areas and neighborhoods, transit facilities, schools, regional bicycle facilities, and designated bicycle routes in neighboring jurisdictions. Includ[ing] an action plan for achieving Bicycle Friendly status." This directive provides clear policy guidance. Therefore, the vision statement for this bicycle master plan is:

Develop a City-wide bicycle facilities plan to connect the City's commercial areas and neighborhoods, transit facilities, schools, regional bicycle facilities, and designated bicycle routes in neighboring jurisdictions.

1. Benefits of Bicycling

People who choose to travel by bicycle realize multiple benefits. These benefits include improvements in public health, the environment, the economy, and social equity.

Public Health Benefits

According to the U.S. Surgeon General's *Physical Activity Guidelines for Americans*, adults should engage in a minimum of 1.5 hours of moderate-intensity physical activity per week. To this end, the Surgeon General encourages community design and development that supports physical activity.

Traveling by bicycle can be an easy and convenient way to incorporate physical activity into everyday life.



Figure 2: A woman riding a bicycle for everyday use.

Environment

According to Environmental Protection Agency (EPA) and Federal Highway Administration (FHWA) data, the average passenger vehicle uses nearly 530 gallons of gasoline and emits 4.75 metric tons of carbon dioxide equivalent emissions per year. Nationwide, motor vehicles account for about half of toxic air pollutant emissions and 75 percent of carbon monoxide emissions.

In 2008, the Northern Virginia region, including the City of Falls Church, was designated a nonattainment area for ozone pollution by the EPA. The EPA defines a nonattainment area as, “any area that does not meet (or that contributes to ambient air quality in a nearby area that does not meet) the national primary or secondary ambient air quality standard for the pollutant. The pollution in the City and the region is designated as “Marginal” based on 2008 8-Hour Ozone Classifications. A Marginal classification places the area close to attainment, which means that even small changes in environmental behavior can have a large impact on air quality with the ultimate goal being air quality attainment in the region.

In comparison to automobile travel, bicycle travel reduces energy usage and vehicle emissions thereby reducing particulate pollution and improving air quality.



Figure 3: Low air quality and air pollution result in smog. Here smog obscures the view of the National Mall in Washington, D.C.

Economic

Low cost and low maintenance bicycle infrastructure can help to reduce the costs of transportation, which are typically the second largest household expense behind housing. The provision of bicycle facilities can be economically beneficial on a personal level by reducing money spent on gas and maintenance of a personal automobile, and it can be beneficial on the municipal level by helping to reduce the cost of automobile infrastructure.

According to the FHWA, the fuel economy of the average passenger vehicle is 21.4 miles per gallon, and average vehicle miles travelled is 11,318 per year. The most recent U.S. Bureau of Labor Statistics report states that the gasoline price in the Washington-Baltimore metro area was \$3.176 per gallon in October 2014. Using these

statistics, automobile drivers in the region may spend an average of nearly \$1,700 per year on fuel alone.

Public infrastructure to support heavy automobile usage and auto-oriented design places an economic burden on the public. Construction and maintenance costs for roadways can lead to higher taxes and other fees. Further, the construction and maintenance of public parking facilities relies heavily on City funding and occupies space that could be used for other purposes.



Figure 4: Substituting bicycle travel for automobile travel reduces transportation costs.

Equity

Bicycle infrastructure provides a means of transportation for those who do not want or are not able to drive. It can be used for local trips where the distances are generally short and public transportation is not available. Bicycle infrastructure can also provide a fast and safe means for people to reach public transportation such as bus stops or Metrorail stations. In this way bicycle infrastructure can be used to reduce what is called the “chauffer burden”.

In the Victoria Transport Policy Institute’s³ January 2015 publication *Evaluating Household Chauffeuring Burden: Understanding Direct and Indirect Costs of Transporting Non-Drivers*, “household chauffeuring” refers to “incremental unpaid motor vehicle travel specifically made to transport independent (people capable of traveling independently if suitable mobility options are available) non-driving family or friends.” The study finds that chauffeuring burdens can lead to negative consequences, such as increased stress and monetary burdens, on both the chauffeur and the passenger. It goes on to state that communities with better transport options lead to a decline in chauffeuring trips, which is an indication that chauffeuring is avoided when alternatives are provided.



Figure 5: Safe bicycling facilities provide travel options for people unable or unwilling to drive.

Is Bicycling for Everyone?

Riding a bicycle is an activity that most people can experience throughout their lifetime. Personal preference, convenience, available facilities, terrain, and other factors can all influence whether people choose to use bicycles as a form of transportation. This plan does not presume that everyone working, visiting, or living in the City will choose to travel by bicycle. This plan does seek to provide more travel options and allow people that want to travel by bicycle the opportunity to do so.

³ The Victoria Transportation Policy Institute is based in Victoria, Canada.

2. Bicycle Routes

Existing Routes

City of Falls Church

The City of Falls Church was a pioneer in the creation of the Washington & Old Dominion (W&OD) Trail, an innovative and extensive regional trail along the old W&OD Railroad right-of-way. After the final discontinuation of railroad operations in 1968 the right-of-way was bought by the Virginia Department of Transportation (VDOT) to use as part of Interstate 66. However, the portion of the property within the City of Falls Church was not used for the interstate and was subsequently sold to the Virginia Electric Power Company (VEPCO) to use for the construction of high-tension power lines. The Northern Virginia Regional Park Authority (NVRPA), which had been organized in 1959, worked with VEPCO and the City of Falls Church to open the first portion of the W&OD Trail in 1974. This innovative approach for the use of the right-of-way soon spread along nearly the entirety of the old W&OD Railroad. The newest portion of the W&OD Trail opened on May 30, 2009, bringing the total length of the trail to 44.7 miles. According to a bicycle and pedestrian counter maintained by Arlington County, during summer months, more than 1,000 bicycle trips cross the City/County line every day.

The City of Falls Church Bicycle Route was created as a southern alternative to the W&OD Trail and to allow residents in the southern part of the City access to bicycle facilities. The City Bicycle Route meets the western end of the W&OD Trail just outside the City border, in Fairfax County, near the intersection of Railroad Avenue and Fowler Street. It exits the City on the eastern end into

Arlington County through Crossman Park, near Van Buren Street, and connects to the East Falls Church Metro Station.

With funding from the Economic Development Authority (EDA), City staff installed sharrows and wayfinding signs along Park Avenue and Maple Avenue in August 2014. These particular roadways were chosen because they (1) run parallel to major roads, West Broad Street (SR 7) and Washington Street (US 29); (2) provide access to most commercial areas of the City; (3) have relatively low automobile traffic volumes; and (4) provide direct access to and from the W&OD Trail.

Arlington County

Arlington County bicycle facilities that meet the border with the City of Falls Church include bike lanes, bikeways, and the W&OD Trail. Bike lanes are defined by Arlington County as, “a portion of a roadway that has been legally designated for the exclusive use of bicyclists or individuals with disabilities using human-powered chairs/scooters, and indicated by signage, striping, and other pavement markings.” Bikeways are defined by Arlington County as, “any street or shared-use trail facility that the County has specifically designated through signs and/or markings for bicycle travel, whether exclusive or shared.”

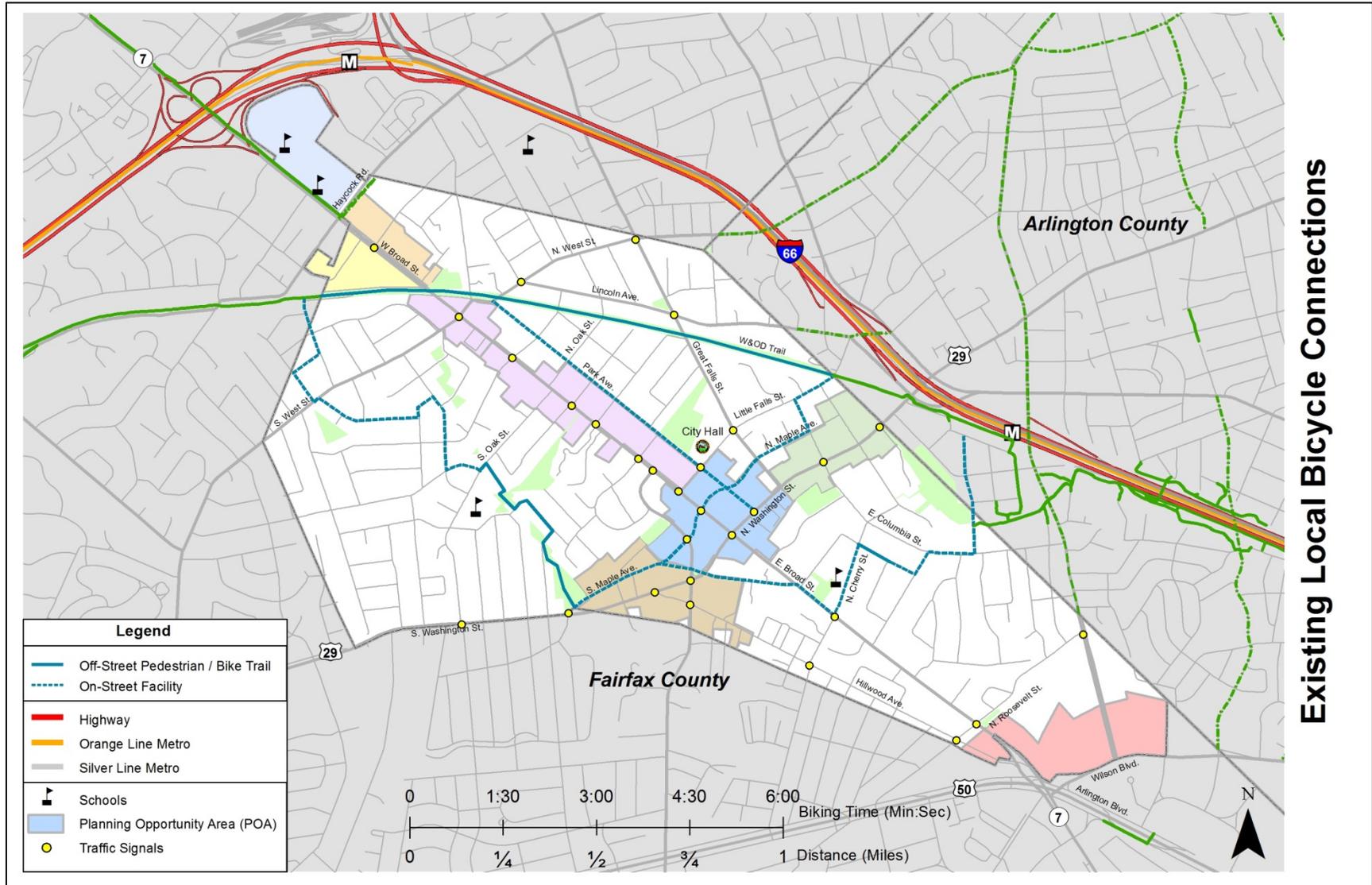
Bike lanes meet the border with the City of Falls Church along Fairfax Drive, Lee Highway (US 29), and North Roosevelt Street. On-street bikeways meet the border with the City of Falls Church along Little Falls Street, Van Buren Street, and 16th Street/East Columbia Street. Bicycle facilities leading from the Falls Church City limits into Arlington County provide direct routes to the East Falls Church Metrorail Station and to the Rosslyn/Ballston Corridor.

Fairfax County

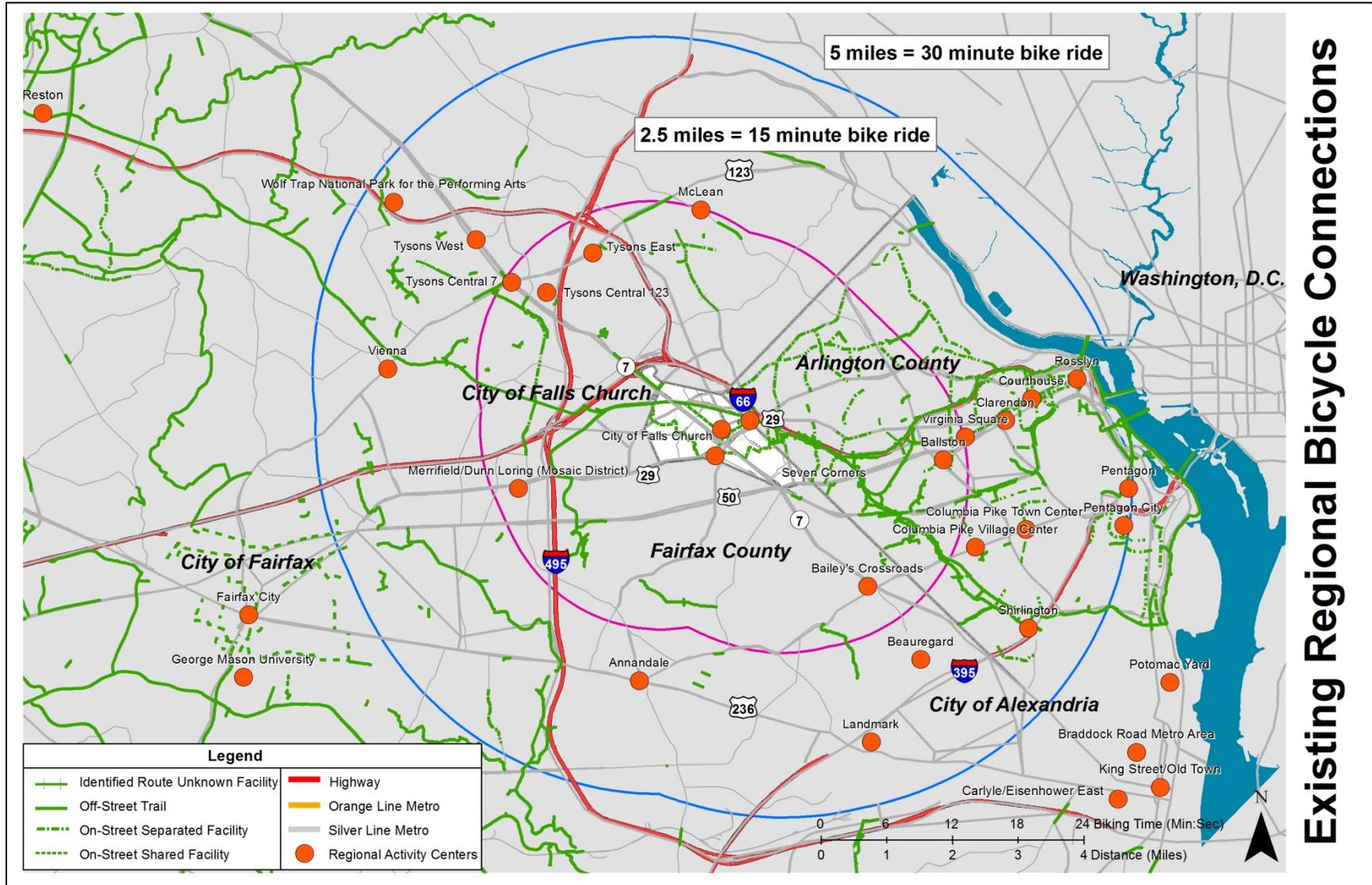
Fairfax County has few existing bicycle facilities that meet the border with the City of Falls Church. The W&OD Trail and an off-street pathway along Leesburg Pike (SR 7) are existing designated bicycle facilities. However, Fairfax County's Countywide Bicycle Master Plan calls for a number of new bicycle routes that will connect with the City of Falls Church. These include bike lanes at Grove Avenue, Haycock Road, South Street (South Roosevelt Street), Wilson Boulevard, West Street, and Cherry Street; and a cycle track along Leesburg Pike (SR 7) beginning in the Seven Corners area. A shared use path is also proposed along Arlington Boulevard (SR 50) in the Seven Corners Area, just outside the Falls Church City limits. Bicycle facilities leading from the Falls Church City limits into Fairfax County provide direct routes to the West Falls Church Metrorail Station, Tysons Corner, Merrifield, and Seven Corners.

Fairfax County defines "Shared roadways" as, "special treatments that are installed along specific sections of narrow, hilly, and/or curving roadways to enhance bicyclists' safety," and cycle tracks as, "a bicycle facility that is physically separated from both the roadway and the sidewalk...using a variety of methods, including curbs, raised concrete medians, bollards, on-street parking, large planting pots/boxes, landscaped buffers (trees and lawn), and other methods."

Bicycle Routes - Existing Routes, City Scale



Bicycle Routes - Existing Routes, Regional Scale



Future Routes

Methodology and Connections to other City Policies

According to City and State laws, people may ride a bicycle on any street in the City. In developing defined bicycle routes, the intent is to provide a network of connections that people can feel safe and comfortable using.

The future routes in this plan build directly from the plan's vision statement of providing a connected network of facilities. The future routes make connections among the following:

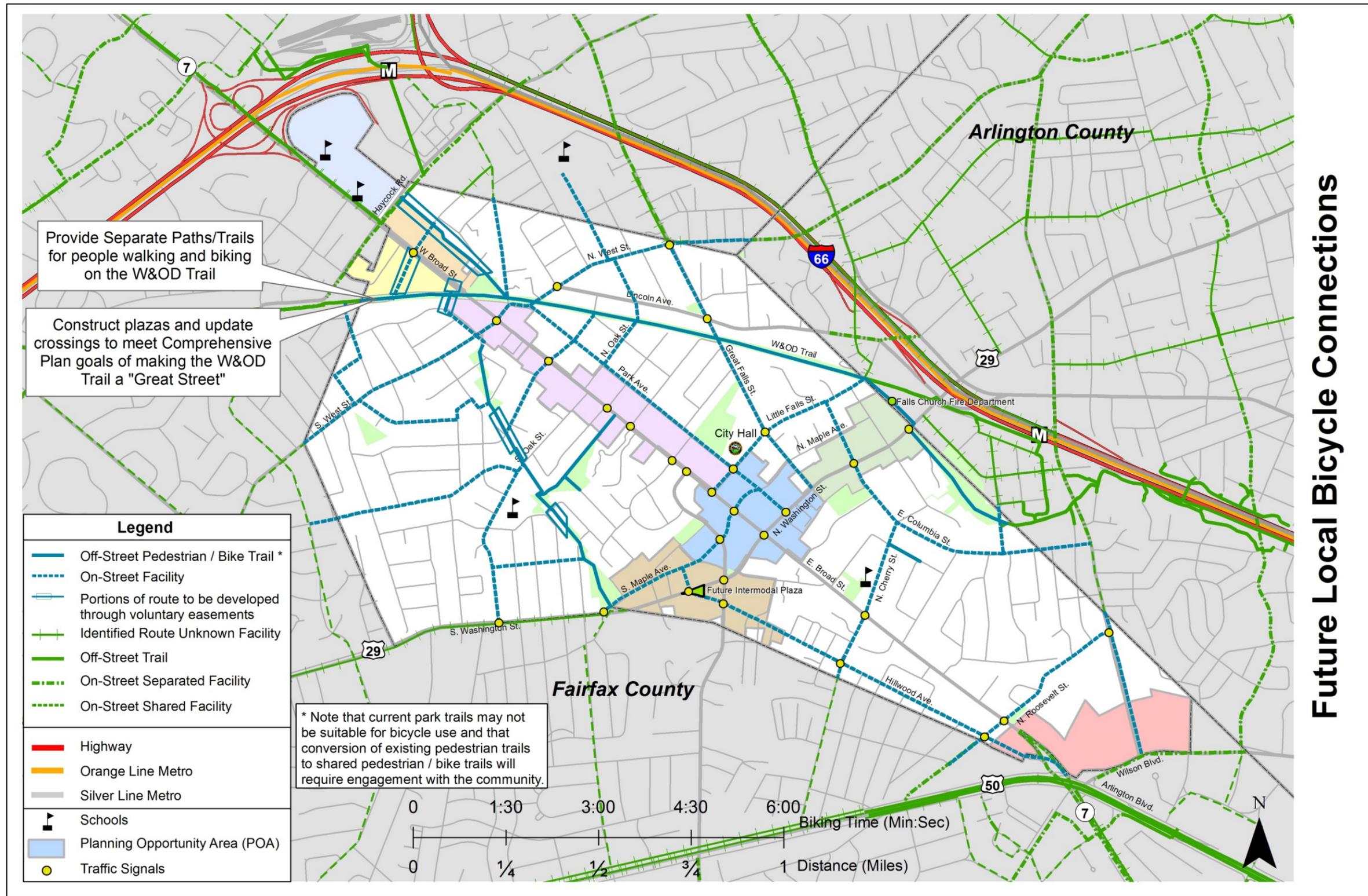
- commercial areas,
- transit facilities,
- schools,
- neighborhoods, and
- existing and proposed bike routes in neighboring jurisdictions to provide regional access.

Route crossings for Broad Street and Washington Street were aligned with signalized intersections to make it easier for people to cross the street.

The proposed routes also relate to other planning efforts, such as the City's small area plans. Proposed routes pass through or alongside the various planning areas.

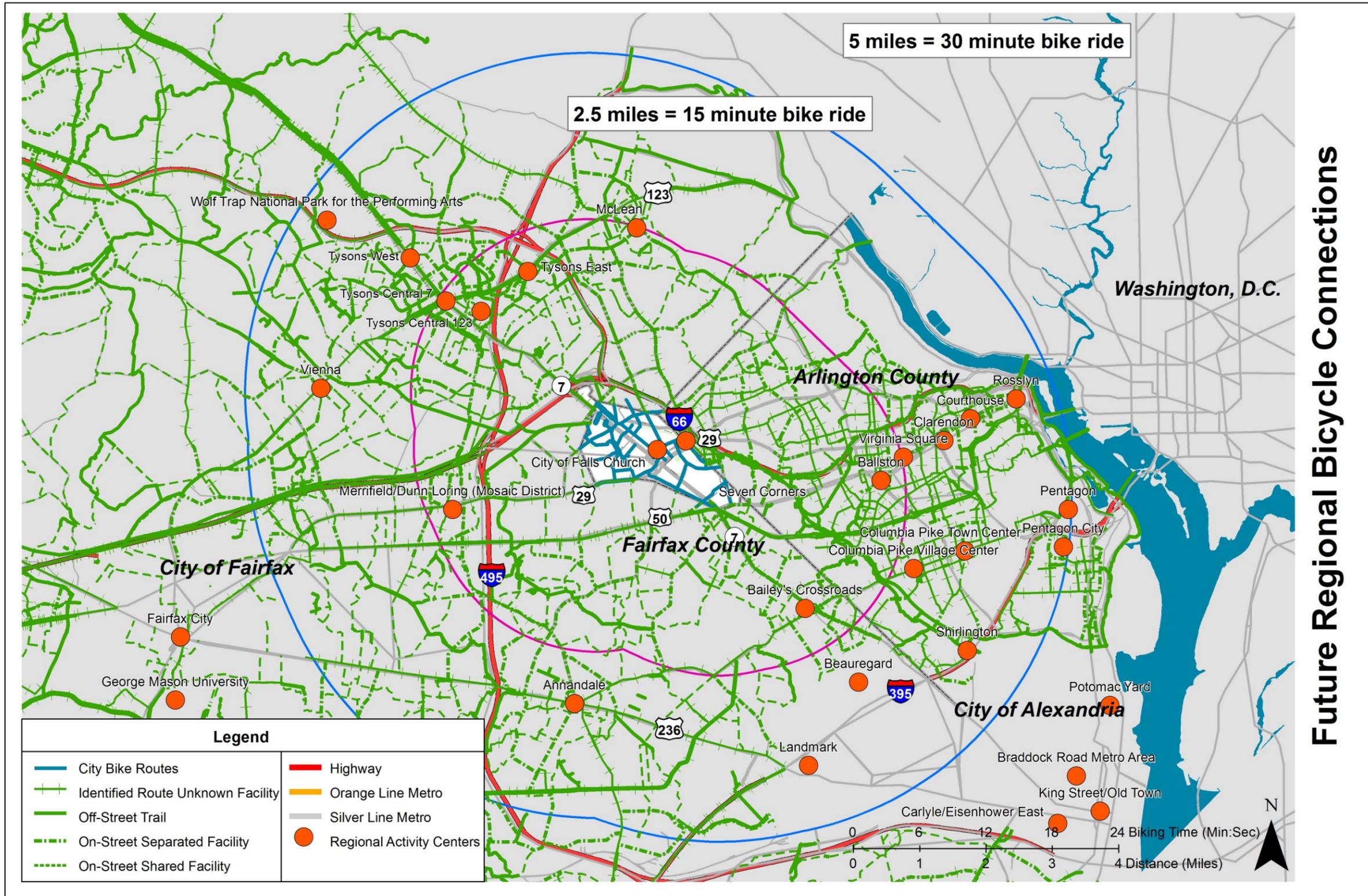
The proposed routes also incorporate ideas from the City's *Parks for People* Plan, adopted in February 2015. In particular, this plan calls for bicycle routes along the Tripps Run and Four Mile Run corridor; the same corridors that *Parks for People* calls out for restoration.

Bicycle Routes - Future Routes, City Scale



Future Local Bicycle Connections

Bicycle Routes - Future Routes, Regional Scale



Future Regional Bicycle Connections

3. Bicycle Parking

Bicycle routes are important for ensuring people who choose to bike can safely reach their destination. Bicycle parking is important for providing people a safe, convenient place to store their bikes. Many communities have adopted bicycle parking standards for new development. These standards should include long-term, secure bicycle parking as well as short-term visitor parking.

Bicycle parking requirements should be adopted as a follow-up action to this plan. At a minimum, the requirements should stipulate the following:

1. number of exterior bike racks required,
2. number of interior bike racks required,
3. proximity of bike parking to building entrances, and
4. location of bike parking within parking structures.

Until the City formally adopts bicycle parking requirements, requirements adopted by neighboring Arlington County, Virginia, should be used as a guide. Arlington County’s requirements provide extensive guidance on location, type, and quantity of bike racks.

The City’s Mobility for all Modes Plan calls for the City to establish a “Request a Rack” program whereby people can request installation of bike racks in public areas. The City should advance this effort.

The City should use fun, whimsical bike rack designs to add visual interest and character to the City streets. Bike racks are an opportunity for public art.



Figure 6: On-street bike racks can be branded with the City logo, as done in nearby Vienna, Virginia.



Figure 7: Custom bike racks like these manufactured by Dero add visual interest.



Figure 8: Covered bike parking protects bicycles from sun and rain.



Figure 9: Bike cages provide secure bike parking for longer term storage.

4. Bicycle Sharing

What is Bike-Share?

Bike-share, as the name implies, is a system for sharing bicycles. Members of the system are free to use any of the bicycles in the system, checking them out of one station/dock and returning them to another station/dock.

Capital Bikeshare operates in many places throughout the Washington, D.C., region, including Washington, D.C., Arlington County, City of Alexandria, and Montgomery County (Takoma Park, Silver Spring, Friendship Heights, Bethesda, and Rockville/Shady Grove/Life Sciences Center). One membership provides access to the entire regional network.



Figure 10: Typical Capital Bikeshare docking station located in Arlington, VA.

Why Use Bike-Share?

Bike-share members enjoy the flexibility of having a bike when and where they want it. Bike-share members use the system to connect to transit, solving the “first-mile, last-mile” problem and to make short trips around town.

For people who do not own bikes, bike-share offers people the convenience of not owning a bike while still providing the benefits of access to bikes, such as financial savings, health benefits, and increased transportation options.

For people who do own bikes, bike-share still offers benefits because members do not have to worry about carrying a bike lock and they have the freedom of taking one-way bike trips.



Figure 11: Capital Bikeshare rider enjoying the Arlington system.

Membership Costs

Capital Bikeshare offers several membership options, including, daily, monthly, and annual memberships. As of May 2015, daily

memberships carry the highest per-day costs at \$7 per day. Annual memberships offer a lower cost at \$75 per year, just \$0.21 per day.

With any membership, the first 30 minutes from one bike station to another is free. For rides lasting longer than 30 minutes, additional fees are charged. This pricing structure is designed to encourage short-term use of the bikes and to prevent users from keeping a bike out of circulation. The expectation is that riders will use a bike to get to their destination, check the bike into a station, and then check out a new bike for their return trip.



Figure 12: Capital Bikeshare station map located in Washington, D.C.

System Operations

Capital Bikeshare stations and bicycles are purchased and owned by localities. Localities then contract out operations and maintenance services, such as bike and station repair and bike rebalancing, to a third-party operator. Localities receive all member costs and overage fees paid by bike-share users.



Figure 13: A Capital Bikeshare technician loads bikes on the rebalancing van to be shuttled to another station in Washington, D.C.

Future Bike-Share Corridors

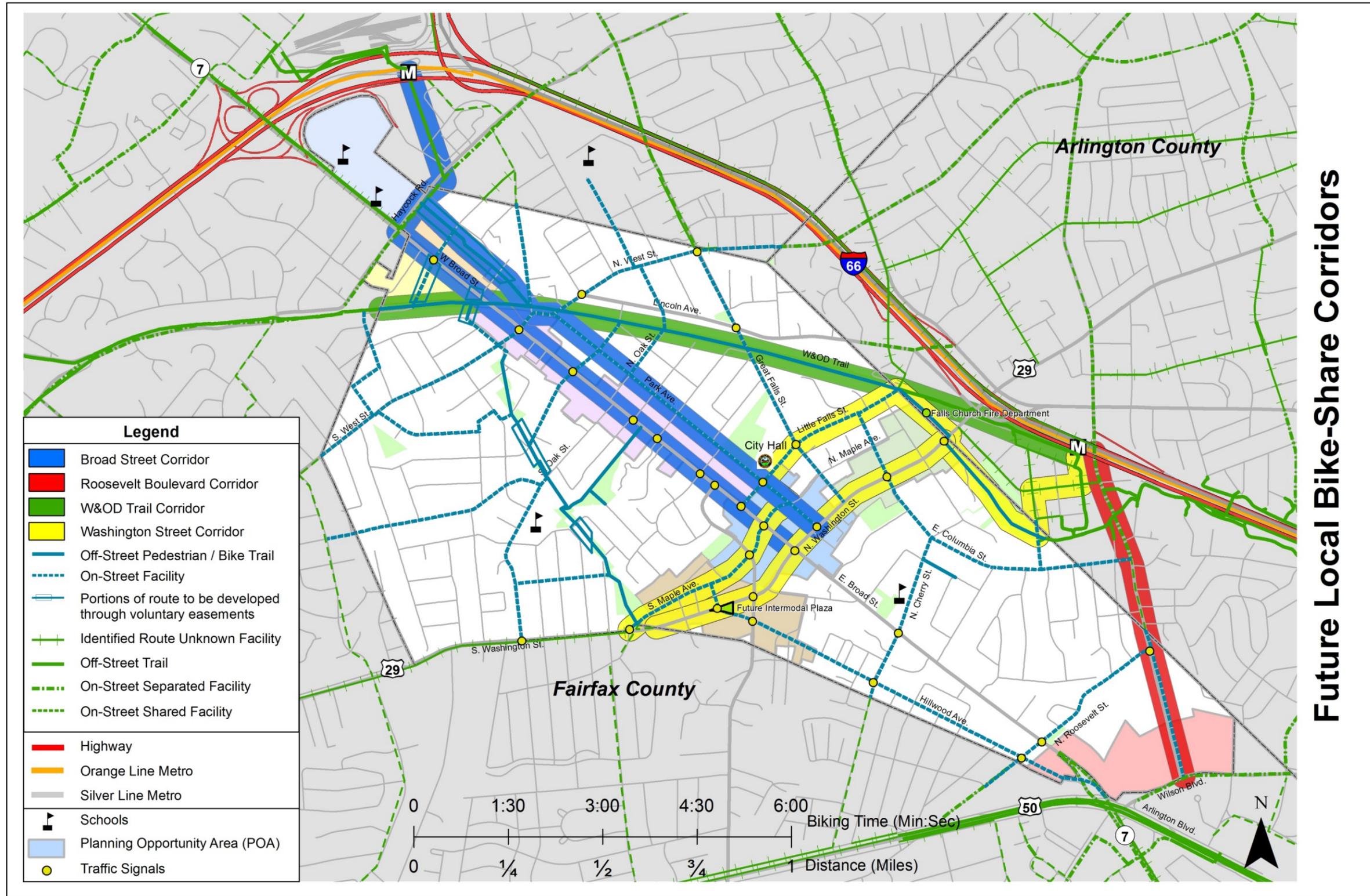
Methodology

The bike-share corridors in this plan connect key anchor points inside and outside the City of Falls Church. Commercial areas service as anchor points inside the City. The East Falls Church and West Falls Church Metrorail Stations service as anchor points outside the City.

The bike-share corridors build upon the future bicycle routes defined earlier in this plan. Washington Street and East Broad Street are included as bike-share corridors because best practices dictate placing bike-share stations in high visibility locations. High visibility locations are easier to find and, therefore, make it easier for riders to use the system.

Because Washington Street and Broad Street are not identified as future bicycle routes, this plan assumes that bike-share users trying to access these streets will either use nearby bicycle routes or ride slowly along the sidewalk (see Appendix B).

Bike-Share Corridors - Future, City Scale



Future Local Bike-Share Corridors

4. Implementation

Bicycle Routes

Implementation of specific routes will rely on dedicated funding and opportunities presented by other projects. The following types of projects may provide opportunities to implement specific routes: Capital Improvement Program (CIP) projects, Neighborhood Traffic Calming (NTC) projects, routine maintenance, paving, and redevelopment projects (both public and private). When funding is provided to implement a route or when a future bicycle route passes through the area of some other project, the following steps will be taken:

1. City staff will evaluate existing conditions, including traffic volumes, traffic speeds, and on-street parking utilization.
2. City staff will brainstorm concepts to improve safety for people traveling by bicycle while maintaining access for all street users. To avoid creating bike facilities to nowhere, the concepts will be sized to provide a meaningful connection to the bicycle network. See appendix A for different kinds of bicycle facilities. On-street parking for automobiles provides safety and accessibility benefits to City residents and businesses. Understanding that on-street parking contributes to quality of life in the City, the intention of this Plan is not to remove on-street parking. Therefore, proposed concepts will limit impacts to on-street parking that is regularly used.
3. City staff will present the options to the public at a community workshop. During the workshop, City staff will present the data collected (step 1) and the concepts

developed (step 2). City staff will then discuss with meeting participants the options presented and get their feedback on the concepts.

4. The City Manager will review the options developed and the public feedback and make the final determination on the type of facility to provide.

In selecting a particular set of facilities, neighborhood character should be taken into consideration as well as access needs and safety of all street users.

Bike-Share

Implementation of specific bike-share corridors will be opportunity driven. Opportunities may include, but are not limited to, partnering with developers and existing business as well as leveraging grant funds. Funding strategies should consider both up front capital costs and ongoing operating costs.

In developing the bike-share corridors, best practices on station placement and station density should be incorporated. Experience with bike-share in other communities has shown that stations need to be placed every few blocks to avoid stations running out of available bikes or becoming full and unable to accept returned bikes.

Education and Outreach

Research shows that education and outreach are important tools for raising awareness of bicycling options⁴. Education can include

⁴ Dill, Foster, and Murdoch. 2014. "How can psychological theory help cities increase walking and bicycling?" Journal of the American Planning Association, Vol 1, Num 1.

safe cycling classes for children and adults. The Washington Area Bicyclist Association (WABA) offers City Cycling classes to help people safely bike on city streets.

Outreach helps publicize biking opportunities and advertises information sources for bicycling. Bike to Work Day is an annual event coordinated by the Metropolitan Washington Council of Governments (MWCOCG) that highlights the potential for biking to work. The City began sponsoring a “pit stop” for Bike to Work Day in 2011.

To provide information and education on biking options, City staff should take a lead role in:

1. Hosting a pit-stop for Bike to Work Day, and
2. Coordinating with WABA to provide a City Cycling class in the City at least once a year.

Timeline

This plan assumes a mix of dedicated funding will be budgeted for bicycle facilities each year and that opportunities presented by other projects and grant funding sources will be leveraged. The below table describes the expected pace of implementation assuming \$25,000 in dedicated annual funding. City staff will report to Council on the pace of implementation each year and estimate the resources needed to stay on schedule.

Bicycle Routes	
Remove out of date signage	June 2016
Implement 1 route (between 0.5 and 1.0 miles long)	3 route every 2 years. Total time to complete network approximately 10 years (excluding off-street trails).
Bike-Share	
Feasibility Study	Completed October 2016
CIP Budget	Considered in FY 2018-2022 CIP
Grant Funding	Awarded for FY 2018
System Launch	System Launch May 2018
Education and Outreach	
Youth Education	1 Class Offered per Year
Adult Education	1 Class Offered per Year
Bicycle Parking	
Bicycle Parking Requirements	Ordinance Adopted June 2016
“Request a Rack Program”	Run program whenever funding is available. Provide parking for at least 20 bicycles per year; approximately 10 modern racks preferably installed with capacity for 4 or more bikes at each location.
Progress Report	
To be provided at the start of the budget process each year	

Funding Opportunities

Several agencies and organizations make grant funding available for a range of bicycle facilities and programs. Below is a list of some of the currently available opportunities:

DRPT Special Programs: The Virginia Department of Rail and Public Transportation (DRPT) makes available grants for a variety of transportation efforts. Grants require a 20 percent local match.

QuickStart Mini-Grants, Safe Routes to School: The Virginia Department of Transportation (VDOT) makes available grants of up to \$1,000 for bike racks, safety equipment, educational materials, and training in support of biking to school.

Building Blocks for Sustainable Communities: The Federal Transit Administration (FTA) provides technical assistance for community engagement and bicycle planning.

Congestion Mitigation and Air Quality Improvement (CMAQ) and Surface Transportation Program (STP): The U.S. Department of Transportation Federal Highway Administration makes available funding for a variety of transportation purposes. The program is administered by the Commonwealth Transportation Board (CTB) and the Northern Virginia Transportation Authority (NVTA). The City's combined share of funding from these two programs is approximately \$350,000 per year.

Outside Opportunities

This plan highlights the regional aspects of bicycle infrastructure and the many connections possible among regional activity centers. Therefore, regional-level and state-level plans should incorporate

the information in this plan. Further, regional-level and state-level projects should be leveraged to advance the vision of this plan.

Flexibility

This plan identifies a set of bicycle routes that will help the City meet its goal to, *“Develop a City-wide bicycle facilities plan to connect the City’s commercial areas and neighborhoods, transit facilities, schools, regional bicycle facilities, and designated bicycle routes in neighboring jurisdictions.”*

As conditions in the City change due to private (re)development projects, public infrastructure projects, or other significant changes, the routes identified in this plan may have to be updated. Therefore, the routes in this plan should be considered as a guide, and they should flex as appropriate to accommodate changing conditions.

Appendix A: Bicycle Facilities

Bicycle facilities are designed to promote safety and predictability for all street users, including people walking, biking, driving and using transit. Recent evidence regarding bicycle facilities and safety suggests that providing safe facilities for people on bikes increases compliance and predictability⁵.

The National Association of City Transportation Officials (NACTO) works to provide safe, cost-effective, equitable transportation systems. NACTO provides guidance on many different kinds of bicycle facilities from street and intersection design to markings and signage.

The following sections summarize several different kinds of bicycle facilities suggested by NACTO. The facility descriptions are provided for information and reference. These descriptions will be updated as appropriate to keep pace with best practices and lessons learned from other communities.

⁵ “People for Bikes” is a coalition of bicycling suppliers and retailers, as well as a charitable foundation that endorses making bike riding better for everyone. People for Bikes (2010). Statistics Library/Facilities Statistics. Retrieved online at <http://www.peopleforbikes.org/statistics/category/facilities-statistics#bicycle-facilities-and-safety>

Bike Lanes

“Bike lanes designate an exclusive space for bicyclists through the use of pavement markings and signage.” (2011, NACTO)⁶

1. Conventional Bike Lane

Bike lanes run parallel to traffic lanes. Bike lanes typically run along the right side of the street, but will occasionally run along the left side of the street – especially on one-way streets. Bike lanes can be installed on streets with or without on-street parking and can be installed on either side of parking lanes.

These lanes provide people with a sense of safety, freedom, and awareness. Bike lanes create a physical space that separates riders and motorists, which leads to greater rider comfort and confidence on busy streets.

NACTO recommends installing bike lanes on streets with average speeds exceeding 25 miles per hour (mph) or carrying more than 3,000 motor vehicles per day. Note that these are guides and circumstances may require other alternatives.



Figure 14: A bike lane along Wilson Blvd in Arlington, Virginia.

⁶ National Association of City Transportation Officials (NACTO). (2011). NACTO Urban Bikeway Design Guide. April 11, 2011 edition. Retrieved online at http://nacto.org/wp-content/uploads/2011/03/NACTO_UrbanBikeway_DesignGuide_LRez.pdf

2. Buffered Bike Lane

Buffered bike lanes build on conventional bike lanes by providing a buffer space, between (1) the automobile travel lane and the bike lane or (2) the parking lane and the bike lane or (3) both. Buffering the bike lane from moving automobiles provides more clearance, improving safety and comfort. Buffering the bike lane from parked cars keeps bicyclists outside the “door zone” – the area into which car doors swing open.

Buffered bike lanes with an actual physical separation, such as bollards or height changes, are often referred to as “cycle tracks.”

Cities around the United States have found that protected bike lanes are associated with increased bicycle ridership, reduced motor vehicle speeding, reduced crashes, and improved sense of safety (Chicago Department of Transportation, 2012)⁷.

Like conventional bike lanes, buffered bike lanes are appropriate for streets with average speeds exceeding 25 mph or carrying more than 3,000 vehicles per day (NACTO, 2011).



Figure 15: A buffered bike lane in Portland, Oregon, provides separation between people driving and people biking.

⁷ Chicago Department of Transportation (2012). Protected bike lanes. Retrieved online at http://www.8-80cities.org/images/res-walking-cycling-articles/protected_bike_lanes.pdf

Intersection Treatments

Intersections are areas where multiple modes of transportation meet and cross paths. This crossing of paths increases the risk of collision. Therefore, special attention must be given to intersection design. Promoting predictability and safe behavior is an important part of intersection design. Designing bicycle facilities that reduce conflict between multiple modes of transportation and coordinate queuing and merging maneuvers contribute to greater awareness for all modes of travel.

Traffic signals in the City are triggered to change by approaching vehicles or pedestrian activated push buttons. As traffic signals are updated through maintenance or capital projects and bicycle routes are implemented, traffic signals will be updated to ensure people riding bikes are able to trigger the lights. Where feasible, the trigger will be automatic and will not require people riding bikes to press a button.

1. Bike Boxes

Bike boxes provide people on bikes with greater separation from vehicles. Bicyclists using a bike box are positioned in front of idling automobiles, which should be stopped behind the automobile stop line for the intersection approach. This reduces the amount of air pollution breathed in by people on bicycles. Another safety advantage of positioning people on bikes at the front of the queue is improving visibility and reducing the chance of a collision.



Figure 16: Two people wait for the traffic signal to change. Their position in front of the automobile protects them from exhaust fumes and improves their visibility.

2. Crossing Markings

Just like dotted lanes (sometimes referred to as “puppy tracks”) that help guide people driving through intersections, dotted lines and lane markings can help guide people biking through intersections. These markings improve predictability by guiding street users through specific portions of the intersection. These markings also improve awareness by highlighting likely travel paths of different street users.



Figure 17: Dashed lines and arrows identify a travel path for people on bikes.



Figure 18: Dashed lines carry this bike lane through the intersection.

3. Lane Merging and Crossing

Turn lanes and through bike lanes need special consideration when approaching an intersection, because they often require different modes to merge and/or cross paths.

Green pavement can significantly improve awareness for vehicular traffic and alert people on bikes and people in cars of the impending intersection and areas with multi-modal merging.

These treatments often include traffic control signs directing right turning vehicles to yield to bicyclists.



Figure 19: Marked green pavement alerts people biking and people driving to merging traffic.

4. Raised Trail Crossings

Raised crossings improve awareness at trail/street intersections. Raised crossings help create a sense that the park or trail is the dominant community feature and that the street is simply passing through it.

Along with raised crossings, street geometry can be narrowed to shorten crossing distances, prevent automobile parking from encroaching into sight lines, and provide gateway features between different land uses or neighborhoods.



Figure 20: This crossing concept narrows that roadway to reduce the crossing distance.



Figure 21: This crossing concept uses a median to narrow the travel lanes and introduce greenspace into the street.

Other Signage and Pavement Markings

1. Sharrows

Sharrows, as described by NACTO, are “Shared Lane Markings which indicate a shared lane environment for bicycles and automobiles.”

Use of these shared lanes encourages riders to be positioned safely with traffic and alerts drivers to the presence of people on bicycles. Sharrows are placed in the middle of the lane which keeps people on bikes out of the “door zone” and also increases rider visibility.

As noted previously in this plan, people on bicycles can travel on any street in the City. Under Virginia law, motorists may pass bicyclists in a shared lane. However, motorists must do so at a reasonable speed and must provide at least three feet of clearance when passing (Virginia code 46.2-839).



Figure 22: On-street markings help guide cyclists to travel outside the "door zone".



Figure 23: Sharrows within the City of Falls Church, along North Maple Avenue.

2. Wayfinding and Signage

Wayfinding signs help guide bicyclists to popular destinations and provide information on the most bike-friendly routes to use. Wayfinding signs used in the City provide information on both direction and distance to destinations. They direct cyclists to locations such as City Hall, the State Theatre, Metrorail Stations, and to the W&OD Trail.



Figure 24: Wayfinding signs direct people to nearby attractions.

Sign toppers can be a useful branding guide that communicates “this is a bike friendly/walkable street” to cyclist, pedestrian, and vehicular traffic. Installation of sign toppers is convenient and cost effective as it only requires a few additional components.

Wayfinding and informational signs should be coordinated with other sign and streetscapes efforts to provide a coordinated and attractive appearance throughout the City.



Figure 25: Sign topper alerts riders to access bike friendly streets in the City of Rehoboth, Delaware.

3. Neighborhood Greenways

Neighborhood Greenways (sometimes called “Bicycle Boulevards”) focus on the neighborhood and community aspects of streets; promoting multiple modes of transportation and maximizing accessibility for all modes.

These greenways provide multiple benefits to communities by creating accessible routes, managing motor vehicle speeds, reducing motor vehicle volumes, and providing areas for safe and accessible street crossings.

Treatments include signs, pavement markings, speed management, and volume management to ensure people on bikes feel safe traveling from one destination to the next (NACTO, 2011).⁸ These design elements promote travel safety for people on bikes and predictability for all street users.



Figure 26: Neighborhood Greenways work well within residential suburban areas.



Figure 27: Neighborhood Greenways can also provide access through retail and commercial areas.

⁸ National Association of City Transportation Officials (NACTO). (2011). Bicycle boulevards. Retrieved online at <http://nacto.org/cities-for-cycling/design-guide/bicycle-boulevards/>

Appendix B: Bicycle Etiquette

As riding bicycles becomes more common, defining expected behavior and use of bicycles becomes more important. The laws of the City and the Commonwealth of Virginia describe the legal requirements that control use of bicycles in the City. This section describes more generally the etiquette that is expected of people riding bicycles in the City.

Sharing the Road: People may ride bikes on any street in the City. Bicycles are considered vehicles, and therefore people riding bikes have the same rights and responsibilities as people driving cars⁹. When biking, people must obey all traffic laws, including stopping at stop signs and traffic signals and riding in the proper direction.

Many streets in the City are narrow and are not wide enough to allow a person driving to pass a person biking in the same lane. To improve visibility and deter unsafe passing behavior, bicyclists should generally ride in the middle of a travel lane. Motorists wishing to pass should do so using a different lane.

Riding on the Sidewalk: On some streets in the City, particularly the busier streets, people may not feel safe biking in the street. In those cases, people may bike on the sidewalk. However, pedestrians have priority use of the sidewalk. People who choose to bike on the sidewalk should travel at a slow/walking speed and exercise caution near pedestrians.

Riding on Shared Pedestrian/Bicycle Paths and Trails: As the name implies, shared trails are used by people walking and people biking.

⁹ Virginia Code § 46.2-800

People on bikes should exercise caution, slow down near pedestrians, and pass with care.

Lighting: At night, bicycles should be equipped with appropriate lighting and reflectors, including a white forward-facing light and a red rear-facing light¹⁰.

Equipment and Maintenance: To ensure safety, bicycle brakes, tires (air pressure), and chains should be checked before each ride.

Earbuds and Headphones: State law prohibits use of earbuds or headphones in both ears while operating a vehicle. This prohibition also applies to people riding bicycles¹¹. The City recommends that people not use earbuds or headphones at all while riding a bike.

¹⁰ Virginia Code § 46.2-1015

¹¹ Virginia Code § 46.2-1078

Appendix C: Public Engagement

Outreach

Many different communication methods were utilized to inform members of the community about the plan and their opportunities to participate in the planning effort. The following methods were used to advertise the effort:

1. Project webpage
2. Announcements on the City webpage
3. Posting physical meeting notices
4. Coverage in the Falls Church News Press
5. Coverage in the Falls Church Times
6. News releases
7. Announcements to the Parent Teacher Associations
8. Listings in the schools' morning announcements
9. Posts to the City's Facebook page
10. Messages on the City's Twitter account
11. Posts on the City's Instagram account

Collaboration

This plan was developed with collaboration among Council, Planning Commission, Citizens Advisory Committee on Transportation (CACT), other relevant boards and commissions, public, and staff.

The Program update was discussed at the following public meetings:

Date	Meeting
March 11, 2015	CACT
March 16, 2015	Planning Commission work session
April 8, 2015	Community Open House
April 8, 2015	CACT
April 16, 2015	Environmental Services Council (ESC)
May 4, 2015	City Council work session
May 13, 2015	Community Open House
May 13, 2015	CACT
May 18, 2015	Planning Commission
June 2, 2015	Economic Development Authority (EDA)
June 15, 2015	City Council work session
July 13, 2015	City Council

CACT Recommendation

On May 13, 2015, the CACT passed the following motion by unanimous vote (5-0) recommending that City Council adopt this Plan.

WHEREAS: The City’s Mobility for all Modes Plan, the Transportation Chapter of the City’s Comprehensive Plan, establishes a vision to, “Provide for the safe movement of people and goods within and through the City via a transportation network, offers choices in travel modes, supports economic activity, is sensitive to the environment, and provides equitable access for all residents, workers, and visitors”; and

WHEREAS: The City’s Mobility for all Modes Plan explicitly calls for the, “Develop[ment of] a City-wide bicycle facilities plan to connect the City’s commercial areas and neighborhoods, transit facilities, schools, regional bicycle facilities, and designated bicycle routes in neighboring jurisdictions”; and

WHEREAS: The draft Bicycle Master Plan: Connecting Communities achieves the stated goals of the Comprehensive Plan and notes the numerous benefits of enabling bicycling as a safe and accessible form of transportation; and

WHEREAS: The draft Bicycle Master Plan: Connecting Communities specifies an implementation process that preserves accessibility for all street users and defines opportunities for public input; and

WHEREAS: The draft Bicycle Master Plan: Connecting Communities was developed with numerous publicized opportunities for input and the Plan incorporates that input.

THEREFORE, I MOVE that the Citizens Advisory Committee on Transportation (CACT) of the City of Falls Church, Virginia recommends City Council adopt the Bicycle Facilities Master Plan: Connecting Communities.

Planning Commission Recommendation

On May 18, 2015, the Planning Commission passed the following motion by unanimous vote (5-0) recommending that City Council adopt this Plan.

WHEREAS, the City’s Mobility for All Modes Plan, the Transportation Chapter of the City’s Comprehensive Plan, establishes a vision to, “Provide for the safe movement of people and goods within and through the City via a transportation network, offers, choices in travel modes, supports economic activity, is sensitive to the environment, and provides equitable access for all residents, workers, and visitors;

THEREFORE, I MOVE that the Planning Commission of the City of Falls Church, Virginia recommends City Council adopt the “Bicycle Facilities Master Plan: Connecting Communities” as a Policy Guide and Incorporate it by reference in the City’s Comprehensive Plan, recognizing that suggested changes have been made by Planning Commissioners and they (the Commission’s comments) will be added to the draft; and after they (the

Commission’s comments) have been added that the draft plan will be recirculated to the Planning Commission for further comment.

Council Adoption by Resolution

On July 13, 2015, The City Council passed the following resolution by unanimous vote (5-0) adopting this Bicycle Master Plan.

WHEREAS, The City’s Mobility for all Modes Plan, the Transportation Chapter of the City’s Comprehensive Plan, establishes a vision to, “Provide for the safe movement of people and goods within and through the City via a transportation network, offers choices in travel modes, supports economic activity, is sensitive to the environment, and provides equitable access for all residents, workers, and visitors”; and

WHEREAS, The City’s Mobility for all Modes Plan explicitly calls for the, “Develop[ment of] a City-wide bicycle facilities plan to connect the City’s commercial areas and neighborhoods, transit facilities, schools, regional bicycle facilities, and designated bicycle routes in neighboring jurisdictions”; and

WHEREAS, The draft Bicycle Master Plan: Connecting Communities, a guiding document for implementation of the Comprehensive Plan, achieves the stated goals of the Comprehensive Plan and notes the numerous benefits of enabling bicycling as a safe and accessible form of transportation; and

WHEREAS, The draft Bicycle Master Plan: Connecting Communities specifies an implementation process that preserves accessibility for all street users and defines opportunities for public input; and

WHEREAS, The draft Bicycle Master Plan: Connecting Communities was developed with numerous publicized opportunities for input and the Plan incorporates that input.

NOW, THEREFORE, BE IT RESOLVED by the City Council of the City of Falls Church, Virginia that the Bicycle Master Plan: Connecting Communities is hereby adopted as a guiding document and follow-up action to the City’s recently adopted “Mobility for all Modes Plan”, the Transportation Element of the City’s Comprehensive Plan.



The City of Falls Church is committed to the letter and spirit of the Americans with Disabilities Act. To request a reasonable accommodation for any type of disability, call 703-248-5027 (TTY 711). For more information call 703-248-5178.