



Bikeway Master Plan

City of Rockville, Maryland

Bikeway Master Plan

Adopted April 26, 2004

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Adopted: April 26, 2004

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1. INTRODUCTION

1.A. Purpose of the Plan Update

Since the adoption of the first Bikeway Master Plan in 1998, Rockville has developed from a city with a few unconnected bicycle trails into one of Maryland's leading communities for bicycling, with an extensive network of signed bike routes, bike lanes, and shared-use paths. In addition, Rockville has implemented far-reaching programs to promote bicycling to all residents and employees, provide recycled bicycles to children, and educate children on how to ride safely. Interested and energized citizens, responsive elected officials, and City staff have worked together over the past five years to create a more livable community in which people have a range of safe and convenient travel choices, including bicycling. Much has been accomplished, and yet more needs to be done to ensure that all residents have access to the bikeway network and to programs that support safe bicycling.

This Bikeway Master Plan Update was developed for the citizens of Rockville and supersedes the Bikeway Master Plan adopted by Mayor and Council on October 12, 1998. Implementation of recommendations in the 1998 Plan, changes in local conditions, updated national guidelines, and a continued increased interest in bicycling, both as a form of recreation and mode of transportation, warrant an update of the 1998 Plan at this time.

This Plan Update outlines a vision for improving bicycling in Rockville over the next 10 years and beyond. It is designed to be used by citizens, public policymakers and City staff. It introduces broad issues in bicycle planning and applies these concepts to the physical environment within the City of Rockville. It also provides information, guidance, and prioritized recommendations for improvements.

1.B. Vision

A bicycle plan vision provides a framework for the City's efforts regarding bicycle improvements. The vision statement has been clarified and strengthened since 1998. It is:

Bicycling in Rockville is for all types of trips; for all types of people; for all parts of the City.

This vision directs the City of Rockville to create safer opportunities for bicycling in the City for both transportation and recreation for all types of bicyclists. To accomplish this vision, Rockville citizens should be able to meet most of their daily needs by bicycle, if they so choose. The vision also guides decisions on what facilities and programs are needed to give bicyclists of all ages and experience levels convenient and comfortable access to public services and recreational, cultural, commercial, and employment destinations in the City.

1.C. Accomplishments of the 1998 Bikeway Master Plan

Following adoption of the 1998 Plan, the City began work to implement the Plan's recommendations. Significant progress has been made, and Rockville has become a more bicycle-friendly city. A key to this progress has been the strong support of the Mayor, City

Council, City staff and citizens to undertake bicycle-related projects and to provide adequate funding to see projects through to completion.

The 1998 Plan identified the following priorities for physical improvements:

- Improve access to critical areas such as the Rockville Town Center, including municipal, cultural, and shopping locations;
- Improve access to local and regional recreation opportunities;
- Provide for the safe crossing of major highways and interstates; and
- Provide access to key inter-modal transit centers.

In the five years since the 1998 Plan was adopted, the City has secured \$5.5 million in federal funds for bicycle projects. With this money and additional state and local funding, the City has completed over 20 miles of multi-use paths (including nearly all of the 10-mile Millennium Trail), signed nearly 20 miles of bicycle routes, and striped more than two miles of bike lanes. The City is preparing to construct a bicycle and pedestrian bridge across I-270 at MD 28, works closely with developers to implement portions of the bike network, and continues to construct safer street crossings for bicyclists. Bicycle racks have been installed in many parts of the City, including at Metro stations and in the Town Center area. Bicycle access to recreation areas has been improved, including paths in City parks and bike lockers at all City-owned recreation facilities.

In addition to physical improvements, several programmatic recommendations were noted in the 1998 Plan:

- Development and implementation of bicycle and motor vehicle operator education programs;
- Inclusion of the needs of bicyclists in regular maintenance programs and new developments; and
- Promotion of opportunities for bicycling in the City.

The City has created many bicycle programs since the adoption of the 1998 Bikeway Master Plan. Rockville is the first city in Maryland to develop and implement a comprehensive Kindergarten through 5th Grade Pedestrian and Bicycle Safety Education Program—a program that will serve as a model for the entire state. The City has also encouraged bicycling through programs such as Ride for Rockville, Bike to Work Day, Bicycle Recycling, providing free bicycles to children through the “Character Counts” program, and commuter assistance. Developers are including bicycle facilities in new developments: bicycle issues have been incorporated into the Falls Grove and Town Center Master Plans. Rockville has been designated a “Bicycle Friendly Community” by the League of American Bicyclists.

Over the past five years, Rockville has had the continuous service of its Citizens Bike Advisory Committee (CBAC). The guidance of this group has been essential for implementing many of the recommendations in the 1998 Plan. The development of the Bikeway Master Plan Update is a further demonstration of this group’s and the City’s commitment to bicycle facilities and programs.

1.D. Opportunities Remaining from the 1998 Plan

Though many accomplishments have been made in the last five years, more work is needed in order to make Rockville a place where all citizens can bicycle to all parts of the City for all types of trips. A primary purpose of this Plan Update is to review the status of the 1998 Plan implementation and to reevaluate future priorities. A number of recommendations from the 1998 Plan still need to be implemented. These include:

- Complete on- and off-road connections designated as bikeways;
- Improve bicycle connections to multi-modal facilities such as Metrorail stations and local bus stops;
- Provide better East-West connections through the City, including crossings of MD 355;
- Provide better North-South connections through the City, including crossings of MD 28, and access to commercial and office buildings along the MD 355 corridor; and
- Improve bike path maintenance.

1.E. Implementing the 2003 Master Plan Update

In addition to completing the remaining recommendations in the 1998 Plan, the City seeks to implement new recommendations for bicycle facilities and programs through this Plan Update. The recommendations of this Plan Update are provided in Section 4, and include two maps (a City-wide map and a Town Center map) that illustrate the locations of existing and proposed bikeways.

1.E.1. Flexibility

The recommendations of this Plan Update are flexible. In many cases the recommended facility is what will ultimately be constructed. Yet, opportunities may arise in some locations that will require the proposed solution to be re-evaluated. Often, these opportunities will result in a facility that is safer, more comfortable, and/or more cost-effective than what was originally envisioned.

There are recommendations in this Plan Update that can be implemented easily in the short-term. Others may require many years to be realized. There will also be locations where both on-road and off-road facilities should be provided. In cases where the ultimate bicycle facility cannot be constructed immediately, short-term solutions may be used.

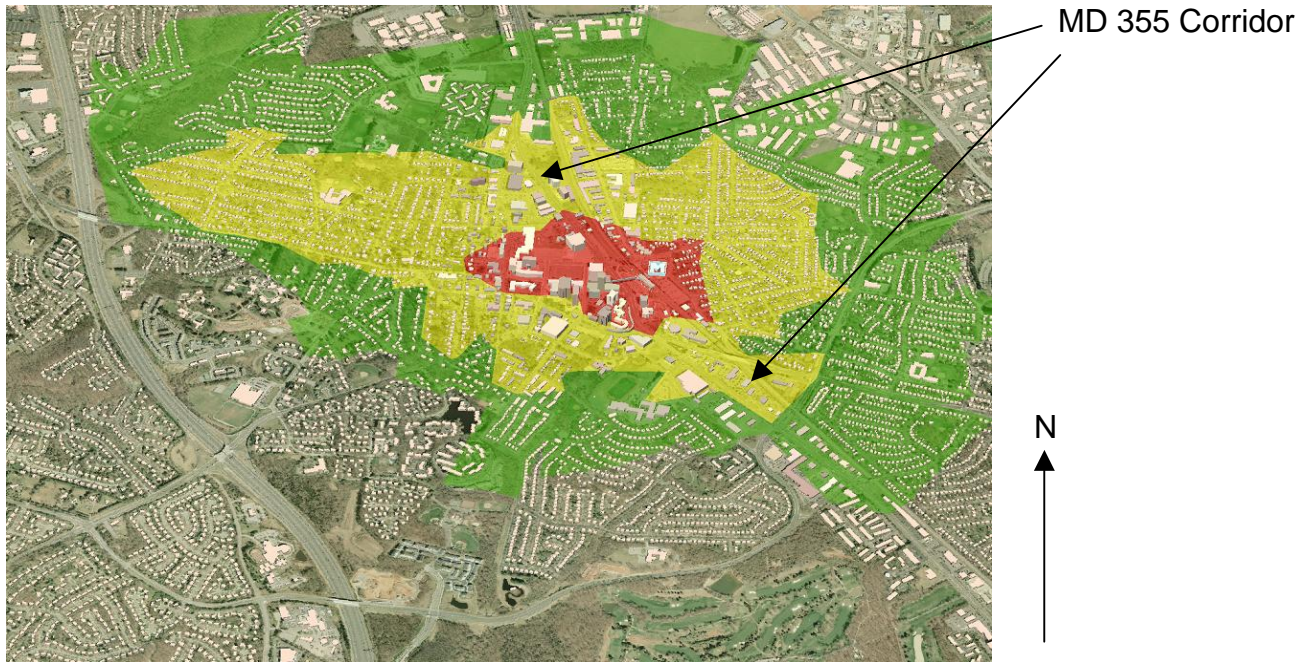
In this manner, the City of Rockville will take a flexible approach to achieving the optimum conditions for bicycling given all of the constraints of site conditions, development locations, construction costs, and time.

1.E.2. Improving Bike Travel Time

By improving its bikeway network, Rockville will make it easier for all residents to make trips to all parts of the City by bicycle. New facilities will make it safer and more comfortable to ride,

and they will also help reduce the amount of time it takes to get between destinations in the City. Figure 1 estimates how long it takes to bicycle to Town Center using the existing bicycle network, assuming that people can ride faster on bikeways with shared-use paths, bike lanes, and signed bike routes than on roadways with no special bike accommodations. Figure 1 shows current bike travel times to the Rockville Metro station and Town Center (each ring is a 5-minute interval). One of the reasons that the travel times are longer for the eastern half of the City is the lack of east-west connectivity across the MD 355 and CSX/Metrorail corridor. Bikeway improvements will equalize and expand the rings of this map so that it is more convenient in terms of time and comfort to reach Town Center from all parts of Rockville.

Figure 1. Bike Travel Time to Rockville Metro Station



Travel Time:
5 minutes ■
10 minutes ■
15 minutes ■

1.F. Accommodating Bicyclists in Town Center

Bicycling must be integrated with all modes of the City's transportation system. It should be encouraged in Rockville's Town Center, which continues to develop into a daytime, evening, and weekend activity center with a mix of land uses and activities. Residents of nearby neighborhoods, new residents, and visitors to Town Center should be able to bike comfortably to reach offices, cafes, restaurants, the movie theater, and other destinations. Bike parking should be provided at each destination. As more buildings and activities are added to Town Center, it will be even more critical to provide bike facilities so that there is a comfortable alternative to driving automobiles and parking. Figure 3 in Section 4 shows where bicycle facilities (signed-shared roadways, bike lanes, and shared-use paths) are recommended in Town Center.

1.G. Changes in Bikeway Classification and Evaluation

1.G.1. Bikeway Classification System

This Plan Update recommends a change in how bikeways are classified so that the Plan is consistent with the 1999 *American Association of State Highway and Transportation Officials Guide for the Development of Bicycle Facilities* (AASHTO Guide). The AASHTO Guide defines four types of bikeways. These bikeway types will replace the Bikeway Classification system used in the 1998 Plan. The four types of bikeways are:

Shared Roadway: A roadway which is open to both bicycle and motor vehicle travel. This may be an existing roadway, street with wide curb lanes or road with paved shoulders.

Signed-Shared Roadway: A shared roadway which has been designated by signing as a preferred route for bicycle use.

Bike Lane: A portion of a roadway that has been designated by striping, signing and pavement markings for the preferential or exclusive use of bicyclists.

Shared-Use Path: A bikeway physically separated from motorized vehicular traffic by an open space or barrier and either within the roadway right-of-way or within an independent right-of-way. Shared-use paths may also be used by pedestrians, skaters, wheelchair users, joggers and other non-motorized users.

More detail on types of bicyclists and bikeways is provided in the AASHTO guide and in Section 5, Design Standards. Section 4, Goals, Objectives, and Recommendations describes how each type of bikeway should be used in Rockville.

1.G.2. Bicycle Level of Service

The 1998 Plan did not take measurements of roadway characteristics to determine bikeway locations or the types of facilities that were appropriate for each route. During the plan update process, Bicycle Level of Service (LOS) analysis was used to fill in this gap. The Bicycle LOS method uses a scientifically calibrated model to evaluate bicycling conditions and bicyclist

comfort levels based on standard roadway features, including speed and volume of traffic, width of traffic lanes, and pavement condition. The method makes it possible to evaluate alternative roadway designs, which allows some flexibility in determining the most appropriate bikeway for given corridors. A more detailed description of Bicycle LOS is included in Section 5. Design Standards.

1.H. Changes in Policies and Orientation

The Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) marked a significant shift in the focus of federal transportation policy. Flexible funding and increased public involvement in the transportation planning process have created greater opportunities to improve conditions for bicyclists in cities such as Rockville. The Transportation Equity Act for the 21st Century (TEA-21), adopted in 1998, continued and strengthened the programs and policies created in ISTEA to secure greater funding availability for bicycle facilities and programs.

As a national leader in the development of smart growth policies, Maryland is beginning to address the needs of bicyclists and pedestrians at the state level. The new position of Director of Bicycle and Pedestrian Access was created in 2000 to coordinate the efforts of various agencies within the Maryland Department of Transportation (MDOT), and MDOT completed the Statewide Bicycle and Pedestrian Master Plan in 2001. All MDOT agencies are working to include bicycle and pedestrian facilities in new projects and new funding sources have been created to allow retrofitting of bicycle and pedestrian facilities on state highways, such as MD 28, MD 189, MD 355, and MD 586 in Rockville.

Montgomery County has also been pursuing bicycle improvements. The Countywide Park Trails Plan was adopted in July 1998, and an update of the Master Plan of Bikeways for Montgomery County is underway and should be completed by the end of 2003. Bikeways in Rockville have been identified as part of both of these county plans.

1.I. Benefits of Bicycling for Transportation and Recreation

Regardless of the purpose of a bicycle trip, every cyclist needs a safe and comfortable route to reach his or her destination. To meet this need, the City should continue to develop a mix of facilities (bike lanes, paths, etc.), that provide bicyclists with a variety of options to reach their destinations, depending upon their skill level.

According to the Nationwide Personal Transportation Survey (NPTS), bicycling produces multiple potential benefits, both for the individual and their community, and there is a great potential to increase the number of trips taken by bicycle. Approximately 69 percent of all daily trips are less than five miles, 50 percent are less than three miles, and 25 percent are less than one mile (NPTS 1995); well within the range of an average cyclist. Rockville's compact scale, traditional development pattern and activity-filled downtown make bicycling an attractive travel option.

By taking advantage of the opportunity to convert short automobile trips to the bicycle, the City can reap enormous benefits in terms of health, environmental benefits, and reduced traffic

congestion. A National Bicycle and Pedestrian Clearinghouse technical brief (1995) notes that the American public saves from 3 to 14 cents for every automobile kilometer (5 to 22 cents per mile) displaced by walking and bicycling due to reduced pollution, oil import costs and costs due to congestion, such as lost wages and lost time on the job.

The physical built environment can create opportunities for, or barriers against, travel by bicycle. It is unpleasant and dangerous for bicyclists to ride along multi-lane, high-speed arterial roadways that have no bike lane, shoulder, or shared-use path. Even when bicycle facilities are provided, these roadways are difficult to cross. According to Census 2000 data, approximately 69 percent of people commuting to work from Rockville drove alone. Some of these trips could potentially be accomplished on a bicycle if it were more convenient and comfortable.

It is also important to recognize that only 20 percent of all trips are taken between home and work. The remaining 80 percent are trips to school, for recreation and errands (NPTS 1995). The potential for increasing the use of bicycles for these types of trips may be even greater than for commuting, since these trips tend to be shorter distances and can be done in casual clothing. Therefore, it is critical to develop or retrofit public roadways and provide local and regional shared-use paths that access all types of land uses (i.e., not just employment centers).

Providing Rockville with transportation choices allows citizens the option of biking or driving, putting the “livability” of Rockville in the hands of its citizens. Bicycling and walking are environmentally clean modes of transportation, requiring no fossil fuels. Errands around town often consist of several short trips within a few blocks of each other, requiring an automobile to be turned on and off, emitting excess exhaust. Bicycle trips produce no air pollution, reduce road congestion, and often take less time, especially if convenient bike parking is provided.

Biking to the store, school or work also provides a time-efficient way of attaining the United States Surgeon General’s recommended daily allowance of physical exercise. By taking a 15-minute ride to work or school and then riding home each weekday, a person will get 30 minutes of exercise five days per week. Children and adults who do take this simple action will experience less heart disease, diabetes, and fewer problems with obesity. In addition to the health benefits, personal benefits may include improved productivity, self-image, greater sense of independence, and improved social relationships (U.S. Department of Health and Human Services 1996).

Traffic calming measures can benefit bicyclists. Features such as narrow motor vehicle lanes, raised medians, and tight turning radii reduce vehicle speeds, which reduce the severity of automobile, pedestrian and bicycle crashes. In addition, slower automobile speeds make the roadway more comfortable for pedestrians and bicyclists.

According to a National Bicycle and Pedestrian Clearinghouse Brief (1995), trails and greenways can have a positive effect on the value of nearby properties. Recent studies of the preferences of new homebuyers indicate that there is a demand for more livable communities and, specifically, better bicycle and pedestrian facilities in the vicinity. A Maryland Department of Natural Resources study of the North Central Rail-Trail in Baltimore County found that the

tax revenue generated from trail-related business and increased property values near the trail in 1993 (\$303,750) greatly exceeded the cost of the trail (\$191,893).

In conclusion, a multitude of reasons exist for continuing to enhance the bikeway network in the City—environmental, health, traffic congestion relief, recreation, and quality of life. Rockville continues to maintain a reputation for being at the forefront of bicycling in Maryland. As the City continues to develop and enhance its transportation network, bicycling will remain a core component of the City's strategy.

2. THE PLANNING PROCESS

The process of updating the Rockville Bikeway Master Plan has involved Rockville citizens, the Mayor and Council, the Citizens Bicycle Advisory Committee, and the Bikeway Master Plan Committee and the cooperation of the Rockville Recreation and Parks Department and several other City of Rockville departments. Their work has built upon the 1998 Plan and defined new priorities for improving bicycling in Rockville the next 10 years.

2.A. Participants

2.A.1. Mayor and Council

The Mayor and Council approved work for this Plan Update as part of the Capital Improvements Program (CIP). They will be responsible for adopting the Plan Update and its recommendations.

2.A.2. Citizens Bicycle Advisory Committee (CBAC)

In May of 1999 the Rockville Citizens Bicycle Advisory Committee (CBAC) was created by the Mayor and Council. The Committee's mandate for action includes the following tasks:

- Assist in the development of the City's bicycle and pedestrian specific policies, as well as other policies that affect the conditions for bicycling in the City;
- Oversee the implementation of the City's Bikeway Master Plan Update and report progress toward completion to the Mayor and Council;
- Review current and proposed CIP projects to ensure bicycle needs are incorporated into design and construction when appropriate; and
- Deliver updates on the needs and desires of bicyclists in the community, with recommendations for action to the Mayor and Council.

The City Bikeway Specialist is assigned as the City staff liaison to the committee to provide communication between agency staff and the committee. The committee has up to ten members, representing a broad range of bicyclist types. Since its creation, the CBAC has held regularly scheduled meetings throughout the year, carried out its mandated tasks, and has become an important and valuable resource to the City on bicycling issues. The active participation of the CBAC is vital to Rockville's continued success in implementing the Bikeway Master Plan Update and in improving conditions for bicycling in the City.

2.A.3. Bikeway Master Plan Committee

Several members of the CBAC worked closely with the City to develop the final recommendations for this Plan Update. This committee provided input on the facility and programmatic improvements that are needed over the next 10 years, commented on the new Rockville Bicycle map, and served as liaisons to the full CBAC and other interested citizens.

2.A.4. Department of Recreation and Parks

The Department of Recreation and Parks manages over fifty parks within the City. The Department also provides support and encouragement for these facilities, including public information and special events, and has a long-standing policy of promoting bicycling within the City. Their responsibilities will focus on off-road bicycle facilities, including trail construction and maintenance. They will work with the Department of Public Works and other City departments to implement this Plan Update.

2.A.5. Department of Public Works

The Department of Public Works (DPW) is responsible for engineering and operational services within Rockville. Within the DPW, the Traffic and Transportation Division plans and installs roadway, sidewalk, and traffic control improvements. This division also manages the Transportation Demand Management program, which includes the promotion of bicycle facilities throughout the City. The Traffic and Transportation Division will be responsible for installing and maintaining on-road bicycle facilities, while optimizing the accessibility, safety and mobility of bicyclists who use them.

2.A.6. Other Departments

One reason for the success Rockville has experienced in implementing bikeways has been the strong level of cooperation between the Department of Recreation and Parks, the Department of Public Works, and other City departments, such as Police and Community Planning and Development Services. Continuing these partnerships during implementation of this Plan Update is essential to its success and to providing an outstanding network of bikeways for the citizens of Rockville.

2.A.7. Other Agencies

The Maryland-National Capital Park and Planning Commission (M-NCPPC) has adopted a Countywide Park Trails Plan, and is working on an update of the Master Plan of Bikeways for Montgomery County. The City has met with M-NCPPC staff to ensure that the recommendations in this Plan Update are consistent with the both the trails and bikeways plans.

The Montgomery County Department of Public Works and Transportation holds monthly “Bicycle Action Group” meetings and works closely with M-NCPPC to implement planned bicycle routes. They are the coordinating agency for the Bethesda Trolley Trail, which is being constructed from North Bethesda to the Twinbrook Metrorail station, including crossings over I-495 and I-270.

The Maryland State Highway Administration manages projects on state highways within the City limits. Coordination between the City and the State has been occurring to ensure that bicycle facilities recommended in this Plan Update are included on state highway projects. Safe intersection crossings of State highways are paramount to the safety of cyclists.

2.B. Public Input Process

Public involvement has been an important part of the bikeway planning process from the outset and was integral in the preparation of this update. Input was gained through meetings with the Bikeway Master Plan Committee, whose members served as liaisons to the Citizens Bicycle Advisory Committee, helped generate goals and objectives for the Plan Update, reviewed the text, and recommended locations where new bike paths, lanes and signs are needed. In addition, a public open house was held to present a draft plan and receive feedback from citizens on the Plan Update. Public comments were also encouraged through the City's website and collected by the Department of Recreation and Parks. The Plan Update was approved by the Mayor and Council.

2.B.1. Regular Public Involvement/Outreach

Programs to encourage and facilitate citizen participation in Plan implementation are critical and should be continued. Ideas from a wide variety of citizens and support from the community will ensure that the Bikeway Master Plan Update continues the success of the 1998 Bikeway Master Plan.

The Department of Recreation and Parks can encourage citizen input as a part of providing educational and public information campaigns. It is recommended that the Department should institute a regular channel of communication for receiving comments and ideas for change in the Bikeway Master Plan Update. This might take the form of brochure/questionnaires as used for the plan development process, informal meetings, etc. In addition, the Department is encouraged to conduct an annual Open House on bicycling in the City. This could coincide with the development of the annual Progress Report by the Citizens Bicycle Advisory Committee.

Another way the Department can receive public input is through the Facility Improvement Request Form that was created in 1999. The form provides citizens with a convenient means of informing City agencies about existing conditions affecting bicycling or of more general concerns or suggestions regarding bicycling in the City. The requests are submitted to the Bikeway Specialist who then refers the request to the appropriate City agency.

Citizens can become involved with bicycling issues in the City by taking advantage of the Department's outreach efforts. By attending future Open House meetings on bicycling in Rockville, submitting Facility Improvement Request Forms with suggestions for bicycle improvements or joining the Citizens Bicycle Advisory Committee, citizens can help implement the recommendations of this Plan Update.

2.B.2. Input on Specific Projects

While there is strong public support for the 1998 Bikeway Master Plan and its update, implementation of individual projects included in the recommendations can raise concerns in affected neighborhoods. To address these concerns the following actions will be taken by the City to help guarantee that impacted residents are aware of proposed bikeway projects and have an opportunity to learn the details of project implementation.

Prior to the implementation of any bikeway project, the following actions are taken:

1. All residents and businesses along the route are notified via direct mailing, which includes:
 - A description and schedule of the project and how it fits into the City bicycle network;
 - A map of the route indicating where parking may be affected;
 - Name and number for a staff contact; and
 - Date, time and location of any meetings scheduled to discuss the bikeway.
2. Local citizen association representatives are notified by mail and invited to any meetings scheduled to discuss the bikeway.
3. A public meeting or open house is held to receive input and answer questions about the project. Aside from direct mailing, the date and location of the public meeting or open house is published in Rockville Reports and on Rockville Municipal Cable.
4. Staff prepares a recommendation to the Mayor and Council, including a summary of public comment.
5. Residents, local citizens associations and other interested parties are notified by mail of the final project design.

2.C. Data Collection

Existing on-road bicycle facility conditions were evaluated and used to develop the recommendations of this Plan Update. This section describes the field data that was collected for the Bicycle Level of Service (LOS) Model, which is a scientific model used to estimate the comfort level of bicyclists on different parts of the Rockville Bikeway Network. It also describes how the model was used to help determine which sections of the bikeway network should have signs, bike lanes, and shared-use paths.

2.C.1. Bicycle Level of Service Model

The Bicycle LOS model was used in Rockville to determine the most appropriate cross-section for roadways where bicycle facilities are being considered. This model is identical to the Bicycle Level of Comfort Model used by the Maryland Department of Transportation to measure bicycling suitability on state-owned roadways in the *Twenty Year Bicycle and Pedestrian Access Master Plan* (2002). The following is a basic explanation of what Bicycle LOS measures and how it has been used to determine the appropriate cross-section for Rockville roadways. For a more detailed explanation of the Bicycle LOS model, refer to Appendix A.

Bicycle LOS Measures

The Bicycle LOS Model is a scientifically-calibrated method of evaluating the comfort level of bicyclists on a roadway segment given existing bicycling conditions. It is used only for on-road bikeways, not shared-use paths. The model uses the same measurable traffic and roadway characteristics that transportation planners and engineers use for other travel modes. The Bicycle LOS Model is based on standard roadway factors such as:

- Lateral separation between bicyclists and adjacent motor vehicle traffic (measured by the width of the right-most lane);

- Presence and width of a paved shoulder/bike lane;
- Volume and speed of motor vehicle traffic;
- Percentage of heavy trucks;
- Number of travel lanes; and
- Pavement condition.

Using the Bicycle LOS Model

Like a motor vehicle level of service model, the Bicycle LOS Model uses score ranges to assign one of six letter grades to describe existing conditions. The grades “A, B, C, D, E, and F” are used as surrogates for users’ perception of the road segments for bicycle travel. Level “A” reflects the best conditions for bicyclists; Level “F” represents the worst conditions.

Level of Service	Bicycle Level of Comfort Score
A	<= 1.5
B	>1.5 and <=2.5
C	>2.5 and <=3.5
D	>3.5 and <=4.5
E	>4.5 and <=5.5
F	>5.5

2.C.2. Bicycle Level of Service Examples

The ultimate goal of the Plan Update is to provide safe and comfortable bicycling conditions for all residents in all parts of the City. The Bicycle LOS Model considers many different factors that affect the comfort of bicyclists and shows that there are many ways to improve overall cycling conditions. Slowing traffic, improving pavement condition, increasing shoulder width, striping narrower travel lanes, and providing bike lanes all improve Bicycle LOS. Rockville seeks to find practical ways to improve the level of service for cyclists using a combination of these strategies.

Bicycle conditions have been improved in Rockville by changing lane striping and reducing motor vehicle speeds. Table 1 shows how bicycling conditions improved from Bicycle LOS “D” to Bicycle LOS “C” on Nelson Street when travel lanes were narrowed to add bike lanes in 1999. Field measurements showed that 85th percentile speeds decreased from 39 m.p.h. to 34 m.p.h. after the changes were made.

Table 1: Bicycle Level of Service Before and After Bike lanes on Nelson Street

Nelson Street from Anderson Ave. to College Pkwy.	Length (Miles)	Lanes	Volume (ADWT)	85 th Pct. Spd.	Pavement Width (ft)			Parking		Pvmt. Cond.	BLOS Score	BLOS Grade
					W _l	W ₁	W _{ps}	% N/E	% S/W			
Before (without bike lane)	0.78	2U	11,000	39	16.5	0.0	0.0	50	50	3.5	4.33	D
After (with bike lane)	0.78	2U	11,000	34	20.5	10.5	6.0	50	50	3.5	2.69	C

U = Undivided configuration
 85th Pct. Spd. = 85th percentile motor vehicle speed
 W_l = total width of pavement between the centerline and the gutter
 W₁ = total width of pavement between outside lane stripe and the gutter

W_{ps} = total width of pavement between the parking line and the gutter (only recorded if bike lane is marked)
Parking = percentage of segment with occupied on-street parking (N/E = North or East side; S/W = South or West side)
Pvmt. Cond. = pavement condition using Federal Highway Administration 5 (best) to 1 (worst) scale

2.C.3. Bicycle Level of Service and Bikeway Accommodations in the Rockville Bikeway Network

Bicycle LOS scores and grades were calculated for over 100 roadway segments in the Rockville Bikeway Network. The results indicate that a number of roadways in the proposed bikeway network are comfortable for typical bicyclists without “special” facilities (such as designated bike lanes or shared-use paths beside the road). Signs designating these low-volume residential streets as bicycle routes are the only accommodations necessary. Many of the neighborhood streets in the bikeway network already have bike route signs, but a few do not.

In locations where they result in slower vehicle speeds, traffic calming measures improve bicycling conditions on roadways. Research has shown that bicyclist comfort improves when travel lanes are narrowed to provide additional space along the edge of the road. Lane narrowing also has the effect of visually narrowing the street, often resulting in decreased motor vehicle speeds (see Nelson Street example). When travel lane narrowing achieves sufficient additional space to stripe a five-foot wide bike lane, the City of Rockville may elect to provide this type of facility. However, it is important to consider that any additional space has a positive effect on bicyclist comfort. Indeed, the *AASHTO Guide for the Development of Bicycle Facilities* (1999) states, “...where four-foot [paved shoulder] widths cannot be achieved, any additional shoulder width is better than none at all” (p. 16).

Finally, shared-use paths may be needed on some roadways in the bikeway network due to high-speed, high-volume traffic. In these situations, Bicycle LOS may be poor, even if bike lanes are added or motor vehicle lanes are narrowed. A shared-use path would allow bicyclists to have full separation from automobiles. However, when shared-use paths are installed, safety problems occur at driveways and roadway intersections because bicyclists are usually not expected by drivers. The most common type of bicycle crash at intersections occur when cyclists are riding on a sidewalk or shared-use path in the opposite direction of adjacent traffic and are struck by a motorist turning right out of a side street or driveway (motorists turning right typically only look to their left and do not see bicyclists approaching from the right). For this reason, the City has developed trail/roadway intersection guidelines to improve visibility and warn motorists of potential hazards in these locations.

Shared-use paths are most appropriate on roadways where there are fewer intersecting roadways and driveways. These facilities are less costly to construct when the roadside is flat with no obstructions, such as trees, guardrails, buildings, utility poles and ditches. These paths are often recommended on roadways with high-volume, high-speed traffic. In Rockville, many of these roadways are not owned and maintained by the City. Therefore, the City supports construction and maintenance of these paths by Montgomery County and the State Highway Administration. These pathways are important links in the City’s bikeway network.

3. GOALS AND OBJECTIVES

3.A. Conceptual Framework

In January 2002, the City of Rockville Planning Commission approved the *Comprehensive Master Plan for the City of Rockville*, which sets goals, policies and recommendations to guide capital improvement projects and development in the City. The *Comprehensive Master Plan* defines these three terms as:

- **Goals** are conceptual, broad, and long range.
- **Objectives** are the guides to the achievement of the goals.
- **Recommendations** define the specific actions needed to accomplish the overall goal as well as the policies.

The 1998 Bikeway Master Plan did not define goals for bicycling in Rockville; instead it provided a list of prioritized recommendations to be implemented. This Plan Update will make the Bikeway Master Plan consistent with other planning documents in the City by defining a set of goals. A prioritized list of recommendations provided in Section 4 outlines means to accomplish each goal. The prioritized recommendations of the Plan Update should be integrated with the *Comprehensive Master Plan* and should be evaluated concurrently.

3.B. Goals and Objectives

This Plan Update sets five goals to improve bicycling in Rockville over the next 10 years. The following are goals and the objectives that have been adopted to make Rockville a city where one can meet all their daily needs by bicycle. The five goals in this Plan Update have been developed to support the overall vision that is outlined in the 2002 Comprehensive Master Plan for the City of Rockville. Each goal listed below corresponds to a goal in the in the Transportation Section of the *Comprehensive Master Plan*.

GOAL 1: Enhance the mobility of bicyclists by improving the bicycle facility network
(Corresponds to Transportation Goal 1: Enhance the mobility of people, goods and services)

Objective 1.1. Install the bike paths, lanes, signs, crossings, signals and other facilities recommended on the Rockville Bicycle Facilities Recommendations map.

Objective 1.2. Remove significant barriers to bicycling.

Objective 1.3. Continue to maintain existing facilities.

Objective 1.4. Continue to gather public input and other data to determine where new facilities and improved maintenance are needed.

Performance Measure: Number of residential units within 5, 10, and 15 minute bike travel time to activity center(s)

GOAL 2: Provide bicycle facilities during development and redevelopment to improve the continuity of the bikeway network

(Corresponds to Transportation Goal 6: Minimize the separation effects of major transportation facilities)

Objective 2.1. Add bicycle facilities during roadway construction, reconstruction, or resurfacing.

Objective 2.2. Require developers to provide bicycle facilities in new developments.

Objective 2.3. Ensure that Rockville's Roadway Design Standards are bicycle-compatible.

Performance Measure: Percent of Master Plan facilities that exist, by planning area

Performance Measure: Percent of new developments and road projects that adhere to the

Bikeway Master Plan recommendations

Performance Measure: Percent of new developments and road projects that go through Comprehensive Transportation Review and are consistent with the City's Adequate Public Facilities Ordinance.

GOAL 3: Improve the safety of children bicycling to school

(Corresponds to Transportation Goal 5: Foster a safe and maintainable transportation network that encourages the observance of traffic laws)

Objective 3.1. Expand the City's Pedestrian and Bicycle Safety Education Program to all Rockville elementary schools.

Objective 3.2. Develop a Safe Routes to Schools Program and use it to generate interest in and ideas for improving bicycle facilities near Rockville schools and on routes children use to access these schools.

Performance Measure: Percent of students wearing bicycle helmets, riding on the correct side of the roadway, and stopping at stop signs

Performance Measure: Number of Rockville schools conducting a Safe Routes to Schools Program

GOAL 4: Protect the environment

(Corresponds to Transportation Goal 4: Protect the environment)

Objective 4.1. Develop media packets on the environmental benefits of bicycling and walking and present them to the Mayor and Council, television, radio, and newspaper media, and the general public.

Objective 4.2. Continue to evaluate the environmental impacts of all proposed bikeway facilities.

Performance Measure: Amount of positive information disseminated about the environmental benefits of bicycling.

Performance Measure: Percent of new bikeways constructed in accord with environmental guidelines

GOAL 5: Promote a transportation system that facilitates bicycling and develop community pride in bicycling

(Corresponds to Transportation Goal 2: Promote a transportation system that is multi-modal, accessible and friendly to all users)

Objective 5.1. Create a user-friendly bicycle map and distribute it at public libraries, bicycle shops, and government buildings throughout the City.

Objective 5.2. Promote the Rockville Bikeway Network by designing a distinctive system of signs, maps and markings.

Objective 5.3. Establish incentive programs to encourage citizens to bicycle.

Objective 5.4. Expand Bicycle Recycling Program to offer more free and reduced price bicycles to low-income families.

Objective 5.5. Work with the local bicycle advocacy groups and a diverse group of citizens to implement the Bikeway Master Plan Update.

Performance Measure: Percent of residents who commute to work by bicycle

4. RECOMMENDATIONS

This section lists the actions that should be taken to achieve the goals and objectives listed in Section 3. Two maps have been provided in this section to support the written recommendations of this Plan Update: the Rockville Bikeway Recommendations Map (a City-wide map) shown in Figure 2; and the Rockville Town Center Bikeway Recommendations Map shown in Figure 3. The recommendations fall into two major categories: bike facilities and bike programs. They are based on conditions and programs in place at this time. Opportunities may arise, such as street resurfacing, which allow for completion of a project more quickly and cost efficiently than originally envisioned. These opportunities are important and should be pursued.

Many factors were considered when developing the recommendations of this Plan Update. Projects and programs that are recommended in this Plan Update have many or all of the following characteristics:

- Achieves an original goal set in the 1998 Bikeway Master Plan;
- Overcomes obstacles and barriers identified in this Plan Update;
- Connects key destinations (schools, recreation areas, employment areas, civic and cultural centers, retail services and transit centers) with existing bicycle facilities;
- Takes advantage of an opportunity to provide bicycle facilities during reconstruction of roadways identified in the City's Master Transportation Plan;
- Is recommended by the Bikeway Master Plan Committee, Citizens Bicycle Advisory Committee or other public comments;
- Improves bicycling safety;
- Improves Bicycle Level of Service;
- Increases the visibility of bicycling as a form of transportation and recreational activity;
- Increases the overall number of people who bicycle in Rockville; and
- Better connects underserved neighborhoods to other destinations.

4.A. How Bikeway Facilities should be used in Rockville

This section provides an overview of how signed-shared roadways, bike lanes, and shared-use paths should be used in Rockville. It also includes a discussion of intersection treatments to make crossings easier for bicyclists. These issues are discussed in more detail in Section 5. Design Standards.

4.A.1. Signed-Shared Roadways

Bike route signs should be posted on all routes in the bikeway network to indicate to bicyclists that particular advantages exist to using these routes compared with alternative routes. Roadways in the Rockville Bikeway Network that are designated as signed-shared roadways should incorporate traffic calming measures and channelize traffic, where possible (see description in Section 5. Design Standards). The City should study the roadway width and parking characteristics to determine feasibility for slowing motor vehicle speeds and defining automobile space on all signed-shared roadways. Often, this can be accomplished by adding edgelines to a roadway. Edgelines help to slow motor vehicle speeds by visually narrowing the

travel lanes for automobiles. In addition, edgelines provide some additional space outside the travel lanes that can be used by bicyclists, therefore improving the Bicycle LOS of the road.

Figure 2. Rockville Bikeway Recommendations

Recommended Bikeways

-  Shared-Use Path
-  On-Street Bike Lane
-  Signed-Shared Roadway*

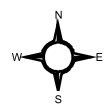
Existing Bikeways (Includes facilities that are funded for construction)

-  Shared-Use Path
-  On-Street Bike Lane
-  Signed-Shared Roadway*
-  Millennium Trail

*Incorporate traffic calming measures and chennelize traffic on signed-shared roadways, where possible

-  Intersection Improvement
-  Pedestrian Bridge
-  Metro Rail Station

-  Water
-  Park
-  City Limit
-  Roadway
-  Rail Line



Map prepared by Toole Design Group
February 2004 

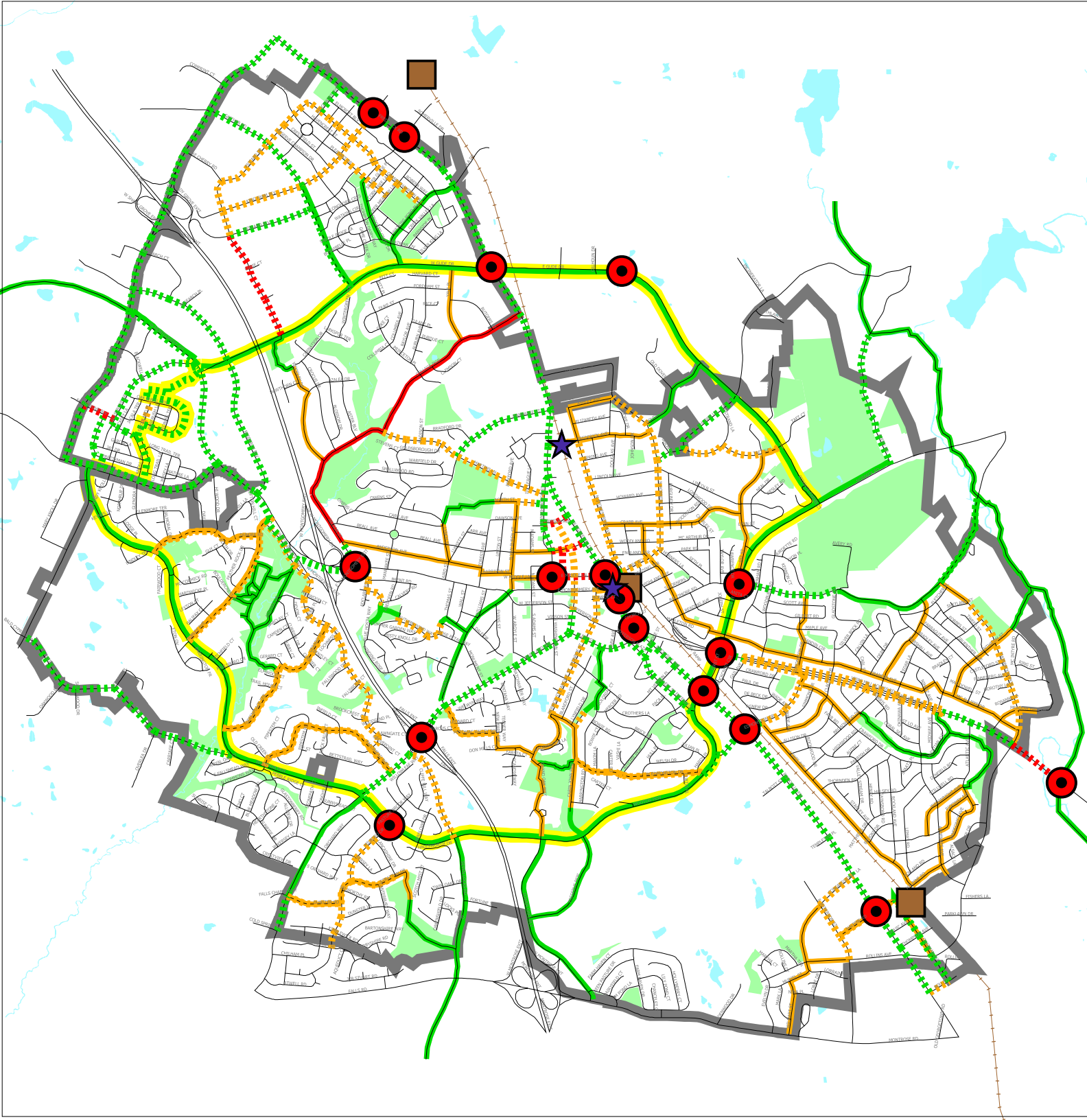
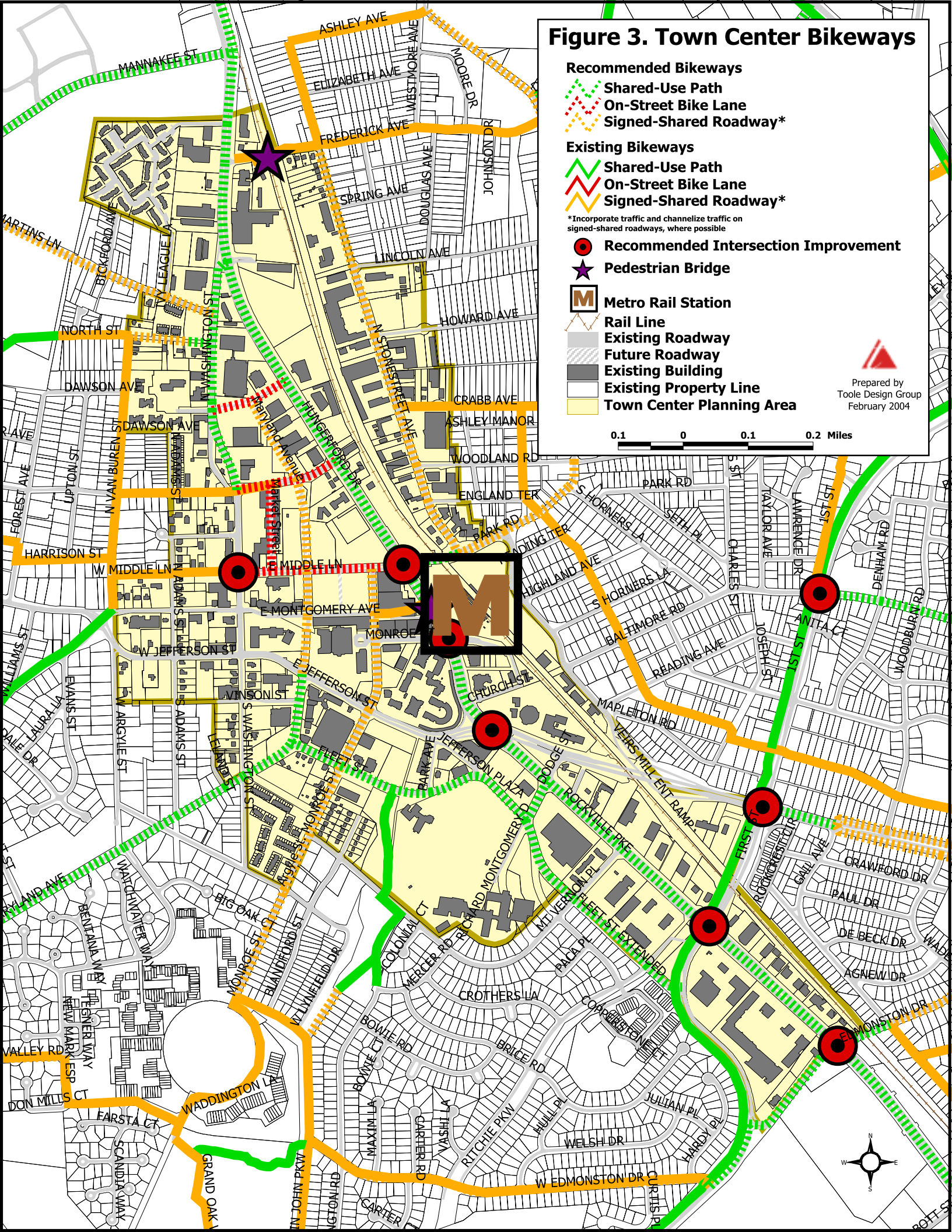


Figure 3. Town Center Bikeways



Recommended Bikeways

- Shared-Use Path
- On-Street Bike Lane
- Signed-Shared Roadway*

Existing Bikeways

- Shared-Use Path
- On-Street Bike Lane
- Signed-Shared Roadway*

*Incorporate traffic and channelize traffic on signed-shared roadways, where possible

Recommended Intersection Improvement

Pedestrian Bridge

Metro Rail Station

Rail Line

Existing Roadway

Future Roadway

Existing Building

Existing Property Line

Town Center Planning Area

Prepared by
Toole Design Group
February 2004

0.1 0 0.1 0.2 Miles

4.A.2. Bike Lanes

Striped bike lanes on roadways with moderate traffic provide significant increases in comfort for bicyclists. Bike lanes can also give a special designation to routes that lead to important destinations in the City and serve as a visible sign of the bikeway network, encouraging more people to bicycle in Rockville.

4.A.3. Shared-Use Paths

Rockville should provide shared-use paths in parts of the bikeway network where there are heavy and fast volumes of traffic. In some cases, there is a need for shared-use paths *in addition to* bike lanes on busy streets. Shared-use paths that are adjacent to roadways can provide separation from heavy, fast-moving traffic and create more comfortable riding conditions, especially for less experienced cyclists. They can also be used to provide space for pedestrians and to serve schools. Shared-use paths should not be used to preclude on-road bicycling but rather to supplement a system of on-road bicycle facilities. They are most appropriate in corridors with few driveways and intersections because conflicts between turning motorists and bicyclists are less of a problem.

4.A.4. Dual Facilities

As the Rockville Bikeway system develops, the City will strive to provide both on- and off-road facilities when a road is reconstructed. Some bicyclists feel more comfortable riding on the roadway surface, while others feel more comfortable separated from traffic on a shared-use path. A wider variety of bicyclists can use a busy roadway if both bike lanes or shoulders and shared-use paths are provided. In some locations, bike route signs may be provided on dual-facility roadways.

Many roads with heavy, fast traffic, such as MD 355, Gude Drive, and Maryland Avenue use all or nearly all of the available pavement width for automobile travel lanes. Therefore, this Plan Update recommends off-road shared-use paths as the primary bicycle facility within these corridors. Because it is desirable to have both on- and off-road accommodations along these significant arteries in the City, bike lanes or paved shoulders should be provided in the long-term when major improvements are made to these roadways.

4.A.5. Intersections

Rockville should provide pedestrian/bicycle warning signs, high-visibility crosswalks, pedestrian/bicycle push-buttons and signals and median refuges and use tight turning radii to improve the safety and comfort of bicyclists at intersections. Due to the conflicts between motor vehicles and bicycles at intersections, special care and treatment must be provided at these locations.

4.B. Top Priority Bikeway Projects

The following is a list of bikeway projects that Rockville should pursue soon after the adoption of this Plan Update. Most of the projects can have a large positive impact on the bikeway network in the short-term by completing connections between existing facilities. Others are large projects that will benefit bicycling in the City and the region in the long term, but should be started right away. More detail is given in the following section. Order does not indicate importance.

1. Complete the Millennium Trail

2. Make the following Town Center bikeway improvements:

- Bike route signs on Maryland Avenue north of Jefferson Street and Monroe Street
- Bike lanes on Dawson Avenue, Beall Street, East Middle Lane, and Market Street
- Shared-use paths on Hungerford Drive and Rockville Pike (MD 355), North Washington Street, Maryland Avenue between Jefferson Street and Great Falls Road (MD 189), and Fleet Street and the Fleet Street Extension

3. Begin construction of the following shared-use paths and install wayfinding signs along the MD 355 corridor:

- Shared-use paths on Hungerford Drive, Frederick Avenue, and Rockville Pike (MD 355), Fleet Street and Edmonston Drive between Wootton Parkway and Rockville Pike
- Wayfinding signs along entire route, including signs directing bicyclists through Town Center

4. Make the following bikeway connections with new or improved facilities:

Signed-Shared Roadways

- Martins Lane
- Monroe Street
- North Horners Lane
- North Stonestreet Avenue
- Taft Street
- Loftstrand Lane
- East Jefferson Street between Woodmont Country Club and the southern City limit
- Congressional Lane between East Jefferson Street and Rockville Pike (MD 355)
- Edmonston Drive between Rockville Pike (MD 355) and Veirs Mill Road (MD 586)
- Watts Branch Parkway
- King Farm Boulevard
- Pleasant Drive between Redland Boulevard and Deer Meadow Lane
- Grand Champion Boulevard
- Seven Locks Road north of Wootton Parkway

Bike Lanes

- Fallsgrove Boulevard
- Piccard Drive between Redland Boulevard and West Gude Drive

Shared-Use Paths

- Gaither Road between Redland Boulevard and Shady Grove Road
- Mannakee Street between Martins Lane and Hungerford Drive (MD 355)
- West Montgomery Avenue (MD 28) between Darnestown Road and Shady Grove Road
- Darnestown Road between West Montgomery Avenue (MD 28) and Shady Grove Road
- Shady Grove Road between Frederick Road (MD 355) and Darnestown Road
- Falls Road (MD 189) between Wootton Parkway and Great Falls Road
- Veirs Mill Road (MD 586) between Bradley Avenue and Twinbrook Parkway

5. Improve the following intersections:

- Connection to Unity Bridge from west of MD 355
- Gude Drive and Frederick Road (MD 355)
- Hungerford Drive (MD 355) and Middle Lane
- Edmonston Drive and Rockville Pike (MD 355)
- First Street/Wootton Parkway and Rockville Pike (MD 355)
- Veirs Mill Road (MD 586) at First Street (MD 28)
- Shady Grove Road and I-270 interchange

4.C. Top Priority Bicycle Programs

In addition to improving bikeway facilities, Rockville should implement the following programs soon after the adoption of this Plan Update:

1. Expand the Pedestrian and Bicycle Safety Education Program;
2. Strengthen the role of the Citizens Bicycle Advisory Committee in the transportation decision-making process;
3. Develop a Safe Routes to Schools Program;
4. Develop, distribute, post and promote a user-friendly bicycle map;
5. Create distinct bicycle signs, maps and markings for the bikeway network;
6. Adopt the Maintenance Program and detailed Maintenance Schedule (see Section 6);
7. Provide dedicated staff support in order to implement the recommendations in this Plan Update.

4.D. Detailed Recommendations by Goal

This section provides a list of recommendations for each of the five goals of the Bikeway Master Plan Update. Each recommendation has a short description of how it will contribute to improving bicycling in Rockville. These recommendations should be implemented within the next 10 years.

GOAL 1: Improve the bicycle facility network.

(Corresponds to Transportation Goal 1: Enhance the mobility of people, goods and services)

Objective 1.1. Install the bike paths, lanes, signs, crossings, signals and other facilities recommended on the Rockville Bicycle Facilities Recommendations map.

The City has already constructed many miles of shared-use paths, striped bike lanes and signed bicycle routes that provide bicycle access around Rockville. Developers are required to build bike facilities through the Adequate Public Facilities Ordinance. The core of the Rockville Bikeway Network is taking shape, and a number of facilities should be constructed to increase the density and connectivity of the network. These projects are shown on the Rockville Bikeway Recommendations map (Figure 2). Several of the following projects are under construction or have received funding for design and construction and are considered complete.

A. Completion of the Millennium Trail

Originally referred to as the “Bicycle Beltway”, the Millennium Trail continues to be a high priority project for the City. Significant progress has been made toward completion of the trail since the 1998 Plan was adopted. The only section of trail that remains to be completed is between Gude Drive and Edmonston Drive (across MD 355 and MD 586). The City received funding to design this section of trail in November 2002. When complete, this trail connection will provide a safe, convenient crossing of two major highways and will help facilitate east-west access across the City.

The City should continue to support the efforts of Montgomery County to improve and maintain the section of the Millennium Trail on East Gude Drive. This part of the 10-mile loop trail serves as an east-west connection on the north side of Rockville, but it is outside the City limits.

B. Development of a Regional Bikeway Network within the MD 355 Corridor

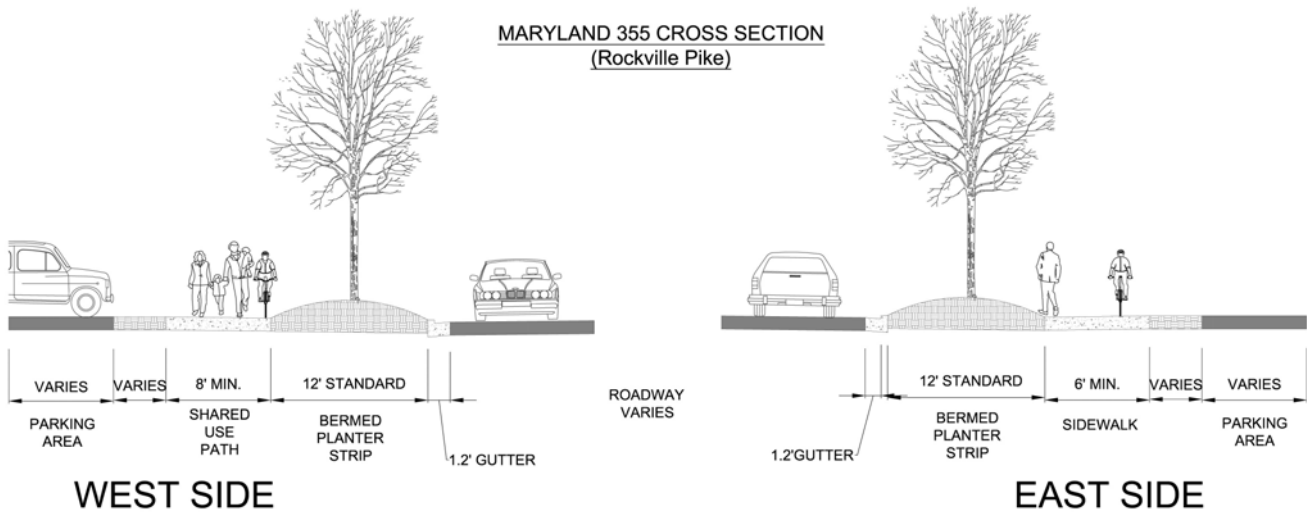
Rockville should provide bicycle access throughout the MD 355 corridor. Ultimately, an 8-foot-wide shared-use path (wide concrete sidewalk) should be constructed on the west side of MD 355 (Rockville Pike, Hungerford Drive and Frederick Road) to serve both pedestrians and bicyclists. The east side of the road should have a 6-foot sidewalk. In many ways, MD 355 operates as Rockville’s “Main Street”. It is also an important route for providing regional connectivity through Rockville. Numerous commercial and retail establishments are located along the street and could be accessed more safely and conveniently by bicycle if better accommodations were in place. The current configuration of MD 355 serves high-speed, high-volume automobile traffic with very little shoulder space and narrow sidewalks. The City should conduct a special analysis to determine the appropriate shared-use path design for each part of the corridor and develop a set of standards for future roadway and land use development in the corridor.

MD 355 can be improved by replacing the existing sidewalks with wider sidewalks that are separated from the roadway and parking lots (see Figure 4). This bikeway would serve Montgomery College, Town Center, Metro, the Convention Center, East Rockville and numerous shopping clusters and office buildings. It would also be within ½ mile of two high schools. Safe, convenient road crossings should be provided to access the Rockville and Twinbrook Metro stations. It is likely that the regional bikeway network would be in the MD

355 right-of-way on the north side of the City, but signs would direct bicyclists interested in Town Center to bike lanes on the new section of Dawson Avenue and a signed-shared route on Maryland Avenue. Bicyclists could continue south on new shared-use paths on Maryland Avenue south of Jefferson Street and on Fleet Street and Edmonston Drive before returning to Rockville Pike. This regional bikeway network would connect to a new shared-use path on the west side of MD 355 in Gaithersburg and the North Bethesda Trail on the south side of Rockville.

Alternative regional bikeway routes parallel to MD 355 have been explored, and they are not feasible at this time. In the future, any redevelopment projects in the corridor should consider accommodating bikes to help provide a clear and direct north/south connection along MD 355.

Figure 4. Proposed Cross Section of MD 355



C. Provision of bicycle access within Town Center

New streets in the Town Center area will improve bicycle access for residents and visitors to downtown Rockville (Figure 3). The City should proceed with plans to provide bike lanes on the new sections of Dawson Avenue and on the reconstructed Beall Avenue and Middle Lane. The City should also provide bike lanes on Market Street when it is constructed. In addition, a shared-use path is recommended on the east side of North Washington Street to increase the comfort of bicyclists riding between the Post Office and Giant Food Store area and Town Center. Widening the sidewalk along the roadway to serve two-way bicycle traffic could provide an alternative connection between the MD 355 corridor regional network bikeway and Town Center. Both Maryland Avenue and Monroe Street should be designated as signed-shared roadways. Maryland Avenue should have special signs showing bicyclists in the MD 355 corridor to use the street to access destinations in Town Center.

In the long-term, the City should explore the possibility of providing a major trail through Town Center, similar to the Georgetown Branch and Capitol Crescent Trails through downtown Bethesda.

D. Study of the provision of shared-use paths on both sides of Maryland Avenue between East Jefferson Street and Great Falls Road (MD 189)

The City should study the impacts of providing shared-use paths on both sides of Maryland Avenue between Jefferson Street (MD 28) and Great Falls Road (MD 189). Because it would serve as part of a regional bikeway network, the section between Jefferson Street (MD 28) and Fleet Street should be constructed first. In this section the shared-use paths would also improve bicycle access to Rockville City Hall, the Rockville Library, and the Montgomery County Council Office Building. These paths could be created by widening the existing sidewalks to 10 feet. Though there are no walls or steep slopes preventing this expansion, the City should consider impacts on existing signs and light poles. If additional space is needed to create the shared-use paths, the City should study narrowing the total roadway width by three to four feet, and striping 10 foot motor vehicle lanes. This would have the additional benefit of slowing both through and turning traffic in this pedestrian-oriented area of the City.

The section between Fleet Street and Great Falls Road (MD 189) should also be served by a shared-use path due to the heavy, fast traffic. The sidewalk in this section may be more difficult to expand because of utility poles, landscaping, and steep slopes close to the sidewalk. Further study will be needed to determine if this solution is feasible.

E. Study of bicycle facility alternatives along Veirs Mill Road (MD 586)

The City should provide bicycle facilities on both sides of Veirs Mill Road (MD 586). Like MD 355, the current configuration of MD 586 serves high volumes of motor vehicle traffic with little or no separation for bicyclists. Bike route signs should be added along the service roads between Gail Avenue and Bradley Avenue to encourage bicyclists to use these low-volume, low-speed streets as an alternative to Veirs Mill Road. Shared-use paths should be constructed on both sides of the roadway from the ends of the service roads to extend the bikeway west to First Street Trail and east to Twinbrook Parkway. The section of Veirs Mill Road east of Twinbrook Parkway should have shoulder bike lanes to connect the City's shared use paths to the Rock Creek Park bike trail. In the long-term, shared-use paths should be extended east from Twinbrook Parkway beyond the City limit. In the future, the City should explore the possibility of constructing a shared-use path between the intersection of Veirs Mill Road and First Street and the Rockville Metro Station.

Sections of these shared-use paths and bike lanes can be added as redevelopment occurs. A bikeway along this route will provide residents on the east side of the City with a direct route to Town Center.

F. Completion of the Baltimore Road bicycle path between the Millennium Trail and Rock Creek Regional Park

Rockville should complete the Baltimore Road shared-use path so bicyclists can ride between the Millennium Trail and the eastern edge of the City. To do this, a shared-use path should be constructed along Baltimore Road between the First Street section of the Millennium Trail and the western terminus of the existing Baltimore Road shared-use path (at Gladstone Drive). This section is a critical connection because it completes a connection between the center of the City and Civic Center Park, Rockville High School, Meadow Hall Elementary School and Rock Creek Regional Park. The completed Baltimore Road bicycle path will also serve neighborhoods on the east side of Rockville.

The City should also support the construction of a new path at the east end of Baltimore Road that connects Norbeck Road (MD 28) with the existing trail near Rock Creek. This section of path is immediately outside the City limits. Though there is an existing path in this area, the current facility is substandard and should be widened to 10 feet. Sections of trail that pass through environmentally-sensitive lands, such as the Rock Creek floodplain should undergo special study before widening.

Rockville should designate Twinbrook Parkway as a signed-shared roadway and possibly include bike lanes to direct bicyclists from Veirs Mill Road (MD 586) to the shared-use path on Baltimore Road. In addition, a shared-use path should be added to Avery Road to connect to the existing path on Norbeck Road (MD 28) and provide access to Rock Creek Park.

G. Connection of Northeast Rockville to the Rockville Metro Station and Town Center

All of Lincoln Park and Northeast Rockville are within easy bicycling distance of the Metro station and the Town Center. North Stonestreet Avenue, North Horners Lane, Loftstrand Lane, Taft Street and Southlawn Lane should be designated as signed-shared roadways. The east-west connection under the railroad tracks at Park Road is critical for bicyclists. In the short-term, the City should also install new curb ramps leading to the 7.5-foot sidewalks directly below the railroad bridge. Ultimately, shared-use paths should be added to both sides of the road between Hungerford Drive (MD 355) and Stonestreet Avenue. These improvements will make bicycling to destinations in downtown Rockville more attractive to neighborhood residents.

H. Provision of Connections within Hungerford, Stoneridge and New Mark Commons

Bikeway linkages are needed to improve access to destinations such as Dogwood Park and Richard Montgomery High School in the Hungerford, Stoneridge and New Mark Commons neighborhoods south of Town Center. A shared-use path should be constructed along the south side of Fleet Street to provide access to the high school. In addition, a shared-use path should be included when Fleet Street is extended from Mount Vernon Place to Ritchie Parkway. In the future, the City should provide a shared-use path on the south side of the section of West Edmonston Drive between Wootton Parkway and MD 355. In the interim, the roadway should be designated as a signed-shared bike route. These improvements would be part of a potential

regional bikeway network within the MD 355 corridor. Bike route signs should be posted on Monroe Street, West Edmonston Drive, East Lynfield Drive, and Potomac Valley Road.

I. Connection of Town Center to Orchard Ridge, Potomac Woods and Fallsridge

The City should provide bicycle facilities to connect Town Center to Orchard Ridge, Potomac Woods and Fallsridge on the southwest side of the City. Shared-use paths should be constructed on both sides of Falls Road (MD 189), where conditions permit. This includes extending the existing bicycle path on Falls Road between Dunster Road and Wootton Parkway north through the I-270 interchange to provide better bicycle access to the many destinations in the center of the City. It is difficult for drivers see bicyclists and pedestrians on the shared-use path on the east side of Falls Road at the I-270 interchange. This sight-distance issue must be addressed. The shared-use path on the northwest side of the road should connect to the shared-use path on Great Falls Road (this includes constructing a section of path in front of Julius West Middle School). The MD 189 path should also be extended south from Dunster Road to the south City limit. A curb ramp should be added to the sidewalk and future sidepath on the west side of Falls Road at the Fallsmead Way intersection so that cyclists can easily cross to Fallsmead from the path when these improvements are made.

When Seven Locks Road is reconstructed, it should include shared-use paths and bike lanes on both sides of the road. The section of Seven Locks Road north of Wootton Parkway comes to a dead end for motorists, but cyclists can connect through to Falls Road. This connection should be signed as a bike route.

Dunster Road and Stratton Drive should still be signed-shared roadways to provide access to the nearby Millennium Trail and the Falls Road Bikeway that runs along the west side of these neighborhoods. Milboro Drive should have bicycle route signs because there is a short sidewalk at the end of the street that connects the neighborhood to Wootton Parkway. An enhanced pedestrian and bicycle crossing should be provided on Wootton Parkway at this location to make it easier for neighborhood pedestrians and bicyclists to access the Millennium Trail on the opposite side of the road.

Opportunities for on-road cycling are limited along Wootton Parkway. The City should provide a paved shoulder for bicyclists' use when reconstruction of Wootton Parkway occurs. This facility will complement the Millennium Trail that is in the Wootton Parkway corridor.

J. Provision of Connections within Rockshire and Fallsmead

The western portion of the Millennium Trail runs along the western edge of both the Rockshire and Fallsmead neighborhoods. Watts Branch Parkway should be designated as a bicycle route because it is an important connection that runs parallel to I-270 and provides access to Hurley Avenue and MD 28. The designation of this street as a signed-shared roadway would complement existing traffic circles and speed humps. Greenplace Terrace, Gerard Street, Hurley Avenue and Fallsmead Way should also be signed-shared roadways. These improvements will provide better access to the Woottons Mill Park and to the new I-270 Pedestrian and Bicycle Bridge near MD 28.

K. Connection of the I-270 Pedestrian and Bicycle Bridge to the bike route on Anderson Avenue

The City should provide a safe and convenient way for bicyclists to travel between the I-270 Pedestrian and Bicycle Bridge and reconstructed Nelson Street/West Montgomery Avenue intersection and the Anderson Street Bikeway. In the short-term, the City should provide bike route signs on Nelson Street to guide bicyclists from the new bridge and reconstructed intersection to Anderson Street. Ultimately, shared-use paths should be provided on both sides of Nelson Street between MD 28 and Anderson Street.

L. Designation of an east-west bicycle route through the Rose Hill area between the I-270 Pedestrian and Bicycle Bridge and the Great Falls Road (MD 189) shared-use path

Rockville should provide signs to direct bicyclists to a path through Rockmead Park between Roxboro Road and Tall Grass Court. This connection is part of a bikeway that would link the new I-270 Pedestrian and Bicycle Bridge and the Great Falls Road shared-use path (MD 189). Sections of Adclare Road, Roxboro Road, Tall Grass Court and Autumn Wind Way should be designated as signed-shared roadways to help direct bicyclists along these streets find this trail connection.

M. Connection of Woodley Gardens and College Gardens with Montgomery College and Town Center

The City should connect the Woodley Gardens and College Gardens neighborhoods on the north side of Rockville with Montgomery College, the Rockville Swim Center, the Post Office and Town Center by constructing a shared-use path on Mannakee Street and designating the entire length of Martins Lane as a signed-shared roadway. These bicycle facilities would connect to the existing bike lanes on Nelson Street. Improving these connections should make bicycling a more attractive and viable option for neighborhood residents.

N. Connection of Rockshire, Fallsmead and Horizon Hill with Robert Frost Middle School and Glen Mill Road

The City should widen the existing sidewalk on the north side of Veirs Drive to 10 feet. Bike route signs should be posted on Scott Drive in the short-term; a shared-use path should be provided along this segment in the future when the bridge across Watts Branch is reconstructed. This shared-use path will make bicycling a more comfortable option for some students at Robert Frost Middle School. These new facilities will help improve the connection from the Millennium Trail and Rockshire, Fallsmead and Horizon Hill neighborhoods to Glen Mill Road.

O. Connection of Montrose Area to Twinbrook Metro Station and the North Bethesda Trail

East Jefferson Street and Congressional Lane, should be designated as signed-shared roadways to complement the existing bike routes in the area of the Twinbrook Metro station. The City of Rockville and Montgomery County share responsibilities for the implementation of bikeway connections in the Montrose/Twinbrook area. Bikeways in this area will provide connections between the Twinbrook Metro station and the Tower Oaks commercial area. North of Twinbrook, bike route signs should be added to Edmonston Drive to help designate a bikeway leading from the Millennium Trail across Rockville Pike (MD 355) and Veirs Mill Road (MD 589) to Baltimore Road.

The City of Rockville should work with the Washington Area Metropolitan Transit Authority (WAMTA) to widen the sidewalk connecting Lewis Avenue to the Twinbrook Metro station to at least 8 feet. It should also provide a curb ramp for bicycle and pedestrian access to this sidewalk. This connection would allow people to bicycle from Lewis Avenue through the Metro Station to Parklawn Drive or Fishers Lane. The City and WAMTA should also consider including a bridge over the railroad tracks to connect Halpine Road over MD 355. This improvement can be made during redevelopment of the Twinbrook Metro station area.

The North Bethesda Trail is planned to connect to the Rockville Bikeway Network near the intersection of Montrose Road and Rockville Pike. The City should construct a shared-use path along the entire length of Chapman Avenue to improve connectivity in the area between this Trail and the Twinbrook Metro. The City also encourages Montgomery County construct a shared-use path on Bou Avenue just outside of the Rockville City Limits to connect between MD 355 and Chapman Avenue. The North Bethesda Trail is the beginning of Montgomery County's I-270 Corridor Bikeway that will continue north using Rockville's bikeways and connect to the Great Seneca Highway Bikeway north of Rockville. Montgomery County and the City of Rockville should conduct a joint study of the corridor between the Twinbrook Metro station and Montrose Road to determine the best alignment for this connecting bikeway facility. This bikeway will also serve as part of the regional bikeway network in the MD 355 corridor.

P. Connections to the major employment centers in the area of Research Boulevard and Piccard Drive.

The City should study the possibility of striping bike lanes on Piccard Drive. Preliminary field work showed that this street is wide enough to accommodate parking and bike lanes. As an alternative, there is adequate space at the sides of Piccard Drive to widen the sidewalks so that they serve as shared-use paths.

The City should also study the potential to construct shared-use paths on both sides of Research Boulevard.

The Millennium Trail provides good bicycle access to the entrances of both Piccard Drive and Research Boulevard. Bikeways within these areas would aide employees who want to bike to work and/or bicycle and walk during their lunch breaks.

Q. Connections between the shared-use paths on the west side of the City

Rockville should improve bicycle access to the office parks and neighborhoods on the west side of the City by connecting the shared-use path that will be completed on West Montgomery Avenue (MD 28) between the I-270 Pedestrian/Bicycle Bridge and Darnestown Road to the shared-use paths shown in the Fallsgrove Bikeway Network Plan. Darnestown Road is a Montgomery County roadway. The City and County should provide shared-use paths on the north side of Darnestown Road and look for opportunities to provide on-road accommodation for bikes. For example, it may be possible to add a paved shoulder or bike lanes when reconstruction of Darnestown Road occurs.

R. Addition of bikeways within the Fallsgrove development

The City should ensure that all of the bikeways shown in the Fallsgrove Concept Plan Bikeway and Pedestrian Network are constructed as the Fallsgrove development is completed. This includes shared-use paths within the development on Fallsgrove Drive and Oak Knoll Drive and bike lanes on Fallsgrove Boulevard and an important section of the Millennium Trail between West Gude Drive and Glen Mill Road. Shared-use paths should be provided around the development on Shady Grove Road, Darnestown Road and West Montgomery Avenue (MD 28). In the future, Rockville should stripe bike lanes on Shady Grove Road, Darnestown Road, and West Montgomery Avenue (MD 28) so that they can accommodate bicycles both on and off the road. Goodland Place should be marked as a signed-shared roadway. The City should also include bicycle and pedestrian facilities along the Corridor Cities Transitway (CCT). Fallsgrove and other developments along the corridor should have bike facility connections to the CCT. The intersection of the CCT and Shady Grove Road must accommodate bicycles and pedestrians.

S. Addition of bikeways connecting to (and within) the King Farm development

The City should add new bicycle facilities in the King Farm area. Redland Boulevard should provide bicycle access between the neighborhood and the Shady Grove Metro station. Shared-use paths should be added to the entire length of Shady Grove Road and Gaither Road, Redland Boulevard between Piccard Drive and Gaither Road, and to the east end of Ridgemont Avenue. The section of Piccard Drive south of Redland Drive should have bike lanes (see recommendation above) and the boulevard section to the north should be designated as a signed-shared roadway. Other roads that should have bike route signs include King Farm Boulevard, Pleasant Drive, Crooked Creek Drive and Grand Champion Boulevard. Improving the intersections of Frederick Road (MD 355) with Redland Boulevard and King Farm Boulevard is essential for making bicycling to the transit station safe and convenient. These roadway and intersection improvements will make it easier for neighborhood residents to access the Metro station and the Millennium Trail on West Gude Drive.

The City should also include bicycle and pedestrian facilities along the Corridor Cities Transitway (CCT). King Farm and other developments along the corridor should have bike facility connections to the CCT. The intersections of the CCT and MD 355 and the CCT and I-270 must accommodate bicycles and pedestrians. King Farm and the Shady Grove Metro are key areas for CCT development in Rockville.

T. Provision of directional signs in Woottons Mill Park and in Twinbrook Park

Signs should be posted in Woottons Mill Park to direct bicyclists through the existing network of trails. Signage should indicate the most direct route between Watts Branch Parkway and Greenplace Terrace and should also show the name of the street to which each trail branch connects. Signs should also emphasize how to get between the Woottons Mill Park and the Millennium Trail. A trail map could also be installed in the center of the park at a prominent trail intersection to help orient bicyclists. Similar signage should be provided on the trail through Twinbrook Park.

Objective 1.2. Remove significant barriers to bicycling.

The 1998 Plan identified a number of barriers and obstacles to bicycling in Rockville. The following broad or general barriers to bicycling were identified in the 1998 Plan and are still pertinent today:

- Crossings along I-270, Rockville Pike (MD 355), and the Metro/MARC/CSX railroad corridor;
- Access to downtown;
- Access to Rock Creek bike path; and
- East-west access throughout the City.

The City's Adequate Public Facilities Ordinance requires developers to fix any condition related to their development that creates or aggravates a safety hazard for bicyclists at an intersection. Though the City is making progress in addressing these barriers, it is challenging to design and construct facilities to overcome these barriers. A new Pedestrian and Bicycle Bridge over I-270 at MD 28 has been designed and funded, and funding has been received to implement improvements to intersections on MD 355 in the Town Center. Continued attention to addressing roadway barriers is critical to the success of this Plan Update.

Although it is not the intent of this Plan Update to provide a bike path or lane for each and every road and highway, it is intended to provide a safe, efficient bikeway network that would allow access to each part of the City. The barriers or problem routes identified above will either need to be improved or alternate routes will need to be designated. By providing the bike lanes and paths along key roadways and improving key intersections throughout the City, Rockville residents will be able to meet all their daily needs by bicycle.

Specific recommendations to eliminate barriers to bicycling include:

A. Improve the Gude Drive/Frederick Road (MD 355) Intersection

The intersection of Gude Drive and Frederick Road (MD 355) is a key Millennium Trail roadway crossing. New pedestrian signal heads with countdown timers are needed at this location. The median should be extended north so that it reaches beyond the crosswalk and provides a refuge in the middle of MD 355. High-visibility crosswalks should be installed and tighter right-turn radii are needed for traffic turning south from West Gude Drive onto MD 355 and for traffic turning east from MD 355 onto East Gude. This will slow the turning traffic and reduce the total crossing distance for pedestrians and bicyclists. Currently, heavy through traffic and fast turning automobiles make it difficult for bicyclists and pedestrians to cross, creating a barrier to many potential Millennium Trail users. The existing crossing is confusing for pedestrians and bicyclists. There is no pedestrian signal head, so it is difficult to tell when vehicles are allowed to turn across the crosswalk and how much time is available to complete the crossing. In addition, the MD 355 median does not extend to the crosswalk, so pedestrians and bicyclists who start crossing late in the green phase can be stuck in the middle of the six-lane highway with no refuge.

The City is working with the Maryland State Highway Administration regarding modifications to the intersection that would better accommodate bicyclists and pedestrians. The City should continue to pursue solutions with the State for this critical safety issue. Completion of this project will address two objectives identified in this Plan Update: crossing MD 355 and improving east-west access across the City.

B. Provide better access through the Falls Road (MD 189)/I-270 Interchange and Shady Grove Road/I-270 Interchange

The City should install high-visibility crosswalks across the on- and off-ramps at the Falls Road (MD 189) and I-270 interchange and reduce the turning radii of these ramps to slow traffic. This path should be constructed on the west side of the bridge so that it avoids crossing the I-270 exit ramps at locations with limited sight-distance. The new path should be created when the interchange is reconstructed. For residents of the southwest part of Rockville, crossing I-270 on Falls Road to connect to destinations east of I-270 is difficult. Making this connection is key to providing residents in this area with a safe and convenient bicycle route to Town Center and throughout the City.

Like Falls Road, I-270 creates a barrier for bicyclists riding on Shady Grove Road. High-visibility crossings and warning signs should be provided across these ramps when new shared-use paths are constructed on Shady Grove Road.

C. Improve Downtown Crossings

Hungerford Drive (MD 355) is a major barrier between downtown Rockville and places such as East Rockville, Lincoln Park, and the Rockville Metro Station. Current crossing conditions at MD 355 intersections are extremely bad for pedestrians and bicyclists. Crossing exposure time is long because the road has six lanes and there are no median islands to serve as refuges. Signals do not provide sufficient time for slower pedestrians to finish crossing. Traffic speeds are fast, which reduces the drivers' awareness of pedestrians. Therefore, higher visibility

crosswalks and median crossing islands should be provided; turning radii should be reduced; and the pedestrian signal phase should be increased at the intersections of MD 355 and Middle Lane, Church Street and Veirs Mill Road (MD 28). The City has received funding through the Maryland Bicycle and Pedestrian Access 2000 program to make improvements at several intersections near the Metro station.

D. Improve access across East Gude Drive to a Future Trail between the Millennium Trail and Needwood Park

Rockville should work closely with the Maryland-National Capitol Park and Planning Commission (M-NCPPC) to improve access to a future trail that will connect the Millennium Trail with Needwood Park. The new trail project is programmed by M-NCPPC to be constructed in 2004. Access to the future trail should be improved by creating a bicycle- and pedestrian-friendly mid-block crossing of East Gude Drive. The crossing should be staggered through the median so that the crosswalk across the south lanes of Gude Drive is 50 to 100 feet west of the crosswalk across the north lanes. This will help pedestrians and bicyclists view oncoming traffic before they cross and provide a staging area for bicyclists. The crossing should be studied to determine if a bicyclist/pedestrian-activated signal is warranted. If so, the signal system should include push-buttons on both sides of the roadway and in the median.

E. Eliminate barriers at other intersections

Many of the following intersection barriers were noted in the 1998 Plan, and they should be addressed during this next phase of work. Concept designs should be created for each intersection to show appropriate locations for safety improvements, such as new median crossing islands, high visibility crosswalks, pedestrian/bicycle warning signs, pedestrian signal heads and push buttons and tighter turning radii. These intersection barriers include:

- West Middle Lane at Washington Street;
- Edmonston Drive at Rockville Pike (MD 355);
- Redland Boulevard at Frederick Road (MD 355);
- King Farm Boulevard at Frederick Road (MD 355);
- Baltimore Road at First Street;
- Halpine Road at Rockville Pike (MD 355);
- First Street/Wootton Parkway at Rockville Pike (will be improved when the Millennium Trail is completed); and
- Veirs Mill Road at First Street (will be improved when the Millennium Trail is completed).

F. Evaluate potential locations for a bike box pilot project.

The City should explore the possibility of doing a bike box (advanced stop bar) pilot project. The intersection of MD 355 and Middle Lane and several other locations are potential candidates that should be evaluated. A bike box would allow bicyclists to move in front of cars waiting at an intersection to increase their visibility and reduce conflicts with turning vehicles. A bike box is a design technique that is typically used at intersections with left-turning cyclists. It employs an advanced stop bar at a signalized intersection, creating a 10-foot to 15-foot long area between

the crosswalk and the stop bar. During a red signal phase, bicyclists are able to better position themselves for a left turn by moving left across the bike box. This device is profiled in the Institute of Transportation Engineers *Innovative Bicycle Treatments* report, and has been tested in several cities around the country.

Objective 1.3. Continue to maintain existing bicycle facilities.

The City should continue to maintain all bikeways, including trails, bike lanes and signs on a regular basis. The Department of Public Works should maintain all bikeways in roadway rights-of-way, and the Department of Recreation and Parks should maintain trails that are not adjacent to existing roadways. Maintenance responsibilities include fixing pavement cracks and potholes, restriping lanes, ensuring adequate drainage, clearing branches that encroach on the bikeway and removing leaves, snow, and other debris (see Section 6). The City should also explore the possibility of working with bike vendors or civic group volunteers to clean up trash on bikeways.

The City should ensure that there is adequate accommodation for bicyclists during roadway construction projects. This may include striping temporary shoulder space, providing a temporary pathway for cyclists around the construction, or signing a detour route.

Rockville should also provide adequate lighting along shared use paths and sidewalks. Light can make trails feel more secure and also make trails more attractive to bicyclists. Though cyclists should always ride with a light at night, roadway lighting makes bicyclists more visible to automobile drivers.

Although the City of Rockville is not directly responsible for maintenance on State Highway Administration and Montgomery County roadways within the City, such as Norbeck Road, Rockville Pike, Gude Drive, and Darnestown Road, City staff should notify the County and State of maintenance needs in a timely manner to ensure that bikeways in these corridors are in good repair and free of debris.

Objective 1.4. Continue to gather public input and other data to determine where new facilities and improved maintenance are needed.

The City of Rockville does extensive public outreach when planning new bicycle facilities. Input should continue to be taken from the Citizens Bicycle Advisory Committee, general comments on Facility Improvement Request Forms and through public meetings. People living near where a new facility will be constructed should continue to be notified.

Implementation of this Plan Update will require strong public support. The City should seek input and support from school representatives, public health groups, neighborhood organizations, and other groups that have an interest in bicycling issues. The City must continue to solicit public feedback about the importance of the recommendations in this Plan Update and receive new ideas to improve bicycling for all people, for all types of trips and for all parts of the City.

In implementing this Plan Update, it is recommended that the City conduct periodic follow-up data collection. A detailed survey of bicyclists should be distributed biennially. This survey

would gather information about how often people ride, origins and destinations, trip purposes and their recommendations for new and improved bicycle facilities and programs in the City. Other data collection may include reviewing census travel information (every ten years), counting bicyclists at Metro stations, public schools and parks (annually) and counting and interviewing people attending special bicycle-oriented events, such as Ride for Rockville and Bike to Work Day (annually). These forums provide an excellent opportunity to talk to citizens and visitors about current conditions and future plans for bicycling in Rockville.

GOAL 2: Provide bicycle facilities during development and redevelopment.

(Corresponds to Transportation Goal 6: Minimize the separation effects of major transportation facilities)

Objective 2.1. Add bicycle facilities during roadway construction, reconstruction or resurfacing.

The addition of a bikeway to a roadway is most easily accomplished when new construction or reconstruction of the road is planned. The bicycle facility requirements of the City's Adequate Public Facilities Ordinance are followed in each development project. Projects that are currently in the City's CIP and are recommended for bikeways in this Plan Update should be identified and appropriate bicycle improvements should be incorporated into their design. Decisions regarding what type of bikeway to construct on a roadway should be determined during the planning phase of each project, using the Bicycle LOS model described in Appendix A to determine the appropriate roadway cross-section. The City of Rockville should work with the County and State to ensure new roads and retrofitted roads under their jurisdiction, adjacent to or within the City accommodate bicycles.

The City's goal for the bikeway network is to maintain a Bicycle LOS of "A" or "B" (for segments with on-road facilities) and/or to provide off-road trails to accommodate bicyclists on streets noted on the bikeway map. Achieving this goal is particularly important during new road construction or road reconstruction projects. These Bicycle LOS targets should be incorporated into the City's Adequate Public Facilities Ordinance.

Implementation involving retrofitting existing roadways to accommodate bicycle use may make projects more complex. Existing streets built with a curb and gutter section will often be viewed as having a fixed width and improvements will likely be limited to "moving paint," that is, restriping the existing lanes. When Bicycle LOS can not be improved to "A" or "B" by changing roadway lane striping, slowing traffic and improving pavement conditions, the City should study shared-use paths or multi-use trail alternatives to separate bicyclists from moving automobiles. These options may not always be available, so the City should provide the best condition possible, given constraints. For example, raising Bicycle LOS from "F" to "D" provides a significant benefit to bicyclists.

Objective 2.2. Require developers to include bicycle facilities in all new developments.

Through the redevelopment process, the City has successfully gained bikeway mileage and has coordinated the locations of proposed trails in new subdivisions to connect to the bikeway

network. Routes that are in the bikeway network will continue to be identified during the site plan development process. Developers are required to construct the required facilities and ensure that additional bikeways in their developments connect to the main bikeway network.

The MD 355 corridor is a key location where development is likely to occur. As commercial establishments redevelop, the recommended MD 355 corridor regional bikeway network should be constructed. For example, the signed bikeway on East Jefferson Street can be connected to the Millennium Trail at Edmonston Drive to complete a part of the bikeway on the west side of MD 355 as properties are redeveloped. Other opportunities to incorporate bicycle facilities are the new developments occurring in Town Center, Fallsmead, Fallsgrove, King Farms and Tower Oaks.

Objective 2.3. Ensure that Rockville’s Roadway Design Standards are bicycle-compatible.

The City should continue to require that future updates of its Roadway Design Standards are bicycle-compatible. These standards should include on-road accommodations for bicyclists and provide guidance on the design of shared-use paths and trails. This will make it easier for developers, who are required to follow these standards, to provide shared-use paths and space on roadways for bicycle travel.

Bicycle-friendly design standards include features such as bike lanes, striped shoulders, and tight turning radii, high-visibility crosswalks and median refuges at intersections (See Section 5, Design Standards). They should also allow 10-foot motor vehicle lanes to be striped on critical links in the bikeway network. If installed in appropriate locations, this encourages slower travel speeds (as demonstrated by reductions in speed on Nelson Street) and provides more space for bicyclists. Motor vehicles on West Jefferson Street, Nelson Street, and Hurley Avenue already operate effectively with 10-foot lanes.

Objective 2.4. Strengthen the role of the Citizens Bicycle Advisory Committee in the transportation decision-making process.

The CBAC has been an important resource to the City of Rockville due to its knowledge of bicycling issues, and the group's long-standing commitment to serving as advisors to the Mayor and Council and City staff. Members of the CBAC have provided hundreds of volunteer hours for a variety of bicycling events and programs sponsored by the City, including the implementation of the Bicycle and Pedestrian Safety Education Program.

The CBAC should continue to serve the City, and should be strengthened in its role as an advisory body in the transportation decision-making process. This can be achieved in a variety of ways. One way to provide a stronger role for the CBAC would be to place a CBAC member on the Traffic and Transportation Commission and vice versa. Strategic involvement of the CBAC will help facilitate implementation of this Plan Update in the years to come.

Objective 2.5. Provide dedicated staff support in order to implement the recommendations in this Plan Update.

Dedicated staff support will be critical to the City's ability to implement this Plan Update. The initial success achieved in the five years since the 1998 Plan was adopted was due in a large part to the availability of staff that were dedicated to carrying out the Plan, and who were able to pursue grant opportunities that provided funding for implementation. In order to carry out the recommendations in this Plan Update, it is therefore important that the City maintain a full time bicycle coordinator.

GOAL 3: Improve the safety of children bicycling to school.

(Corresponds to Transportation Goal 5: Foster a safe and maintainable transportation network that encourages the observance of traffic laws)

Objective 3.1. Expand the City's Pedestrian and Bicycle Safety Education Program to all Rockville elementary schools.

As the City's network of bicycle facilities expands, it is essential for children to understand how to ride safely on streets, in bike lanes and on bicycle paths. The City of Rockville is currently serving as the pilot community for the Maryland Pedestrian and Bicycle Safety Education Program. The Department of Recreation and Parks developed and implemented Pedestrian and Bicycle safety lessons that were taught at six of the City's elementary schools during the 2002-2003 school year. The program's success has already led to the Montgomery County Public Schools Pedestrian Safety Task Force to recommend the adoption of the program to the County Board. The City should offer the Pedestrian and Bicycle Safety Education Program to all City elementary schools on a consistent basis and continue to support staffing for the program. Rockville should also consider offering bicycle safety instruction to middle and high school students.

Objective 3.2. Develop a Safe Routes to Schools Program and use it to generate interest in and ideas for improving bicycle facilities near Rockville schools and on routes children use to access these schools.

The City should build upon the interest and enthusiasm generated by the Pedestrian and Bicycle Safety Education Program to encourage parents to participate in a Safe Routes to Schools Program. Rockville should use the Safe Routes to Schools guidebook, developed by the Maryland Department of Transportation, to help parents, students, school representatives and City representatives come together to make pedestrian and bicycle improvements at one or two schools in the first year and to eventually expand to more City schools. The program would examine school access routes in the neighborhoods surrounding the school and implement improvements to intersections, add traffic calming features and provide better bike paths and sidewalks. Rolling Terrace Elementary School in Montgomery County piloted a Safe Routes to Schools Program sponsored by the Maryland Department of Transportation in 2001-2002.

By making improvements that decrease the risk of traveling along and crossing busy streets, it will be easier for students to walk and bicycle to school, reducing the number of parents who choose to drive so that they can drop off and pick up their children at Rockville schools.

GOAL 4: Protect the environment.

(Corresponds to Transportation Goal 4: Protect the environment)

Objective 4.1. Develop a media packet on the environmental benefits of bicycling and walking and present it to the Mayor and Council, television, radio, and newspaper media, and the general public.

Rockville should produce a media packet for wide distribution that highlights the environmental benefits of bicycling. The packet could be entitled, “How Can Bicycling and Walking in Rockville Help the Environment?”, and its materials should focus on benefits to both the physical environment and the social environment in Rockville. Physical environmental benefits of bicycling include no air pollution and minimal noise impacts. Social environmental benefits include increased interaction between residents and inexpensive recreational opportunity. Benefits to personal fitness and public health will be a particularly strong focus of the materials. The media packet can also encourage residents to do their part to improve air quality and to get to know their neighbors by bicycling and walking instead of driving. The packet should stress the importance of establishing a multi-modal transportation system, in order to be prepared for future levels of traffic congestion, diminishing air quality, and the need for people to get exercise as a part of their daily lives.

The City should distribute the media packet to convey environmental benefits to the general public through television and radio spots, newsletters, and newspaper articles and advertisements. Brochures summarizing the environmental benefits of bicycling and walking can be created and distributed in the same manner as the bicycle map. The City should also use future public transportation hubs, such as Metro stations and future Multimodal centers, to disseminate information on the benefits of bicycling.

Objective 4.2. Continue to evaluate the environmental impacts of all proposed bikeway facilities.

The City should review bikeway proposals to ensure they follow the City of Rockville’s Environmental Guidelines. The City should also encourage the creation of bikeways that allow people to enjoy significant views and vistas and to be close to plants, birds, and animals.

GOAL 5: Create and support programs to facilitate bicycling and develop community pride in bicycling.

(Corresponds to Transportation Goal 2: Promote a transportation system that is multi-modal, accessible, and friendly to all users)

Objective 5.1. Create a user-friendly bicycle map and distribute it at public libraries, bicycle shops, and government buildings throughout the City.

The City of Rockville should create a full-color bicycle map to show existing bikeways and bicycle suitability throughout the City. The map should also show bicycling destinations, such as parks, transit stations, civic attractions and commercial areas. Rockville should regularly distribute this map to bicycle shops, recreation centers and through other outlets. In addition to showing bicycle routes and destinations, the map can be used to generate public interest in

bicycling. Mass distribution of a user-friendly bicycle map will raise awareness of bicycling in Rockville among residents and visitors.

Objective 5.2. Promote the Rockville Bikeway Network by designing a distinctive system of signs, maps, and markings.

The City should highlight the Millennium Trail with specially designed “Millennium Trail” signs and unique crosswalk markings each time the trail crosses a roadway. It should also give names to other significant bikeways, such as the continuous bikeway designated with bike lanes on Nelson Street and College Parkway and the future regional bikeway network in the MD 355 corridor. Each of these significant bikeways can be marked with distinctive signs that will give bicyclists the sense of being on a unique route and will also help advertise bicycling in the City. The signs should provide safety messages, basic rules and responsibilities of bicyclists, contact information for bikeway suggestions and volunteering to help Rockville’s bicycling program, directions to nearby destinations and be difficult to vandalize.

Wayfinding signs should be posted at the entrances to City parks with shared-use paths. This will make it easier to follow a main trail through the park and find destinations on the other side of the park.

The City should also post a simple map of the entire bikeway network at transportation hubs, such as the Metro stations and future Multi-modal centers, and other key bikeway intersections throughout Rockville. The map would be similar to the Washington Metrorail System map, showing the significant bikeways and a few key destinations in the City, such as Town Center, the Metrorail stations, City Hall, Montgomery College and other schools, major retail centers and City parks. Posting bicycle network maps will tell residents what street or path they are bicycling on, help them navigate to destinations throughout the City and make them aware that they can bicycle to destinations that they have not considered traveling to by bicycle before. In addition, attractive maps can help advertise the Rockville Bikeway Network. If signs are posted near major roadway intersections, all City residents will see that they can use the bicycle network for transportation and recreation, and some may choose to bicycle more often.

Objective 5.3. Establish incentive programs to encourage citizens to bicycle.

To promote using the City’s bicycle facilities, Rockville should establish programs that give incentives to bicyclists. There are a number of groups with which the City can partner in order to generate resources to make these programs successful. They include the Washington Metropolitan Area Transit Authority (WMATA), Commuter Connections, corporate sponsors and the Washington Area Bicyclist Association (WABA). For example, programs could offer small monetary incentives to Rockville citizens who bicycle to work or Metrorail on a specific day of the week, such as Friday. The “Bike Friday” program would promote bicycling on a regular basis in Rockville. Benefits of this type of program would be increased use of the City’s bicycle facilities, reduced automobile trips, increased transit trips, reduced air pollution, more active citizens, and information circulated about bicycle use in Rockville on a weekly basis.

The City of Rockville is researching other ways to actively encourage bicycling for transportation. In order to deal with congestion and predicted local and regional growth, the City has chosen to look to alternative modes of transportation, and is crediting developers who implement bicycle facilities through its Transportation Demand Management (TDM) program. Incentives that have been offered in other parts of the United States include cash rewards, free bicycle storage, free showers and free movie tickets (Podjer 2003).

Objective 5.4. Expand Bicycle Recycling Program to offer more free and reduced price bicycles to low-income families.

Some families do not have the resources to buy bicycles, which prevents them from receiving the recreation and transportation benefits of Rockville's bikeway network. Residents who do not own a bicycle will not be able take full advantage of the City's new bicycle paths and lanes, Pedestrian and Bicycle Safety Education Program and potential "Bike Friday" program. Children experience the greatest negative impact: those who do not have bicycles and are often dependent on their parents to drive them to visit parks and friends, participate in sports and access other destinations in the City.

To make it easier for all residents of Rockville to have the opportunity to meet their daily needs by bicycle, the City should continue to offer free or reduced price bicycles to children without bicycles. The City currently fixes donated and unclaimed lost bicycles through the Bicycle Recycling Program. Bicycles are given to children who perform community service and accumulate a certain number of "Character Counts" points. This program should be expanded by looking for other opportunities and programs to get all children in Rockville on bikes. The City should explore opportunities to obtain more bikes for the program at the trash transfer station.

There may also be the potential to offer free or reduced-price bicycles to low-income families through bicycle donations programs and police auctions throughout the region. The City should also explore programs that make it easy for families to purchase and repair used bikes.

Objective 5.5. Work with local bicycle advocacy groups and a diverse group of citizens to implement the Bikeway Master Plan Update.

The City should work with local bicycle advocates to gather input on future bikeway plans and projects and to gain public support for bikeway initiatives. Advocates and other citizens can help Rockville implement this Plan Update.

5. DESIGN STANDARDS

5.A. Overview

National standards and guidelines for bikeway design are derived from the AASHTO Guide and the Manual on Uniform Traffic Control Devices (MUTCD), both of which have been recently updated. The revised AASHTO Guide contains expanded guidance on the design of all types of bikeways, while the MUTCD includes updated standards and guidelines regarding signing and markings for bikeways. These documents are the State Highway Administration's (SHA) and the City's design standards and guidelines, therefore all bikeway designs should conform to them. This section of the Plan Update addresses basic concepts of bicyclist types and facility types. Designers should refer to the AASHTO Guide and the MUTCD for more detailed design guidance.

To allow greater flexibility in determining what type of bikeway is best for corridors identified in this Plan Update, the Bicycle Level of Service (Bicycle LOS) model has been for this Plan Update and should be used in the future to determine the most appropriate bikeway cross-section for each corridor, on a case-by-case basis. This is a change from the 1998 Plan that recommended a specific bikeway for each road or corridor included in the Plan. Bicycle LOS is a scientifically calibrated model that evaluates existing and future bicycling conditions based on standard roadway features including speed and volume of traffic and the width of travel lanes.

5.B. Types of Facilities

The 1999 AASHTO Guide defines four types of bikeways and presents design guidance for each. To be consistent with the recommendations in the AASHTO Guide, this Plan Update deletes the previous classification system for bikeways used in the 1998 Plan (Class I, II, and III) and adopts the bikeway definitions included in the AASHTO Guide.

The AASHTO Guide defines a **bikeway** as:

A generic term for any road, street, path or way which in some manner is specifically designated for bicycle travel, regardless of whether such facilities are designated for the exclusive use or bicycles or are to be shared with other transportation modes.

The following descriptions provide an overview of the four bikeway types included in the AASHTO Guide, with local examples of each type. Use of all four types of bikeways is recommended to create an integrated and accessible network of bikeways that meets the needs of all types of bicyclists in the City.

5.B.1. Shared Roadway (No Bikeway Designation)

Most bicycle travel occurs on streets and highways without bikeway designation, and this is expected to continue into the future. Most of these streets are low volume neighborhood streets that provide a comfortable travel environment for most cyclists. Shared roadways are a primary

means of access to the network of designated bikeways for most bicyclists. The majority of streets in Rockville fall into this category of bikeway.

5.B.2. Signed-Shared Roadway

Signed-shared roadways are those that have been identified by signing as preferred bike routes. There are several reasons for designating signed bike routes, including:

- Providing continuity to other bicycle facilities, usually bike lanes;
- Designating preferred routes through high-demand corridors; or
- Identifying routes leading to destinations within a neighborhood such as a park, school or commercial district.

Roadways in the Rockville Bikeway Network that are designated as signed-shared roadways should incorporate traffic calming measures to slow vehicle speeds.

The City should consider street width and parking when deciding the feasibility of traffic calming measures. Often, signed-shared roadways are recommended on residential roadways that are 36-feet wide from curb to curb. Traffic calming measures, such as traffic circles and narrowing motor vehicle lanes will benefit bicyclists on these roadways by helping to lower vehicle speeds and by providing additional space for bicycles along the edge of roads.

If a roadway in the Rockville Bikeway Network does not have a bike lane or shared-use path and has adequate width, narrower motor vehicle lanes can be considered as one method of slowing vehicle speeds and improving Bicycle LOS. Edgelines are used to narrow the travel lanes to 10- or 11-feet wide and provide a wide striped parking lane. This defines the space for automobiles, slows traffic and results in a marginal increase in Bicycle LOS. While this treatment is not an official bikeway type, it is supported by the AASHTO Guide for the Development of Bicycle Facilities (1999), which states, "...where four-foot [paved shoulder] widths cannot be achieved, any additional shoulder width is better than none at all" (p. 16).

Many of Rockville's streets were constructed to be 36-feet wide from curb to curb. Since parking is permitted on both sides of these streets, there is insufficient room to provide bike lanes. Removing parking to create bicycle lanes is rarely an option in these circumstances, unless the parking lanes are not used (such as alongside a park or other undeveloped property). Therefore, edgelines are an alternative that benefits bicyclists and benefits neighborhood residents by calming traffic.

Edgelines and shoulder space are useful even for cyclists who prefer not to ride on the shoulders, since they provide a buffer between the curb lanes and the curb, gutter, or edge of the roadway.

Signing of shared roadways should indicate to bicyclists that particular advantages exist to using these routes compared with alternative routes. Any route that is to be signed should be analyzed (via the Bicycle LOS model) to assure that it is suitable to be designated as a shared route, and if not, improvements should be implemented prior to installation of bike route signs. The route should have good riding conditions (i.e. Bicycle LOS "A" or "B"). If current riding conditions

are not suitable, steps should be taken to improve the Bicycle LOS, including reducing motor vehicle travel speeds, providing striped shoulders, etc.

5.B.3. Bike Lane

Bike lanes are established with appropriate pavement markings and signage. The purpose of a bike lane should be to improve conditions for bicyclists and motorists on the street and to indicate the proper position of each vehicle in the right-of-way. Bike lane markings can provide for more predictable movements by motorists and bicyclists. Nelson Street is an example of a street with bike lanes in place in Rockville.

The AASHTO Guide includes extensive information about the design of bike lanes.

Bike Lane Considerations

Bike lanes should be striped on roadways with moderate traffic to provide significant increases in comfort for bicyclists. Bike lanes can also give a special designation to routes that lead to important destinations in the City and serve as a visible sign of the bikeway network, encouraging more people to bicycle in Rockville. They also make it easier for drivers to see bicyclists at driveway crossings and require bicyclists to ride in the same direction as automobile traffic. It is easiest to provide bike lanes during roadway construction or reconstruction. Most of the bike lanes recommended in this Plan Update should be added as Town Center is developed. Many of the roadways in Rockville's Bikeway Network are low-volume, low-speed residential streets that are comfortable for bicyclists without bike lanes or shared-use paths.

Where bicycle lanes are striped next to parallel parking, the lanes should be designed to provide adequate space between the riding area and parked vehicles, particularly in commercial areas with high parking turnover. Bicyclists should use caution and should not ride in the area where car doors could potentially swing open.

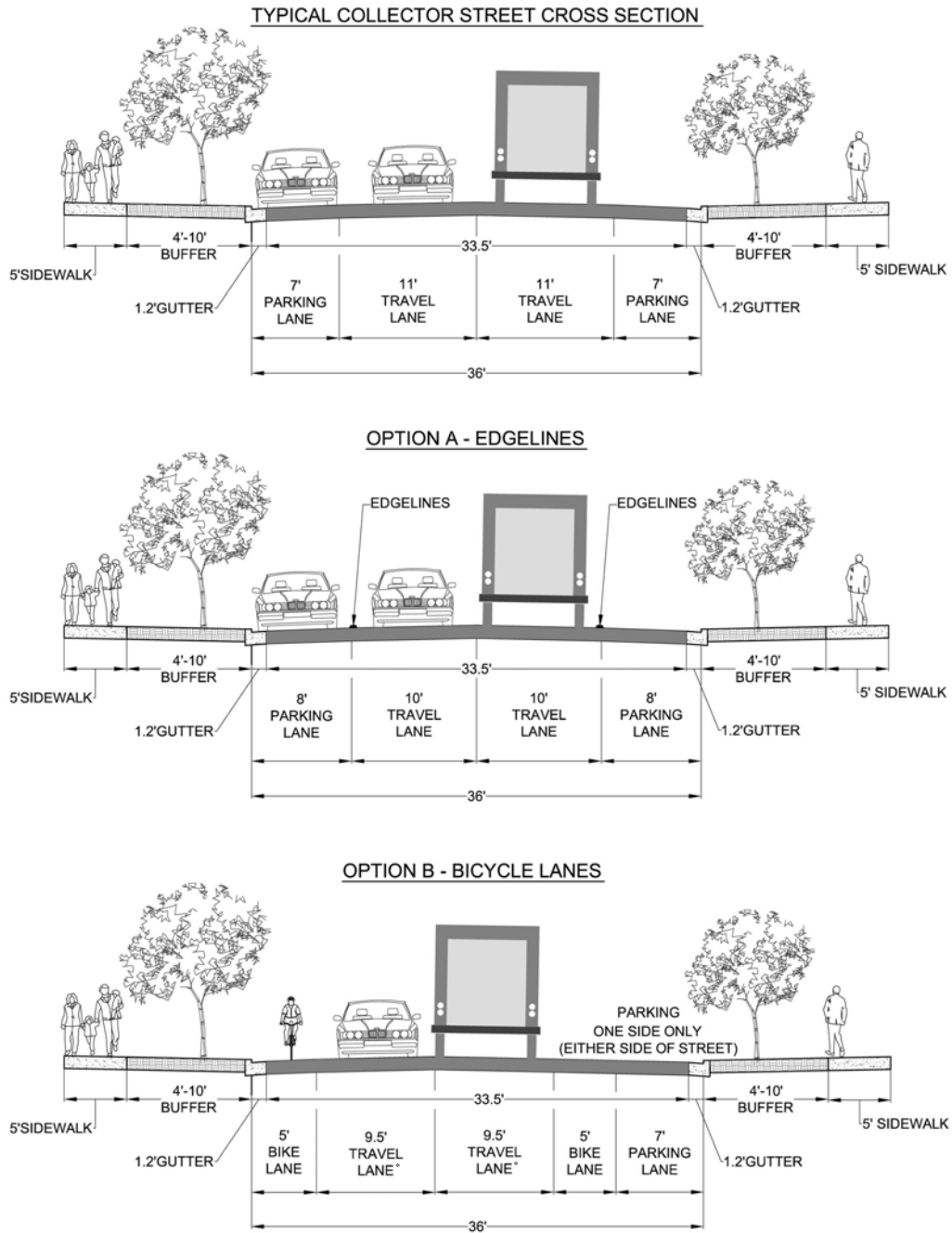
Providing Roadway Space for Bicyclists

Bike lanes can be created and automobile travel lanes can be narrowed when a road is repaved. This can be done by restriping an existing road. Space exists on many streets to accommodate striping changes without impacting existing or future traffic patterns or requiring acquisition of right-of-way. Figure 5 shows how a typical 36-foot Rockville collector street can be restriped with edgelines or bike lanes. When determining the appropriate roadway cross-section, Bicycle Level of Service, Motor Vehicle Level of Service and parking needs should be considered in an effort to balance the needs of all roadway users.

It also is possible to add space for bicyclists by increasing the total pavement width when roads are reconstructed or repaved. Other options to consider when reconstructing or restriping a street include:

- Reducing the number of travel lanes; or
- Narrowing the parking lanes.

Figure 5. Alternative 36-foot Cross-Sections



*An engineering study should be done to determine the feasibility of providing narrow (9.5') travel lanes. This solution is generally appropriate on streets with slower speeds

5.B.4. Shared-Use Path

Shared-use paths are facilities on exclusive right-of-way with minimal cross flow of motor vehicles. Often referred to as trails, shared-use paths are intended to accommodate various non-motorized users including bicyclists, in-line skaters, walkers, runners, people with strollers, wheelchair users and dog walkers. These facilities are most commonly designed for two-way travel. The recommended minimum width for a shared-use path is 10 feet. In Rockville, there are many opportunities to widen sidewalks to 10 feet so that they serve as shared-use paths. Right-of-way constraints, such as utility poles, trees, ditches, and buildings and environmental constraints, such as wetlands and stream buffers, should be considered at potential sidepath locations. Where space is constrained, an 8-foot path width may be acceptable. Ideally, some buffer space is provided between the road and the sidepath, but right-of-way constraints may force the shared-use path to be constructed next to the curb. In these cases, the full shared-use path width is more important than the buffer.

Rockville should provide shared-use paths in parts of the bikeway network where there is heavy, fast traffic. Shared-use paths should not be used to preclude on-road bicycling but rather to supplement a system of on-road bicycle facilities. Shared-use paths that are adjacent to roadways can provide separation from heavy, fast-moving traffic and create more comfortable riding conditions, especially for less experienced cyclists. They can also be used to provide space for pedestrians and to serve schools. However, shared-use paths in the roadway right-of-way are less desirable when the roadway corridor has many driveways and intersections. Cyclists riding in the opposite direction of motor vehicle traffic and approaching from the right side of right-turning vehicles from intersecting streets and driveways (drivers look left) often come in conflict with these vehicles. In corridors with fewer driveways and intersections, these conflicts are less of a problem. For information on other design elements of shared-use paths, designers should refer to the AASHTO Guide.

5.B.5. Intersection Accommodation

Rockville should provide crosswalks, pedestrian/bicycle push-buttons and signals, median refuges and use tight turning radii to improve the safety and comfort of bicyclists at intersections. Due to the conflicts between motor vehicles and bicycles at intersections, special care and treatment must be provided at these locations. The AASHTO Guide and the MUTCD have recommendations on how to sign and stripe bike lanes at various types of intersections.

6. MAINTENANCE PROGRAM

6.A. Introduction

Bicyclists are very sensitive to maintenance problems on bikeway facilities. A new bicyclist who encounters frequent or recurring maintenance issues on their regular route, may find biking too difficult or hazardous and, consequently, may give up riding. Whether it is debris on a bikeway or problems with the pavement surface in a bike lane or shared-use path, a system should be established to address both regular and remedial maintenance on both the on-street and off-street bikeway networks. It is recommended that the City follow the Bicycle Facility Maintenance Practices and Bikeway Maintenance Schedules below.

The first step in developing a maintenance program is to identify what tasks need to be undertaken and who is responsible for each task. The Bikeways Maintenance Schedule (see Tables 2 and 3) lays out maintenance tasks and identifies the Department that should have lead responsibility for each task. The Bikeway Specialist should be responsible for coordinating the execution of the Maintenance Schedule and should be the point of contact for citizens with questions regarding maintenance. Funding for an ongoing maintenance program should be included in the City's operating budget or Capital Improvements Program.

The Facility Improvement Request Form gives citizens an easy means of reporting maintenance concerns. The form allows citizens to notify City agencies about existing conditions affecting bicycling or of more general concerns or suggestions regarding bicycling in the City. The requests are submitted to the Bikeway Specialist who then refers the request to the appropriate City agency. The forms should be made available at locations throughout the City and on the City's web page.

6.B. Bicycle Facility Maintenance Practices

The following description of maintenance practices was adapted from the 1996 Oregon Bicycle and Pedestrian Plan. The descriptions serve as guidelines for the City Departments that are responsible for performing bikeway maintenance tasks.

6.B.1. Sweeping

Bicyclists often avoid bike lanes filled with sand, gravel, broken glass and other debris; they will ride in the roadway to avoid these hazards, causing conflicts with motorists. Debris from the roadway should not be swept onto sidewalks (pedestrians need a clean walking surface); nor should debris be swept from the sidewalk onto the roadway.

A regularly scheduled inspection and maintenance program helps ensure that travelway litter is regularly picked up or swept. During extended icy conditions, it may not be cost-effective to frequently remove sanding materials; however, they should be swept after major storms in high-use areas and after the winter season ends.

Recommendations

- Establish a seasonal sweeping schedule;
- Sweep bikeways whenever there is an accumulation of debris on the facility; and
- Provide extra sweeping in the fall in areas where leaves and cones accumulate in bike lanes.

6.B.2. Surface Repairs

A smooth surface, free of cracks, potholes, bumps and other physical problems should be provided and maintained.

Recommendations

- Inspect bikeways regularly for surface irregularities;
- Respond to citizen complaints in a timely manner;
- Repair potentially hazardous conditions as soon as possible;
- Prevent the edge of a repair from running through a bike lane; and
- Sweep a project area after repairs.

6.B.3. Pavement Overlays

Pavement overlays are good opportunities to improve conditions for cyclists if done carefully: a ridge should not be left in the area where cyclists ride (this occurs where an overlay extends part-way into a bike lane). Overlay projects offer opportunities to widen the roadway or to restripe the roadway with bike lanes.

Recommendations

- Extend the overlay over the entire roadway surface to avoid leaving an abrupt edge;
- If this is not possible, and there is adequate bike lane width, it may be appropriate to stop at the bike lane stripe, provided no abrupt ridge remains;
- Raise inlet grates, manhole and valve covers to within 6 mm (1/4") of the new pavement surface; and
- Sweep the project area after overlay.

6.B.4. Vegetation

Vegetation encroaching into bikeways is both a nuisance and a problem. Roots should be controlled to prevent break-up of the surface. Adequate clearances and sight-distances should be maintained at driveways and intersections: pedestrians and bicyclists must be visible to approaching motorists, rather than hidden by overgrown shrubs or low-hanging branches, which can also obscure signs.

Recommendations

- Cut back vegetation to prevent encroachment; and

- Perform preventative operations such as cutting back intrusive tree roots.

6.B.5. Signs, Stripes & Legends

New bikeway signs and legends are highly visible, but, over time, signs may fall into disrepair and legends may become hard to see, especially at night. Signs and legends should be kept in a readable condition, including those directed at motorists. Pedestrians and bicyclists rely on motorists observing the signs and legends that regulate their movements.

Recommendations

- Inspect signs and legends regularly, including reflectivity at night;
- Replace defective signs as soon as possible; and
- Retrace legends, crosswalks and other pavement markings in the spring; in high-use areas, these may require another paint application in the fall.

6.B.6. Drainage Improvements

New drainage facilities function well but may sink and deteriorate over time. Catch basins may need to be adjusted or replaced to improve drainage. A bike-safe drainage grate at the proper height improves bicycle safety. At intersections, there should be no puddles in pedestrian crosswalks.

Recommendations

- Raise catch basin grates flush with pavement;
- Modify or replace deficient drainage grates with bicycle-safe grates; and
- Repair or relocate faulty drains at intersections where water backs up onto the curb cut or into the crosswalk.

6.B.7. Utility Cuts

Utility cuts can leave a rough surface for cyclists if not back-filled carefully.

Recommendations

- Wherever possible, place cut line in an area that will not interfere with bicycle travel;
- Back fill cuts in bikeways flush with the surface (humps will not get packed down by bicycle traffic); and
- Ensure that cuts parallel to bicycle traffic do not leave a ridge or groove in the bicycle wheel track.

6.B.8. Snow Removal

Snow stored on bike lanes or shared-use paths impedes bicycling and walking in winter.

Recommendations

- On streets with bike lanes, remove all snow from street surface; and
- Clear snow from shared-use paths and make sure that snow banks do not block paths where they cross plowed roads.

6.C. Bikeway Maintenance Schedules

The following Tables 2 and 3 provide a schedule for maintaining on-road and off-road bikeways, respectively. On-road bikeway maintenance is the responsibility of the Department of Public Works; off-road bikeway maintenance is the responsibility of the Department of Recreation and Parks.

**Table 2: On-Road Bikeways
Department of Public Works**

Task	Frequency	Comments
Regular inspection	32 times per year	Includes all on-road bikeways, identify needed repairs of pavement, signs, marking, etc.
Street sweeping	4 times per year	All streets with bike lanes, extra attention in the fall
Street repairs	As needed	Repair of streets with bikeways including potholes, cracks or other problems
Bike lane snow removal	As needed	Clear snow completely from streets with bike lanes
Debris removal from on-street bikeways	As needed	Remove debris from on-street bikeways such as gravel and broken glass
Signs and markings	As needed	Repair or replace signs and markings identified during inspections
Markings	As needed, at least every 2 years	Includes all bike lane markings and symbols and crosswalks

**Table 3: Off-Road Bikeways
Department of Recreation & Parks**

Task	Frequency	Comments
Regular inspection	2 times per year	Includes all off-road bikeways, identify needed repairs of pavement signs, marking, etc.
Trail sweeping	2 times per year	All paved trails
Trail snow removal	As needed	Clear snow from identified priority trails
Trail repairs	As needed	Repair of trails including potholes, cracks or other problems on shared-use paths, and benches, trash cans, and other trail amenities
Trail resurfacing	10-12 years	Applies to all asphalt trails
Debris removal from trails	As needed	Remove debris from trails such as limbs, slit and broken glass
Signs and markings	As needed	Repair or replace signs and markings identified during inspections
Vegetation control	As needed, at least 2 times per year	Trim limbs and shrubs 2 feet back from trail edge, trim grass from trail edges
Litter removal	6 times per year	Could be done with volunteers

7. TYPICAL BIKEWAY FACILITY COSTS

This section describes the typical cost of adding pavement stripes, constructing shoulders, adding shared-use paths and providing bicycle racks and lockers.

- Restriping lanes costs between \$3,200 and \$25,000 per mile.

This cost depends on whether the lanes are restriped during reconstruction or repaving of the roadway. If done in conjunction with another project, any extra restriping cost is for lane marking material (for a six-inch line, the cost is about \$0.80 per foot, or \$4,200). However, if existing lanes need to be scraped off or the road needs to be regraded to ensure proper drainage, the cost will be much higher. These costs do not include the cost of maintenance of traffic during construction, engineering and design, right-of-way acquisition, utility relocation, grading, labor, administration or future maintenance.

- Including a 5-foot shoulder or wide curb lanes in a project costs approximately \$100,000 per mile per side. Retrofitting shoulders or wide curb lanes into an existing condition costs approximately \$250,000 per mile per side.

These costs would include paving, base, earthwork, drainage structures, etc. They would not include right-of-way or any necessary utility relocations or adjustments.

- Constructing a 10-foot sidepath (minimal earthwork and paving) costs approximately \$100,000 per mile.

This cost includes contingencies for grading, drainage, landscaping, erosion and sediment control, etc. However, it does not include right-of-way or utility relocations or adjustments.

- Constructing a separate trail system on its own right-of-way would cost approximately \$250,000 per mile.

This cost includes contingencies for grading, drainage, landscaping, erosion and sediment control, etc. However, it does not include right-of-way or utility relocations or adjustments, and the \$250,000 per mile does not include any structures such as bridges, box culverts or pipes (large enough to carry a trail). Bridge structures can be generally estimated at \$100 per square foot.

- The cost of a bicycle rack that can hold 10 to 12 bikes ranges from \$200 to \$600.

This cost varies dramatically based on design and material and does not include labor, administration or future maintenance.

- The cost of a bicycle locker that can fit two bicycles ranges from \$350 to \$700.

The cost varies depending on the type of bicycle locker and does not include labor, administration or future maintenance.

8. SUPPLEMENTAL FACILITIES AND POLICIES

8.A. Bicycle Parking

Cyclists must have safe and secure parking available at likely destination points for the Rockville Bikeway Network to be used to its full potential. Bicycle parking (or the lack of) can make the difference between a trip that is taken by bicycle and one that is not. A survey conducted by *BICYCLING* Magazine revealed that 43.5 percent of adults who had ridden a bike in the last year but not to work in the past month said they would bicycle to work if there were showers and secure bicycle storage.

One type of bicycle parking does not meet all needs, rather a combination of facilities should be investigated to accommodate the needs of bicyclists. The biggest fear is theft. A bike rack placed close to building entrances, visible to others, offers adequate security for short-term parking, while lockers are preferred for long-term storage. Local legislation can be used to develop a comprehensive parking program. An example can be found in San Francisco, where local law requires the City to provide its employees the equivalent of a locker, “sheltered and access restricted” while visitors to municipal buildings have the more appropriate bike rack outdoors for short-term use.

8.A.1. Ordinances

A proven method to increase the amount of bicycle parking in a City is the adoption of or amendment to local ordinances and/or building codes to require bike parking with new developments. The City has discussed this issue as part of the development of the Adequate Public Facilities Ordinance.

Jurisdictions throughout the United States have adopted such ordinances, including Montgomery County, Maryland. Montgomery County’s Zoning Ordinance 59-E2.3 Standards for Bicycle and Motorcycle Parking require:

1. All (owners of) parking facilities containing more than [50] fifty parking spaces shall provide one bicycle parking space or locker for each twenty automobile parking spaces in the facility. Not more than twenty bicycle parking stalls or lockers shall be required [on] in any one [lot] facility.
2. Bicycle parking facilities shall be so located as to be safe from motor vehicle traffic and secure from theft. Interior storage and lockers are encouraged. They shall be properly repaired and maintained. Facilities that are used for overnight parking must be protected from the weather, when they are part of an enclosed parking facility.

The City should adopt a bicycle parking ordinance.

8.A.2. Location

The location of bicycle parking facilities might be considered the most important element of creating an effective bicycle parking system. Facilities should be located with the user in mind. Bicyclists, more than motorists and pedestrians, enjoy a freedom of mobility that allow them to travel within feet of their final destination. Facility site location should consider this element heavily. Bicyclists will find another option to secure their bicycles if the provisions provided are not near the final destination.

Good location for parking facilities is dependent on several items. Several bicycle-friendly cities have adopted standards that ensure good placement of bicycle parking facilities.

8.A.3. Types of Parking

There are three basic types or levels of parking available for bicycles, based on the level of security provided for the bike and the needs of the intended users. The first level of parking generally serves the needs of short-term users, such as shoppers and college students, and is often called low-security parking and is the least expensive. Standard bike racks fall into this category. Racks should be designed to support the bike by its frame and allow for the use of various types of locks. Medium-security racks allow the frame and both wheels of the bike to be secured using various types of locks. These racks serve longer-term users, such as people accessing transit stations, and usually involve moving parts. The highest level of security is provided by bicycle lockers. Lockers not only provide protection for the bike from theft, but also provide protection from the elements and a security for the bicycle's components, lights, and other gear.

8.B. New Development Policies

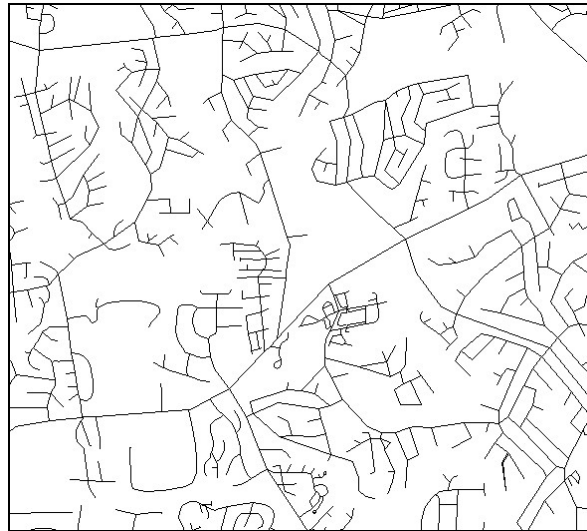
Although Rockville is, for the most part, a developed community, proposals for new development and redevelopment (as a part of downtown revitalization) will be submitted to the City. It is important that accommodation of bicycles be addressed in the planning and design of these projects. Policies and ordinances should be reviewed to ensure that appropriate accommodations are provided, both as specific facilities (e.g. bicycle parking racks) and as a part of street configuration and access control.

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 (Figure 6).

Figure 6. Example Street Patterns



Traditional Grid



Disconnected Suburban Streets

Land use and zoning patterns can also encourage bicycling. Providing people with convenient and close access to shopping, schools, and churches increases the potential that people will choose to bicycle to these locations as opposed to driving a car. Mixed-use zoning districts or provisions within the zoning ordinance that allow small scale, neighborhood-oriented commercial development within residential zones can create neighborhoods where people will choose to walk and ride their bikes.

Right-of-way should also be dedicated, which will allow bicycle connections between adjacent development and land uses.

8.C. Funding Opportunities

8.C.1. Introduction

Funding sources for bicycle and pedestrian facilities and programs can be found at all levels of government as well as in the private sector. Prior to the 1990's only a few million dollars a year of federal funds were being invested in bicycle or pedestrian facilities. Starting with the passage of ISTEA (the Intermodal Surface Transportation Efficiency Act) in 1992, hundreds of millions of dollars are now being spent annually on bicycle, pedestrian and trail facility development. Millions more are spent regularly on planning, safety and promotion programs.

In Maryland, funding opportunities for bicycle and pedestrian facilities and programs exist from a variety of sources within MDOT and other state agencies, including:

- Neighborhood Conservation/Urban Reconstruction Program
- Sidewalk Retrofit Program
- Retrofit Bicycle Program

- Transportation Enhancement Program
- National Recreational Trails Program
- Maryland Scenic Byways Program
- Highway Safety Grant Program (Section 402)
- Program Open Space
- Rural Legacy Program

In addition, there are several new programs currently under consideration that could offer significant sources of funding for trails and bikeways:

- GreenPrint Program
- Community Parks and Playgrounds Program
- MDOT CMAQ Fund

These, and other federal, local and private funding opportunities are described in this section.

8.C.2. Government Funding Sources

Federal—Transportation (ISTEA and TEA-21)

Leading the way in government funding sources is federal funding through the Transportation Equity Act for the 21st Century or “TEA-21.” This six-year funding bill (FY 1998 - FY 2003) authorizes \$217 billion in federal gas-tax revenue and other federal funds for all modes of surface transportation, including highways, bus and rail transit, bicycling and walking. More than half of these funds are made available through programs for which bicycling and walking activities are eligible expenditures, however, none of these funds are dedicated solely for bicycle or pedestrian facilities or programs.

TEA-21 is the successor to “ISTEA,” the Intermodal Surface Transportation Efficiency Act, which provided federal funding for the years 1992-1997. ISTEA is now viewed as the federal act that initiated a major policy shift in federal funding priorities making federal funds much more accessible for state and local bicycling and walking facilities and programs. TEA-21 continues and strengthens this new emphasis on improving conditions for bicycling and walking.

TEA-21 funds are administered by the State of Maryland, through the Maryland Department of Transportation (see below).

The Transportation and Community and System Preservation Pilot 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. States, local governments and metropolitan planning organizations are eligible for discretionary grants to plan and implement strategies that improve the efficiency of the transportation system.

State agencies, MPOs, tribal governments and units of local governments recognized by a state are eligible recipients of TCSP grant funds. This includes towns, cities, public transit agencies, air resources boards, school boards and park districts but not neighborhood groups or developers. While non-governmental organizations are not eligible to receive TCSP funds, these

organizations are encouraged to form partnerships with an eligible recipient as the project sponsor.

Federal—Non-Transportation

Outside of the federal transportation programs there are a wide range of other federal funds that can be used for bicycling and walking facilities. Some of the most common include funds through the federal land agencies such as the National Forest Service, National Park Service or Bureau of Land Management; however, these funds are primarily for trails and must be on federal lands. Community Development Block Grants through the Department of Housing and Urban Development (HUD) are a likely source of funds for community-based projects, such as commercial district streetscape improvements, sidewalk improvements, safe routes to school or other neighborhood-based bicycling and walking facilities that improve local transportation options or help revitalize neighborhoods. The National Transportation Enhancements Clearinghouse has prepared a useful technical brief, *Financing and Funding for Trails*, that sites over thirty federal and national funding sources that could be used to help fund bicycling and walking facilities and/or programs, especially trails: www.enhancements.org.

Clean Air Transportation Communities: Innovative Projects to Improve Air Quality and Reduce Greenhouse Gases: The Environmental Protection Agency (EPA) recently announced the availability of funds for projects that involve climate change and transportation/air quality issues or pilot programs that have a high potential to encourage innovations in the reduction of transportation-related emissions and vehicle miles traveled (VMT's) at the local level and throughout the United States. The EPA is particularly interested in projects that incorporate at least one of the following: smart growth efforts that reduce transportation-related emissions, commuter choice, cleaner vehicles and clean, renewable fuels.

State—Transportation

Neighborhood Conservation/Urban Reconstruction Program

This program began in 1996 to assist in the revitalization of neighborhoods through roadway improvements to state highways and urban state highways. Three phases of funding are available: 1) concept development, 2) design, and 3) construction. Some of the eligible projects funded by this program include adding or upgrading drainage, curb and gutter construction/reconstruction, conventional sidewalks, bus shelters and transit station access improvements, landscaping and specialized signage. Counties or municipalities can send concept development or design proposals to SHA District Engineer's anytime during the year. Construction projects, however, are accepted semi-annually (spring and fall). The proposal will then be submitted to the Chief Engineer's Office for review and selection.

Funding Cycle: Year Round

Contact: SHA District Engineer

Sidewalk Retrofit Program

This program was established in 1995 to provide funding for the construction of new and the reconstruction of existing sidewalks and pathways. In the first three years of the Retrofit Sidewalk Program, 170 communities received a total of \$4.1 million for sidewalk construction. The program receives \$3 million annually and allocates funds to counties based on a distribution formula. Counties can spend the funding directly or distribute them to local municipalities. Proposals are accepted on an ongoing basis. The Chief Engineer's Office will review and select projects.

Funding Cycle: Year Round

Contact: SHA Program Coordinator (410) 545-8900

Bicycle Retrofit Program

This program was initiated by the State Highway Administration (SHA) in 2000. The purpose of the program is to fund minimal on-road improvements on state highways that would benefit bicycling. Eligible improvements include projects that can be completed quickly and without the need for permits or right-of-way. One million dollars is allocated annually to the Bicycle Retrofit Program. Individuals and local jurisdictions can submit project requests to SHA's Bicycle and Pedestrian Coordinator on an on-going basis.

Funding Cycle: On-going

Contact: Maryland Bicycle and Pedestrian Coordinator (410) 545-5656

Transportation Enhancement Program

This program is administered by SHA and uses Federal appropriations (Federal Surface Transportation Program funds) to fund transportation-related facilities. Projects such as bicycle and pedestrian facilities and education programs, acquisition of scenic easements and preservation of abandoned railways are examples of projects funded each year; approximately 70% of the program funds have gone toward bicycle and pedestrian education programs and trail projects. Up to 50% of each project's cost is eligible for funding; the other 50% must be matched by the project sponsor.

Funding Cycle: Twice per year

Contact: Enhancement Program Manager (410) 545-5670

National Recreational Trails Program

This program, administered by SHA, matches federal funds up to 50% with local funds to implement trail projects. Eligible activities include trail construction, reconstruction, maintenance, restoration and easement or property acquisition. Counties or municipal governments are eligible to apply for these funds and must submit an application to SHA's Office of Environmental Design. Applications are distributed in September for a mid-November deadline. Typically, funds are awarded in January or February of each year.

Funding Cycle: Mid-November Deadline
Contact: Recreational Trails Coordinator (410) 545-8637

TEA-21 Congestion Mitigation and Air Quality Improvement Program (CMAQ)

This program provides over \$8.1 billion dollars in funds to State Departments of Transportation, Metropolitan Planning Organizations and transit agencies to invest in projects that reduce transportation-related emissions. Each State is qualified for an apportioned amount of funding each year based on county populations residing within ozone and carbon monoxide (CO) non-attainment and maintenance areas and the severity of the areas air quality problems.

Departments of Transportation or Metropolitan Planning Agencies must submit projects to FHWA for approval before funds are actually received. Once projects have been identified, SHA applies for the funding directly to FHWA. SHA typically seeks CMAQ funding for HOV lanes; however, it is possible to submit an application for a bicycle and pedestrian project.

Funding Cycle: On-Going
Contact: MD SHA (410) 865-1296

Federal Highway Safety (Section 402) Grant Program

This program is administered by SHA's Office of Traffic and Safety. Federal 402 funds are used for pedestrian and bicycle public information and education programs. Funds are distributed to states annually from the National Highway Traffic Safety Administration (NHTSA) according to a formula based on population and road mileage. Every county in the State and the City of Baltimore is assigned a Community Traffic Safety Program Coordinator who organizes local task forces that identify and prioritize traffic safety issues and develop appropriate countermeasures. Projects are then communicated to the Traffic Safety Division through the local coordinator. Projects are reviewed and approved on a continual basis. 402 funds are awarded to SHA sometime after October 1 each year.

Other Potential Sources of State Funding

The following programs are currently under review for implementation in Maryland:

MDOT CMAQ Fund – The Maryland Office of the Secretary of Transportation is considering a new program that would enable local governments to request CMAQ funding through an MPO or other governmental process. The submittal and selection of applications would be separate from the current CMAQ process. The amount of funding potentially available, eligible projects and the application process for this program are currently under development.

The Community Parks and Playgrounds Program – This program is proposed in the current budget as a 3-year, \$45 million initiative that will provide funding to restore and create parks and playgrounds in communities all across the State. While this initiative is not specifically written to fund bicycle and pedestrian facilities, such plans could be proposed as enhancements to existing parks.

Maryland's GreenPrint Program - This program would act as a compliment to existing land conservation programs. The purpose of this new land preservation initiative is to acquire ecologically sensitive lands. A network of green infrastructure has been identified by the Department of Natural Resources with assistance from local governments, scientists and conservation organizations. While GreenPrint program funds would not be competitive, counties would be encouraged to approach DNR with significant projects.

State – Non-Transportation

Program Open Space's (POS)

The primary focus of this program is to acquire outdoor recreation and open space areas for public use. POS is administered by Maryland's Department of Natural Resources (DNR) and is funded through the state real estate transfer tax. The money set aside for this program is divided equally between local and state projects. Half of the money is used by the state for direct land acquisitions, while the other half is granted to local governments. In order to receive these funds, counties are required to create Land Preservation and Recreation Plans that outline acquisition and development goals, of which bicycle and pedestrian facilities may be included.

Funding Cycle: July 1 Fiscal Year

Contact: Program Open Space Coordinator (410) 260-8426

Local

Examples of local communities taking action on their own to create revenue streams for improving conditions for bicycling and walking are not hard to come by. Three common approaches include: special bond issues, dedications of a portion of local sales taxes or a voter-approved sales tax increase and use of the annual capital improvement budgets of Public Works and/or Parks agencies. Some examples follow:

- San Diego County residents voted to impose a ½-cent sales tax for transportation purposes. Out of those funds (\$171 million in year 2000), \$1 million is set aside for bicycle projects. The tax is administered by the San Diego Association of Governments and is scheduled to expire in 2008.
- The City of Albuquerque, New Mexico, and Bernalillo County, both have a 5% set-aside of street bond funds which go to trails and bikeways. For the City, this has amounted to approximately \$1.2 million every two years for these facilities. The City voters last year passed a ¼ cent gross receipts tax for transportation which includes approximately \$1 million per year for the next ten years for trail development. In addition, many of the on-street facilities are being developed as a part of other road projects and are incorporating the bike facilities in the roadway budget for new roads or when a resurfacing project is planned.
- Pinellas County, Florida built much of the Pinellas Trail system with a portion of a one cent sales tax increase voted for by county residents.

- Seattle, Washington, and King County voters approved a \$100 million bond issue to protect open space in the urban area; \$33 million was set-aside for trail development. The Seattle Department of Public Works used about \$6 million per annum for the City's bike program.
- Denver, Colorado also invested \$5 million in its emerging trail network with a bond issue, which also funded the City's bike planner for a number of years.
- In Eagle County, Colorado (which includes Vail) voters passed a transportation tax that earmarks 10% for trails, about \$300,000 a year.
- In Colorado Springs, Colorado, 20 percent of the new open space sales tax is designated for trail acquisition and development, about \$5-6 million per year.

8.C.3. Private Sector Funding Sources

Just as the use of public transportation funding for bicycle and pedestrian projects has been on the increase throughout the 1990's, private sector funding has become more plentiful. For example, the environmental land trust movement has mushroomed in the past twenty years and many of these organizations have raised funds for purchase of land where trails are built, especially rail-trails. In recent years, local corporations and businesses from the bicycling and outdoor recreation industry have joined in financial support of local projects and programs.

Community Fundraising and Creative Partnerships

In Prince George's County, local funds were used for the development, construction and maintenance of the WB&A Trail. The trail project was primarily funded by the Maryland-National Capital Park and Planning Commission (M-NCPPC). Additional funding was provided by the Maryland's Program Open Space and ISTEA dollars. While the M-NCPPC continues to support the trail financially, trail advocates are in the process of establishing a citizen-based organization, similar to the existing group called the Friends of the B&A Trail, that will organize fundraising events and partake in trail beautification and enhancement projects.

In Ashtabula, Ohio the local trail organization raised one-third of the money they needed to buy the land for the trail by forming a "300 Club." Three hundred acres were needed for the trail and they set a goal of finding 300 folks who would finance one acre each. The land price was \$400 per acre, and they found just over 100 people to buy an honorary acre, raising over \$40,000.

In Jackson County, Oregon they had a "Yard Sale." The Bear Creek Greenway Foundation sold symbolic "yards" of the trail and placed donor's names on permanent markers that are located at each trailhead. At \$40 a yard, they raised enough in private cash donations to help match their \$690,000 Transportation Enhancements program award for the 18-mile Bear Creek trail linking Medford, Talent, Phoenix and Ashland.

Selling bricks for local sidewalk projects, especially those in historic areas or on downtown Main Streets, is increasingly common. Donor names are engraved in each brick, and a tremendous

amount of publicity and community support is purchased along with basic construction materials. Portland, Oregon's downtown Pioneer Square is a good example of such a project.

In Colorado Springs, the Rock Island Rail-Trail is being partly funded by the Rustic Hills Improvement Association, a group of local home-owners living adjacent to the trail. Also, ten miles of the trail was cleared of railroad ties by a local boy scout troop.

A pivotal 40-acre section of the Ice Age Trail between the cities of Madison and Verona, Wisconsin, was acquired with the help of the Madison Area Youth Soccer Association. The soccer association agreed to a 50 year lease of 30 acres of the parcel for a soccer complex, providing a substantial part of the \$600,000 acquisition price.

Corporate and Business Community

- In Evansville, Indiana a boardwalk is being built with Corporate donations from Indiana Power and Light Co. and the Wal-Mart Foundation.
- In Arizona, trail directional and interpretive signs are being provided by the Salt River Project a local utility. Other corporate sponsors of the Arizona Trail are the Hughes Missile Systems, BHP Cooper and Pace American, Inc.
- Recreational Equipment, Inc. has long been a financial supporter of local trail and conservation projects.
- The Kodak Company now supports the American Greenways Awards program of The Conservation Fund, which was started in partnership with the Dupont company. This annual awards program provides grants of up to \$2500 to local greenway projects for any activities related to greenway advocacy, planning, design or development.

For further details and tips for accessing the corporate and business community contact the Trails and Greenways Clearinghouse at the Rails-to-Trails Conservancy: 1-877-GRNWAYS (476-9297), or on the web at: www.trailsandgreenways.org.

Foundations

A wide range of foundations have provided funding for bicycling and walking. A few national and large regional foundations have supported the national organizations involved in bicycle and pedestrian policy advocacy. One example is the Robert Wood Johnson Foundation, which seeks to achieve its public health goals by encouraging physical activity in local communities. Their web site can be found at: www.rwjf.org. However it is usually regional and local foundations that get involved in funding particular bicycle, pedestrian or trail projects. These same foundations may also fund statewide and local advocacy efforts as well. The best way to find such foundations is through the research and information services provided by the national Foundation Center. They maintain a huge store of information including the guidelines and application procedures for most foundations and their past funding records. They can be reached on the world wide web at: www.fdncenter.org.

The Bicycle Industry—Bikes Belong Coalition

The Bikes Belong Coalition is sponsored by member companies of the American bicycle industry. The Coalition's stated goal is to put more people on bikes more often through the implementation of TEA-21. One of the Coalition's primary activities is the funding of local bicycle advocacy organizations that are trying to ensure that TEA-21-funded bicycle or trail facilities get built. Grants are awarded for up to \$10,000 on a rolling basis. By June 2000, almost \$200,000 has been awarded to advocacy organizations in the District of Columbia; Marin County, CA; Milwaukee, WI; Dallas, TX; Los Angeles, CA; New York City, NY; Portland, Maine and others. Information about the Coalition, including grant applications and related information, is on the web at: www.bikesbelong.org.

9. SUMMARY

In the five years since Rockville began planning and implementing bicycle facilities the City has made significant progress toward creating a truly bicycle-friendly city. The 1998 Bikeway Master Plan has been an instrumental guide to decision makers in this progress and has aided the City in securing funding for bicycle projects from sources outside the City. This update of the Master Plan is not a major departure from the recommendations of the 1998 Plan but rather more of a fine tuning of the 1998 Plan.

The City should continue its current policies and procedures for implementing this Plan Update. City staff should continue working to identify funding sources to design and construct high priority projects, while at the same time taking advantage of opportunities to implement other bikeway improvements as they arise. The Bikeway Specialist position should be retained and consideration should be given to making the position full-time. Also, the practice of retaining consultants to provide assistance on planning and design issues should be continued.

The 1998 Bikeway Master Plan was successful for several reasons, including

- Extensive public involvement in planning the types of facilities and programs to implement;
- Implementation of Plan recommendations through the cooperation of City departments;
- Active pursuit of federal and state funding for projects and programs;
- Requirements for developers to provide bicycle facilities;
- Facilities added by the State Highway Administration as part of regular roadway improvements; and
- Support from the Mayor and Council and other stakeholders.

These elements are essential for the continued success of this updated Bikeway Master Plan. If they are achieved, they will help make bicycling in Rockville an activity for all types of trips, for all types of people and for all parts of the City.

10. REFERENCES

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