Bikeway Master Plan

DRAFT - NOVEMBER 2016

CITY OF ROCKVILLE, MARYLAND

City of Rockville
Get Into It

CITY OF ROCKVILLE BIKEWAY MASTER PLAN UPDATE
ACKNOWLEDGEMENTS

This Plan was prepared by the City of Rockville Department of Public Works, Traffic and Transportation Division. Internal assistance was provided by the Department of Community Planning and Development Services, Department of Recreation and Parks, and the Police Department. The Rockville Bicycle Advisory Committee and the Traffic and Transportation Commission provided input throughout the process.

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Abbreviations Key:

- BFC – Bicycle Friendly Community
- BL – Bicycle Lane
- CIP – Capital Improvement Program
- CL – Climbing Lane
- CMAQ – Congestion Mitigation and Air Quality Improvement Program
- CPDS – Department of Community Planning and Development Services
- CT – Cycle Track
- CTR – Comprehensive Transportation Review
- DPW – Department of Public Works
- DR&P – Department of Recreation and Parks
- JARC – Job Access and Reverse Commute
- LAB – League of American Bicyclists
- MCDOT – Montgomery County Department of Transportation
- MCPD – Montgomery County Planning Department
- MWCOG – Metropolitan Washington Council of Governments
- RBAC – Rockville Bicycle Advisory Committee
- SHA – Maryland State Highway Administration
- SR – Shared Roadway
- SRTS – Safe Routes to School
- SUP – Shared Use Path
- TAP – Transportation Alternatives Program
- TCSP – Transportation, Community, and System Preservation Program
- TLC – Transportation Land Use Connection
- TDM – Transportation Demand Management

CHAPTER 1 - VISION

> "Bicycling in Rockville is for all types of trips, for all types of people, and for all parts of the City."
>
> *The Mayor and Council vision for bicycling in Rockville, 2004.*

The Rockville Bikeway Master Plan (Plan) is a component of the City's Comprehensive Master Plan and provides a vision for a safe and efficient multimodal transportation system within the City of Rockville. First adopted in 1981, the Plan was updated in 1998 and again in 2004 to reflect new opportunities for network expansion and program development. The Plan is intended to be used by City staff, elected officials, and residents as a guide for improving bicycle infrastructure and programs over the next ten years.

This Plan proposes 24.5 miles of new dedicated bikeway facilities and 18.1 miles of new shared roadway designations in the City of Rockville within the next ten years. These proposals mark an increase to the current 34.3 miles of separated bikeway facilities and 33.5 miles of shared roadway designations throughout the city. Fully implemented, this Plan should help to provide a safe, practical, and efficient bikeway network that is connected with commercial, cultural, recreation, residential, and employment destinations throughout the City of Rockville.

Section 1.1 – WHY BICYCLES?

Bicycling offers a healthy, affordable, and efficient mode of transportation that also increases the flexibility and reach of the existing transportation network.

Bicycling offers a variety of benefits, including:

Quality of Life - Additional mobility and increased fitness and recreation opportunities
Health - Higher levels of physical and mental health
Environmental - Improved air quality and reduced vehicular congestion
Transportation Costs - Lower costs for the user as well as roadway maintenance
Local Economy - More dollars staying within Rockville businesses due to decreased fuel consumption.

A 2015 bicycle count study in Rockville showed high bicycle usage in Town Center. The busiest intersection was at Maryland Avenue and E. Middle Lane. In order to increase the reach of the benefits of bicycling to even more users, bicycle infrastructure and encouragement must be targeted to all road users: young and old, experienced and novice, families and commuters, and everyone in between.

SECTION 1.2 - HOW TO USE THIS DOCUMENT

The Plan is divided into six chapters. Chapter II discusses the planning process including the stakeholders involved in the creation of the Plan as well as its goals and objectives. Chapter III outlines the recommendations of the Plan from bicycle infrastructure to priority bicycle routes. Chapter IV presents supplemental policies and practices that help support the Plan, while Chapter V discusses the implementation of the Plan's recommendations and funding sources. Chapter VI outlines the maintenance recommendations to ensure bikeways remain safe and in good operating condition.

Carl Henn Millennium Trail in Fallsgrove

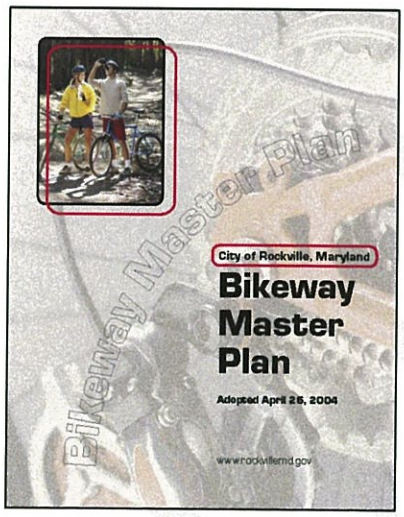
CHAPTER 2 – PLANNING PROCESS

Updating the Plan requires reviewing the progress from the previous plan, a process of assembling people and groups with various interests in the state of bicycling in Rockville, and laying out new objectives and policies. This chapter lays out these elements through an analysis of the progress of the 2004 Plan, a discussion of stakeholders and public involvement, and a presentation of the updated plan objectives and policies.

SECTION 2.1 –2004 PLAN SUMMARY

The 2004 Bikeway Master Plan identified the following priorities for physical improvements:

- Complete the Millennium Trail
- Complete various bikeway improvements to Town Center
- Begin construction of shared-use paths along MD 355 and install wayfinding signs
- Complete a variety of projects including bike lane striping, signed shared roadway sign installation, and the construction of several shared-use paths
- Improve seven high-conflict intersections



The 2004 Plan also recommended the implementation of several bicycle programs, including expanding the pedestrian and bicycle safety education program, strengthening the role of Rockville Bicycle Advisory Committee (RBAC) in the decision making process, develop a Safe Routes to School program, develop a user-friendly bicycle map, and provide dedicated staff support to implement the recommendations of the Plan.

A significant portion of the projects and programs recommended in the 2004 Plan was developed, including high profile projects such as completing the Millennium Trail, creating bikeways improvements in Town Center, constructing over 20 miles of shared-use paths, and marking at least 20 miles of signed shared roadways. RBAC continues to be consulted on major bicycle projects throughout the City, and Rockville has produced a bicycle map that is updated frequently and provided free of charge to area residents. A Pedestrian and Bicycle Coordinator, a role that used to reside within the Department of Recreation and Parks, was assigned in the Department of Public Works to ensure the role of bicycling in the transportation discussion, and the City adopted a Complete Streets policy that ensures bicycle facilities will be prioritized in new road construction and road re-construction.

Though many of the 2004 Plan recommendations were completed within that plan's horizon year, several outstanding recommendations remain incomplete. These recommendations are

still recognized as valuable improvements and are incorporated into the Plan update. Examples of these remaining opportunities include, among others:

- Evaluate the roadway to provide on-road bicycle facilities along Maryland Avenue between Great Falls Road and E. Jefferson Street and along Falls Road between Wootton Parkway and Great Falls Road.
- Provide a connection from the existing bicycle lanes on Nelson Street that end at Anderson Avenue to the shared use path along W. Montgomery Avenue to the I-270 bicycle and pedestrian bridge.
- Install a shared-use path along Edmonston Drive between Wootton Parkway and Rockville Pike.

SECTION 2.2 – STAKEHOLDERS

The Rockville Bikeway Master Plan Advisory Committee was convened to discuss the future of bicycling in Rockville and provide insight into the Bikeway Master Plan update. This committee identified potential future facility improvements and provided perspective throughout the planning process. The committee included members of the following:

ROCKVILLE RESIDENTS

Rockville's residents have been represented in various stages in the process of developing this Plan, including through several of the committees listed below. Residents were consulted during the Planning Commission review and approval process at various neighborhood associations, public open houses on April 9, 2014 and October 14, 2015, and three public hearings in front of the Planning Commission. At these public hearings, 55 individuals and organizations participated, yielding 173 comment items which were reviewed for integration into the Plan. Rockville residents are the key stakeholders in this and all planning processes, and their input will be sought and taken into account at every step of the implementation of a bicycle facility in Rockville.

ROCKVILLE BICYCLE ADVISORY COMMITTEE

A volunteer committee of cyclists who meet monthly to provide input to City staff, plan events, and discuss bicycle-related topics in Rockville and the greater area. RBAC reviewed the Plan throughout the process, provided feedback and recommendations throughout the process, and recommended approval of the Plan to the Mayor and Council.

ROCKVILLE TRAFFIC AND TRANSPORTATION COMMISSION

A nine-member appointed body that advises the Department of Public Works on matters relating to transportation throughout Rockville. The Commission reviewed the Plan, provided feedback and recommendations, and recommended approval of the Plan to the Mayor and Council.

Various City of Rockville Departments

- Department of Public Works (DPW): DPW is responsible for transportation engineering and operations on locally-owned roadways. Staff in DPW plan, implement, and maintain bicycle facilities on City streets and within the public right-of-way. Through the Pedestrian and Bicycle Coordinator, DPW leads a quarterly meeting of the citywide Pedestrian and Bicycle Safety Committee.
- Department of Recreation and Parks (DR&P): DR&P supports bicycling through routine maintenance of off-road shared use paths and encourages bicycling through recreation programs.
- Department of Community Planning and Development Services (CPDS): CPDS supports bicycling by requiring supporting facilities through the Zoning Ordinance, neighborhood plans, and the Comprehensive Master Plan.
- City Police Department: The City Police Department enforces traffic regulations and lead safety initiatives for all transportation modes to encourage compliance with the law.

External Agencies

- Montgomery County Planning Department (MCPD): MCPD maintains a County Bicycle Master Plan and manages transportation elements of the County's development review process. MCPD is currently working on an update to the Bicycle Master Plan, including a plan for a separated bike lane network in nearby White Flint.
- Montgomery County Department of Transportation (MCDOT): MCDOT is responsible for engineering, operations, and maintenance of on-street bicycle facilities within Montgomery County right-of-way.
- Maryland State Highway Administration (SHA): SHA is responsible for engineering, operations, and maintenance of state roadways within Rockville, including MD 28, MD 189, MD 355, MD 586, and MD 911.

The Rockville Mayor and Council, along with the Planning Commission, also have opportunities to provide input and approve the project:

City of Rockville Mayor and Council

Among other duties, the Mayor and Council are responsible for adopting the Plan. Once adopted, recommendations included in the Plan should be incorporated into the annual Capital Improvement Program (CIP) and the five-year Transportation Demand Management (TDM) program based on the availability of funds.

City of Rockville Planning Commission

A seven-member appointed body that reviews projects from a planning perspective. The Commission reviewed the Plan, held public hearings in April 2014, October 2015, and January 2016, and recommended approval of the Plan to the Mayor and Council on September 28, 2016.

SECTION 2.3 – PUBLIC INVOLVEMENT

The Plan reflects the values and priorities of the residents of the City of Rockville. The public was involved in crafting the Plan and its recommendations. Engaging the public and getting feedback was an important component of the plan development process and helped to form many of the Plan's recommendations. Staff compiled input and worked with various committee and commission members to modify the Plan to meet citywide short- and long-term needs. Public involvement and input opportunities included:

- Presentations to the Rockville Bicycle Advisory Committee, where feedback was solicited and incorporated into the Plan.
- Presentation to the Traffic and Transportation Commission, where feedback was solicited and incorporated into the Plan.
- Providing an electronic draft of the document for public comment before public hearings with the Planning Commission and Mayor and Council, as well as making hard copies available at City Hall and the Rockville and Twinbrook libraries.
- Presentations to various neighborhood organizations who requested a presentation from staff.
- Public Open Houses held on April 9, 2014 and October 14, 2015.
- Presentation to the Planning Commission, who reviewed the Plan and recommendations and provided comments to staff. The Planning Commission held 3 public hearings prior to voting on the approval of the Plan where public comments were provided.
- Presentation to the Mayor and Council, who held a public hearing and reviewed the Plan and recommendations.

The public is encouraged to remain involved in the development of bikeways after the adoption of this Plan. Residents can become involved with bicycling issues in the City by taking advantage of outreach efforts by staff. By attending future open house meetings on bicycling in Rockville, submitting requests and/or concerns to the Traffic and Transportation Division related to bicycle improvements, or joining the Rockville Bicycle Advisory Committee, residents can help implement the recommendations of this Plan Update.

During the implementation phase of individual bikeways projects, questions and concerns will arise in and around neighborhoods near the project. To address these concerns, City staff will ensure that affected residents are made aware of proposed bikeway projects and have an opportunity to learn and provide feedback on the details of project implementation before plans are finalized. This outreach will be done through direct mailings, website updates, public meetings, and presentations to local neighborhood associations, using the methods deemed most appropriate for the project at hand.

SECTION 2.4 - PLAN OBJECTIVES AND POLICIES

The Plan states five main objectives to improve bicycling in Rockville over the next ten years. These objectives support the vision outlined in the City of Rockville 2002 Comprehensive Master Plan (CMP) and correspond to goals established in the Transportation Element of the CMP. Performance measures set forth below will be monitored every 2 years to determine progress in achieving the goals of this Plan.

OBJECTIVE 1 – MOBILITY

Enhance the mobility of cyclists by improving the bicycle facility network. The recommendations within this Plan are intended to help create a more comprehensive bicycle network. It is also helpful to be knowledgeable about Rockville's bicycle ridership. Statistics allow us to better plan for the future by knowing current ridership numbers and compare them to past and future ridership data.

POLICIES

- Policy 1.1 - Install bike paths, lanes, signs, crossings, signals and other facilities recommended in this Plan.
- Policy 1.2 - Gather bicycle counts and public input to determine where new facilities and improved maintenance are needed.

PERFORMANCE MEASURES

- Number of miles of bikeways of all types. (DPW)
- Progress towards implementing the total number of miles of bikeways proposed in this plan. (DPW)
- Increase in satisfaction with bicycle facilities in public surveys. (DPW/DRP)
- Increase in bicycle ridership through bicycle counts, including the annual National Bicycle and Pedestrian Documentation Project. (DPW)
- Installation and number of bikes counted on automated bicycle counters along major off-road bicycle thoroughfares. (DPW/DRP)

OBJECTIVE 2 – FACILITIES

Provide bicycle facilities during development and redevelopment to improve the continuity of the bikeway network. It is important to add these amenities early in a development or redevelopment process because it is difficult to retrofit existing development to adequately accommodate bicycling. Rockville's Complete Streets policy is a guiding document to ensure that bicycling is included in all projects across the city.

POLICIES

- Policy 2.1 – Evaluate adding bicycle facilities during all roadway construction, reconstruction, and resurfacing.

- Policy 2.2 – Require developers to provide bicycle facilities in new developments and redevelopment of sites, as appropriate.
- Policy 2.3 – Ensure that Rockville's Roadway Design Standards are bicycle-compatible.
- Policy 2.4 – Encourage existing development to add safe and secure bicycle parking through the creation of an incentive program.
- Policy 2.5 – The City of Rockville will install bicycle facilities where appropriate.

PERFORMANCE MEASURES

- Percent of new developments and road projects that adhere to the recommendations of this Plan. (DPW)
- Status of update to the Roadway Design Standards. (DPW)
- Bicycle parking spaces added throughout the City. (DPW/CPDS)
- Number of businesses participating in the Bike Rack Grant Program. (DPW)

OBJECTIVE 3 – ENVIRONMENT

Protect the environment. Rockville's Mayor and Council signed the U.S. Mayor's Climate Protection Agreement in 2006, and Maryland's Greenhouse Gas Reduction Act of 2009 requires greenhouse gas emissions statewide to be reduced 25% by 2020. Roughly 40% of Rockville's greenhouse gas emissions come from transportation, according to a 2006 study. Bicycling is a non-polluting form of transportation, and its use is a statement by an individual to reduce their carbon emissions and help Rockville meet these goals. The City can help promote the environmental benefits of bicycling by encouraging its use and developing bicycle amenities in environmentally sound ways.

POLICIES

- Policy 3.1 – Encourage bicycle use as a means to reduce carbon emissions.
- Policy 3.2 – Evaluate the environmental impacts of proposed bikeway facilities and construct new facilities in accordance with the Environmental Guidelines for the Protection and Enhancement of the City's Natural Resources (1999).

PERFORMANCE MEASURES

- Miles estimated to have been transferred from single passenger automobile use to bicycling, using annual bicycle counts and mileage converters available online through various sources. (DPW)
- Percent of new bikeways constructed in accord with the Environmental Guidelines for the Protection and Enhancement of the City's Natural Resources (1999). (DPW)

OBJECTIVE 4 – SAFETY

Improve the safety of bicycling in Rockville for users of all groups. Many people cite safety concerns as reasons why they do not ride bicycles. Directly addressing these concerns through infrastructure, outreach, and enforcement can help people climb over the safety hurdle.

POLICIES

- Policy 4.1 – Increase enforcement of motorist, pedestrian, and bicyclist behavior to reduce bicycle and motor vehicle crashes.
- Policy 4.2 – Educate all residents, including children, regarding safe bicycling behaviors.
- Policy 4.3 – Collect, monitor, and review bicycle-related crashes and analyze reasons and potential solutions to prevent future crashes.
- Policy 4.4 – Identify potentially strong bicycle routes where ridership may be depressed because of safety concerns.
- Policy 4.5 – Ensure that all bikeway projects account for pedestrian safety.

PERFORMANCE MEASURES

- Number of warnings or citations targeting road user behaviors that compromise bicycle safety. (Police)
- Number of warnings or citations given to parties determined at fault in a crash involving a bicycle where warranted. (Police)
- Status of Safe Routes to School education outreach in local schools. (DRP)
- Number of specific safety-related infrastructure projects completed throughout the City. (DPW)
- Percent of bicycle crashes compared to Rockville population (Police, DPW)

OBJECTIVE 5 – ENCOURAGEMENT

Encourage bicycling as a means of transportation and recreation. Many people fondly remember bicycling as a child, and a little encouragement can help them understand its potential role in their lives as adults.

POLICIES

- Policy 5.1 – Organize and/or encourage regular community-based bicycle rides and other bicycling events.
- Policy 5.2 – Expand the Capital Bikeshare program through public and private partnerships.
- Policy 5.3 – Educate the public on the logistics of bicycle commuting.
- Policy 5.4 – Undertake measures to achieve the Silver level for Bicycle Friendly Communities (BFC) from the League of American Bicyclists (LAB), including:
    - Increasing the proportion of bicycle network mileage to total road mileage,
    - Implementing a Safe Routes to School program including a bicycle safety component,
    - Review and revise local ordinances related to bicyclist safety,
    - Provide bicycle education courses for adults, and
    - Make bicycle parking more readily available and more prevalent.
- Policy 5.5 – Use City platforms to promote safe bicycling for recreation and transportation.
- Policy 5.6 – Implement a bicycle commuter subsidy program for City of Rockville employees and encourage Rockville businesses to do the same.

PERFORMANCE MEASURES

- Number of organized bicycle rides in Rockville. (RBAC/DRP)
- Number of monthly users of a bicycle sharing program. (DPW)
- Number of public outreach efforts (articles in local papers, reports on Rockville 11, social media outreach, etc.). (DPW/DRP/Public Information Office)
- Progress towards achieving Silver BFC status, using LAB guidelines in the Building Blocks of a Bicycle Friendly Community. The LAB's Building Blocks of a Bicycle Friendly Community are included as Appendix C to this Plan. (DPW)

SECTION 2.5 – CONNECTIONS WITH NEIGHBORING JURISDICTIONS

Rockville does not exist in a bubble – the city has transportation connections to important destinations in Montgomery County on all sides. Staff conducted a review of current and future plans for the areas immediately adjacent to Rockville, including plans for Twinbrook, North Bethesda, Great Seneca, Shady Grove, Aspen Hill, and Gaithersburg as well as the bicycle plan for the Metropolitan Washington Council of Governments.

The plan review shows that Rockville is in a good place to connect to existing and future bicycle facilities. The Recommendations Map in Appendix A shows the strong connections to Montgomery County that already exist via the Millennium Trail, Key West Avenue, Seven Locks Road, Baltimore Road, and the Bethesda Trolley Trail. Areas such as Twinbrook to the southeast and the Great Seneca Corridor to the northwest are poised for significant development, including additional bicycle facilities. Plans for the Corridor Cities Transitway also include a shared-use path on a bridge connecting King Farm to points west over I-270 and Shady Grove Road. The facilities that Rockville currently has, in addition to the recommendations in this plan, will help create a thorough bicycle network throughout the region as it continues to develop. Rockville will work with Montgomery County to encourage its plans to link to City routes and infrastructure, and Rockville can assist bicyclists in using routes to and through neighboring jurisdictions by including destination signage near our borders.

The Bethesda Trolley Trail connects Rockville to Bethesda and points south.

CHAPTER 3 – RECOMMENDATIONS

This chapter describes the process to create the Plan's recommendations. Then it explains the different types of bikeway facilities available, followed by an outline of the recommendations broken down by road segment and a description of the Priority Bicycle Routes to create a network of cross-town bicycle travel.

SECTION 3.1 – RECOMMENDATION PROCESS

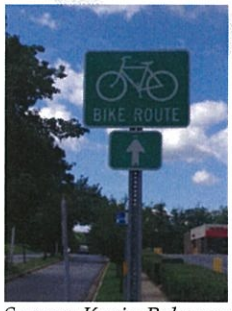
Following the review of the 2004 Bikeway Master Plan and identification of remaining opportunities for improvements, staff designed a transportation network analysis and hired a bicycle planning consultant to identify opportunities for new infrastructure. Using criteria established by City staff, the analysis team evaluated City streets and recommended bicycle facilities appropriate to the context of each street's characteristics.

Data collected by the analysis team during the preliminary analysis was summarized and integrated into a GIS model to demonstrate existing bicycle demand based on residential density and the presence of community amenities. This model allowed the analysis team to develop a Bicycle Facility Demand Map that illustrated opportunities to prioritize capital investment in bicycle facilities.

Using the demand map as a base, the analysis team established demand corridors that connected high demand community amenities and existing bicycle facilities. These demand corridors were then classified, based on the previously conducted field analysis, to bicycle facilities appropriate to each street's characteristics. These demand corridors are identified as priority routes as shown in Appendix B.

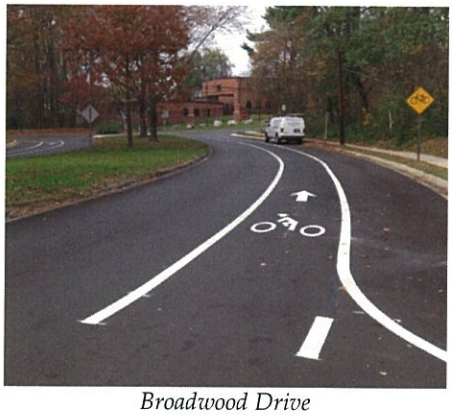
SECTION 3.2 – BIKEWAY FACILITY TYPES

Bicycles are treated as vehicles in the state of Maryland, but providing cyclists with a variety of facilities helps to increase bicyclist visibility and encourage safety among all road users. The following is a list of the various bicycle facilities recommended in this Plan.

 *Source: Kevin Belanger*	**Shared Roadways**: Shared roadway designations are appropriate where vehicular and bicycle traffic may share the same lane or bicycles can use a wide shoulder. These streets often have low vehicular speeds and/or volumes. Shared roadways should not be used on streets with a posted speed limit greater than 35 miles per hour. Streets that are appropriate for shared roadway designations are often denoted with a post-mounted "Bike Route" sign on the side of the road.

King Farm Boulevard

Sharrows: On more heavily traveled roadways that can still be used as shared roadways, shared roadways are designated through the use of shared lane pavement markings, often called "sharrows". Every attempt to add in separated bicycle lanes should be made when possible, but when there is insufficient road width, sharrows should be considered.



Broadwood Drive

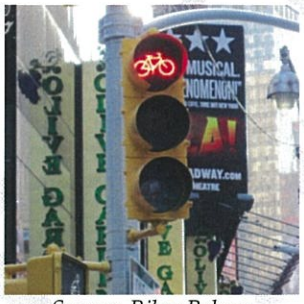
Bicycle Lanes: Bicycle lanes designate separate on-street space for bicycles through the use of pavement markings and signs. Standard bicycle lanes are five feet wide and are generally appropriate for roadways that have a posted speed limit less than 40 miles per hour. However, bicycle lane width should be increased to six feet when the posted speed limit exceeds 45 miles per hour. Additionally, the use of physical bicycle lane buffers (painted stripes, bollards, etc.) should be considered to improve bicyclists' comfort on roadways with high vehicular speed and/or traffic volume.

Bicycle lanes can be painted different colors to increase their visibility. Green and blue are the most common colors for painted bicycle lanes around the world. Painted lanes are most often used at intersections and other points with a high conflict potential to ensure that drivers see cyclists at these conflict points. The State of Maryland has not yet issued any guidance on painted bicycle lanes, but the City of Rockville will follow their future standards for painted bicycle lanes to be proposed.

Source: Green Lane Project

Source: American Trails

Shared Use Paths: Shared use paths are off-road bicycle facilities that provide bicycle and pedestrian accommodations separated from vehicular traffic by a tree lawn, curb and gutter, or other physical barrier. This type of facility is frequently located adjacent to major roadways or through City parks and has a recommended minimum width of 10 feet. Shared use paths are most appropriate along roadways with few driveways and side street intersections because these connections often result in conflict points between turning vehicles and bicyclists. Shared use paths should not preclude implementation of on-road bicycle facilities along the same corridor.

 *Source: WashCycle*	**Cycletracks**: Protected on-street bicycle paths, also known as cycletracks, provide a designated bicycle lane that is separated from vehicular traffic by a physical barrier. This facility can be configured to support either one-way or two-way bicycle operation, depending on cycletrack width and traffic control, and can be located at or above road grade. Cycletracks are an innovative use of roadway that Rockville has not yet implemented; however, the use of cycletracks should be considered for the redeveloping Rockville Pike Neighborhood, as identified in the recently adopted Rockville Pike Neighborhood Plan.
 *Source: FHWA*	**HAWK Beacon:** A HAWK beacon (High-Intensity Activated Crosswalk Beacon) is a traffic signal that is used to assist bicycles and pedestrians in crossing a high volume road. The light stays dark until activated by a bicyclist or pedestrian, at which point the light turns yellow to warn drivers to stop, then red. The pedestrian or bicyclist is given a cross signal. After a period of time, the light then flashes red, at which point drivers can continue through the intersection if already cleared of pedestrians and bicyclists. The light will then go dark again after enough time is given for crossing pedestrians and bicyclists.
 *Source: Bikes Belong*	**Bicycle Signal:** A bicycle signal is a traffic signal specifically for bicyclists. It can be programmed so that it is only added to the traffic light cycle at an intersection when it is activated by a bicyclist. It helps ensure that a bicyclist makes it through an intersection safely when there are opposing forces that complicate a safe and convenient crossing.

SECTION 3.3 – RECOMMENDATIONS

Based on the recommendations in this Plan, 40.99 total miles of bikeways are proposed, including 22.64 miles of dedicated bikeways and 17.44 miles of shared roadway designations. Of the 22.64 miles of dedicated bikeways, 9.91 miles are bicycle lanes, 4.27 miles are shared-use paths, and 5.21 miles are cycletracks. Table 3.1 lists all facilities recommended in this Plan, which are also visually displayed on the map provided in Appendix A. These facilities are new and in addition to the 68.76 miles of on- and off-street bicycle facilities that currently exist in Rockville. Many of the newly recommended facilities are included in one or more of the eight Crosstown Routes, which show cyclists ways to get across town comfortably by bike. These are further discussed in the next section and in Appendix B. If any of the recommended segments are included in one of the official Crosstown Routes (either partially or in full), those Crosstown Routes are shown in Table 3.1. It is important to note that some of the recommendations in this plan are aspirational and would face constraints in the form of finances, existing road width, and on-street parking, to name a few. While the City continues to review this plan and gather the resources to implement it, the City should find ways to increase the safety and efficiency of all roads for bicycles as projects arise.

KEY for Table 3.1 (below)
BL = Bicycle Lane
CL = Climbing Lane (BL only on uphill side of road)
CT = Cycletrack
SR = Shared Roadway
SUP = Shared Use Path

Note: The recommended facility type on each road segment should be assumed to be proposed for both sides of the road unless otherwise indicated with a directional label or other text.

TABLE 3.1 - STREET RECOMMENDATIONS

Street/Location	From	To	Facility Type	Length (miles)	Crosstown Route
Anderson Park	Princeton Pl.	Madison St.	Study	-	
Ardennes Ave.	Crawford Dr.	Vandegrift Ave.	SR	0.40	East Twinbrook
	Vandegrift Ave.	Twinbrook Pkwy.	BL	0.26	East Twinbrook
Baltimore Rd.	S Stonestreet Ave.	First St.	SR	0.42	Lincoln Park to Twinbrook Metro, Fallsgrove to Rock Creek

Street/Location	From	To	Facility Type	Length (miles)	Crosstown Route
	Gladstone Dr.	City Limits	SR	0.87	Fallsgrove to Rock Creek, Rock Creek to Rockshire
Blackwell Rd.	Shady Grove Rd.	Fallsgrove Dr.	SR	0.20	
Broadwood Ave.	Veirs Mill Rd.	Crawford Dr.	SR	0.21	East Twinbrook
Bullard Cir.	W. Montgomery Ave.	Shared use path connection to Autumn Wind Way	SR	0.29	
Chapman Ave.	Halpine Rd.	City Limits	BL	0.38	Lincoln Park to Twinbrook Metro
Chapman Ave. (extended north)	Halpine Rd.	North planned end	SR	0.39	
Claggett Dr.	Grandin Ave.	Crawford Dr.	SR	0.16	
College Pkwy.	Yale Pl.	Frederick Rd.	SR	0.31	
Crawford Dr.	Broadwood Dr.	Ardennes Ave.	SR	0.41	East Twinbrook
Dawson Ave. (extended)	N. Washington St.	Hungerford Dr.	BL	0.12	
E. Jefferson St. (extended)	North end	Congressional Ln.	BL	1.54	
E. Jefferson St. (SB)	Congressional Ln.	Rollins Ave.	CL	0.30	
Falls Rd.	Wootton Pkwy.	Great Falls Rd.	BL	0.60	Upper Rock to Potomac Woods
	Cold Spring Rd.	Dunster Rd.	SUP	0.18	Upper Rock to Potomac Woods
Fallsgrove Dr.	Fallsgrove Blvd.	W. Montgomery Ave.	SR	0.52	
First St./Norbeck Rd.	Rockville Pike	Veirs Mill Rd.	BL	0.21	
Fleet St.	Maryland Ave.	Mt. Vernon Pl.	SR	0.55	King Farm to Tower Oaks

Street/Location	From	To	Facility Type	Length (miles)	Crosstown Route
Forest Ave.	W. Montgomery Ave.	Dawson Ave.	SR	0.33	Fallsgrove to Rock Creek
Fortune Terr. (EB)	Seven Locks Rd.	Park Potomac Ave.	BL	0.16	
Fortune Terr. (WB)	Seven Locks Rd.	Park Potomac Ave.	SR	0.16	
Frederick Rd.	(City limits)	Mannakee St.	CT	2.40	MD 355
Great Falls Rd.	W. Montgomery Ave./W. Jefferson St.	Maryland Ave./Falls Rd.	SR	0.65	Upper Rock to Potomac Woods
Gude Dr. (WB)	W. Montgomery Ave.	Frederick Rd.	BL	1.54	
Halpine Rd.	E. Jefferson Street	Chapman Ave.	BL	0.31	Lincoln Park to Twinbrook Metro
Hungerford Dr. (NB)	New St.	Mannakee St.	SUP	0.86	MD 355
Hungerford Dr. (SB)	New St.	Mannakee St.	CT	0.86	MD355
Hurley Ave.	Feather Rock Dr.	Watts Branch Pkwy.	BL	0.14	
Hurley Ave. (NB)	Wootton Pkwy.	Feather Rock Dr.	SR	0.55	
Mannakee St.	W. Montgomery Ave.	Beall Ave.	SR	0.18	King Farm to Tower Oaks
	Beall Ave.	Martins Ln.	CL	0.57	King Farm to Tower Oaks
	Martins Ln.	Hungerford Dr.	BL	0.51	King Farm to Tower Oaks
Martins Ln.	N. Washington St.	Mannakee St.	BL	0.45	King Farm to Tower Oaks
Maryland Ave.	Great Falls Rd.	S. Washington St.	BL (buffered)	0.60	
	S. Washington St.	Dawson Ave. (extended)	SR	0.54	
Monroe St.	Fleet St.	Cabin John Pkwy.	SR	0.39	King Farm to Tower Oaks
	Monroe Pl.	Fleet St.	BL	0.20	

Street/Location	From	To	Facility Type	Length (miles)	Crosstown Route
Montgomery College	Princeton Pl.	Mannakee St.	Study	-	King Farm to Tower Oaks
Montrose Woods Park	Tildenwood Dr.	Rollins Ave.	SUP	0.20	
Mt. Vernon Pl.	Fleet St.	Rockville Pike	SR	0.10	
Nelson St. (SB)	W. Montgomery Ave.	Anderson Ave.	CL	0.14	Upper Rock to Potomac Woods, Fallsgrove to Rock Creek
Nelson St. (EB)	College Pkwy.	Mannakee St.	CL	0.39	
North Farm Ln.	Tower Oaks Blvd.	Montrose Rd.	SR	0.18	
N. Washington St.	Hungerford Dr.	W. Jefferson St.	BL	0.53	King Farm to Tower Oaks
Park Rd.	Hungerford Dr.	S. Stonestreet Ave.	BL	0.15	Lincoln Park to Twinbrook Metro, Fallsgrove to Rock Creek
Preserve Pkwy	Wootton Pkwy.	Tower Oaks Blvd.	SR	0.56	King Farm to Tower Oaks
Research Blvd. (NB)	Shady Grove Rd.	W. Montgomery Ave.	SUP	1.29	Research Corridor to Montrose
Research Blvd. (SB)	Shady Grove Rd.	W. Gude Dr.	SR	0.60	Research Corridor to Montrose
	W. Gude Dr.	W. Montgomery Ave.	CL	0.69	Research Corridor to Montrose
Research Court	Shady Grove Rd.	Research Blvd.	BL	0.34	
Rock Terrace School	Mannakee St.	Martins Ln.	Study	-	
Rockville Swim Center Road	Martins Ln.	Its end	SR	0.17	
Rockville Pike	New St.	Rollins Ave.	CT	1.95	MD 355
Rollins Ave.	Montrose Woods Park	Congressional Ln.	SR	0.24	
	E Jefferson St.	Chapman Ave.	SR	0.40	

Street/Location	From	To	Facility Type	Length (miles)	Crosstown Route
Scott Dr. (EB)	Wescott Pl.	Wootton Pkwy.	SR	0.67	Rock Creek to Rockshire
Scott Dr. (WB)	Wescott Pl.	Wootton Pkwy.	SUP	0.67	Rock Creek to Rockshire
Seven Locks Rd.	Wootton Pkwy.	(City limits)	SR	0.66	Research Corridor to Montrose
S. Stonestreet Ave.	Park Rd.	Baltimore Rd.	CL	0.23	Lincoln Park to Twinbrook Metro
	Baltimore Rd	Veirs Mill Rd.	BL	0.30	
Southlawn Ln.	N. Horners Ln.	Gude Dr.	SR	0.52	
Thomas St.	Its end	Rose Petal Way	SUP	0.02	
Tildenwood Dr.	Montrose Rd.	(Its end)	SR	0.23	
Tower Oaks Blvd.	Wootton Pkwy.	Montrose Rd.	SR	0.92	King Farm to Tower Oaks
Twinbrook Pkwy.	Baltimore Rd.	Veirs Mill Rd.	Study	0.91	
Upper Watts Branch Forest Preserve	Gude Dr.	Fordham St.	SUP	0.10	King Farm to Tower Oaks
Veirs Dr. (EB)	Glen Mill Rd.	Wescott Pl.	Paved Shoulder	0.55	Rock Creek to Rockshire
Veirs Dr. (WB)	Glen Mill Rd.	Wescott Pl.	SUP	0.55	Rock Creek to Rockshire
Veirs Mill Rd.	Bradley Ave.	Twinbrook Pkwy.	SUP	0.40	
Veirs Mill Rd. service drive	Gail Ave.	Midway Ave.	SR	0.94	
Welsh Park Ln.	Mannakee St.	Welsh Park	SR	0.07	
W. Montgomery Ave.	Nelson St.	W. Jefferson St.	Study	-	Upper Rock to Potomac Woods
	W. Jefferson St.	N. Washington St.	SR	0.20	
	Shady Grove Rd.	W Gude Dr.	BL	0.41	
W. Montgomery Ave. (WB)	Darnestown Rd.	Hurley Ave.	CL	0.38	Fallsgrove to Rock Creek

Street/Location	From	To	Facility Type	Length (miles)	Crosstown Route
Wootton Pkwy.	Darnestown Rd.	Longhill Dr. (eastern)	SR	2.16	Rock Creek to Rockshire
	Longhill Dr. (eastern)	Seven Locks Rd.	BL	0.70	Research Corridor to Montrose
	Seven Locks Rd.	W. Edmonston Dr.	SR	1.29	
	W. Edmonston Dr.	Rockville Pike	BL	0.46	Rock Creek to Rockshire

SECTION 3.4 – CROSSTOWN BICYCLE ROUTES

In the 2004 Plan, two "Through-City" routes were determined. One route (yellow) went east/west and connected Key West Avenue to Veirs Mill Road through Town Center. The second route (orange) went north/south and connected the Millennium Trail and East Gude Drive to Dunster Road, south of Wootton Parkway, also through Town Center. These routes are suggestions for safe and efficient cross town travel. However, additional routes and additional facilities are required to make a more thoroughly connected bicycle network to fulfill the Mayor and Council vision for bicycling in Rockville.

Identifying "Crosstown Routes" helps transportation planners and engineers fill in gaps and prioritize connections to existing or proposed routes located inside and outside the City. Many of the routes are combinations of bicycle lanes, climbing lanes, shared roadways, and shared use paths. The new crosstown routes, as shown in Appendix B, will help staff pursue grants for implementation and identify key areas of improvement and maintenance along existing bicycle facilities. Wherever possible, efforts were made to guide Bike Routes to connecting bicycle facilities in Montgomery County to assist in bicycle traffic coming from or heading to locations outside of Rockville's city limits.

The new crosstown bicycle routes include the following:

NORTH/SOUTH CONNECTIVITY

- Bike Route MD 355 – From Shady Grove Road to Rollins Avenue via MD 355
- Bike Route Research Corridor to Montrose– From Shady Grove Road to Montrose Road via Research Boulevard, Watts Branch Parkway, and Seven Locks Road
- Bike Route Upper Rock to Potomac Woods – From Shady Grove Road to Cold Spring Road via Piccard Drive, Nelson Street, and Falls Road
- Bike Route King Farm to Tower Oaks – From Shady Grove Road to Montrose Road via Gaither Road, College Gardens, Washington Street, and Tower Oaks Boulevard
- Bike Route 4 Lincoln Park to Twinbrook Metro – From Gude Drive to Rollins Avenue via North Stonestreet Avenue, Grandin Avenue, Edmonston Drive, and Lewis Avenue
- Bike Route East Twinbrook – From Baltimore Road to Twinbrook Metro Station via Broadwood Drive, Crawford Drive, Ardennes Avenue, and Halpine Road

EAST/WEST CONNECTIVITY

- Bike Route Fallsgrove to Rock Creek – From Baltimore Road to Shady Grove Road via West Montgomery Avenue and Town Center
- Bike Route Rock Creek to Rockshire – From Baltimore Road to the western City limits via Edmonston Drive , Falls Road, Fallsmead Way, Wootton Parkway, Scott Drive and New Commons Wayand

Maps and detailed descriptions of the Crosstown Routes are included in Appendix B of this Plan.

SECTION 3.5 SPOT IMPROVEMENTS

The majority of the bicycle transportation network is made of on-road facilities. This means that people cycling will often share roadways and even lanes with motorists. Retrofitting the existing street network to accommodate the needs of people cycling can be challenging. Narrow bridges can be difficult to navigate without a designated space for each mode. Street geometry and complex intersections can be challenging to redesign for the comfort and safety of cyclists, especially when multiple jurisdictions may need to be involved. This Plan identifies several places that maybe difficult to navigate as a person cycling, but are worth analyzing possibly redesigning because the "spot" could provide a crucial connection for the bicycle transportation network. These spot improvements are identified on the Bikeway Master Plan Proposed Facilities Map, and are listed in the following table. The intent of identifying the spots and their challenges with this Plan is to pursue solutions for these larger-scale projects individually, perhaps with the help of consultants and outside funding sources.

TABLE 3.2 – SPOT IMPROVEMENTS

Location	Challenge
Falls Road (I-270 overpass)	This street segment includes multiple on/off ramps for I-270. The bridge would be difficult to widen for designated cycling facilities. The road and ramps are owned by MDSHA.
MD 355 & N Washington Street	N Washington Street meets MD 355 at an angle. With the street geometry and multiple turn lanes sight lines from all approaches are not ideal. Access management with the post office and gas station is an issue. The intersection is owned by MDSHA.
Edmonston Road bridge over MD 355	The bridge has a relatively steep grade, a narrow roadway width, and somewhat limited sightlines over the bridge. The intersection is owned by SHA.
Park Road & MD 355	Wide intersection, lighting conditions are fair. The intersection owned and by MDSHA.
Park Road (under CSX tracks overpass)	Park Road, especially under the CSX bridge has a relatively narrow and confined width that experiences relatively high volumes of traffic by all modes during peak travel times. Motorists appear to travel at relatively high speeds to get to and through the intersection with MD 355. The roadway is owned by the City but the bridge and tracks are owned by CSX and WMATA.
Grandin Ave and Norbeck Road	Motorists cannot traverse Grandin Avenue at this intersection, but bicyclists and pedestrians can. Motorists may not be aware the cyclists and pedestrians are attempting to cross. The roadway is owned by MDSHA.

SECTION 3.6 – ADDITIONAL RECOMMENDATIONS

BICYCLE PARKING

The City will continue to enforce its bicycle parking regulations as laid out in the Zoning Ordinance. Section 25.16.09, as described further in Section 5.1 of this plan, outlines the bicycle parking requirements in the City. These requirements should be fulfilled by all new development to ensure people have adequate facilities to park their bicycles safely and conveniently. Likewise, the City will continue to encourage existing development to increase the number, safety, and convenience of their own bicycle parking, including consultation on bicycle parking design and placement as well as removing obstructions to developing more bicycle parking.

Bicycle parking in Rockville should follow the guidelines set forth in the Rockville Zoning Ordinance and the following guidelines in the Rockville Bicycle Parking Guide, available online and at City Hall:

- The "inverted U" bike rack is to be preferred as it is one of the simplest, most easily understood, and most effective types of short-term bicycle parking. Other types of bicycle parking can be effective and should be considered throughout the City, but U-racks provide the simplest and most easily understood type of bicycle parking.
- Distance to other racks:
    - Rack units aligned end-to-end should be placed a minimum of 96 inches apart.
    - Rack units aligned side-by-side should be placed a minimum of 36 inches apart.
- Distance from a curb:
    - Racks located perpendicular to a curb should be a minimum of 36 inches from the back of curb.
    - Racks located parallel to a curb should be a minimum of 24 inches from the back of curb.
- Distance from a wall:
    - Assuming access is needed from both sides, U-racks located perpendicular to a wall should be a minimum of 48 inches from the wall.
    - Racks located parallel to a wall should be a minimum of 36 inches from the wall.

In 2015, the City developed the Bike Rack Grant Program to provide eligible businesses with safe and convenient bicycle parking. The current bicycle parking requirements in the Zoning Ordinance were added in 2009. Businesses without bicycle parking that were established before the 2009 Zoning Ordinance update can apply for up to two bike racks to be furnished and installed by the City.

BICYCLE LAWS AND REGULATIONS

The City relies on the State of Maryland's traffic rules per the Annotated Code of Maryland. The City should look to adopt its own regulations (within legal limits) regarding the rights and

responsibilities of all road users when it comes to bicycle transportation. Clearly detailing road regulations within the City gives law enforcement more power to protect the safety of all road users. An example of additional regulations to increase bicycle safety would be increased penalties for drivers exhibiting dangerous road behaviors such as passing too closely, verbal abuse and intimidation, and illegal turning movements.

Wayfinding Signage

The City should continue to provide and improve bicycle route signage where appropriate, including Bike Route signs, bicycle wayfinding signs to points within the City and bicycle facilities outside of the City, and on-street sharrows to guide bicyclists towards less traveled and/or safer streets. As the proposed projects are realized in the field, wayfinding will become increasingly important. With the next update of this Bikeway Master Plan, the City should develop and implement a wayfinding protocol for the proposed Bicycle Crosstown Routes, as shown in Appendix B. The wayfinding protocol should include significant destinations along or near the established crosstown routes, and should include directional symbols and mileage.

County and State Policy

The City of Rockville only has jurisdiction over its own limits; however, it has a strong stake in county- and state-wide policies as they affect road users within Rockville as well. Where appropriate, the City should advocate for the best interest of all road users. The City should also advocate for the County to connect its routes to City facilities, where appropriate.

Signal Timing

The City should continue to review signal timing for city-maintained traffic signals to better address the needs of bicyclists and pedestrians. For traffic signals operated by Montgomery County, staff should continue to advocate for signal timing changes where necessary and possible.

Intersections

When an intersection is to be improved, amenities for bicycles should be analyzed and included when at all possible. A significant portion of the crashes involving bicyclists and motor vehicle drivers occur at intersections. Whenever possible, bicycle facilities should continue to and through intersections to facilities on both sides to prevent confusion and collisions.

Neighborhood Connectivity

Rockville has several important pieces of infrastructure to link neighborhoods together via bicycle, including the Friendship Bridge over I-270 at MD 28 and the Unity Bridge over the Metro/CSX tracks between Lincoln Park and MD 355. However, there is a notable lack of connections between neighborhoods in other parts of the city. Notably, the only places to cross the Metro/CSX tracks between the lower Twinbrook neighborhood and MD 355 are at

Edmonston Drive and below the Twinbrook Metro Station, which are approximately 1.1 miles apart and are inconvenient for many people. The City should consider a project to close the gap between these connections, as well as consider other locations where neighborhoods are not well-connected.

BIKESHARE

Bikesharing was introduced in Rockville in 2013 with an expansion of the Capital Bikeshare system into Rockville and surrounding Montgomery County. The Montgomery County Department of Transportation manages the bikeshare network in Rockville with supporting funds and staff resources from the City of Rockville. Bikesharing was introduced as part of a grant program for low-income commuters called the Job Access Reverse Commute (JARC) program. This program initially centered on the Shady Grove/Life Sciences area, and there are currently a total of 22 stations in the area, including 13 within Rockville limits. Bikesharing offers another transportation option for those who cannot or chose not to own a personal vehicle, and Rockville should support the continued existence and future expansion of bikeshare into new areas as much as possible.

DATA COLLECTION TOOLS FOR FUTURE UPDATES OF THE BIKEWAY MASTER PLAN

Future updates of the Bikeway Master Plan should incorporate the use of crowd-sourced data that can show where cyclists are beginning and ending their trips, and what roads, routes, and facilities are used. Data collection efforts for future plan updates can begin at any time, as historical datasets can help to show patterns and trends. In 2016, opt-in trip data collection apps that run are smart phones are becoming increasingly popular. Jurisdictions can obtain the open-source data to conduct analysis to identify needs and demands for the bicycle network. Using dynamic maps, accessible online should also be explored, along with the latest technology of the time.

CHAPTER 4 – ENABLING POLICIES AND ADDITIONAL PRACTICES

In addition to the objectives and policies laid out in this Plan, the City of Rockville has several other documents that outline policies and practices that complement the Bikeway Master Plan. This chapter provides an overview of these supplemental policies and practices, along with their current potential impact on the Plan.

SECTION 4.1 - ENABLING POLICIES

ZONING ORDINANCE

The Zoning Ordinance functions to regulate land use within Rockville. The most current Zoning Ordinance was adopted by the Mayor and Council in March 2009. As it relates to transportation, the purpose of the Zoning Ordinance is to "promote alternative modes of transportation by providing convenient, safe, and connected accessibility to public transportation, pedestrian and bicycle systems, inviting streetscapes, and a mixture of uses" (Zoning Ordinance, Section 25.01.02).

Specifically related to bicycles, Section 25.16.09 of the Zoning Ordinance outlines bicycle parking requirements for developments within the city. The location of bicycle parking facilities is addressed in Section 25.16.09(c)(1), which states that bicycle parking must be provided within a certain distance of a main door to a building. The City requires two types of parking for bicycles: short-term and long-term parking. Short-term bicycle parking usually consists of inverted "U"-shaped bicycle racks that serve visitors to buildings such as retail customers. Long-term bicycle parking usually consists of bicycle lockers or a covered locked room inside a building or parking garage to serve residents of a building or employees of an office building. Bicycle racks placed close to building entrances, visible to others, offer adequate security for short-term parking, while lockers are preferred for long-term storage. In addition, new office buildings in excess of 50,000 square feet are required to provide shower facilities and clothes storage lockers. These facilities provide additional incentives for a commuter to use a bicycle by allowing them to freshen up before work. Both showers and clothing storage lockers must be installed in a safe and secure area and be accessible to all tenants.

The Zoning Ordinance does not have jurisdiction over the public right-of-way, meaning that there are no regulations within the Zoning Ordinance related to on- or off-street bicycle facilities, with the exception of sidewalks, which this Plan does not consider bicycle infrastructure.

COMPREHENSIVE TRANSPORTATION REVIEW

The Comprehensive Transportation Review (CTR) methodology provides technical guidelines to analyze and report the effects of new development on transportation facilities. It is used during the development review process to ensure that the mobility of motor vehicles, pedestrian, transit users, and bicyclists will be optimized. CTR also outlines the required contents of, and steps to complete, a Transportation Report that a developer must submit with a

development application. During the CTR process, City staff review an application to ensure that it complies with all City criteria related to bicycles.

Transportation Demand Management Program

Transportation Demand Management (TDM) is a general term for various strategies to increase transportation system efficiency. TDM strategies are designed to better balance peoples' need to travel a particular route at a particular time with the capacity of available facilities to efficiently handle this demand. The focus of TDM strategies is to provide people with increased travel choices – from choices in travel modes to choices in travel route and trip departure time – and to provide incentives and information for people to make informed travel choices. TDM strategies that are related to bicycles include incentives for employers to make their offices more bicycle-friendly, events to promote bicycling, and creating more dedicated road space for bicycling.

Complete Streets Policy

The City of Rockville's Complete Streets Policy was adopted by Mayor and Council in July 2009. Its purpose is to "ensure that multimodal elements are incorporated into all transportation improvement projects" (City of Rockville, 2009). The Policy requires that new construction and re-construction of roadway projects in Rockville accommodate users of all ages and abilities including pedestrians, bicyclists, transit users, motorists, and adjacent land users. The Policy presents four design scenarios: separate accommodation for all users, partial sharing for bicyclists and motor vehicles, shared bicycle/motor vehicle accommodation, and shared bicycle/pedestrian accommodation. All four scenarios are represented in the recommendations in this Plan.

Neighborhood Plans

The Community Planning and Development Services Department works with neighborhoods throughout Rockville to develop neighborhood plans, which, along with this Plan, are part of the City's Comprehensive Master Plan. These plans outline the unique needs and desires of Rockville's neighborhoods. Within the plans, bicycle and pedestrian circulation are often mentioned as important livability criteria. There are 8 adopted neighborhood plans in Rockville:

- East Rockville Neighborhood Plan (2004) – The Plan recommends the construction of all missing sidewalk segments in the neighborhood and the completion of the portion of the Millennium Trail along First Street, which has been completed since the adoption of this plan.
- Hungerford-Stoneridge, New Mark Commons, Monroe-Lynfield (Planning Area 3) Neighborhood Plan (1985) – The Plan recommends bike paths along Wootton Parkway and New Mark Esplanade (which were completed) as well as along Cabin John Pkwy and Monroe Street (which have since been determined to be infeasible).
- I-270 North of Montrose Road (Planning Area 12) Neighborhood Plan (1985) – The Plan recommends a 10-foot bike/ped path along Ritchie Parkway. This has been determined

to be infeasible, but a bike/ped path was constructed along nearby Wootton Parkway and is now part of the Millennium Trail.

- Lincoln Park Neighborhood Plan (2007) – The Plan recommends the completion of the bicycle facilities in the neighborhood that were recommended in the 2004 Bikeway Master Plan, including bicycle facilities on North Stonestreet Avenue, Ashley Avenue, Frederick Avenue, and North Horners Lane. Sharrows were added to North Stonestreet Avenue since the Lincoln Park Neighborhood Plan was adopted.
- Rockville Pike Corridor Neighborhood Plan
    - *1989 edition* – The adopted Rockville Pike Corridor Neighborhood Plan recommends the completion of missing sidewalk segments and expansion of sidewalk to 10 feet in width along Rockville Pike and popular pedestrian areas. The Plan also recommends grade-separated pedestrian facilities to cross Rockville Pike, which could benefit bicyclists as well.
    - *Current update* – The 2016 Rockville Pike Corridor Neighborhood Plan includes several of the recommendations in this updated Bikeway Master Plan, including cycletracks along a redesigned Rockville Pike.
- Town Center Master Plan (2001) – The Plan recognizes the importance of locating bike racks near building entrances and the creation of dedicated bike routes as alternatives to driving, including on the future extension of Maryland Avenue.
- Twinbrook Neighborhood Plan (2009) – The Plan recommends the completion of missing sidewalk segments in the neighborhood. It also asks for the reconsideration of a shared use path that was recommended in the 2004 Bikeway Master Plan to connect Town Center to Rock Creek Trail along Veirs Mill Road because of the potential disturbance of the future of Bus Rapid Transit along this corridor. In this updated Bikeway Master Plan, shared roadway signs are recommended along the service road of Veirs Mill Road instead of a shared use path.
- West End-Woodley Gardens (Planning Area 4) Neighborhood Plan (1989) – The Plan recommends a separated bikeway along Great Falls Road (which was completed) along with shared roadway signs on the remainder of the low-volume streets in the neighborhood. Shared roadway signs have been added to this neighborhood where appropriate, and additional signs are included in this plan.

Section 4.2 – Additional Practices

Education and Safety

City staff plans and implements safety campaigns through its interdepartmental Pedestrian and Bicycle Safety Committee, which holds quarterly meetings and includes representatives from the Department of Public Works, the Department of Recreation & Parks, Police, Neighborhood Resources, and the Public Information Division, in addition to public representatives from the Rockville Bicycle Advisory Committee and the Traffic and Transportation Commission. This group is responsible for coordinating pedestrian and bicycle safety initiatives throughout the

City. Some elements that have been successfully promoted include a series of public service announcements on the City's local television station (Rockville 11) and website as well as at community meetings. City staff has also distributed multilingual materials supplied by Metropolitan Washington Council of Governments' (MWCOG) "Street Smarts" campaign.

To improve safety, the Police Department implements programs such as "Rockville Reflects", where the Police hand out reflective bands for pedestrians and cyclists to wear at night to increase visibility. The Police Department also hands out pedestrian and bicycle safety tip cards to raise awareness of the importance of pedestrian and bicyclist visibility and deploys a variable message sign near elementary schools to raise awareness about traffic safety when children and pedestrians are present.

The City has also had success through a federal Safe Routes to School grant to provide an instructor to elementary schools for in-school bicycle safety instruction. Rockville has a long-standing tradition of supporting youth bicyclist education through the program and developed the first Safe Routes to School (SRTS) curriculum in the state.

Also, RBAC has worked with Montgomery College to add bicycling classes as part of the physical education and workforce development program. The course, Cycling Commuter Safety and Traffic Skills, offers League of American Bicyclist safety practices and supports the Bicycle Commuter Act. During the course, students learn new cycling techniques for commuting by bicycle to build greater confidence in maneuvering safely and legally on trails, road, and paths.

Currently, there is no staff support or funding for a Safe Routes to School Program in Rockville. Individual schools can choose to support this curriculum on their own. The City owns a trailer with dozens of children's bicycles and helmets that are available for the free use of any school who would like to do this education on their own.

ENFORCEMENT

Enforcement of traffic laws is a key element in developing cooperative behavior among all road users. Bicycle travel enforcement efforts should encourage safe and lawful travel by strategically targeting high risk behavior and locations, maximizing educational opportunities, and focusing on community partnerships and communication.

Thorough analysis of cyclists' crash reports is an important element in identifying potentially unsafe conditions for bicycling. Careful review of bicycle collisions can help assist with the planning of new bicycle facilities, identify which violations should be prioritized for future enforcement efforts, and provide safety education opportunities. Important data to collect in reporting bicycle crashes include time, weather, contributing circumstances, injuries, and police determination of fault, all of which are gathered in police reports and analyzed by City staff. Not all crashes involving bicycles are reported, but encouraging the public to report these incidents and keeping a thorough log can help to plan for the future.

Encouragement

The City encourages bicycling through programs such as the annual Bike to Work Day event, which invites commuters across the Washington, D.C. metropolitan region to celebrate bicycling as a clean, fun, and healthy way to get to work. In Rockville, participants enjoy free food and drinks along with a morning of festivities at several pit stops located throughout the City. Participation levels reached a new high in 2013, and the City plans to continue to expand this celebration.

City staff also interacts with children in the community through the SRTS program as well as the TERRIFIC Kid awards. The TERRIFIC Kid awards encourage good citizenship in children with the reward of a new bike, lock, and helmet. These awards are presented by the Mayor and Council each year during Bike Month in May. This program is made possible through charitable bike donations and maintenance by the local non-profit, Bikes for the World.

Terrific Kid Program Advertisement

Section 4.3 – Policy and Practice Recommendations

The following section presents additional recommendations to the City's policies and practices that could help increase bicycle ridership and keep bicyclists safe on the streets.

Policies

It is important that the accommodation of bicycles be addressed in the planning and design of proposals for new development and redevelopment. In the case of new development, careful consideration should be given to bicycle circulation within the development area and to connections with the local and regional bikeway networks with particular attention to intersection accommodations adjacent to existing roadways. Grid street patterns and the provision of pedestrian and bicycle connections between cul-de-sacs and/or long block faces are examples of development patterns that provide options to bicyclists and encourage bicycling as a part of people's everyday lives. Likewise, bicycle parking should be provided at all public facilities and should be incorporated into streetscape projects. Bicycle parking should be located at both points of origin and points of destination. Policies that support these urban

form recommendations should be explored for potential addition to the Zoning Ordinance and City Code.

PRACTICES

While Rockville is no longer eligible for SRTS grant funding for in-school instruction, the City should continue to encourage schools in Rockville to incorporate this program in their curricula. DPW should also continue to look into ways to apply for and use SRTS grant funding for infrastructure projects near schools to increase bicycle safety for children. The Rockville Police Department should encourage the public to report even minor crashes involving bicyclists and pedestrians and coordinate with DPW to target enforcement in high incident areas. Encouragement efforts should also be enhanced through additional organized rides with the Department of Recreation and Parks and the Rockville Bicycle Advisory Committee as well as bicycle commuter celebrations (monthly bicycle breakfasts, etc.).

Rockville should also look into further efforts to use advanced bicycle counting technology. Currently, the City uses manual counts twice a year at various intersections throughout the city and annual mechanical counts at two locations along the Millennium Trail. Recent advancements in technology to assist in year-round automated counting of bicyclists can help staff collect important data regarding bicycle usage in Rockville.

CHAPTER 5 – IMPLEMENTATION AND FUNDING

Bicycle facilities will be added or improved as opportunities arise during street resurfacing or road rehabilitation projects, while others will be implemented as independent bicycle and pedestrian improvement projects. Bicycle accommodation and improvements will be routinely considered in the planning phases of new public projects and private developments within the City. City staff should regularly revisit the recommendations in this plan to schedule near-term projects.

Some recommended facilities are complex and may take many years to implement, while others are relatively simple and will be ready for construction as soon as funding is available. Interim facilities may be considered for elements of the bikeway network that are not practicable during the horizon year of this plan. Any recommended improvements not completed upon the next revision of the Bikeway Master Plan will be reevaluated on a case-by-case basis, by staff and through the public process, for future implementation.

City staff will notify civic associations and residents along the project alignment as Bikeway Master Plan projects are funded and scheduled for implementation. This notification will include information about the project scope, location, proposed construction schedule, and contact information for responsible staff.

Chapter 5 includes an analysis of funding options available for the recommendations in this Plan, including tax revenue, developer funds, and federal, state, and local grants.

SECTION 5.1 – IMPLEMENTATION AND PUBLIC INVOLVEMENT

While there is a general public support for the updated Bikeway Master Plan, implementation of individual projects included in the recommendations can raise concerns in affected neighborhoods, particularly if the impacts are significant. To address these concerns, City staff will take certain actions to help guarantee that impacted residents are aware of proposed bikeway projects and have an opportunity to learn the details of project implementation and provide adequate input.

These actions by City staff are triggered whenever a proposed project includes one of the following actions:

1. The removal of one or more lanes of traffic.
2. The removal of 10% or more of existing on-street parking spaces across the entire length of the project.
3. The widening of a roadway to accommodate a new bikeway where any of the following occurs: street trees are removed and not replaced, private property acquisition is required, or sidewalks are narrowed or relocated. (Note: these scenarios are very unlikely given cost and available space.)

Prior to the implementation of a bikeway project where one of the triggers is reached, the following actions will be taken:

1. All residents and businesses with frontage along the route are notified via direct mailing (which will also be posted on the City's website), and includes:
    a. A description and schedule of the proposed project and how it fits into the City bicycle network;
    b. A map of the route indicating where the applicable actions are proposed;
    c. Name, email address, and phone number for a staff contact;
    d. Date, time, and location of any meetings scheduled to discuss the bikeway;
    e. Signs posted along the route and in the nearest Community Center indicating where information on the proposed bikeway project may be obtained; and
    f. Estimated closing date of the public comment period.
2. Local citizen association representatives are notified and invited to any meetings.
3. A public meeting is held to receive input and answer questions about the project. In addition to being identified in direct mailing, the date and location of the public meeting is published in Rockville Reports and/or the City's website.
4. A public hearing is held in front of the Mayor and Council, and staff prepares a recommendation to the Mayor and Council. The Mayor and Council then discuss the public comments and staff recommendation and provide direction to staff on how to proceed with the project.
5. Residents, local citizens' associations, and other interested parties who add their name to a notification list, are notified by mail of the final project design and proposed date of implementation.

SECTION 5.2 – FUNDING

When bikeway projects reach the implementation phase, the source of funding will be determined based on the cost and location of the improvement. For capital improvements and maintenance of bicycle facilities, an adequate amount of funding needs to be available to ensure regular progress toward achieving the bicycle objectives of this Plan. The City works to identify new sources of funding to implement bicycle-related projects and programs and seeks to maximize the amount of Federal, State, and private funding that can be leveraged by local dollars. Funding decisions will be made by the Mayor and Council as part of the Capital Improvement Program (CIP) through the annual budget process. There are two general types of external funding sources: developer money and grants. Developer money is the primary source of funding for bicycle projects and comes through the TDM program as explained below. Grant money is often highly competitive and securing funds can be difficult. The following section provides further details on these funding sources.

Capital Improvement Program

The Capital Improvement Program (CIP) annually outlines important projects for each division within the City. The Traffic and Transportation Division chooses projects each year to use its designated funding, which comes from capital funds, developers, speed cameras, and grants.

Transportation Demand Management

Transportation Demand Management (TDM) programs aim to decrease traffic congestion and vehicle emissions through education, marketing, and outreach to employers and residents about the variety of commuting options available. The TDM program is established through the development review process. Developments that generate 30 or more peak hour trips are required to pay a TDM fee, which is paid over ten years. In March 2011, Mayor and Council adopted a revised Comprehensive Transportation Review (CTR) policy, which establishes the total contribution from the developers, and is now paid as a Transportation Improvement Fee (which replaced the TDM Fee) prior to issuance of a building permit.

Speed Camera Funds

The City of Rockville first installed speed cameras in 2007 where automatic citations are issued to drivers who speed past a camera. The Police Department has installed several more throughout the City since. The revenue that is generated from speed cameras is available to CIP projects and can be used to support pedestrian and bicycle projects.

Rockville uses speed cameras in targeted locations to increase speed limit compliance. (Source: Washington Post)

GRANTS

Grant funding is available from a variety of sources to assist in the development and construction of the recommendations in this Plan. In the past, the City of Rockville has received federal grants from the U.S. Department of Transportation, state grants through the Maryland State Highway Administration, and regional grants from the Metropolitan Washington Council of Governments. The following is a partial list of potential federal and state grant funding sources to implement some of the recommendations in this Plan:

Federal	
Transportation, Community, and System Preservation (TCSP) – USDOT	The TCSP program is a comprehensive initiative of research and grants to investigate the relationship between transportation and land use, in partnership with private sector-based initiatives. Rockville has received TCSP funds for two projects along South Stonestreet Road and pedestrian improvements in the Twinbrook area.
Safe Routes to School (SRTS) – FHWA	SRTS funds are available for a wide range of projects through the FHWA to improve the safety and availability of amenities for children to walk or bicycle to school. Rockville has received these funds in the past to implement a program in local schools to teach children how to ride safely with traffic. Future grant funding could be available for projects that work from the successes of previous projects and incorporate new ideas.
Job Access and Reverse Commute (JARC) - FTA	The City of Rockville entered into a partnership with Montgomery County to introduce a bikesharing system to the region. The funds for this project were provided in part by a JARC grant to provide commuting options for lower-income residents of Rockville. Future JARC grant funding could exist for projects that also fall into this category.
Transportation Alternatives Program (TAP) - FHWA	TAP was instituted in MAP-21 to replace the Transportation Enhancements program. The City works with MDOT to submit applications for these funds, which are available for FY13 and FY14 with future funding depending on congressional appropriation. TAP can fund infrastructure, a Safe Routes to School coordinator, community involvements projects, and other similar items.
Transportation Land Use Connection (TLC)– MWCOG	The TLC grant is provided by MWCOG to hire a consultant for technical assistance on studies linking transportation and land use. The City has used a TLC grant in the past to get assistance in writing the Complete Streets policy and to update this Plan.

State	
Congestion Mitigation and Air Quality Improvement Program (CMAQ) – various sources	CMAQ funds come from the federal government to state Departments of Transportation, Metropolitan Planning Organizations, and transit agencies to invest in projects that reduce transportation-related emissions. These funds often help fund projects such as HOV lanes; however, it is possible to submit an application for a bicycle and pedestrian project.
Maryland Bikeways Program – Maryland DOT (MDOT)	The Maryland Bikeways Program provides funds for three types of bikeways to local jurisdictions throughout the state. The Program can provide funds to a jurisdiction for minor retrofits (up to $100,000 per project), funds for the construction of larger projects (with a minimum of $100,000), and funds for the design of future amenities. Applications are due annually in June. MDOT is also piloting a funding program to support the creation of Bicycle and Pedestrian Priority Areas, which are specific areas that would benefit from the targeted use of funds to develop connected bicycle and pedestrian networks. These areas will include areas of high demand and safety concerns combined with local commitment and consistency with State requirements.
Recreational Trails Program - SHA	The Recreational Trails Program provides funds to help design and construct off-street trails. Funds cannot exceed $40,000 for trail construction and $30,000 for non-construction. Applications are received throughout the year with an annual deadline of July 1.
Program Open Space – Maryland Department of Natural Resources	The primary purpose of Program Open Space is to acquire outdoor recreation and open space areas for public use. The City could be eligible for these funds for applicable bicycle and pedestrian facilities, depending on their inclusion in Montgomery County's Land Preservation and Recreation Plans.

CHAPTER 6 – MAINTENANCE

Maintaining bikeways in a state of good repair ensures that facilities remain safe and accessible for bicyclists across the City throughout the year. Implementation of a thorough maintenance program will help protect bicyclists who use the facility as well as the public investment in the bikeway network. Funding for an ongoing maintenance program should be included in the City's Operating Budget and Capital Improvement Program.

Though the City has methods in place for regular maintenance, concerns about bikeway maintenance outside of the normal schedule should be reported by the general public. The Pedestrian and Bicycle Coordinator should act as the point of contact for residents with questions and concerns regarding maintenance of bikeways. Concerns and questions should be submitted to the Department of Public Works. Upon receiving a public request, the Coordinator should then refer resident requests for service to the appropriate City department in a timely manner.

The following recommended practices should guide City departments responsible for maintaining the bikeway network. All maintenance should be performed as needed unless otherwise indicated.

SWEEPING AND SNOW REMOVAL

Bicyclists tend to avoid bikeway facilities where sand, snow, gravel, broken glass, and other debris are present because such obstructions impede travel and increase the likelihood of puncturing a tire. In addition to causing delay for the bicyclist, debris can push individuals from a shared-use path or bicycle lane into a better maintained vehicle lane and increase the potential for vehicle-bicycle conflict. Consistency of a regularly scheduled inspection and maintenance program helps ensure that bikeways remain free of litter. It may not be cost-effective to continuously sweep bikeways during extended icy conditions; however, bikeways in high-use areas should be swept after major storms and at the end of the winter season. As a general practice, debris and snow from the roadway should not be pushed onto sidewalks where their presence will impede pedestrians, nor should debris be swept from the sidewalk or shared-use path onto the roadway.

Snow removal is also important as many people choose to bicycle year round. The Carl Henn Millennium Trail should be prioritized for snow removal first, and other paths should follow. Snow should not be stored in bike lanes, on shared-use paths, or at curb ramps used by bicyclists or pedestrians.

PAVEMENT MAINTENANCE AND REPAIR

Similar to the reasons listed above for the importance of sweeping and snow removal, a smooth pavement surface that is free of cracks, potholes, bumps and other physical problems is important. The City maintains an annual asphalt resurfacing program for pavement overlays on streets. This program also provides an opportunity to improve on-road conditions for bicyclists

through the modification of pavement markings and roadway width. In addition to the City's annual street asphalt maintenance program, care should be exercised during any public utility work within the roadway as utility cuts leave a rough surface for bicyclists if not properly backfilled and patched.

Sidewalks and Shared-Use Paths

Bicyclists should be able to expect clear and level sidewalks and shared-use paths throughout the City. The City's Operations and Maintenance staff thoroughly review all sidewalks and shared-use paths in the City on a ten-year cycle. Any improvements to be made are completed as soon as possible once they are discovered. In the course of their work, Operations and Maintenance staff also notice problem areas along sidewalks and shared-use paths. Staff should take extra care to document these areas and ensure that they are promptly corrected. The public should feel empowered to alert the Department of Public Works when they notice problems as well, and the City will make sure to act quickly on a solution.

Signs and Pavement Markings

Bicycle destination and route signs, pavement markings, and traffic control signs should be reviewed and replaced as needed to ensure that their message remains effective and legible for both bicyclists and motorists. At the minimum, pavement markings, including bicycle lanes and sharrows, should be refreshed every five years or as needed. In addition to the guidance these devices provide bicyclists within the travel way, pedestrians and bicyclists rely on motorists to observe signs and traffic control devices that regulate vehicular movement.

Drainage Improvements

Proper drainage is essential to maintaining safe bikeways, and there should be no standing water on City bikeways. Road inlets on bicycle facilities should include safety grates and should be monitored following construction to ensure the finished grade does not settle below the pavement. Catch basins may also need to be adjusted or replaced to improve drainage.

Vegetation Management

Vegetation that encroaches into bikeways creates hazardous conditions for bicyclists by limiting sight distance, obstructing the bicycle facility, and damaging the pavement surface. In order to manage the impact vegetation has on the bikeway, maintenance staff should elevate vegetation off the facility to maintain adequate clearance and sight distance at driveways and intersections. Additionally, staff should root prune young trees near the bikeway to prevent pavement surface damage. DPW should work with the City's Code Enforcement staff to quickly enforce the requirement that vegetation that abuts bikeways from a private property be adequately maintained by that private property owner.

TABLE 6.1 - MAINTENANCE RESPONSIBILITY

	Department of Public Works	Department of Recreation and Parks	Police Department
On-street bikeways	X		
Shared-use paths within City street ROW	X		
Shared-use paths on other City property		X	
Bicycle parking facilities at City-owned locations		X	
Removal of vegetation encroachments from City-owned properties		X	
Removal of vegetation encroachments from private property			X (notify landowner to take care of issue)

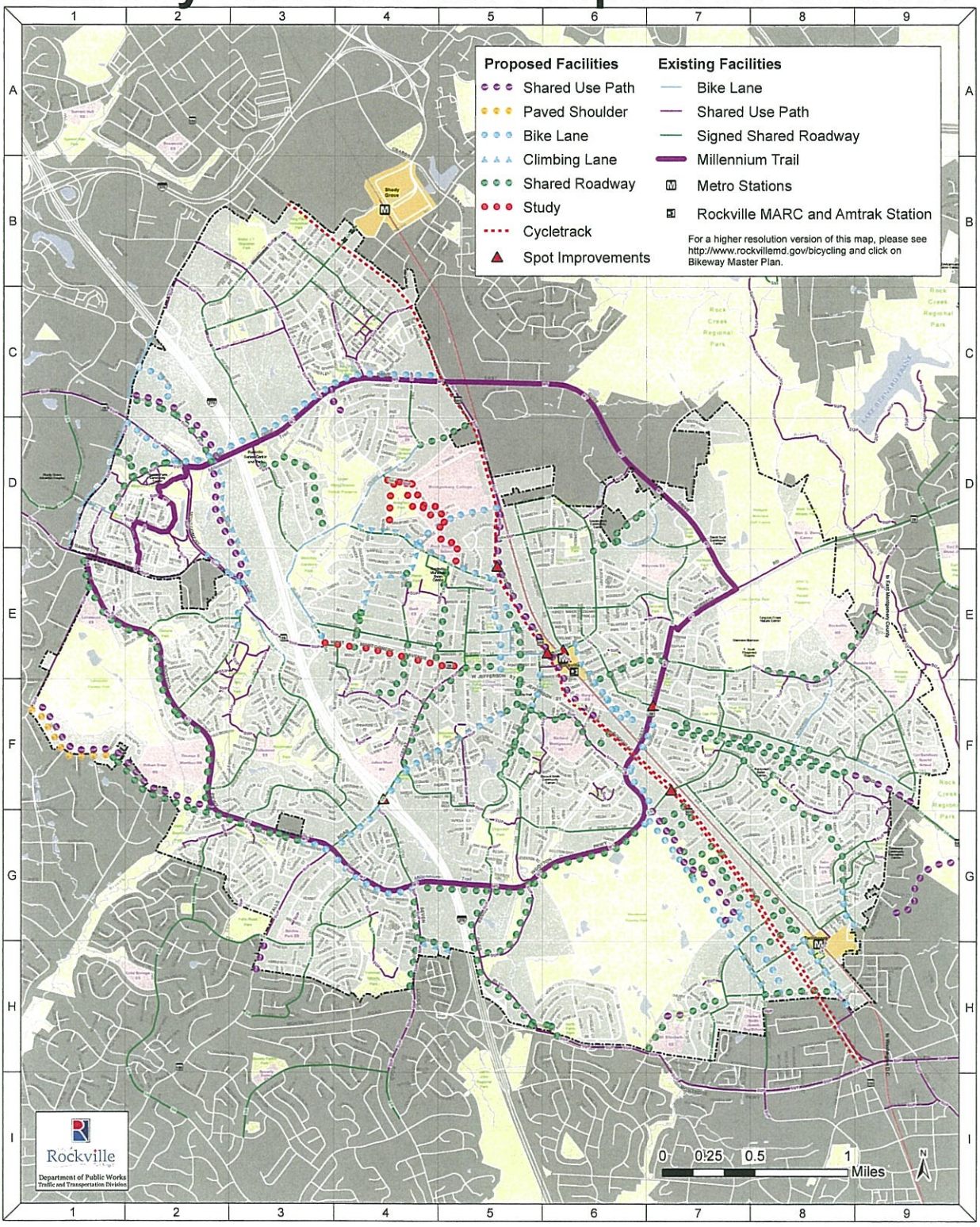
INFORMATION MANAGEMENT

Maintaining current information on existing bicycle facilities and routes in the City is equally important to maintaining bicycle infrastructure. Whenever bicycle infrastructure projects are completed in the field, updates to the Bike Map, the map which shows existing facilities and routes, will be necessary. Successful implementation of this plan will be realized with regular updates to the online version of the Bicycle Map and routine updates of the printed version.

APPENDIX A

BIKEWAY MASTER PLAN PROPOSED FACILITIES MAP

Bikeway Master Plan Proposed Facilities



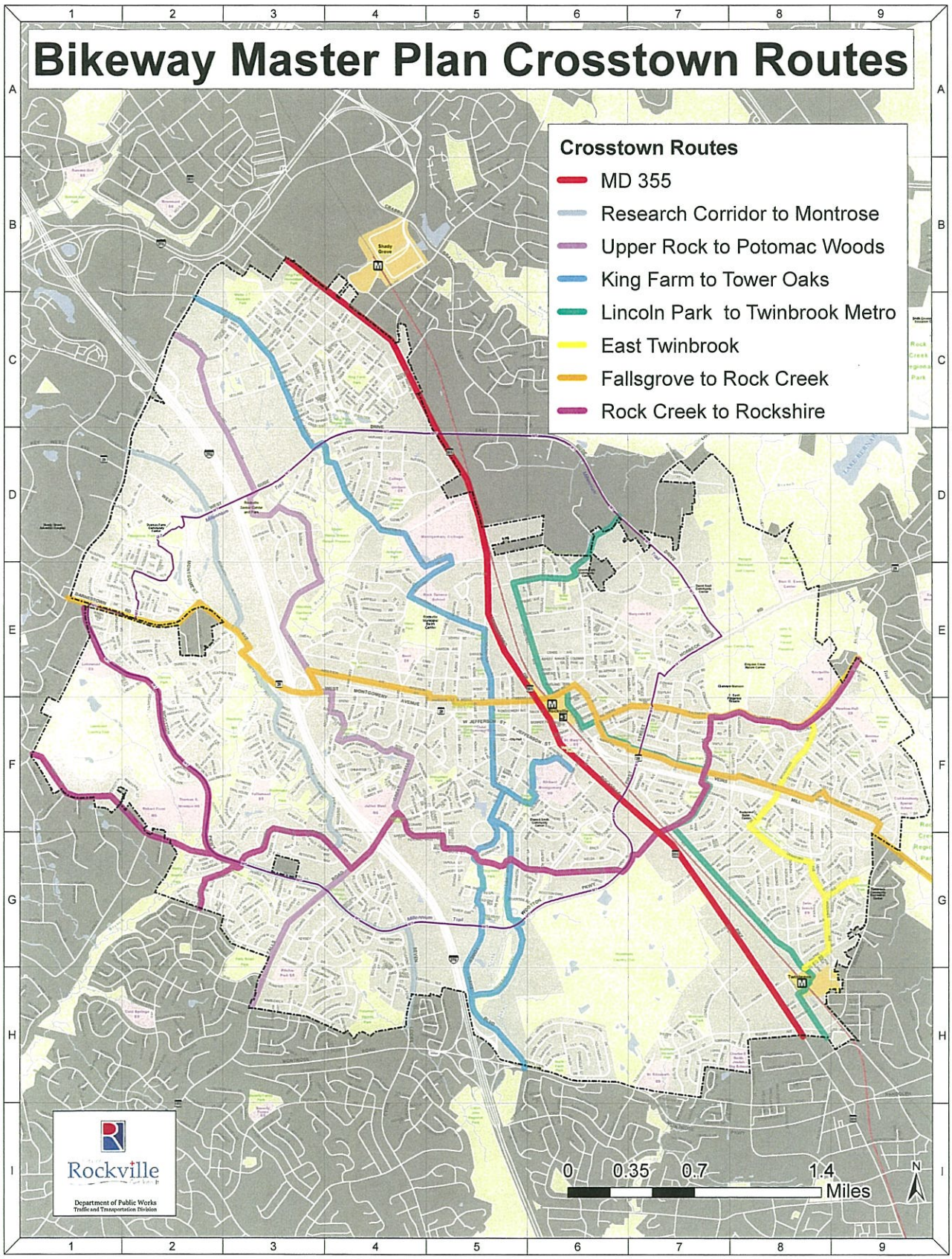
APPENDIX B

BICYCLE CROSSTOWN ROUTES

NOTES ON BICYCLE PRIORITY ROUTES

- The following Bicycle Priority Routes are suggestions for cross-town bicycle travel. Items not listed in bold on each of the following sheets are bicycle facilities that already exist; items in bold are those that are suggested in this Bikeway Master Plan. Items in bold are all listed in Table 3.1 in Chapter 3; however, not all recommendations from Table 3.1 are listed in these Bicycle Priority Routes.
- These recommendations should be completed in a timely fashion, and implementation of the Bicycle Priority Routes will depend on the completion of the recommendations in this plan. The key that corresponds with the "facility" column in the tables the follow is:

KEY
BL = Bicycle Lane
CL = Climbing Lane (BL only on uphill side of road)
CT = Cycletrack
SL = Shared Roadway
SUP = Shared Use Path


Bikeway Master Plan Crosstown Routes
Crosstown Routes
MD 355
Research Corridor to Montrose
Upper Rock to Potomac Woods
King Farm to Tower Oaks
Lincoln Park to Twinbrook Metro
East Twinbrook
Fallsgrove to Rock Creek
Rock Creek to Rockshire
Rockville
Department of Public Works
Traffic and Transportation Division
0 0.35 0.7 1.4
Miles
N

Crosstown Bike Route: MD 355

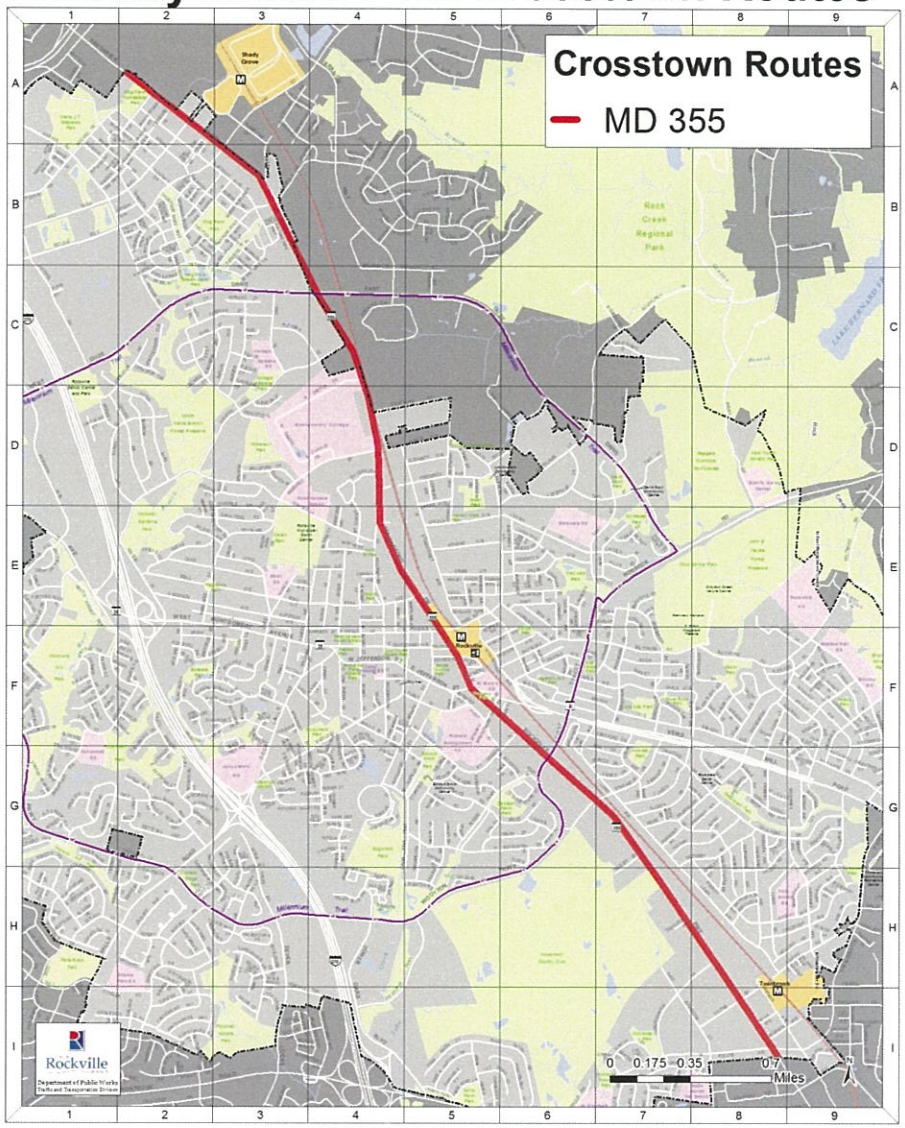
North/South Connectivity Along MD 355

Provides a designated bicycle facility along the entire length of MD355 within the City (from Shady Grove Road to Rollins Avenue).

Street/Path	From	To	Facility	Length
MD 355	**Shady Grove Rd**	**Gude Dr**	**CT (west side)**	1.3
MD 355	**Gude Dr**	**Mannakee St**	**CT (west side)**	.7
			SUP (west side)	
MD 355	**Mannakee St**	**Richard Montgomery Dr**	**CT (west side)**	1.3
			SUP (west side)	
MD 355	**Richard Montgomery Dr**	**Rollins Ave**	**CT**	1.9
			TOTAL	5.2
			TOTAL NEW	**5.2**

Bolded red text indicates that the facility is recommended and not built at the time of the Plan's adoption. All other facilities listed exist in the bike network.

Bikeway Master Plan Crosstown Routes



Crosstown Bike Route: Research Corridor to Montrose

North/South Connectivity West of Interstate 270

Provides a convenient route for bicycle trips that do not need to travel east of I-270.

Street/Path	From	To	Facility	Length
Research Blvd	**Shady Grove Rd**	**W Gude Dr**	**SR (west side)**	**0.6**
			SUP (east side)	
Research Blvd	**W Gude Dr**	**MD 28**	**SUP (west side)**	**0.7**
			CL (east side)	
MD 28 (west)	Research Blvd	Hurley Ave	SUP	0.1
Hurley Ave	**MD 28**	**Watts Branch Pkwy**	**BL**	**0.1**
Watts Branch Pkwy	Hurley Ave	Aintree Dr	BL	0.5
Watts Branch Pkwy	Aintree Dr	Fallsmead Way	SR	1.6
Fallsmead Way	Watts Branch Pkwy	Wootton Pkwy	SR	0.7
Wootton Pkwy	Fallsmead Way	Seven Locks Rd	SUP	1
Seven Locks Rd	**Wootton Pkwy**	**City Limits**	**SR/SUP**	**0.4**
		TOTAL		5.7
		TOTAL NEW		**1.8**

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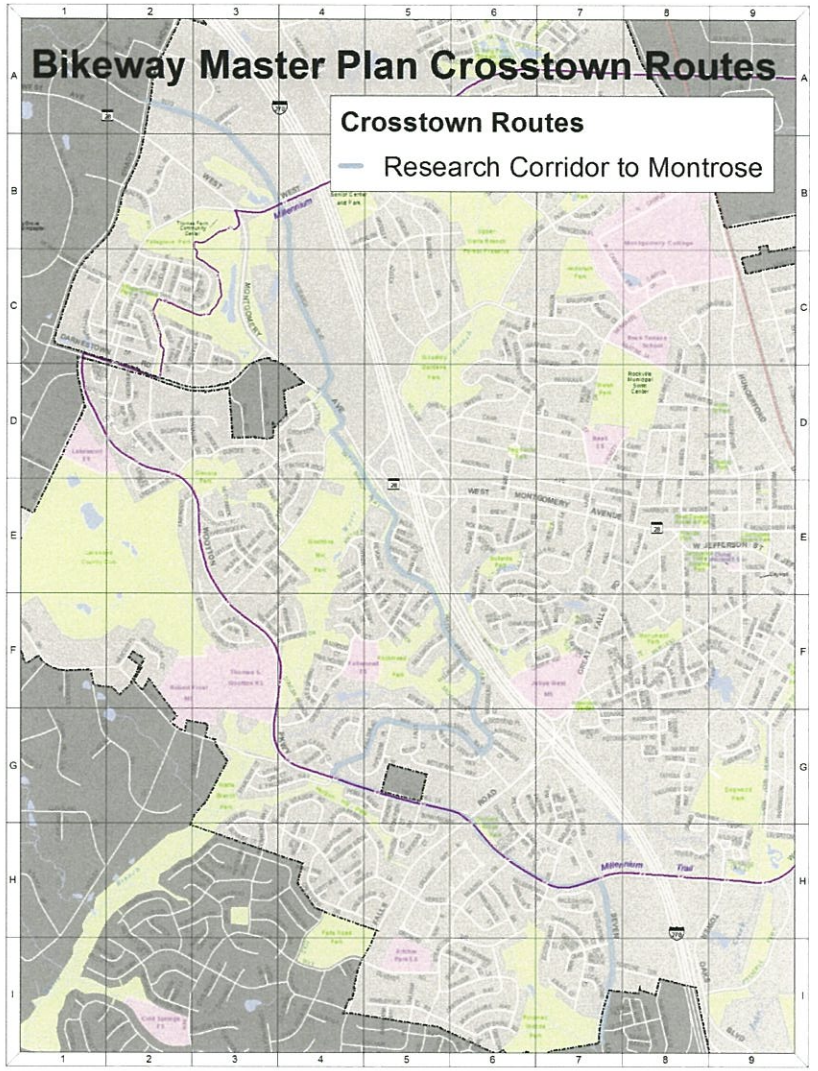

Crosstown Bike Route: Upper Rock to Potomac Woods

North/South Connectivity Between Interstate 270 and MD 355

Provides the most convenient north/south route through the city while highlighting several off-street trails and updated amenities.

Street/Path	From	To	Facility	Length
Chokecherry Rd	Shady Grove Rd	Piccard Dr	SUP	0.2
Piccard Dr	Chokecherry Rd	Gude Dr	SR	0.8
Senior Ctr Trail	Gude Dr	Carnation Dr	SUP	0.4
Carnation Dr	**Senior Center Driveway**	**Aster Blvd**	**SR**	**0.1**
Aster Blvd	**Carnation Dr**	**Nelson St**	**SR**	**0.5**
Nelson St	Aster Blvd	Anderson Ave	BL	0.6
Nelson St	**Anderson Ave**	**MD 28**	**BL/SR**	**0.1**
MD 28	Nelson St	Adclare Rd	SL	0.1
Adclare Rd	MD 28	Roxboro Rd	SL	0.1
Roxboro Rd	Adclare Rd	Calvert St	SL	0.1
Bullards Park Trail	Calvert St	Autumn Wind Way	SUP	0.2
Autumn Wind Way	Bullards Park	Rose Petal Way	SUP	0.3
Rose Petal Way	Autumn Wind Way	Great Falls Rd	SUP	0.1
Great Falls Rd	**Rose Petal Way**	**Falls Rd**	SL/SUP	0.3
Falls Rd	**Great Falls Rd**	**Wootton Pkwy**	**BL**	**0.6**
			TOTAL	4.5
			TOTAL NEW	**1.3**

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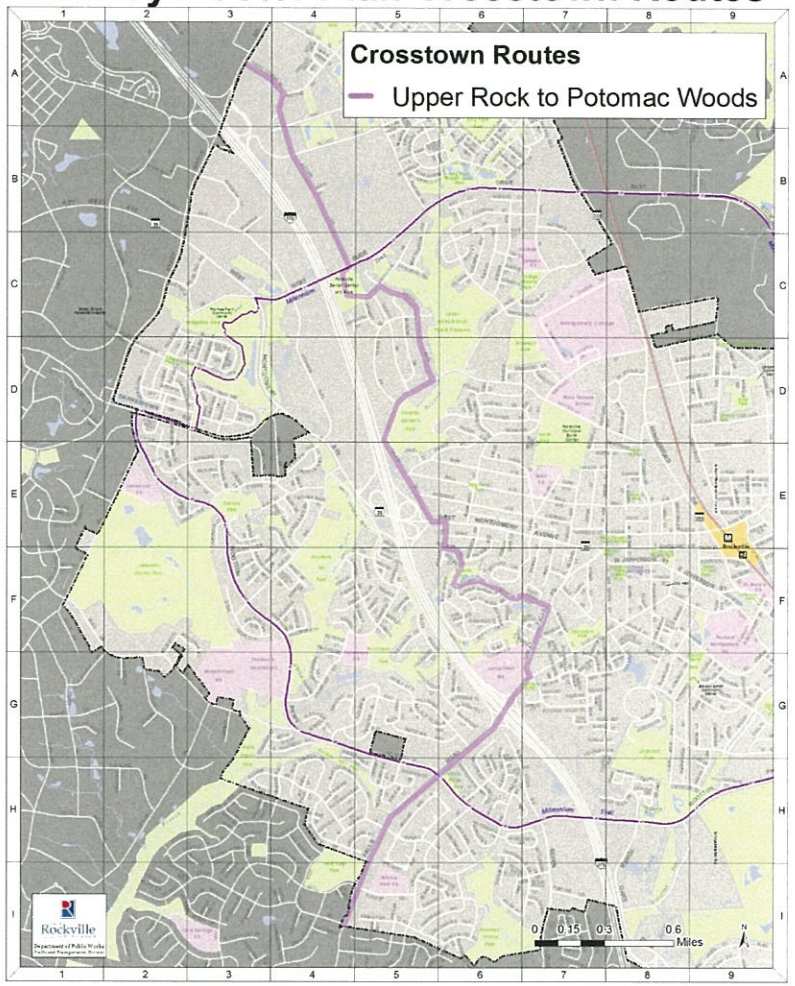
Bikeway Master Plan Crosstown Routes



Crosstown Bike Route: King Farm to Tower Oaks

North/South Connectivity From Gaither Road to Montrose Road

An efficient north/south route to access Town Center from the King Farm neighborhood and Dogwood Park. This route has spurs that connect to Richard Montgomery High School, Dogwood Park, Cabin John Parkway, and Preserve Parkway.

Main Route/Spur	Street/Path	From	To	Facility	Length
Main Route	Gaither Rd	Shady Grove Rd	Gude Dr	SUP	1.1
	Upper Watts Branch Forest Preserve Trail	**Gude Dr**	**Princeton Pl**	**SUP**	**0.1**
	Princeton Pl	**UWBFP Trail**	**Mont. College**	**SR**	**0.6**
	Mont. College	**Princeton Pl**	**W Campus Dr**	**Study**	**0.1**
	S Campus Dr	**W Campus Dr**	**Mannakee St**	**Study**	**0.2**
	Mannakee St	**S Campus Dr**	**Martins Ln**	**BL**	**0.3**
	Martins Ln	**Mannakee St**	**N Washington St**	**BL**	**0.3**
	N Washington St	**Martins Ln**	**MD 28**	**BL**	**0.5**
	N Washington St	**MD 28**	**W Argyle St**	**SR**	**0.5**
	W Argyle St	**S Washington St**	**Monroe St**	**SR**	**0.1**
Richard Montgomery High School Spur	**E Argyle St**	**Monroe St**	**Elwood Smith Park Trail**	**SR**	**0.1**
	Elwood Smith Park Trail	E Argyle St	Mount Vernon PL	SUP	0.1
	Mount Vernon PL	Elwood Smith Park	Cabin John Creek Trail	SR	0.04
	Cabin John Creek Trail	Mount Vernon PL	Fleet Street	SUP	0.2
	Fleet Street	Cabin John Creek Trail	Richard Montgomery Drive	SUP	0.3
Dogwood Park Spur	**Monroe St**	**W Argyle St**	**Dogwood Park**	**SR**	**0.4**
	Dogwood Park	Monroe St	Grand Oaks Way	SR	0.2
	Grand Oaks Way	Dogwood Park	Tower Oaks Blvd	SR	0.1
	Tower Oaks Blvd	**Wootton Pkwy**	**Preserve Pkwy**	**SR/SUP**	**0.4**
Cabin John Pkwy/Preserve Pkwy Spur	Cabin John Pkwy	Monroe Street	Leverton Rd	SR	0.5
	Cabin John Pkwy trail	Leverton Rd	Wootton Pkwy	SUP	0.2
	Wootton Pkwy	**Cabin John Pkwy**	**Preserve Pkwy**	**SR/SUP**	**0.05**
	Preserve Pkwy	**Wootton Pkwy**	**Tower Oaks Blvd**	**SR/SUP**	**0.6**
Main Route	**Tower Oaks Blvd**	**Preserve Pkwy**	**Montrose Rd**	**SR/SUP**	**0.5**
				TOTAL	**7.49**
				TOTAL NEW	**4.75**

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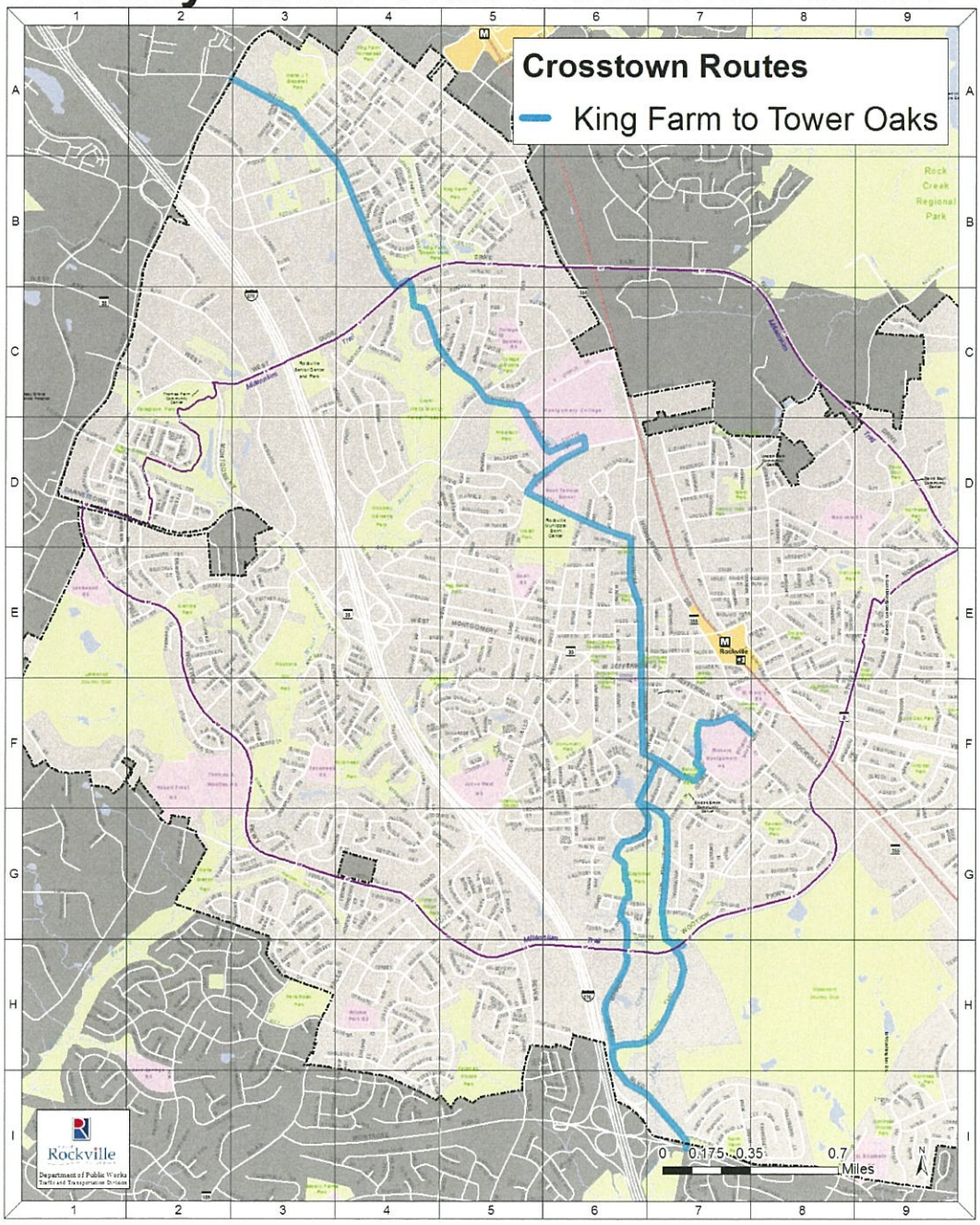
Bikeway Master Plan Crosstown Routes



Crosstown Bike Route: Lincoln Park to Twinbrook Metro

North/South Connectivity from Lincoln Park to the Twinbrook Metro Station

A safe route to connect the Lincoln Park neighborhood to Metro via the Rockville and Twinbrook stations and on to the Bethesda Trolley Trail.

Street/Path	From	To	Facility	Length
Dover Rd	E Gude Dr	N Horners Ln	SUP	0.4
N Horners Ln	Dover Rd	Frederick Ave	SR	0.04
Frederick Ave	N Horners Ln	N Stonestreet Ave	SR	0.3
N Stonestreet Ave	Frederick Ave	Park Rd	SR	0.7
Park Rd	**N Stonestreet Ave**	**S Stonestreet Ave**	**BL**	**0.1**
S Stonestreet Ave	**Park Rd**	**Baltimore Ave**	**CL**	**0.2**
Baltimore Ave	**S Stonestreet Ave**	**Grandin Ave**	**SR**	**0.1**
Grandin Ave	Baltimore Ave	Edmonston Dr	SR	0.7
Edmonston Dr	Grandin Ave	Lewis Ave	SR	0.4
Lewis Ave	Edmonston Dr	Twinbrook Metro	SR	1.1
Chapman Ave	**Twinbrook Metro**	**Bethesda Trolley Trail**	**BL**	**0.4**
			TOTAL	4.44
			TOTAL NEW	**0.8**

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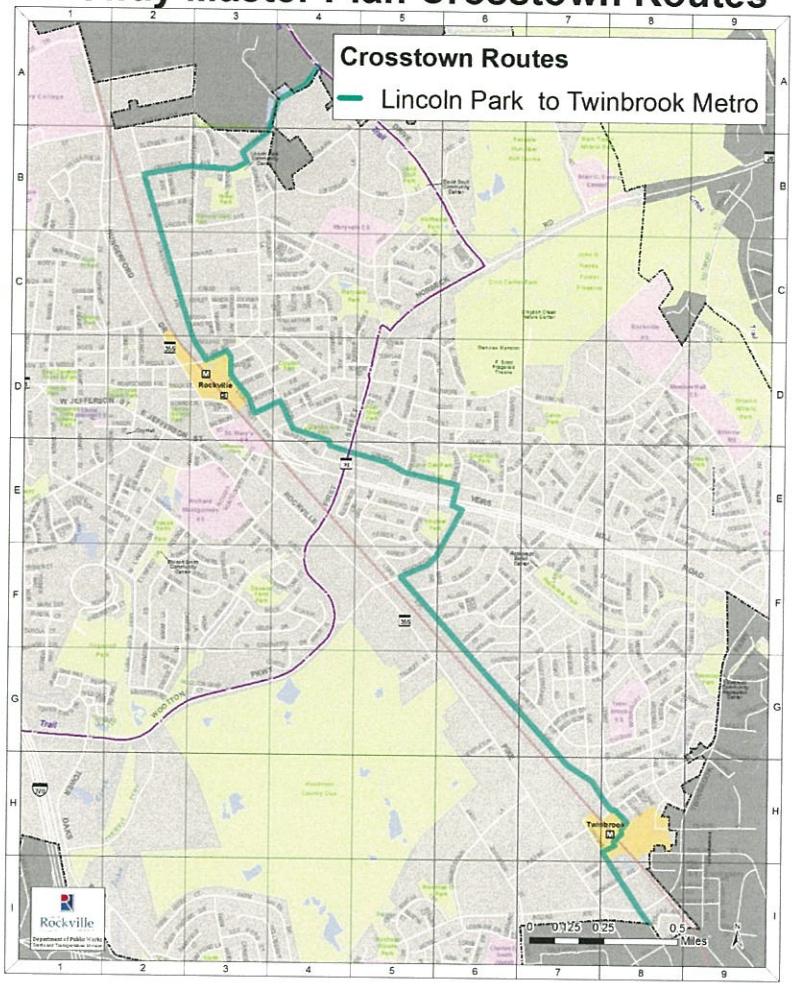
Bikeway Master Plan Crosstown Routes



Crosstown Bike Route: East Twinbrook

North /South Connectivity, Lincoln Park to Twinbrook Metro

A bicycle route from Rock Creek Park and Rockville High School to the Twinbrook Metro and Bethesda Trolley Trail along low-volume roads. This route includes a spur that connects to the Twinbrook Community Center.

Main Route/Spur	Street/Path	From	To	Facility	Length
Main Route	**Balitmore Ave**	**Northeast City Limits**	**Broadwood Dr**	**SUP/SR**	**0.4**
	Broadwood Dr	**Baltimore Rd**	**Grandin Ave**	**BL**	**0.5**
	Broadwood Dr	**Grandin Ave**	**Crawford Dr**	**SR**	**0.3**
	Crawford Dr	**Broadwood Dr**	**Ardennes Ave**	**SR**	**0.4**
	Ardennes Ave	**Crawford Dr**	**Wainwright Ave**	**SR**	**0.2**
Twinbrook Community Center Spur	Wainwright Ave	Ardennes Ave	Twinbrook Community Center	SR	0.2
Main Route	**Ardennes Ave**	**Wainwright Ave**	**Ridgway Ave**	**SR**	**0.1**
	Ardennes Ave	**Ridgway Ave**	**Halpine Rd**	**BL/SR**	**0.2**
	Halpine Rd	Ardennes Ave	Twinbrook Metro	SR	0.2
	Chapman Ave	**Twinbrook Metro**	**Bethesda Trolley Trail**	**BL**	**0.4**
				TOTAL	2.1
				TOTAL NEW	**2.2**

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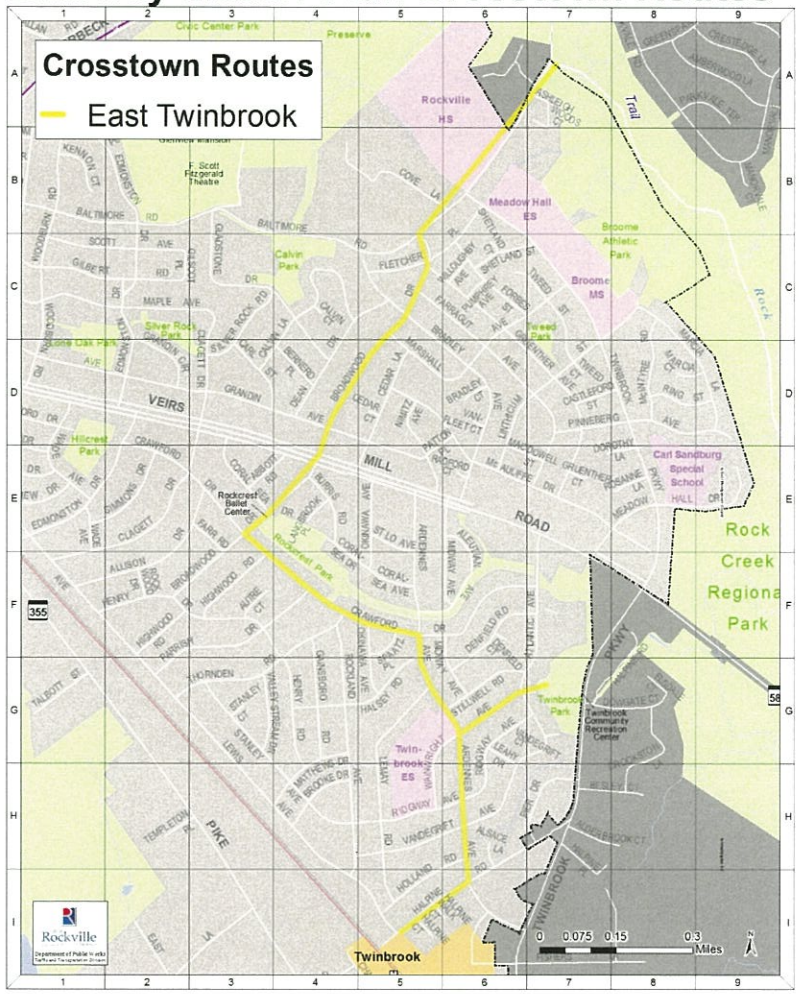
Bikeway Master Plan Crosstown Routes



Crosstown Bike Route: Fallsgrove to Rock Creek

East /West Connectivity Through Town Center to Baltimore Rd and Veirs Mill Road.

A bicycle route across town through Town Center to the city limits at Baltimore Rd (continuing on to the Rock Creek Trail via County streets). This route has two spurs on the eastern extent that converge into one route east of MD 355; one along Baltimore Road and the other along Grandin Avenue that ultimately ends at Veirs Mill Road.

Main Route/Spur	Street/Path	From	To	Facility	Length
Main Route	Darnestown Rd	Shady Grove Rd	MD 28	SUP	0.8
	MD 28	**Darnestown Rd**	**Hurley Ave**	**CL/SUP**	**0.4**
	MD 28	Hurley Ave	Nelson St	SUP	0.5
	Nelson St	**MD 28**	**Anderson Ave**	**BL**	**0.1**
	Anderson Ave	Nelson St	Forest Ave	SR	0.7
	Forest Ave	Anderson Ave	Harrison St	SR	0.03
	Harrison St	Forest Ave	N Van Buren St	SR	0.2
	N Van Buren St	Harrison St	Middle Ln	SR	0.03
	W Middle Ln	N Van Buren St	N Washington St	SR	0.2
	E Middle Ln	N Washington St	MD 355	BL	0.2
	Park Rd	**MD 355**	**S Stonestreet Ave**	**BL**	**0.1**
	Park Rd	Stonestreet	Grandin Ave	SR	0.2
	Grandin Ave	Park Rd	Baltimore Rd	SR	0.2
Baltimore Road Spur	**Baltimore Rd**	**Grandin Ave**	**Norbeck Rd**	**SR**	**0.2**
	Baltimore Rd	Norbeck Rd	Gladstorne Dr	SR	0.5
	Baltimore Rd	**Gladstone Dr**	**City Limits**	**SL/SUP**	**0.9**
Grandin Avenue Spur	Grandin Ave	Baltimore Rd	Patton Pl	SR	1.3
	Patton Pl	Grandin Ave	McAuliffe Dr	SR	0.06
	McAuliffe Dr	Patton Pl	Linthicum St	SR	0.1
	McAuliffe Dr	Linthicum St	Meadow Hall Dr	BL	0.3
	Meadow Hall Dr	McAuliffe Dr	Veirs Mill Rd	SR	0.1
	Veirs Mill Rd	**Meadow Hall Dr**	**Twinbrook Pkwy**	**SUP**	**0.1**
	Veirs Miill Rd	Twinbrook Pkwy	Planned Rock Creek Trail Connection	SR	0.4
				TOTAL	7.62
				TOTAL NEW	**1.8**

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Bikeway Master Plan Crosstown Routes
Crosstown Routes
Fallsgrove to Rock Creek
Rockville
Twinbrook
Rock Creek Regional Park
1st Ed Montgomery County Trail
Millennium Trail

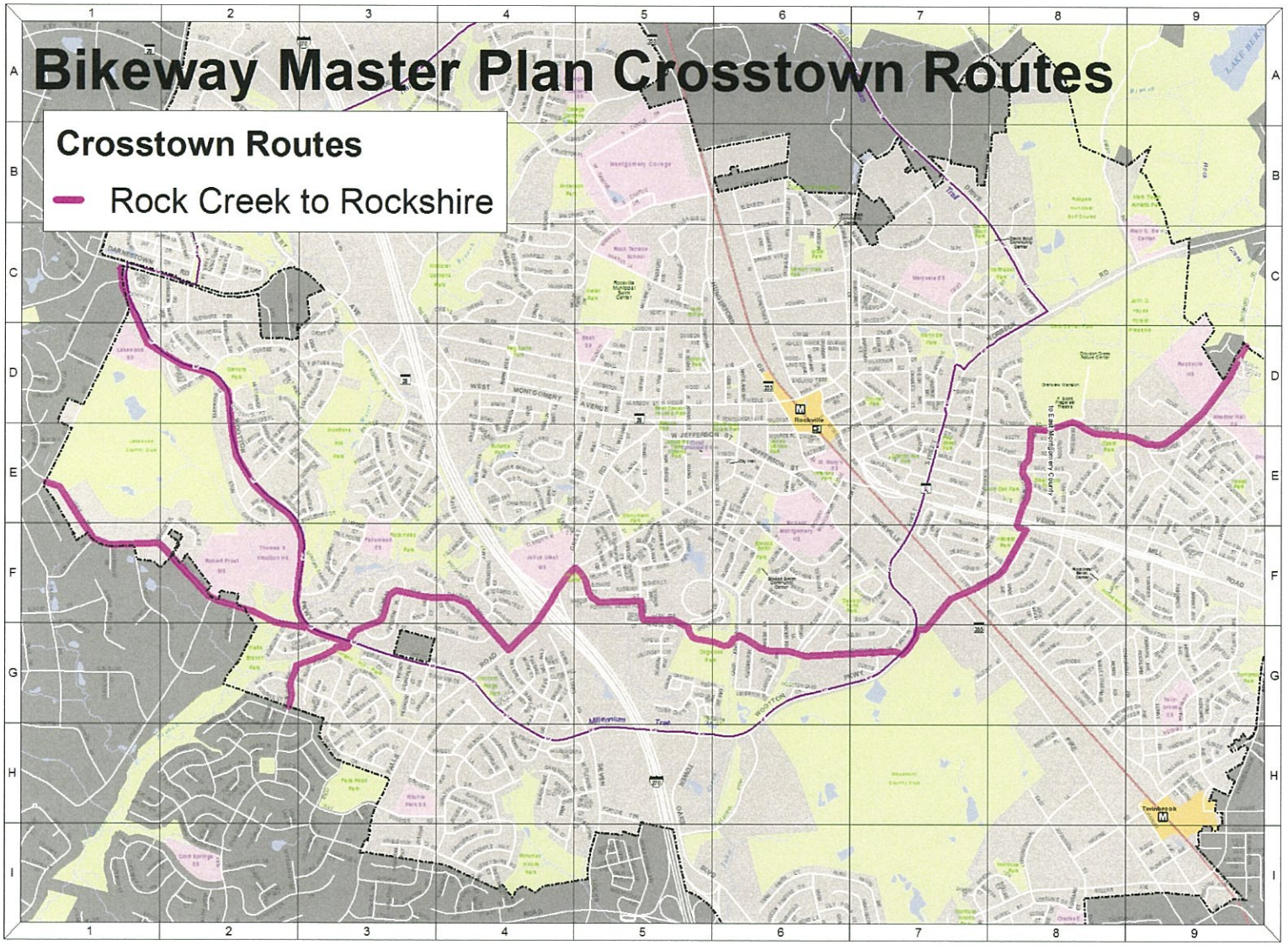
Crosstown Bike Route: Rock Creek to Rockshire

East/West Connectivity Through Dogwood Park Bypassing Town Center

A bicycle route for travelers originating south of Town Center who need to get to another location south of Town Center. This route has three spurs; one travels along Wootton Parkway to connect to Wootton High School and ends at Darnestown Road, another connects to Horizon Hill Park, and one connects to Robert Frost Middle School terminating on Veirs Drive.

Main Route/Spur	Street/Path	From	To	Facility	Length
Main Route	Rock Creek Trail	City Limits	Baltimore Rd	SUP	0.1
	Baltimore Rd	**City Limits**	**Gladstone Dr**	**SL**/SUP	**0.8**
	Baltimore Rd	Gladstone	Edmonston Dr	SR	0.2
	Edmonston Dr	Baltimore Rd	Wootton Pkwy	SR	1.1
	Wotton Pkwy	Edmonston Dr	W Edmonston Dr	SUP	0.1
	W Edmonston Dr	Wootton Pkwy	Dogwood Park	SR	0.5
	Dogwood Park	W Edmonston Dr	New Mark Espl	SUP	0.2
	New Mark Espl	Dogwood Park	Potomac Valley Rd	SR	0.3
	Potomac Valley Rd	New Mark Espl	Falls Rd	SR	0.3
	Falls Rd	**Potomac Valley Rd**	**Fallsmead Wy**	**BL**	**0.4**
	Fallsmead Wy	Falls Rd	Wootton Pkwy	SR	0.8
Horizon Hill Spur	Fallsmead Way	Wootton Pkwy	Horizon Hill Pk	SR	0.1
	Horizon Hill Park	Fallsmead Way	N Commons Way	SUP	0.2
	New Commons Way	Horizon Hill Park	City Limits	SR	0.1
Wootton Parkway Spur	**Wootton Pkwy**	**Fallsmead Way**	**Darnestown Rd**	SUP/**SR**	**1.9**
Scott Drive /Veirs Drive Spur	**Wotton Pkwy**	**Fallsmead Way**	**Scott Dr**	SUP/**SR**	**0.2**
	Scott Dr	**Wotton Pkwy**	**Veirs Dr**	**SUP/SR**	**0.7**
	Veirs Dr	**Scott Dr**	**City Limits**	**PS/SUP**	**0.5**
				TOTAL	8.3
				TOTAL NEW	**4.3**

Bolded red text indicates that the facility is recommended and not built at the time of the Plan's adoption. All other facilities listed exist in the bike network.


Bikeway Master Plan Crosstown Routes
Crosstown Routes
Rock Creek to Rockshire

APPENDIX C

BUILDING BLOCKS OF A BICYCLE FRIENDLY COMMUNITY (LEAGUE OF AMERICAN BICYCLISTS)

THE BUILDING BLOCKS OF A BICYCLE FRIENDLY COMMUNITY

produced by
THE LEAGUE
OF AMERICAN BICYCLISTS
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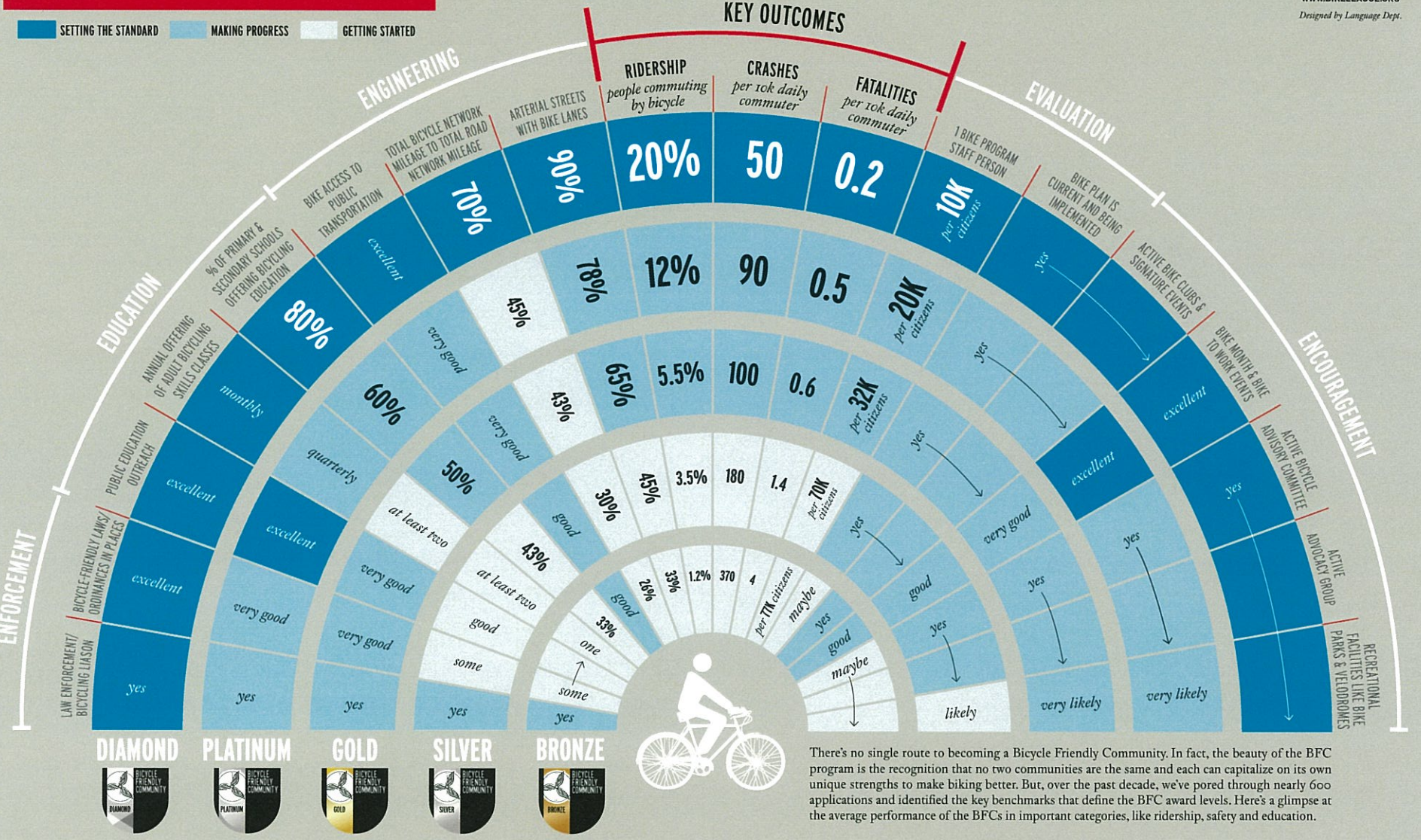
Designed by Language Dept.



There's no single route to becoming a Bicycle Friendly Community. In fact, the beauty of the BFC program is the recognition that no two communities are the same and each can capitalize on its own unique strengths to make biking better. But, over the past decade, we've pored through nearly 600 applications and identified the key benchmarks that define the BFC award levels. Here's a glimpse at the average performance of the BFCs in important categories, like ridership, safety and education.