BIKE HOWARD

Howard County Bicycle Master Plan

2015
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Introduction

Purpose

BikeHoward is the Howard County Bicycle Master Plan. The primary purpose of BikeHoward is to provide a framework to guide the county’s future actions to improve conditions for bicyclists and promote bicycling as a safe and convenient travel option. In other words:

Making it easy for people of all ages and abilities to get around by bike in Howard County.

BikeHoward provides recommendations and guidance in the following general categories:

- Policy updates
- Programs for education, encouragement and enforcement
- Infrastructure improvements to create a connected bike network

It is important to note that details on committed funding sources for the infrastructure improvements are not identified or confirmed in this plan. The network is aspirational and provides a vision to work towards over time. Funding will require creativity in acquiring grants, coordinating with the County resurfacing schedule, working with developers and exploring various funding sources at the local, state and federal level. Providing the details of the desired bike network will be valuable for maximizing these funding opportunities, however, BikeHoward does not commit Howard County to funding all of the structured projects in the plan.

Vision and Goals

The vision and goals of BikeHoward flow directly from PlanHoward 2030, the County’s general plan. PlanHoward 2030 is organized around the concepts of environmental, economic and community sustainability.

Bicycling has the potential to make a significant contribution toward achieving the County’s sustainability goals in each of these areas:

- Environmental sustainability by reducing air and water pollution
- Economic sustainability by contributing to tourism and reducing household transportation expenditures
- Community sustainability by contributing to public health and helping neighborhoods remain safe and functional for all generations

PlanHoward 2030 calls for the promotion of complete streets design practices, and establishment of an interdepartmental team to implement both a countywide Bicycle Master Plan and a countywide Pedestrian Master Plan. BikeHoward is an important step in achieving these objectives.

By improving conditions for cyclists on roadways, by connecting and extending paths, and by linking residential areas to shopping centers, public facilities and jobs, bicycling can take its place in an effective multi-modal transportation system that provides residents sustainable transportation options for daily life.

The Vision of BikeHoward

“Howard County, Maryland seeks to be a bicycle-friendly County where residents and visitors, schoolchildren and seniors, men and women feel comfortable and safe bicycling on our roads and paths as a means of daily transportation and healthy recreation.”
The Goals of BikeHoward

Create a Safe and Seamless Network: For bicycling to grow, cyclists must have a safe, intuitive, easy and seamless network of bikeways that connects them to where they want to go: schools, shops, parks and work, with facilities that will serve cyclists of all skill and comfort levels.

Increase Participation and Safety through bicycle educational programs for school-aged children and youth, and awareness campaigns for motor vehicle users, to make bicycling normal, popular and an accepted transportation option.

Update County Policies to ensure that the County’s infrastructure and land development policies fully accommodate and encourage bicycling.

Coordinate with Maryland state legislators and agency officials to accommodate bicycle travel through:
- State highways and public transit services
- Regulation of utility rights-of-way
- Administration of storm water treatment and water quality regulations

Promote Active Living by including bicycling as an active component of a livable community that is physically healthy, economically sound and environmentally sustainable.

How BikeHoward is Organized

Following this introductory chapter, Chapter 2 of BikeHoward provides a brief discussion of existing bicycling conditions that focuses on the physical conditions for bicycling for transportation.

Chapter 3 describes the roles of county agencies and partners in relation to bicycle planning and facility development, current planning practices and development policies that affect bicycling and the development of bicycle transportation infrastructure. This discussion of existing conditions is followed by recommendations for updating planning and development policies to provide a firmer foundation for creating a bicycle-friendly county.

Chapter 4 discusses the public outreach activities undertaken as a part of the planning process to develop BikeHoward. It also describes the work done to assess the existing roadways, pathways and path corridors, evaluate the potential for creation of a Countywide Bikeway Network and it describes the process used to develop the networks.

Chapter 5 discusses the Countywide Bikeway Network and explains how it has been subdivided into Short-Term and Mid-Term and Long-Term Networks. This Chapter also describes the types of bicycle facilities that are recommended to create a bikeway network that serves a broad range of cyclists.

Chapter 6 presents recommendations for specific components of the bikeway network including way finding sign systems, use of experimental and new facility types, state roads in BikeHoward and provides highlights of the shared use path recommendations.

Chapter 7 addresses bicycle parking and integration of bicycling with public transit services.

Chapter 8 discusses a set of recommended programs in the areas of bicycle safety education, encouragement and enforcement.

Chapter 9 summarizes the implementation strategies for the plan, presents the Short-Term network organized into specific projects and recommends specific institutional processes that are key for effective build out of the Bikeway Network.

Chapter 10 presents an implementation matrix that serves as a guide to all of the recommendations in the plan.

Chapter 11 provides the conclusion for BikeHoward.
Why Bicycling in Howard County?

Investing and improving conditions for bicycling is a fast growing trend throughout the country. There is a growing and strong body of evidence showing that when communities invest in bicycling, there are many short and long-term benefits to public health, household budgets, the local economy, environmental sustainability and overall quality of life.

Howard County’s economic competitiveness has been driven in large part by its image and location as a great place to live, do business and raise children. Howard County has long depended on its location between Baltimore and Washington DC and its proximity to major transportation hubs and corridors to assure its economic success. However, in today’s changing economy the ability to attract and retain successful companies, and attract highly skilled employees that can compete in the broader global marketplace is critical to ensuring the county’s sustained success. Communities that are prospering and attracting top tier talent and companies are investing in building cycling infrastructure.

In a report by People for Bikes, Fred Schmidt, a founder of two tech companies in Austin TX stated “Tech companies, especially in the game industry, like to be where there’s a lot of buzz, where there’s entertainment and energy. In order to attract those type of companies, we need to continue to provide buildings and workspaces and infrastructure that supports the culture that thrives on that type of urban environment.”

The Urban Land Institute, in its report “Shifting Suburbs: Reinventing Infrastructure for Compact Development”, stated that “…market preferences have been shifting. Signs point to an increasing appetite—especially among generation Y—for higher-density living patterns and for transportation options that include transit, walking, and biking.”

Affordability

In a period of high-variability in the cost of fuel, bicycling offers a lower cost transportation option. Bicycling has an annual operating cost less than 4% of the average ownership and use cost of a car. In Howard County, few households report having no access to a motor vehicle (less than 4 percent) and 70 percent report having 2, 3 or more vehicles per family unit. The annual cost of owning and maintaining a car can range from $9,000 to $11,000 a year, even more if the car is older and requires more repairs. For a family, the bicycle is the most economic second or third car, providing independence and freedom for members of the household when the family car is already in use.

Traffic Congestion

In time, bicycling will have an impact on local traffic congestion. In Howard County, around one-third of all daily trips are less than three miles in length, nationwide 50% of all trips are three miles or less, a distance covered by bicycle in fifteen to twenty minutes. Today, most of these trips are made by automobile, in part due to a lack of safe walking and bicycling facilities. Improved bicycling conditions will reduce congestion by providing residents the option to travel by bicycle for shopping, running errands and visiting friends. At certain times of the day, there may be little difference in the time it takes to make a short trip by bicycle or by car, and bicycling may be a preferred choice to save time and money.

Health

All our citizens need opportunities for regular exercise and active transportation in order to maintain and improve their physical health. The Centers for Disease Control and Prevention recommends thirty minutes of moderate physical activity almost every day and adults who are physically active are healthier and less likely to develop many chronic diseases than adults who are inactive. Today, there are nearly twice as many overweight children and almost three times as many overweight adolescents in the U.S. as there were in 1980. Expanded and improved bi-

**National Average of Personal Trip Lengths**

1 American Community Survey, US Census, 2010
2 The American Automobile Association reports the average annual cost of owning a sedan to be $9,000 per year in 2012; an SUV is over $11,000. [http://newsroom.aaa.com/2012/04/cost-of-owning-and-operating-vehicle-in-u-s-increased-1-9-percent-according-to-aaa%E2%80%99s-2012-%E2%80%98your-driving-costs%E2%80%99-study/](http://newsroom.aaa.com/2012/04/cost-of-owning-and-operating-vehicle-in-u-s-increased-1-9-percent-according-to-aaa%E2%80%99s-2012-%E2%80%98your-driving-costs%E2%80%99-study/)
cycle facilities along with policies and programs that support active transportation will provide easy opportunities for our citizens to easily incorporate exercise into their daily transportation routines.

Local Spending
Economic benefits are also generated by the spending of local and visiting cyclists, especially by those that come to participate in large bicycling events like charity rides or triathlons. A 2004 economic impact study prepared for the Virginia Department of Conservation found that the estimated 1.7 million adult W&OD trail users in Northern Virginia suburbs spent about $12 million annually related to their recreational use of the trail. Other studies have documented similar impacts. Whether the bicycling draw is in a suburban, urban or rural context, it generates surprising levels of local spending.

Traffic Safety
Interestingly, more people bicycling will actually increase traffic safety for cyclists and safe, clear and consistent accommodations for cyclists enhance safety for all road users. For example, bicycle lanes not only give cyclists clear guidance and more confidence about riding in the road, they give motorists information about where to expect bikes. When entering a street with bike lanes from a side street or driveway, bike lanes provide better sight distance for motorists watching for oncoming traffic. Research undertaken by the Alliance for Biking and Walking shows that areas with more bicycling trips per capita have a lower frequency of bicycle/motor vehicle crashes. When bicyclists are encountered more frequently on roadways, motorists become more accustomed to sharing the road with them. Also, when more people ride bikes, it’s more common that a driver is also an occasional cyclist themself, so they have more awareness, understanding and patience for people on bikes.

Recreation
Creating a countywide network of bikeways will increase the opportunities for close-to-home and affordable recreation for people of all ages. It will enhance access to the County’s many public parks and other recreational venues. On County and Columbia Association trails, bicycling for recreation offers a way to de-stress, exercise and enjoy nature. On County roadways, particularly in western Howard County, bicycling offers a serious cardiovascular workout and a chance to appreciate a working agricultural landscape.

Environmental
Bicycling is not the sole answer to environmental issues such as air pollution and climate change, but it can make a meaningful contribution. Increased levels of bicycling reduce fossil fuel consumption and the resulting air pollution and carbon emissions. Every bike trip that replaces a car trip reduces pollution. Based upon research conducted by the U.S. Environmental Protection Agency, it is estimated that sixty percent (60%) of the pollution created by automobile emissions is emitted in the first few minutes of operation, before pollution control devices begin to work effectively. So even short trips make a difference.

Equity and Transportation Choices
Improving bicycle conditions will expand transportation choices for the entire community. People with low incomes more often depend on car-free options such as public transit, walking and biking. Access to public transit is much easier when biking is possible. Four percent of Howard County households do not have access to a motor vehicle. Many people cannot drive due to being under age, having a physical disability or other reasons. Some of these people can get around by bike if safety and conditions are improved. Bicycling may also be a solution for older residents who reach an age where driving is no longer an option by providing the ability to get to the grocery store, to medical appointments and to access recreational opportunities. Improvements to the bikeway network will make it easier for County residents to age in place, while also lowering transportation costs.

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3 http://www.americantrails.org/resources/adjacent/WODstudy04.html
5 American Community Survey, 2010 U.S. Census.
Section 2:
Existing Facilities
Existing Facilities

As of 2015, bicycle conditions in Howard County are highly varied. Rural two lane roads in the Western part of the County are narrow and largely without shoulders, many have low traffic volumes and remain popular with increasing numbers of recreational cyclists but increased traffic levels and development is impacting cyclists using these roads. Most of the large arterial roadways in the central and eastern part of the county have poor cycling conditions due to large traffic volumes, high traffic speeds and/or lack of space available for cycling. However, many collector roads and neighborhood streets have good cycling conditions due to low traffic volumes, low speeds, the presence of traffic calming and/or the availability of extra space for cycling.

The state highways in the county are also variable, for instance, MD 108, has high volumes of high speed traffic and no consistent bicycling facilities. However, recently upgraded highways like MD 32 have consistent and wide shoulders that have been designated by the state to provide bicycle access even as the roadway in general has been upgraded to highway design.

One of the county’s major bicycling issues are the barriers to connectivity, including major highways with few bicycle-friendly crossings, railroad lines, large natural areas and stream valleys with steep topography such as the Patapsco River.

The county has an extensive shared use path system that is centered on Columbia and extends south to Savage along the Little Patuxent River. The County is just beginning to install on-road bikeways such as bike lanes. Additional details describing the status of off-road and on-road facility development follows:

Off Road
Off-road facilities include Columbia Association’s pathway system, paths in residential developments, the Patuxent Branch Trail that connects Savage with Columbia, and other trail systems in parks like Centennial Park. While the pathway system is extensive in the Columbia and greater Columbia area, much of it is fairly narrow and quite steep in places.

On Road
The on-road bikeway network consists of a very few bicycle lanes, but a fair number of roadways with paved and striped shoulders that are sufficiently wide for cyclists to use. A number of residential streets have striped parking lanes that are minimally used, creating de facto bicycle lanes. Some roadways have wide outside lanes (13-15 feet) that provide cyclists a place to ride away from passing motor vehicles.

BikeHoward has classified paved and striped shoulders (of 4 feet or greater) as existing facilities; these shoulders are wide enough to accommodate cyclists. However, some roads with existing paved and striped shoulders may not be comfortable for all cyclists.

See Table 1 for an estimate of linear miles of existing on-road and off-road bikeways in the County.

Improvements for bicycling are already being made within the path networks and on the roadway system.

A few examples of recent activities related to bikeway network development follow:

- “pocket” bike lanes have been installed on Route 99 near Mt. Hebron High School and on MD 103 at Snowden River Parkway
- A trail is being designed to link the Howard General Hospital, Downtown Columbia and Blandair Park
- New bicycle lanes were installed on Great Star Drive in 2012 and extended on Stevens Forest Drive
- Some roads commonly used by cyclists, have received SHARE THE ROAD signs
- Columbia Association completed a pathway around Lake Kittamaqundi
In addition to on-the-ground conditions for bicycling, BikeHoward reviewed the existing planning and policy environment. The next chapter discusses these conditions and presents a comprehensive set of recommendations for County policies and planning practices.

Please see Map 1 on the following page for summary of existing bicycle facilities in the county as identified in the planning process.

<table>
<thead>
<tr>
<th>Bikeway Facility Type</th>
<th>Estimated Linear Miles or Count of Locations</th>
</tr>
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<tbody>
<tr>
<td>Paved Pathways (Owned by Columbia Association)</td>
<td>~95 Miles</td>
</tr>
<tr>
<td>Paved Pathways (Owned by DRP, HCPSS, or other HOA's)</td>
<td>~54 Miles</td>
</tr>
<tr>
<td>Bicycle Lanes</td>
<td>3 Miles</td>
</tr>
<tr>
<td>Paved &amp; Striped Shoulders (No parking)</td>
<td>~42 Miles</td>
</tr>
<tr>
<td>Tunnels under roadways</td>
<td>10 Locations</td>
</tr>
<tr>
<td>Bicycle/pedestrian bridges over roadways</td>
<td>5 Locations</td>
</tr>
</tbody>
</table>
BIKE HOWARD

Existing Facilities
Map No. 1

- On Road (Bike Lanes, Shared Roadways, Paved and Striped Shoulders)
- Off Road (Shared Use Path-CA Pathways, HC Trails and Other)
Planning and Policy Conditions and Recommendations

There are number of County agencies and non-county organizations that are involved in the planning, development and management of cycling infrastructure and cycling related programs. Each and every agency and organization has an important role to play in advancing cycling in the county, their roles are outlined in this section.

Additionally, the County has existing policies and infrastructure design standards that govern private and public development. BikeHoward reviewed these documents and developed policy recommendations and guidance to direct further actions.

Bicycling Related Roles and Responsibilities of County Agencies and Organizations

Office of Transportation
The Office of Transportation (OOT) performs the following roles related to transportation in the county:

The Office develops and oversees the implementation of the plans that guide transportation investments in the county; these plans include the county-wide bike and pedestrian master plans, and regional transportation plans. In addition, the Office develops and manages the grant and capital programs that fund the development of cycling facilities.

The Office oversees the provision of public transportation services, including route development, financial oversight and procurement.

Department of Transportation
The Department of Transportation (DDOT) performs the following functions:

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Department of Planning and Zoning
The Department of Planning and Zoning’s (DPZ) Development Engineering Division reviews private property and road development plans to identify opportunities for cycling and pedestrian infrastructure and compliance with subdivision regulations.

Department of Public Works
The following bureaus within the Department of Public Works (DPW) perform key roles:

- The Bureau of Engineering develops and implements major capital projects, including the development of new roads, road widening, sidewalks and intersections
- The Bureau of Highways oversees the maintenance and repair of the county’s sidewalks, roads and intersections, including repaving and restriping roads, street cleaning, and developing traffic-calming measures
- The Bureau of Facilities is responsible for the maintenance and upgrading of county buildings, including parking and grounds
- The Real Estate Services Division plays an important role by developing and managing developer agreements, sidewalk maintenance agreements and securing land for capital projects

Department of Recreation and Parks
The Department of Recreation and Parks (DRP) develops and manages Howard County’s recreational facilities and programs, including parks, community centers, and trails. The key bureaus within the department are:

- The Bureau of Capital Projects, Park Planning and Construction conducts long range planning efforts that guide park and recreational facility development, and constructs new parks, trails and park buildings
- The Bureau of Recreation Services manages and develops the recreational programs for the public, such as walking and hiking events, and educational classes
- The Operations Bureau maintains the County’s Parks and path systems

Columbia Association
Columbia Association (CA) plans, develops, constructs and maintains the pathway network within the organization’s boundaries. CA also manages a broad range of programs and events that use the pathway system, including the Columbia BikeAbout. CA also works closely with the County to coordinate planning and maintenance efforts.

Howard County Public School System
The primary role the Howard County Public School System (HCPSS) plays in relation to cycling is:

- Planning, development and construction of school buildings and grounds
- Installation and maintenance of bicycle parking on school grounds
Building and maintaining paths into and through school grounds, including paths that connect to County and CA paths

Bicycle Advisory Group
The Bicycle Advisory Group (BAG) is a cooperative effort between Howard County and advocates addressing their mutual interest in promoting safe and effective bicycle transportation systems. The Howard County Executive and County Council formed BAG in response to a request by advocates for regular meetings with departments which include bicycling and other active transportation modes as a part of their missions. Participating members of the BAG include advocates and representatives of the County Executive, County Council, Departments of Planning and Zoning, Public Works, Recreation and Parks and Office of Transportation. BAG also includes representatives from Columbia Association, State Highway Administration and the Maryland Department of Transportation. The BAG meets quarterly to review issues of concern to the bicycling community and the ways advocates and government can work together to address those issues.

Existing Policies & Practices
The development of cycling facilities in the county is closely linked to laws, regulations and practices that guide the development of land, housing and transportation. These formal laws and policies are outlined in the Zoning Ordinance, Subdivision Development Regulations and the Howard County Design Manual. During the planning process, these manuals, codes and practices were reviewed to identify sections and areas that impact conditions for cycling and the implementation of the Plan.

Practices
The County has informal county policies in effect that impact the development of cycling infrastructure.

- Executive policy that all newly paved road and newly constructed roads will accommodate bicycles where possible
- The Department of Public Works has a draft internal design manual to provide guidance on the design of bicycle facilities on all new and resurfaced roads

The Zoning Ordinance
The Zoning Ordinance regulates the use of land within zoning districts in the county and is the primary tool used by the County to implement the County’s general plan. The zoning ordinance guides the supply and density of housing and commercial development, types of uses allowed in different areas, setbacks and the amount of parking required.

Subdivision and Land Development Regulations
Along with the Zoning Ordinance, the subdivision regulations guide the subdivision of land and new development in the county. The regulations are divided into a number of subtitles. BikeHoward identifies relevant sections that impact the development of cycling facilities in the county.

Subtitle 1 is the primary section that guides and controls the subdivision of land, provides design guidance and requirements for development projects, and the steps and processes for approving and implementing development projects. Subtitle 1 is a comprehensive document, but also references other county documents for specific guidance. Subtitle 1 provides direction and guidance on when public improvements are required during the subdivision and land development process. However, this document does not include language related to cycling and cycling facilities.

Subtitle 11, the Adequate Public Facilities Ordinance (APFO) controls the rate of development in the county by ensuring that schools and roads are adequate to accommodate the impact of new development. The APFO requires development projects to pass certain tests as a condition for approval. The APFO has language specifically related to downtown Columbia and the county as a whole.

The countywide portion includes three tests: housing allocations test, schools test and a roads test. The tests are designed to assure; that a proposed development does not exceed the number of houses allocated to an area by the general plan’s growth targets; that the number of new residents associated with a new development will not exceed the capacity of public schools. The roads test, also known as a traffic study, measures the impact from car traffic from a proposed development. The roads test
measures the impact on the automobile “levels of service” at certain types of intersections within a certain distance from the proposed development site. Generally, if a project fails the roads test, mitigation is required as a condition for plan approval. Mitigation measures can include adding car travel and turning lanes or paying a fee in lieu to the County for future road improvements.

The traffic study methodology and test thresholds do not include factors for the development’s generation of bicycle trips. Moreover, the tests called for by the county wide APFO do not require measuring the impact on pedestrian and cyclist traffic, the impact on conditions for cyclists and pedestrians from the proposed development or the impact on bicycling or walking from the proposed road mitigation measures. This is left to the discretion of the Director of Public Works.

The Howard County Design Manual

The Design Manual details the County’s technical engineering standards, approved by resolution of the County Council, for design, construction and inspection of bridges, roads, storm drain structures, storm water management systems, sidewalks, walkways, pathways, trails, parking areas, traffic-control devices, water and sewer facilities, and other improvements. Volume III, Roads and Bridges details criteria and standards for roads in the county. Volume III presents extensive and detailed information and guidance on the design of roads and intersections.

The Design Manual references cycling in a number of sections but does not provide detailed road section drawings that are specifically related to cycling infrastructure. However, the manual does provide guidance related to bikeways in general; and specific guidance for roads classified as major collectors or greater-- “Outside lanes on curbed roadways on major collectors or above shall be a minimum of 14’ wide to facilitate bicycle use” (2.4 Typical Sections).

Subtitle 15 of the Subdivision regulations provides for the development of a Design Advisory Panel. The design advisory panel provides expert guidance to the Director of the Department of Planning and Zoning on new development plans in parts of the county that have design manuals, such as the US 1 Corridor, Downtown Columbia and areas for age restricted housing.

The Downtown Columbia portions of the APFO do require that cycling and walking be addressed specifically in the traffic study and does allow for the use of mitigation measures if the test is not passed.

The scenic roads section protects the character of roads that meet certain characteristics and have been added to the scenic roads inventory. Some of the key scenic road characteristics include: a) they go through an area of outstanding environmental features and b) have outstanding views or follow historic alignments. The ordinance allows changes to these roads if the changes are designed to preserve the character of the road and improve safety. The Howard County design manual includes design standards for scenic roads.

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The Design Manual, in 2.24 (section j), also states the following:

“Pathways shall be constructed in subdivisions where directed by the Department of Planning and Zoning or under capital project implementation by the Department of Public Works or the Department of Education. Residential areas, school and open space areas and short routes connecting residential and employment centers typically warrant provisions for pedestrians and/or bicyclists. Bikeways may be separated from the roadway but within the road right-of-way such as through open areas. Cul-de-Sac roads and local roads will not normally have designated bikeways because of the low traffic volumes and speeds. The location of all bikeway systems should be compatible with the General Plan for Howard County. Bikeways may be incorporated as part of a combined bikeway/pedestrian pathway system where they can be accommodated with adequate safety. When planning a bikeway, the Department of Planning and Zoning shall be consulted to provide coordination between the planned bikeway and those in surrounding areas. The Department of Public Works shall be consulted when planning a bikeway within or adjacent to a road right-of-way. The design of bikeways shall be in conformance with the AASHTO Criteria for Bikeways.”
Policy Recommendations for Bicycle Infrastructure Planning, Implementation and Management

To ensure the most efficient development of a bicycle-friendly Howard County, policies affecting bicycling in the Zoning Ordinance, the Subdivision and Land Development Regulations, and the Howard County Design Manual should be reviewed and modified as necessary. This section of BikeHoward identifies key issues addressed by these documents and recommends the policy outcomes that should be achieved in initiatives to update and revise them.

Additionally, there may be other policies, practices and design guidelines that need to be revised to achieve the objectives in this section of the plan. The following recommendations are organized by general topic and may need to be addressed by more than one agency or within more than one policy document.

Transportation Planning
Changes to transportation planning practices are recommended in the areas of staffing, transit planning and traffic projections.

**Staffing**

**Recommendation:** Develop a Bicycle and Pedestrian Coordinator Position.

To address the increased level of work necessary to implement BikeHoward and the specialized skills needed to effectively address bicycling issues, at least one person should be hired to provide focused leadership in this area.

**Public Transit Planning Activities**

**Recommendation:** Ensure that the practice of scoping transportation studies always includes elements related to bicycling and other relevant inter-modal and multi-modal topics.

Future planning and feasibility studies related to existing or new public transit services or systems should address bicycling in a variety of ways, i.e. bikes on transit vehicles, bike parking at transit stations and stops, bicycle access to transit stations and stops.

**Future Traffic Projections**

**Recommendation:** In coordination with the Baltimore Regional Transportation Board develop long-range transportation forecasting methods and models for bicycle and pedestrian trips.

Current traffic models do not typically account for bicycle trips, and existing bicycling levels are admittedly low.

**Recommendation:** Consider the establishment of a bicycle counting program that would allow the County to measure annual changes in bicycle ridership and traffic counts to better understand the impacts of enhanced bicycle facilities.

At least 10 locations, including both road and trail settings, can be identified for use of automated bicycle counting technology. Counts can be performed on a continuous basis. The County can model its program after a similar program evolving in Arlington, VA and promote the activity with the Baltimore Metropolitan Council and its member jurisdictions. Baltimore City has recently initiated a manual counting program using trained local cyclists and transportation professionals.

**Road System Design**

Roadway and bikeway design policy and guidelines should be thoroughly reviewed and updated. In general, bikeway design practices should conform to the current edition of the American Association of State Highway and Transportation Officials (AASHTO) Guide to the Development of Bicycle Facilities. In addition to this, County guidelines should be informed by SHA’s currently adopted Bicycle Policy & Design Guidelines, the Urban Bikeway Design Guidelines from National Association of City Transportation Officials (NACTO) and the Maryland and Federal Manuals on Uniform Traffic Control Devices (MUTCD). County standards should be based upon the most current national and state standards and guidelines.

While these guidance documents are useful resources, the County also needs specific guidelines tailored directly to developing the bicycle network; and its relationship to other users and environmental considerations.

The following recommendations will enable DPW and the Maryland State Highway Administration (SHA) and other relevant entities to design and build many of the bicycle facilities and treatments that make up the bikeway network to be described in the following chapters of BikeHoward.

**Complete Streets**

**Recommendation:** Develop a “complete streets” policy and a Complete Streets Design Manual to ensure that Howard County streets are designed, built, and operated to enable safe access for all users, including pedestrians, bicyclists, motorists and transit riders of diverse ages and abilities. This could include requiring the development of site and location specific bicycle and pedestrian circulation plans.
General Roadway and Bikeway Facility Design Guidelines

**Recommendation:** Consider the adoption of the specific roadway and bikeway design guidelines related to the facilities proposed in this Plan as outlined in Appendix A.

Appendix A provides specific guidance regarding lane diets and minimum travel lane widths, shoulder widths, bicycle lane widths, shared use path widths, shared use sidewalk widths and other features and is intended to serve as guidelines for the county and inform the county’s actions with SHA in relation to state roads in Howard County.

By-pass lanes

**Recommendation:** Monitor DPW and SHA roadway resurfacing and design projects.

In rural areas, where by-pass lanes are provided on two lane roads, if the roadway section approaching the by-pass lane has a shoulder it is essential that the shoulders are continued through the widened roadway section.

Slip Lane Design and Warrants

**Recommendation:** Consider revising traffic volume warrants for slip lanes, including the review of design standards to include: a) pocket bike lanes and dashed bike lanes showing the cyclist’s left merging movement, b) the radii of slip lanes should be designed to reduce entry and exit speeds, and c) high quality bicycle and pedestrian crossing accommodations should be provided for those traveling on the crossing roadway.

Right turn slip lanes at intersections can create a dangerous situation for cyclists.

Bicycle Design for Roundabouts

**Recommendation:** Consider retrofitting existing roundabouts and traffic circles with appropriate signs and striping to provide bicycle accommodations and appropriate directives and warnings for bicyclists and motorists. Update design guidance that will be used to design future roundabouts.

Most roundabouts in the county are appropriately small and one lane. Bicyclists should be encouraged to take the lane upon approach to roundabouts and they should be provided sufficient advance directive to do so. Motorists should be alerted to expect this movement from cyclists and be directed to yield respectfully. This can be done by providing signage for motorists and cyclists as per the MUTCD.

Bicycle Friendly Traffic Calming

**Recommendation:** Consider designing all traffic calming treatments, such as speed humps, curb extensions, chicanes, etc. to allow easy passage for cyclists. When travel lanes are narrowed at intersections or mid-block crossings to reduce crossing distances for pedestrians, slots should be provided so that bicyclists traveling on the right do not have to merge into the travel lane to pass through the narrowed section of roadway.

Bicycle-friendly traffic calming designs can be found in a number of traffic calming design resources, including The AASHTO Guide for the Development of Bicycle Facilities; Traffic Calming: State of the Practice, ITE/FHWA, 1999; and the Institute of Transportation Engineers’ (ITE) website and fact sheets (http://www.ite.org/traffic/tcdevices.as).

Compliance with State Stormwater Regulations

Increasingly, compliance with state stormwater management regulations are affecting shared use path projects and on road bicycle facilities. Shared use path projects are being scrutinized closely because they add impervious surface and are reviewed in the same manner as parking lots and roads. This can cause paths to be reduced in width, reducing their effectiveness. In addition, these regulations can also lead to road improvement projects that minimize shoulder width or eliminate paved shoulders in efforts to meet stormwater regulations.

**Recommendation:** Given their low impact on stormwater runoff and water quality, the county should consider advocating for and work with state officials to identify and encourage alternate best practices for stormwater management appropriate for non-motorized pathways.

**Recommendation:** Trail projects should consider utilizing Low Impact Development (LID) and other design treatments as a part of trail and path projects to ensure that trail designs do not promote erosion and appropriately direct runoff to pervious areas that can filter and absorb water.

Low Impact Development is a design and engineering approach to manage storm water runoff which uses conservation and on-site natural features close to a project to mitigate the impact of stormwater.
**Recommendation:** Roadway improvement projects should consider utilizing pavement reduction strategies, where appropriate that support bicycling, such as:

- Reducing the width of wide motor vehicle lanes (greater than 12 feet)
- Reducing curb radii at intersections
- Reducing the use of slip lanes for right turn movements
- Minimizing the foot print of intersections, and including LID treatments in place of asphalt where it is not needed for vehicular movements
- Minimizing the length of turn lanes and stacking lanes
- Minimizing the use of acceleration lanes
- Using planted buffer spaces to separate bicycle traffic from high speed motor vehicle traffic

**Howard County Scenic Roads**

The County has a policy designed to help preserve the integrity of view sheds and environmental features of certain roads.

**Recommendation:** Consider amending Howard County Scenic Roads legislation to accomplish the following: a) clarify that road improvements allowed on designated scenic roads to provide safe conditions for traffic includes improvements for the safety of bicycle traffic, b) that improvements listed in BikeHoward as components of the “facility type” Shared Roadway with Safety Treatments are in keeping with this policy recommendation.

**Land Development Policies that Govern Private Development and Site Plan Review**

**Recommendation:** County zoning, subdivision policy, and the County Design Manual, all of which regulate new development, redevelopment and site design should be, where feasible, updated to achieve the following objectives related to implementing BikeHoward and improving conditions for bicycling:

1. Ensuring that all new development or redevelopment plans do not reduce or degrade the amount of space available for bicycling on public roads along the property frontage or on access roads. This shall apply to existing travel lanes of 11 feet or greater, paved shoulders, parking lanes and other road elements not marked or shown as a legal bike facility.

2. Ensuring that appropriate types and quantities of bicycle parking are provided in commercial, retail, institutional, multi-family residential and public facility developments.

3. Ensuring that bicycle and pedestrian connectivity from residential developments is provided to surrounding developments as well as to roadway, utility, school and park rights-of-way adjacent to the property.

4. Ensuring that commercial development provides bicycle and pedestrian connectivity to adjoining properties.

5. Ensuring that large tract multi-family residential developments provide public access ways through the development that are designed for bicyclists and pedestrians.

6. Increasing the traffic generation thresholds that trigger provision of right and left turn lanes into the development from arterial and collector roads. Emphasis should be placed on reducing delays from left turns. A higher threshold of traffic generation should be provided before right turn receiving lanes are required.

7. Determine the provisions that could require offsite road improvements related to traffic impacts include provision of shoulders or bike lanes for up to 0.1-0.2 of a mile in each direction from the development property boundary on entrance frontage.

8. Intersection improvements required of developers as a result of traffic impacts should include upgraded bicycle and pedestrian...
accommodations at and approaching the intersection.

Recommendation: A representative of the Office of Transportation should be added as a member of the Subdivision Review Committee to ensure achievement of the objectives enumerated above and to maintain an ongoing focus on compliance with the Bicycle Master Plan and the Pedestrian Master Plan throughout the subdivision and site development plan review process.

Howard County Public School Policy Governing Site and Road Design for Public Schools

Recommendation: The following recommendations are provided for guidance and direction on how public school property can contribute to a bicycle-friendly Howard County. The Howard County Public Schools and School Board should consider adopting the following policies:

1. Replace existing substandard bicycle parking equipment with racks that meet standards described in this plan and begin a process of providing covered bicycle parking where bicycle access is highest.

2. Manage bicycle parking supply in response to use and need, to ensure that all schools have sufficient supply to meet the needs of students, teachers, staff, visitors and school and non-school events that use school facilities.

3. At middle and high schools especially, provide appropriate bicycle facilities on and/or adjacent to school entry roads, drive ways, parking lots and circulation roadways.

4. Provide pathways through school grounds and around athletic fields as identified in BikeHoward, and as may be identified in future updates of BikeHoward to ensure that school properties can contribute to a continuous and connected bikeway network. Funding may be provided through HCPSS capital improvement funds, county transportation funds, and other funding sources, including state and federal grants.

5. Provide direct bicycle and pedestrian access paths to existing and new schools from adjacent neighborhoods. Where ever possible these paths shall be provided by residential property developers.

6. Consider siting new schools in locations that will: a) maximize access by walking, bicycling and use of public transit; b) ensure that school site design minimizes conflicts between motorized and non-motorized access modes and c) favors student and other arrivals by walking, bicycling, public transit and school bus, not motor vehicle drop-off.

County Policy Governing Park Design and Development of County Parks and Facilities

Recommendations: The following recommendations are provided for guidance and direction on how parks can contribute fully to a bicycle-friendly Howard County. The Howard County Department of Recreation and Parks (DRP) should consider adopting the following policies:

1. Replace existing substandard bicycle parking equipment with racks that meet standards described in this plan and begin a process of providing covered bicycle parking where bicycle access is highest.

2. Manage bicycle parking supply in response to use and need, to ensure that all parks have sufficient supply to meet the needs of park visitors.

3. Provide temporary bicycle parking for special events as it may be requested by event sponsors.

4. Promote bicycle access to parks as an alternative to motor vehicle access and as a way to: a) reduce the need for asphalt surface parking lots, b) reduce car trips and resulting air pollution, and c) promote healthy and active living.

5. Provide appropriate bicycle facilities on and/or adjacent to park entry road drive ways, parking lots and park circulation roadways.

6. Develop pathways through park lands as identified in the BikeHoward, and as may be identified in future updates of the Plan. Funding may be provided through DRP capital improvement funds, County transportation funds, or other sources.

7. Design and build Transportation Trails (as so designated in this Plan) to width and surface standards detailed in Appendix A.

8. Update the Blandair Park Development Plan based upon consideration of proposed adjustments to a small number of proposed trail alignments. These alignments will improve directness and user experience in the bikeway network and better enable park trails to contribute to a continuous and connected county-wide system of bikeways.
9. Implement the on-road, off-road and spot recommendations in this plan that are on or directly related to Howard County parklands. These may be in Centennial Lake Park, Meadowbrook Park, Rockburn Branch Park, Cedar Lane Park, and on the Patuxent Branch Trail.

10. Provide direct bicycle and pedestrian access paths to existing and new parks from adjacent neighborhoods.

11. In regional parks with large pathway systems, DRP should consider creation of a hierarchy of paved paths, providing sufficient width for high volumes of mixed use, and through bicycle movements on select paths, and providing narrower, varied-surface paths for pedestrian strolling, hiking, nature observation, etc.

Bikeway Management & Maintenance

Due to the extensive pathway system managed by Columbia Association and the Department of Recreation and Parks, the County is well acquainted with the maintenance and management of shared use paths. None the less, these practices will need to be upgraded to appropriately manage shared use paths for transportation use. Moreover, as the inventory of on-road bicycle facilities increases, management and maintenance of this system will require greater attention. The following list of maintenance and management practices for path and on-road bikeways are recommended.

On-Road Bikeway Maintenance and Management

Recommendations:

1. Use the County’s mobile app. (Tell HoCo) and/or online reporting systems system to identify road hazards that pose a safety risk for cyclists. Encourage bicycle clubs and advocacy groups to use this service. As hazards are addressed, the County should provide feedback to the citizens that report problems as well as to the community at large, to describe what citizens and government can do together in an ongoing partnership.

2. Develop a bike lane and shoulder sweeping program that focuses on the roads with the worst debris build up and those with the highest user levels.

3. Restripe bicycle lanes and reapply shared lanes markings as needed.

4. Develop an asset management database for maintenance of wayfinding and other signs used in the bikeway system.

5. Develop a coordination protocol between County roadway maintenance officials and State Highway Administration roadway maintenance offices.

Trail Maintenance and Management

Recommendations:

1. Expand the geo-coded emergency response location system to include CA and other pathway tunnels and other regularly spaced markers to ensure that the trail systems are fully covered.

2. Develop a program that involves volunteers in trail maintenance, especially youth on County paths and trails.

Volunteer cyclists may also be useful to conduct periodic visual inspection of bicycle related signs and markings.

The following Chapter discusses how the network was developed.
Section 4:
How the Network Was Developed
Learning about the County

BikeHoward approached learning and studying cycling conditions in the county through the following methods:

- Gathering input and knowledge from county residents and stakeholders through a series of public meetings, interactive online maps and interviews
- Conducting extensive field analysis of the roadway system, existing trails and potential future trail corridors
- Reviewing relevant local and state planning documents and initiatives
- Reviewing Columbia Association’s Active Transportation Action Agenda

Public Input

Public involvement was facilitated through 6 public workshops, an online survey and an online interactive map. More than 750 people were engaged in the process and provided comments and ideas on every aspect of bicycling in the county. Please see Appendix B for additional detail on the public outreach activities.

Field Analysis

Field analysis was conducted on approximately one-third of the county’s roads (including state highways in the county). Additional review was conducted on county trails and potential trail corridors. The trail assessment looked first at the potential for the existing trail or potential trail to provide an important transportation connection. Additional factors reviewed were related to engineering feasibility and property ownership. Please see Appendix B for additional detail on the roadway and trail assessment process.

What is a Bikeway Network?

A Bikeway Network is concept used in transportation planning to identify a set of roadways, shared use paths and other bicycling infrastructure (such as bridges and tunnels) that will function effectively for bicycle transportation.

It is comprised of existing shared use paths and roadways that are good for bicycling, as well as the roads and paths that need improvement to better accommodate bicycle travel. It also includes proposed new pathways, new bridges and tunnels and even new roads that may be called for in existing development plans.

The goal of a Bikeway Network is to establish effective connectivity between trip origins and destinations so that bicycling can be a viable option for greater numbers of people. As a whole, a proposed Bikeway Network establishes both a vision and a “road map” for making a community safe and attractive for bicycling.

It is important to note that many existing roads, chiefly neighborhood streets, are already bicycle-friendly, but may not be included in a Bikeway Network because they do not need special bicycling facilities or are not critical for system-wide transportation connectivity. Likewise, many trails may not be included because they serve primarily as capillaries that supplement the network, or because they are recreational in nature and do not need to be upgraded for transportation use.
Planning Context
More than twenty existing or ongoing project plans, general planning and study documents were reviewed. The review looked for nexus points, i.e. factors and issues which may have some important relationship to bicycling and thus the potential to inform the Plan. See Appendix C for additional detail on the plans reviewed.

Themes

Comfort for All
For a network to work for all types of cyclists, it must be comprised of facilities that increase the physical safety of cyclists (as well as cyclists’ perception of safety). Concern for safety in traffic is the primary reason Americans give for not bicycling for transportation, and the survey of Howard County residents conducted during this planning process revealed the same.

A goal of BikeHoward is to create a seamless network of roadways, trails, public transit services and parking facilities that serves cyclists of all skill and comfort levels and bicycle trips for all purposes. To do this, BikeHoward focuses on developing facilities for a broad range of people, from expert cyclists comfortable riding in all conditions to families that want to run local errands by bicycle and youth that want to bike to school.

The classification of bicyclists is informed by research conducted by the City of Portland, Oregon. Through surveys of both existing cyclists and those toward whom promotional efforts were directed, Portland found that its overall population could be divided into four different groups based upon their attitude toward bicycling for Transportation (see Figure 1):

- **Strong and Fearless** riders (less than 1%); this group is willing to bicycle under almost any traffic conditions
- **Enthused and Confident** cyclists (7%); this group is generally willing to ride in urban areas but prefers low volume streets and dedicated bicycle facilities
- **Interested but Concerned** cyclists (60%); this group is hesitant to ride in urban traffic and tends to stick to very low volume, low speed neighborhood streets or shared use paths and greenway trails
- **No Way No How** (33%); people who would not cycle under any circumstances

Moreover, Portland found that cyclists’ attitudes toward utilitarian bicycling were essentially a reflection of their skill and confidence levels. From this work Portland has concluded that making improvements to the physical bicycling network is essential to:

a) Get the *enthused and confident* to ride even more often and to more varied destinations; and

b) Increase the numbers of people in the *interested but concerned* group to get engaged in bicycling for transportation.

Portland’s work has been built upon by research published by the Mineta Transportation Institute that looked at bicycling stress levels and “low-stress” bikeways. This study defined a range of stress levels cyclists experience while bicycling in various settings. Stress is primarily determined by three factors:

- The cyclist’s skill level
- The traffic conditions on the road or trail (speed, volume and mix)
- The degree of protection from traffic provided by the bicycling facility and/or overall roadway design

Low stress bikeways can now be defined as those that provide a high level of comfort for even the lowest skilled, in low to moderate traffic conditions.

Figure 1: Classifications of Utilitarian Cyclists

1 http://www.portlandoregon.gov/transportation/article/158497

However, it is important to note that cyclists of the highest skill level require less protection from motor vehicle traffic and have greater tolerance for high stress traffic conditions, and thus may consider a 4-5 foot shoulder on a low volume road with 45 mph car traffic a “low stress” condition, whereas less skilled cyclists and children may not consider a 10 foot shoulder on such a road sufficient to make it low stress.

Because traffic conditions on a roadway are a major contributor to the stress factor, the same facility may be a low stress bikeway to some in certain settings, a medium stress bikeway to others in certain settings, and a high stress bikeway to still others in a certain setting.

As a result, bikeway types (i.e. facilities) are classified as “low stress” bikeways, and “variable stress” bikeways. Moreover, the design quality of the bikeway, as well, will play a role in its ability to reduce stress for cyclists.

In most suburban settings, shared use paths of 10 feet in width, sidewalks with bikes permitted, and residential streets are low stress for most cyclists. Protected Bike Lanes, also known as Cycletracks, a European bicycle facility now being used in the U.S., are also low stress bikeways. A bicycle lane is a “variable stress” bikeway. (See Figure 2, Traffic Stress Matrix, for further illustration of this concept.)

![Figure 2: Traffic Stress Matrix](image-url)
Connections

For a bicycle network to be useful, it needs to connect people to places they want to go, be continuous, direct and efficient, and be easy to navigate. BikeHoward addresses connections in four ways: 1) connecting people and places, 2) connecting Howard County to surrounding jurisdictions, 3) addressing barriers to bicycle travel and 4) closing gaps in and extending the existing pathway networks.

Connecting People and Places

Based upon public input and mapping of neighborhoods, rural villages, employment centers, recreational destinations, schools and libraries, transit hubs, major trails and commercial areas, a set of 51 key geographic destinations within and just outside the county were identified and confirmed by the Technical Advisory Group as key places that need improved bicycle access. In the selection process, emphasis was placed on the most heavily populated and developed core of the county, which can be best understood as the area within the planned water and sewer service boundary.

Map 2 provides a schematic map of these locations. For a list of Key Destinations please see Appendix D.

Connecting Howard County to Surrounding Jurisdictions

A second planning exercise included review of bicycle plans by the state and surrounding counties, and included public input to identify key border locations where on-road bikeways or trail links are needed for bicycle access to and from surrounding jurisdictions. Recreational as well as transportation routes were considered.

Addressing Barriers to Connections

Like all of central Maryland, Howard County has many barriers to bicycling such as major highways, railroad corridors and stream valleys. There are also large natural areas such as the protected lands along the Patuxent and Patapsco rivers. The following strategies are recommended for addressing these types of barriers.

- Improve the transportation utility of trails that have existing grade separated crossings (bridges, tunnels or underpasses) of major highways, railroads, rivers and streams.
- Use and improve trail and road routes that cross limited access highways at locations where there are no interchanges.
- Provide improvements to routes that use the most convenient and direct alternatives around barriers that cannot be directly addressed in the near term.
• Provide a priority list of key grade separations that can be pursued as major funding opportunities become available.

Throughout the planning process the public continued to stress that intersections along arterial roadways are also key barriers to bicycling. Due to the large crossing distances and multiple turn lanes at typical intersections, cyclists can easily go unnoticed to motorists, or be hidden behind other vehicles. It can also be difficult to make left turn movements at such intersections. As a result BikeHoward has identified a number of locations where intersections should be improved.

**Closing Gaps in and Extending the Existing Pathway Networks**
Columbia has one of the most extensive pathway networks of any suburban community in the U.S. A plan to build on that existing CA pathway network, and a plan for improving that network has already been articulated by the Connecting Columbia Active Transportation Action Agenda. This plan, completed in 2012 by Columbia Association identifies and highlights key trail segments that will contribute significantly to use of both CA pathways and Howard County Recreation and Parks Department’s trail systems.

BikeHoward will build upon and improve the pathway system by:

• Closing gaps in existing systems
• Improving connectivity to adjacent land uses such as employment centers, retail shopping areas, residential neighborhoods and key roadways
• Widening and upgrading key trail segments so that they can safely support bicycle transportation usage
• Extending pathway networks where feasible along stream valley, road corridors and utility corridors

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**Bicycle Trip Types and Purposes Served by the Bikeway Network**

**Trips of 3 miles or less**

• Casual riders
• Commuting to work
• Shopping, errands, seeing friends
• Children and youth biking to school
• Close to home recreation

**Trips of 3 miles or more**

• Biking to transit or park & rides
• Commuting to work
• Long distance recreation
• Fitness and training
Prioritization of Recommendations

BikeHoward developed over 500 miles of roadway and pathway improvements throughout the county. The full set of recommendations is referred to as the Countywide Bikeway Network and represents the long term vision for the county’s bikeway network, a bikeway network that provides a high level of connectivity for the county.

To make implementation practical, these facility recommendations were prioritized and divided into networks referred to as the Short-Term Network, Mid-Term Network, and the Long-Term Network.

In general, the Short-Term Network is comprised primarily of lower cost improvements and includes a very small number of “non-standard” facility types. The Mid-Term Network is more balanced between lower cost and high cost activities. The balance of the network includes primarily higher cost activities and supplemental routes that provide additional linkages to destinations, or connections to destinations of lesser importance.

In addition to proposed improvements, each network also includes existing roads and trails that are important because of the connectivity they provide, even though further improvements are not necessary.

Prioritization Criteria

BikeHoward approached prioritizing the countywide network into the mid-term and Short-Term networks using the following baseline criteria for all recommendations:

*That all recommendations must connect with each other, to existing facilities, or to Key Destinations as identified in BikeHoward. There can be no gaps; and each network, while limited in scope, should be fully functional if completed as planned.*

Three specific types of criteria were identified and used in the screening process to develop the Short, Mid and Long-Term Networks. The basic framework used in the screening process is shown in Figure 3:

- Overarching Criteria
- Geographic Criteria
- Feasibility Criteria

Overarching Criteria

Overarching criteria address values that are represented in most recommendations in the Mid-Term Network and many recommendations in the Short-Term Network, including:

- Leveraging existing facilities
- Safety Improvements
- Better serving riders in “enthused and confident” and “interested but concerned” groups as described in BikeHoward
Geographic Criteria

Geographic criteria ensure that the network provides connectivity and continuity to as many key destinations as possible. The Mid-Term Network connects to 95 percent of the Key Destinations in the county and the Long Term network represents the balance of the key destinations in the county as shown in Map 2. The Short-Term Network provides a small set of core routes that serve north-south and east-west movements within the core of the county and key corridors for access to popular recreational routes.

The public input gathered throughout the planning process is primarily integrated into the geographic criteria. The Key Destinations list was developed based upon the destinations identified in public meetings and workshops as well as on the interactive map. As routes were selected to link these destinations, input from cyclists was considered heavily. Moreover, public input was used to determine which recreational routes were most important to include in the Short-Term Network.

Some key criteria are:

- Creating connectivity between important destinations such as trails, schools, parks and employment clusters
- Develop select scenic/recreational routes
- Align with Columbia Association’s Active Transportation Action Agenda

Feasibility Criteria

Feasibility criteria are factors related to the physical nature of each recommendation, including the proposed facility type, and other logistical issues related to implementation, including the level of effort required and the estimated cost.

Some key criteria are:

- Facility type
- Level of effort needed to implement the facility
- Right of way availability
- Cost

For a full discussion of the screening process, please see Appendix E.
Section 5:
The Bikeway Network
The Countywide Bikeway Network

This chapter describes the Long-Term, Mid-Term and Short-Term networks and the recommendations that comprise the Countywide Bikeway Network and describes the bikeway facility types that make up the networks.

Short-Term Network

The Short-Term Network utilizes the core of the existing pathway system and provides a basic level of connectivity in the more heavily populated and developed core of the county. The Short-Term Network is projected to take 10 years to fully develop from the adoption of BikeHoward. Outside of the existing pathway system, it also leverages committed projects being planned and built by as part of the redevelopment of Downtown Columbia and by Columbia Association.

This network mostly includes variable stress facility improvements on low and medium volume roads. It includes 72 miles of on-road bikeway improvements, 23 miles of new and upgraded pathways and 47 spot improvements at intersections and pathway crossings.

A few north-south routes are included, linking Historic Ellicott City and the Howard County government center to downtown Columbia, Oakland Mills, Savage and Laurel. East-West routes link the Howard County General Hospital (HCGH) to Rockburn Regional Park, and River Hill to the Savage MARC station.

Mid-Term Network

The Mid-Term Network is oriented to ensure that most of the Key Destinations identified by the long term vision for the county are connected. It includes 160 miles of upgrades and improvements on roads, 34 miles of new and upgraded paths and recommends 97 spot improvements at intersections, trail crossings, bridges and tunnels.

In addition to recommendations for trail and pathway upgrades, the Mid-Term Network includes much of the existing CA trail system. A major goal of this network is to create a bikeway system that will attract more people from the interested but concerned group of cyclists. It relies more heavily on development of low and medium stress bikeways in high stress corridors. Build out of this network is projected to take 20 years from plan adoption. It aims to create both transportation routes and recreational routes, linking more of the scenic and historic corridors in both the western and eastern portions of the county.
Long-Term Network

The Long-Term network is the long term vision for the whole county and is comprised of the recommendations that are not included in the Mid-Term and Short-Term Networks.

Many of the facility improvements designated in this network will likely happen in conjunction with major roadway reconstructions and expansions and is projected to take place 20 to 30 years following the adoption of BikeHoward. Other types of projects in the countywide network include the following:

- New bicycle overpasses of major highways
- Many of the more costly cycle tracks; and many of the more costly new trails
- Development of lower stress routes to destinations already served by variable stress routes
- Upgrades of variable stress facilities implemented in the Short-Term or Mid-Term to low stress facilities

<table>
<thead>
<tr>
<th>Bikeway Facility Type</th>
<th>Network (Miles)</th>
<th>Total (Miles or Locations)</th>
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<tbody>
<tr>
<td><strong>On-Road Bikeway Improvements</strong></td>
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<tr>
<td>Minor Upgrades to Existing Facilities</td>
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<tr>
<td>Recommendations for New Facilities</td>
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<tr>
<td><strong>New and Upgraded Path/Cycletrack or Protected Bike Lanes</strong></td>
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<tr>
<td>Upgrade Existing Pathways</td>
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<tr>
<td>Construct New Shared Use Paths &amp; Protected Bike Lanes</td>
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<td>21</td>
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<tr>
<td>Spot Improvements</td>
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<tr>
<td>Trail Access and Bike Linkage Improvements</td>
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<td>17</td>
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<td>7</td>
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<tr>
<td>Intersection Improvements</td>
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</table>

*In addition, the existing bicycle and pedestrian bridge over Route 29 between Downtown Columbia and Oakland Mills was the topic of the 2015 “Downtown Columbia Bridge Feasibility Study”. www/howardcountymd.gov/Departments/County-Administration/Transportation/Transportation-Projects. The study evaluated several options to modify the existing bridge or build a new bridge to accommodate transit in addition to improving bicycle and pedestrian traffic. The potential change to this bridge has been incorporated in Appendix F and Appendix G of this plan.*
Facilities in the Bikeway Network

The County’s Bikeway Network is made up of a variety of bikeway facility types and spot improvements, each of which has been assigned to specific road and trail segments based upon need and applicability. The visual glossary presents the various bikeway types proposed in BikeHoward.

Linear Improvements

The networks include a range of standard and non-standard bikeways. They also include the use of low volume neighborhood streets and other streets where cyclists can share the roadway with low speed traffic. The Networks include other facilities such as shared use paths, neighborhood greenways and shared lane markings (sharrows). New treatments such as colored bike lanes are also included.

Spot Improvements

In addition to linear facilities, spot location recommendations are included, such as intersections that need to be upgraded, trail crossings that should be made safe and functional, and small path connections, such as curb ramps, barrier removal locations, stairway retrofits, etc. Locations where new or upgraded bicycle/pedestrian bridges or tunnels are needed are also included. A table with detail on the spot locations is presented in Appendix F.

Network Mapping

Accompanying the main body of the document are two large scale maps.

A map titled “Countywide Network by Phase” presents the network by the three phases.

Click here to open the map.

A map titled “Short-Term Network Bike Facility Type” presents the Short-Term network by the types of facilities recommended.

Click here to open the map.

5 smaller network maps are also presented in this chapter

Maps 3-7 shows the full extent of all three networks, including segments with recommended improvements and those with existing facilities. One map is provided for each of the five planning areas:

- Map 3 presents the whole county, along with the Rural West Planning Area
- Map 4 presents the Ellicott City Planning Area
- Map 5 presents the Columbia Planning Area
- Map 6 presents the Elkridge Planning Area
- Map 7 presents the Southeast Planning Area
Connections to Surrounding Jurisdictions

Table 3 on the next page identifies a set of key locations where Howard County desires bicycle-friendly roadway connections to its neighboring jurisdictions. These locations listed as confirmed are those that are identified in the bikeway plans of the neighboring jurisdiction and those that are listed as unconfirmed are only identified by Howard County. In general, the County hopes that neighbor jurisdictions, or the state (in the case of a state roadway) will provide bicycle facilities or accommodations commensurate with those shown by this plan on the Howard County side of the border.

Regarding state roadways that become limited access highways, i.e. US 29, MD 100, and portions of MD 32 and MD 216, Howard County generally prefers development of parallel routes on each side of such highways, rather than shared use path, cycletrack or wide shoulder accommodations within the road ROW. In some cases, where major road and/or interchange upgrades take place these project may create opportunities for high quality bikeways with grade separated ramp crossings along portions of such roads. Howard County seeks to preserve bicycle access to the shoulders of US 29 especially between Old Columbia Road in Howard County and Old Columbia Road in Montgomery County, as this is the only crossing of the Rocky Gorge Reservoir.

Small Area Plans

During the planning process, it was determined that additional study would be needed in parts of the county that are undergoing or expected to undergo significant change.

In response to this need, BikeHoward developed a detailed circulation bicycle plan for Downtown Columbia that is harmonized with the countywide plan. The Downtown Columbia circulation plan is presented in Maps 8 and 9 and additional detail on Downtown Columbia is presented in Appendix G. The Downtown Columbia map represents two scenarios for Downtown, with and without the new north-south collector road.

In addition, BikeHoward recommends the following areas for Future Small Area Planning:

- Dobbin Road Commercial Area
- Gateway Commerce Center
- Route 40 Corridor in Ellicott City
- MD 216 Corridor
- Maple Lawn
- Various segments of the Route 1 Corridor
- Clarksville (River Hill)
- Historic Ellicott City
<table>
<thead>
<tr>
<th>Desirable Connections (Confirmed by neighboring jurisdiction)</th>
<th>Connections Howard County Desires (unconfirmed by neighboring jurisdiction)</th>
</tr>
</thead>
<tbody>
<tr>
<td>To Baltimore County Via Old Frederick Road</td>
<td>To BWI Trail Via Hanover Road</td>
</tr>
<tr>
<td>To Baltimore County Via Frederick Road</td>
<td>To Anne Arundel County Via Dorsey Road</td>
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<tr>
<td>To Baltimore County Via Gun Road</td>
<td>To Anne Arundel County Via Race Road</td>
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<tr>
<td>To Anne Arundel County Via Ridge Road</td>
<td>To Anne Arundel County Via Coca Cola Drive</td>
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<tr>
<td>To Anne Arundel County Via Waterloo Road</td>
<td>To Carroll County &amp; Frederick County Via Penn Shop Road</td>
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<tr>
<td>To Anne Arundel County Via Savage Guilford Road</td>
<td>To Carroll County Via MD 97</td>
</tr>
<tr>
<td>To Prince George’s County Via N 2nd Street</td>
<td>To Anne Arundel County Via Whiskey Bottom Road</td>
</tr>
<tr>
<td>To Prince George’s County Via MD 216</td>
<td>To Anne Arundel County Via Montevideo Road</td>
</tr>
<tr>
<td>To Montgomery County Via US 29 &amp; Old Columbia Road</td>
<td>To Anne Arundel County, Baltimore County &amp; Baltimore City via River Road</td>
</tr>
<tr>
<td>To Montgomery County Via Bright Dam Road</td>
<td>To Baltimore County Via Street Denis MARC Sta. River Road</td>
</tr>
<tr>
<td>To Montgomery County Via Georgia Ave</td>
<td>To Baltimore County Via Tunnel, Trail and Foxhall Farm Road</td>
</tr>
<tr>
<td>To Montgomery County Via Ridge Road</td>
<td>To Baltimore County Via US 40, Baltimore National Pike</td>
</tr>
<tr>
<td>To Prince George’s and Anne Arundel County via Brock Br. Road</td>
<td>To Carroll County Via Marriotsville Road</td>
</tr>
<tr>
<td>To Baltimore County Via Trolley Line #9 Trail</td>
<td>To Carroll County Via Old Henryton Road-restore bridge</td>
</tr>
<tr>
<td>To Baltimore County Via River Road</td>
<td>To Sykesville and Carroll County via Main Street</td>
</tr>
<tr>
<td>To Prince George’s and Laurel MARC via Bike Lane on new road bridge</td>
<td>To Mt. Airy and Carroll County Via Twin Arch Road</td>
</tr>
<tr>
<td></td>
<td>To Mt. Airy, Frederick County and Carroll County Via Ridge Road</td>
</tr>
<tr>
<td></td>
<td>To Montgomery County Via Tucker Lane &amp; Ednor Road</td>
</tr>
<tr>
<td></td>
<td>To Montgomery County Via Ednor Road</td>
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<tr>
<td></td>
<td>To Laurel and Prince George's County Via restored bridge</td>
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<td></td>
<td>Through City of Laurel</td>
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</table>
Bicycle Facilities Visual Glossary

The visual glossary presents a series of typical treatments and facility types that are included in the proposed Howard County Bikeway Network. The glossary is organized into three types of facilities.

**Bikeways that primarily use facilities separated from the road with vertical barriers or landscape buffers**

**One-Way Protected Bike Lanes**
One-way bicycle facility physically separated from moving traffic and pedestrians to create a lower stress bikeway

**Two-Way Protected Bike Lanes**
Two-way bicycle facility physically separated from both the roadway and sidewalk

**Shared Use Paths**
Off-street bicycle and pedestrian facility, physically separated from the road and motor vehicle traffic creates a lower stress bikeway

**Sidewalk with Cycling Permitted**
An off-street facility which is used where pedestrian and bike volumes are expected to remain low to create a lower stress bikeway

**Neighborhood Greenways**
Low traffic street with bicycle friendly traffic calming to create a low stress bikeway. Used where all traffic volumes are expected to remain low
Bicycle Facilities Visual Glossary

Bikeways that primarily use on-road bike lanes and facilities

Colored Bike Lanes
Type of bike lane that uses color to create additional awareness of right-of-way for bicyclists

Buffered Bike Lanes
A type of bike lane with additional striped buffer zones to provide increased separation from faster moving traffic

Advisory Bike Lanes
Type of facility where the center line has been removed from the road in order to have room to stripe “advisory” bike lanes. The dashed lines (as opposed to solid) allow motor vehicles to occupy that space when a bicyclist is not using it

Climbing Lanes
Used where existing road width will support addition of only one bike lane. Bike lane provided in uphill and shared lane marking on the downhill portion of the road

Bike Lanes
Pavement marking designating a portion of roadway for preferential use of bicycles
Bicycle Facilities Visual Glossary

Bikeways that primarily use existing roads and streets with treatments to guide car and bicycle placement and behavior.

**Shared Roadway**

Used on rural roads, neighborhood streets where there is good sight distance and low traffic volumes

**Shared Roadway w/ Safety Treatment**

Used on two-lane rural roads where there are no continuous shoulders. Uses safety signs and short shoulder sections to allow cars to pass bikes on hills

**Paved and Striped Shoulder**

Most often used on rural roadways and can accommodate bicycle travel. Usually no less than four (4) feet wide

**Shared Lane Markings (Sharrows)**

Used where speed limit is 35 mph or lower. Indicates cyclists’ safest path of travel and reminds motorists of requirements to share the road
Section 6:
Components of the Network
Components of the Network

This section advances the discussion related to certain bicycle facility types and treatments that make up the network and how people will navigate the network. It provides detail and specific guidance related to intersections, path crossings, bike links, connector paths, bridges and tunnels, path systems, State roadways, special safety treatments for rural roads, sidewalk bikeways, and new facility types. It also provides recommendations on a signage and way finding system.

Standard Bikeways

The AASHTO Guidelines for the Development of Bicycle Facilities, 2012 and Manual on Uniform Traffic Control Devices, provides a basis for the application of most of the bicycle facilities and treatments recommended by BikeHoward. For additional guidance to clarify application of facilities such as shoulder bikeways, bicycle lanes, buffered bicycle lanes, climbing lanes, shared use paths and other features included in BikeHoward, please see Appendix A.

Difficult Intersections and Network Gaps

Howard County has a large number of major highways that act as barriers to bicycle travel; among them are U.S. 29, MD 100, Route 40, MD 108, MD 32, Broken Land Parkway and Snowden River Parkway. After significant analysis and feedback from a variety of stakeholders, the following priority list is provided to direct County and State attention in the near term and illustrate potential least-cost solutions.

Recommendation: Review the following areas to determine which solutions should be pursued in the near term and which can be delayed or should be coordinated with expected future road improvements or development:

- MD 103 and Long Gate Area
- Columbia Road and MD 108
- MD 108: Homewood Road to Centennial Lane
- North-South Link through Downtown Columbia
- North-South Link from HCGH/Howard County Community College/Symphony Woods to southern Howard County
- Access to the JHU-Applied Physics Lab across U.S. 29 at Johns Hopkins-Gorman Road
- Cedar Lane Corridor
- Dobbin Road/Gateway Commerce Center

For each of these areas, the solutions are not as simple as fixing one intersection. Often there are space constraints and the needs of pedestrians must be taken into consideration. The challenges for cyclists, pedestrians and those using electric personal assistive devices, usually include passage through multiple intersections and along short segments of roadway with poor conditions. Roadway configurations tend to be complex and often involve interchanges with limited access highways. It may take multiple phases of infrastructure upgrades to make these areas safe and inviting to the enthused and confident and interested but concerned cyclists.

However, creating a connected network is dependent on addressing these areas.

Recommendation: The County’s Traffic Engineering Division should initiate a review of all traffic signals in the County to ensure that bicycles will be detected on the minor road approaches which may be given a green cycle only when cross traffic is present. Various treatments are available to remedy any location where bicycles are not currently detected.

Shared Use Paths

As a part of this plan, a number of existing and potential pathway corridors were explored. Existing and planned regional parks were also reviewed. The Connecting Columbia Active Transportation Action Agenda adopted by Columbia Association was studied in detail. As a result an extensive list of recommended shared use path improvements was developed. See Table 4 for a summary of the number of new and upgraded shared use paths.

BikeHoward supports the Connecting Columbia Active Transportation Action Agenda approved by Columbia Association in 2012. Specifically, it supports the flexible pathway width recommendations for the
Primary, Secondary and Tertiary system, and identifies which CA path segments will be most important to be upgraded to accommodate both recreational and transportation usage. It supports the curb ramp and crossing improvements, and again identifies which of these will be most important to facilitate safe transportation usage and it specifically identified recommendations for on-road and/or off-road facilities in the Columbia area where the CA plan identified pathway connection needs along County-owned or state highways.

In some cases, BikeHoward recommends only on-road bikeways and assumes standard sidewalks for expected small numbers of interested but concerned cyclists.

**Key Path Recommendations:**

- **Key path trail improvements are identified in regional County parks including Blandair, Centennial Lake, Cedar Lane, Meadowbrook, Troy and Savage. Bicycle Lanes or shared lane markings are also recommended for a number of park access roads and/or parking lot aisles to improve bicyclists’ safety passing through these parks.**

- **The Patuxent Branch Trail south of the Guilford Road trailhead should be paved to provide all-weather, three-season transportation use of this trail.**

- **The Maple Lawn area and the MD 216- Hammonds Branch corridor between Maple Lawn and North Laurel represent a significant opportunity for major new transportation trail development.**

- **Utility corridors and rights-of-way present important opportunities to make key connections throughout the County. BikeHoward recommends that the county conduct additional research and develop strategies, including working with key federal, state and local stakeholders to develop clear technical, design and policy guidance on the development of linear shared use trails on utility rights-of-way.**

- **BikeHoward did not fully explore further trail potential in the Patapsco Heritage Greenway Corridor (primarily state DNR lands), nor the protected lands along the main branch of the Patuxent River. BikeHoward recommends exploring trail potential and road linkages in these areas, including the concept of a loop trail to link Ellicott City, Mt Airy and Laurel.**

<table>
<thead>
<tr>
<th>Facility Recommendations</th>
<th>Miles or Locations</th>
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<tbody>
<tr>
<td>New Shared Use Paths</td>
<td>86 Miles</td>
</tr>
<tr>
<td>Upgraded Shared Use Paths</td>
<td>37 Miles</td>
</tr>
<tr>
<td>Mid Block and intersection path crossings</td>
<td>44 Locations</td>
</tr>
<tr>
<td>New Bicycle/Pedestrian Bridges</td>
<td>21 Locations</td>
</tr>
<tr>
<td>New Tunnels</td>
<td>3 Locations</td>
</tr>
<tr>
<td>Spot Trail Access</td>
<td>12 Locations</td>
</tr>
</tbody>
</table>
Special Facility Types and Treatments

A number of special facility types and treatments are included in BikeHoward, including some that are considered “Experimental” in nature. The Federal Highway Administration manages a formal approval process for state and local governments who wish to install experimental facilities and treatments.

These special facility type treatments include:
1) safety treatments for a certain class of shared roadways, 2) sidewalk bikeways, 3) colored bicycle lanes, and 4) cycletracks/protected bike lanes and median pathways.

Shared Roadway with Safety Treatments

This plan recommends development of a safety treatment for 106 miles of roadways that generally have the following characteristics.

- Two 10-12 foot paved travel lanes
- No or minimal shoulder, unpaved
- Speed limit of 35 mph or greater; advisory speed limits of 30 or less on sharp curves
- Traversing hilly terrain and crossing numerous stream drainages
- Drainage ditches, farm fields and mature trees on the edge of the roadway
- Periodic curves with poor sight distances
- Forested and/or rural residential landscape

During the planning process, many cyclists identified these roads as uncomfortable and potentially dangerous. Moreover, many motorists would concur that they seem dangerous for bicycling. Due to the hills, which slow cyclists down and the periodic curves and poor sight distances, it is easy for a motorist to come upon a bicyclist from behind with little or no warning. The lack of a paved shoulder requires bicyclists to use the travel lane, and thus motorists must decelerate quickly and determine when it may be safe to pass.

Many of these roads are in western Howard County and are popular for recreational cycling, especially on weekends. However, others are in the older, less developed section of the county along the Patapsco River, around Elkridge, in the MD 216 corridor and around Savage and North Laurel. Howard County has a tremendous economic interest in maintaining and expanding the recreation and tourism potential of these bikeways.

However, universally widening these roads to provide full shoulders on each side will be both cost prohibitive and would violate the rural, scenic, cultural and historic character of the road. Preserving these values is not only essential for their success as recreational bikeways, but is important for a host of other reasons to which the County is already committed.

**Recommendation:** Consider the development of new approaches to increase both safety and mutual respect for bicyclists and motorists who share these roads including but not limited to the following treatments.

- Utilize existing signs, such as the BIKES MAY USE FULL LANE sign.
- Use available flexibility in the MUTCD to develop auxiliary word plaques to more directly address situations and appropriate driver and cyclists’ response, such as PASS WITH CARE, ALLOW 3 FEET, EXPECT CYCLISTS, etc.
- Ensure that sign messages are unambiguous and have separate messages directed to motor-ists and cyclists, explaining why and how all users must share the road.
- On hills, in the uphill direction, add bike pullout lanes, i.e. short segments of shoulder where a cyclist can pull to the side and let a line of cars following them to safely pass.
- Use new technologies to detect cyclists in potentially hidden locations and inform approaching motorists of their presence; use similar technologies to inform motorists traveling at unsafe speeds.
- Establish a unique logo and graphic identity to use on signage for a system of On Road Recreational Routes.

These routes will be primarily in western Howard County, but also include routes in the southwest around Fulton, in and around Historic Ellicott City, the Patapsco River area and Elkridge. By having a unique brand for rural recreational routes, the county can coordinate effective safety messaging campaigns using a variety of media. Information that is provided on the web, at events, during road safety awareness weeks, on printed materials, etc. can all be associated with the route system where these safe bicycle and motorist road sharing practices are most applicable.
Sidewalk Bicycling

In general, sidewalk bicycling is discouraged, except for children and those just learning to ride a bicycle. However, in Howard County many casual and recreational cyclists ride on sidewalks for short sections of their ride or even long distances, because conditions on the roadway are too uncomfortable. Sidewalk cycling is permitted by county code.

**Recommendation:** In 16 locations (6.6 miles), where sidewalks exist and where no bicycle facilities exist, this plan recommends designation of Sidewalks w/ Bikes Permitted, as a formal Bikeway.

These facilities should be a minimum of 6 feet wide, and may be up to 8 feet wide depending on space available. If a 4-5 foot sidewalk already exists, where feasible it should be expanded to 6 or more feet wide. The location should be posted as Sidewalks with Bikes Permitted and BICYCLISTS YIELD TO PEDESTRIAN signs. In the locations identified in BikeHoward pedestrian volumes are expected to be low, as are bicycle volumes. These facilities may be needed to provide low cost connectivity in areas where retrofitting roadways will likely have a low cost/benefit ratio. These facilities may also be recommended in areas where some cyclists will be served on the roadway and low-skilled cyclists will be best served on the sidewalk.

Note: BikeHoward also identifies 20 locations (4.8 miles) where existing sidewalks are present, but upgrades to Shared Use Path facilities are recommended. Sidewalk upgrades to path standards will require a minimum of 8-foot treads (asphalt or concrete), and a minimum 5-foot lateral buffer from the adjacent roadway, or vertical barrier.

Colored Bicycle Lanes & Advisory Bicycle Lanes

Colored bicycle lanes are currently sanctioned by a formal Interim Approval for Optional Use of Green Colored Pavement for Bike Lanes (IA-14), (April 15, 2011)\(^3\) A Federal Highway Administration process to encourage communities to apply and evaluate new approaches to address traffic control and safety issues. Advisory Bike Lanes are approved for experimentation.

**Recommendation:** As a demonstration project, consider conducting an experimental application of colored bicycle lanes in one location: westbound Johns Hopkins Road from Montpelier Road to the Applied Physics Lab entrance and on eastbound Johns Hopkins Road from Montpelier Road through the entrance ramp to US 29 south. Coordination with SHA may be required due to the project’s relationship with US 29 traffic.

**Recommendation:** Consider conducting an experimental application of advisory bicycle lanes on the Little Patuxent Parkway loop in Clary’s Forest.

Cycltracks, Protected Bike Lanes and Median Paths

Guidelines for cycltracks, also known as protected bike lanes, are not provided in AASHTO or the MUTCD, however, NACTO provides a guidance document based on the experience of leading cities in the U.S. that have installed these facilities as well as European designs.\(^4\) Median paths are also not specifically addressed in AASHTO. Howard County is not prohibited from installing these facilities by their omission from these national guidance documents. Moreover the specific guidance that is provided for shared use path and bicycle lane design can and should be applied to these less common bicycle facility types.

**Recommendation:** Consider installing pilot protected bike lanes in three locations: 1) along Columbia Road between Annapolis Road and MD 108, 2) along Robert Fulton Drive between Snowden River Parkway and Commerce Center Drive, and 3) along MD 103 between Long Gate Parkway and Old Columbia Road. The later segment will need to be conducted in coordination with the MD State Highway Administration.

State Roadways

The state roadways in Howard County are critical for bicycling for a number of reasons:

- State roads open to bicycling need to have bicycle facilities and treatments where appropriate and feasible, including bicycle improvements through large arterial intersections with high volumes of traffic and many turning movements.
- Existing bicycle access on state roads cannot be forfeited when they are upgraded to divided or limited access highway design.
- State roadways that prohibit bicycling need parallel routes on minor streets and roads.
- Limited Access State and Interstate highways need to have bicycle-friendly and safe crossings that do not require cyclists to make major detours, or travel through unimproved crossings with multiple, high speed, free flow, entrance and exit ramps.

This plan studied a large portion of the state roadway network in the county and includes facility and

\(^3\) [http://www.fhwa.dot.gov/environment/bicycle_pedestrian/guidance/design_guidance/mutcd_bike.cfm](http://www.fhwa.dot.gov/environment/bicycle_pedestrian/guidance/design_guidance/mutcd_bike.cfm)

\(^4\) Cycltracks have been used extensively, and for many years, in northern European countries such as Germany, Denmark and the Netherlands contributing to urban bicycle mode shares of 10-30 percent of all trips.
treatment recommendations for these roadways. In many cases the accommodations recommended are well within the design guidelines currently used by SHA to address routine accommodations. Howard County will be seeking cooperation, coordination and partnership to implement a variety of both standard and non-standard facilities in the coming years. For a list of state roadways and recommended facilities and intersections please see Appendix H.

**Recommendation:** Howard County requests that major bicycle facilities be included in the SHA maintained Highway Needs Inventory, which includes lists of priority projects consisting of new and upgraded highway and transit facilities and requests BikeHoward’s recommendations be included into SHA fund 76.

Howard County will annually identify the following bicycle facility needs that are directly related to roadways and state transportation infrastructure on the Highway Needs Inventory:

- Facilities needed on the state primary system
- Parallel facilities needed that serve bicyclists in limited access highway corridors
- Accommodations through Interchanges
- Grade-separated over/under passes of limited access highways
- Accommodations needed on state-owned bridges that serve County or state roads that cross limited access highways at non-interchange locations

**Recommendation:** Howard County request that bicycle facilities proposed in BikeHoward be included into the Baltimore Regional Transportation Board (BRTB) long range transportation plan and Transportation Improvement Program (TIP), including bridge resurfacing projects.

**State Scenic Byway Designations**

**Recommendation:** Consider engaging the SHA Scenic Byway office regarding any plans to implement the paved striped shoulders recommended for MD 144 which is part of the National Road Scenic Byway. It is state policy to consider proposals to widen designated scenic byways on a case by case basis, because the presence of scenic and historic resources that need protection varies considerably along the length of the National Road Scenic Byway, and it is state policy to provide a minimum 4-foot shoulder along open section state roads where needed for bicycle safety, is feasible, fundable and in keeping with the goals of scenic byway designations.

In the planning document for this byway, *Context Sensitive Solutions for the Maryland Historic National Road Scenic Byway, 2006*, published by the MD State Highway Administration, it states, “Decisions regarding requirements for bicycle accommodations should be made carefully taking into consideration the importance of maintaining the character-defining features of the Historic National Road.”
Wayfinding & Signage Systems

Public comment during this and other recent planning processes clearly identified the need for improved wayfinding geared toward cyclists. Three distinct but related signage needs were identified:

- Wayfinding on the CA pathway system and other County and school owned paths
- On-road bike route signage
- On-road signage related to recreational routes, especially in western Howard County and historic sites

County stakeholders use a number of existing signage and wayfinding systems. Descriptions of these systems follow.

**CA Pathways Wayfinding Signs**

In 2013, Columbia Association conducted a pilot program that included design and installation of wayfinding signs on a small portion of the CA pathway system. It will use primarily blue fingerboards as shown in Figure 4.

**County Parks Trail Wayfinding Signs**

The Howard County Department of Recreation and Parks currently uses brown wayfinding signs for trails, but does not install signs on all of its trails.

**State Signed Routes**

Currently, the only signed bicycle routes in the county are along State roadways. Additionally, the MD State Highway Administration is developing a plan to sign a bicycle route in the MD 32 corridor that will act as a bicycling alternative to the portions of the highway upon which bicycle use is prohibited. This route would extend from MD 108 at MD 32 to the National Security Administration campus adjacent to Fort Meade, in Anne Arundel County. The state is considering two options provided in the MUTCD.

Installation of an attractive and coordinated sign system will broaden public awareness of bicycling, and in combination with web-based information and traditional maps, help users identify low-stress routes, recreation routes and standard routes for people of all ages and skill levels.

Please see Appendix I for a full discussion of issues that need to be coordinated among key stakeholders with an interest in and responsibility for bicycle wayfinding signs.

**Recommendation:** Develop an integrated bikeway sign protocol and manual using the system of shields and branding graphics provided in Figure 4.

Initial sign installation efforts should focus on providing signs along the Short-Term network, Columbia Association and the County’s pathway systems and routes that may be developed and designated by the State Highway Administration. As safety on rural roads is improved and other facilities are installed, the recreational route system and additional County routes in the Mid-Term Network can be signed.

**Recommendation:** The County should develop and advance, in coordination with state and local stakeholders, paper and electronic directional applications and devices to enable navigation, including expanding CA’s existing directional app outside its current limits.

![Figure 4: Concept for Sign Shield System for Signed Bicycle Routes](image-url)
**Recommendation:** The County should consider developing an On-Road County Recreational Route System in western Howard County, the southwest area around Fulton, in and around Historic Ellicott City and Savage, as well as in the Patapsco Heritage Greenway and the Elkridge Area (See Figure 5).

The recreational route system should be coordinated with local stakeholders to maximize the economic impact of the recreational routes.

Creating unique brands for a distinct set of recreational routes will help cyclists easily find their way around an area they may not be familiar with. In addition, since these recreational routes will be on roads in more rural and older areas, roads which tend to be narrower and steeper, allow the county to coordinate its efforts to ensure safety for cyclists and motorists.

**Figure 5: Draft Recreational Route System**
Section 7:
End of Trip Facilities
End of Trip Facilities

For bicycling to be attractive for transportation, providing places for cyclists to store their bikes is essential. Bicycle parking equipment provides a community an opportunity to integrate public art into streetscapes, brand their bike program and engage the business community in bicycling.

The opportunity to leverage a bike trip into a longer trip by using public transit is also central for those seeking to reduce motor vehicle use. This chapter details how bicycle end of trip facilities should be will be integrated into the plan.

Cyclists who commute by bike often need showers and changing rooms and is an important tool in encouraging utilitarian cycling.

Bicycle Parking Types and Applications

Bicycle parking needs vary based upon land use and intensity of activity levels. Covered or uncovered racks are appropriate for Short-Term parking needs such as at retail stores, restaurants, recreation centers, parks, libraries and similar locations. While students, teachers and staff at schools stay for longer periods of time, covered bicycle racks are recommended at elementary, middle, high schools, colleges and technical schools, both public and private. At all of these locations it is important to plan for both employee parking as well as visitor parking.

On-demand lockers, standard rental lockers or bike-lids are recommended at locations where all day parking in lightly supervised locations such as park & ride lots, commuter rail stations, office complexes, industrial parks, etc. Bike lids are covered racks that provide protection from the weather, but are easier to install and move if needed.

Secure indoor parking is needed in apartment buildings and other multi-family, residential housing types, including senior housing and retirement centers. Garden apartments and campus-style complexes who have limited public access can meet residents' needs by providing covered medium security bike parking in convenient locations for regular use, and indoor storage areas for winter or long term storage.

The challenge for communities with little existing bicycle parking is developing an approach that addresses, 1) retrofit of existing commercial employment sites and 2) provision of appropriate types, locations and capacity as an integrated component of new developments. To do this Howard County should implement a publicly supported retrofit program and update zoning and subdivision codes to address new development and public facilities.

Another important bicycle parking principle is that needed capacity is not a static factor. When the goal is to increase levels of bicycle it is critical that as progress is made, increased levels of bicycle parking are also provided. Provision of bicycle parking is a management activity not a capital program.

Recommendation: Howard County should initiate a publically supported Bicycle Parking retrofit program, see box for details.

Recommendation: Howard County should consider initiating an interagency program to evaluate, replace and add bike parking at all County owned public facilities.

- Assess needs and current bike parking equipment. Replace sub-standard equipment, seek covered and convenient locations, assess needs, and ensure that the program is responsive to the need for added capacity as usage increases
- Coordinate the efforts of the Howard County Public Schools, the Recreation and Parks Department, the library system, and Department of Public Works, Facilities Division

Generally, racks that do not provide two points of contact to lock the bike are substandard. The current edition of AASHTO’s Guide for the Development of Bicycle Facilities provides guidance and direction on bike parking.

Bicycle Parking in New Commercial Developments

Recommendation: Consider amending zoning and subdivision codes to require new development to provide appropriate types, quantities and locations of bicycle parking as a part of development approval.

Appendix J provides examples and help to guide the County in developing the revisions.

Bicycle Parking Retrofit Program Components:

- A contest for architects and small business fabricators to design and develop a covered bicycle parking shelter that could be “mass” produced and used in a variety of settings throughout the County
- A property tax credit incentive for retail and customer-oriented commercial businesses that provide covered bicycle parking for customers.
- A commitment to support employee bike parking needs for businesses with fewer than 50 employees, if property managers, the benefiting business, and employees partner to assess and meet employee needs. Up to $1,000 per site depending on number of employees committed to participate in biking to work. Up to $20,000 per year
- A mechanism for bicycle customers to request bike parking racks with an application that includes a request to the business, property owner/manager, and Howard County Bike Parking program; with the program to install the racks at a shared cost
Bike Sharing Programs

Bike share programs provide access to bikes at multiple locations throughout a community for short point-to-point trips. In just a few years, bike sharing has become an extremely popular mobility option in communities across North America, with one of the most successful systems being Capital Bikeshare in Washington D.C., Arlington, Alexandria and Montgomery County.

The bikes are designed specifically for continuous outdoor use and are sturdy, theft proof and easy to ride. The stations where the bikes are docked are easy to use, unstaffed, and often solar powered. Some systems now include the locking and technology aspects on the bikes themselves, which can provide more flexibility and lower cost than systems that use docking stations.

**Recommendation:** Study and based on findings, consider implementing a pilot bicycle sharing program.

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Full-Service Bicycle Stations

**Recommendation:** In the future, as bicycle usage increases countywide, and the bicycle network is built, consider public support for a full-service bicycle station at an appropriate location such as downtown Columbia, in the Dobbins Road/Gateway Commercial Area, or in relation to a transit hub that may be created to serve a new, higher-volume transit system.

Integrating Bicycling with Public Transit Services

Bicycle integration with public transit can take a number of forms. The Regional Transportation Agency of Central Maryland (RTA) provides scheduled fixed route transit services in Howard County, Anne Arundel County and Prince Georges County.

RTA fixed route buses are equipped with front mounted bicycle racks that hold two bikes each. The Maryland Transit Administration also serves Howard County with commuter buses running to Washington DC, Baltimore, Gaithersburg and Fort Meade. MTA also services Ellicott City and downtown Columbia with an express bus from Baltimore. MTA commuter rail service is also provided at the St. Denis, Dorsey Road, Jessup and Savage MARC stations. None of these locations provide covered bike parking or lockers. Some do not have racks. In addition, MTA Commuter buses do not include bike racks.

Through public input and dialogue with Office of Transportation Services a number of additional bike/transit integration needs and opportunities were identified. Bicycle access to commuter bus and rail hubs was identified as a key need.

**Bike Parking at Transit Hubs**

**Recommendations:** Consider upgrading bicycle parking at MARC stations and Park & Ride (P&R) lots. In the near term, a minimum of two bike lids (i.e. individual, on-demand, covered racks) should be placed at each of the following transit hubs:

- Broken Land Parkway P&R
- Clarksville P&R
- Long Gate P&R
- Oakland Ridge P&R
- Scaggsville P&R
- Snowden River Parkway P&R
- Dorsey MARC Station
- Savage MARC Station

Market these services to the public, bicycling community and existing users of these hubs. Remove substandard racks. As usage occurs additional bike lids should be added to ensure that anyone considering biking to a transit hub will see that high security covered racks are available.
Bicycle Access to/from Transit Hubs

**Recommendations:**

- Prioritize and implement access improvements to the following transit hubs (as identified on the plan map) Broken Land East and West, Long Gate, Oakland Ridge, Snowden River Parkway, Dorsey MARC and Savage MARC, access. Improvements at Broken Land Parkway East and West should be completed before bike parking at these locations is upgraded. Coordination with MTA and/or SHA may be required.

- Explore the potential to provide bicycle storage in the under carriage on commuter bus services. Survey customers regarding likelihood to use such a service. Coordinate with the state to implement such services. Market services to the public.

- Request state leadership in providing a system of higher quality on-demand bike storage lockers throughout the MTA and Park & Ride systems in Maryland. Across the country, private vendors are providing this service on contract with local governments for a small hourly fee to the user. The system does not have to be limited to transit hubs; it could also be used to serve colleges, hospitals or other institutions.

Integration with RTA

Currently bike-on-bus rack usage is low due to the significant headways between buses on RTA lines (30 or 60 minutes). Many people may be able to ride some distance in the time that they would spend waiting for a bus. However, as service levels are increased in the future, or as routes may be changed, bike-on-bus services may become a more important component of the network.

During the planning process three new ideas for bus/bike integration emerged for consideration in the near term.

**Recommendations:**

- Consider purchasing a bus shelter that includes covered bicycle parking as a part of the structure’s design

- Consider offering a special weekend service (periodically) to take recreational cyclists to a location in Western Howard County for a day of recreational riding. This may be attractive to entry level recreational riders

- Market transit routes and bike-on-bus services that cross or travel along major barriers for bicyclists, such as I-95, US 29, US 40, MD 32, MD 100, MD 175, the CSX railroad and US 1
Section 8:
Programs for Safety Education, Encouragement and Enforcement
Programs for Safety Education, Encouragement & Enforcement

Existing Programs, Activities and Organizations

Howard County has a wide range of programs, organizations and activities that involve cycling. The following narrative provides highlights of those that address safety education, encouragement and enforcement.

Safety Education

A few Howard County public schools participate in Safe Routes to School programs including Walk to School Day and Bicycle to School Day events. These events are run and developed out of individual schools with parent leadership and participation. The Howard County Police Department participates in these and many other events contributing a multi-modal safety message.

Encouragement

The Howard County Department of Recreation and Parks regularly offers classes and camps focused on mountain biking, trail conservation skills, bike repair, and triathlon training, as well as classes that help children with disabilities learn to bicycle. Encouragement efforts include participation in annual region-wide Bike to Work Day events, as well as a long list of triathlons, charity bike rides and road races. The JHU-Applied Physics Laboratory is a bicycle friendly business and supports many of its bicycle commuting employees by providing showers and changing facilities and secure bicycle parking on its campus. The CA BikeAbout is an annual event sponsored by CA in which cyclists explore historical and cultural sites using the CA pathway system.

In 2013, the Howard County Office on Aging started a bicycling encouragement program, Cycle2Health, focused on older cyclists, both men and women. Local cyclists from the Howard County Bicycle Advocates and various cycling clubs volunteered as ride planners and leaders. Throughout the summer and fall, as weather permitted, weekly rides were offered on routes throughout the County. Cyclists seeking to increase their strength, skill levels and endurance were able to venture into a variety of contexts with confidence, due to the support of riding with a group.

Enforcement

Currently, police programs that support bicycle safety are primarily educational. The HC police have bicycle mounted officers and International Police Mountain Bike Association instructors that train additional officers as necessary. The department is involved in a wide range of education and prevention programs oriented to traffic safety including; a You Are Responsible program for teen driver training, regular training of officers regarding traffic laws and enforcement practices, a ticket diversion program for young offenders who commit serious traffic violations, and participation in the bi-annual Street Smart campaign oriented to bicycle and pedestrian traffic safety. The primary enforcement activities are automated red light camera and a School Zone Photo Speed enforcement program begun in 2011.

Organizations

The Bicycling Advocates of Howard County is the lead bicycling advocacy organization in Howard County. A number of bicycle clubs and bike stores, regularly offer group rides, including the Glenelg Gang, the Baltimore Bicycling Club, and Howard County Cyclists. Howard County residents’ participation in the Mid-Atlantic Off-Road Enthusiasts and the International Mountain Bike Association is also strong as they partnered with the Department of Recreation and Parks to create a top flight mountain bicycling skills park at Rockburn Regional Park.

The Transportation Advocates organization promotes and supports transportation issues both in Howard County and regionally. The group’s primary focus areas are public transit, bicycling and walking.

Recommendations for Partnerships, Programs and Activities

An extensive set of programmatic recommendations are described below. Communities that combine infrastructure development and safety education and encouragement programs are the most successful at increasing levels of participation in bicycling. Howard County is already ahead of many communities in terms of public interest in bicycling. Education and encouragement programs will help ensure that many of the interested but concerned cyclists will transition to the enthused and confident group.

Education and encouragement programs are the best opportunity for partnerships between government agencies, community groups and the non-profit sector. Leadership from local elected officials is key as well; their support can ensure that activities are seen and understood by the wider public as for the common good of the community as a whole.
Programs that combine safety education and encouragement are discussed first, followed by award programs, other encouragement programs and enforcement recommendations. For a full discussion of program recommendations please see Appendix K.

**Recommendation:** Seek a bronze level Bicycle-Friendly Community Designation from the League of American Bicyclists

BAHC submitted an application for initial designation and the County was awarded a Honorable Mention in the Spring of 2013. It will take a focused partnership including CA, key county agencies, any Bicycle Friendly businesses within the county and the BAHC to make the progress necessary for a bronze level designation.

**Recommendation:** Provide cycling education and encouragement materials at Howard County Public Libraries.

Because libraries are a well used and supported component of community life, develop a multi-dimensional bicycling education and encouragement program; using all of the media resources available to the library system. Key partners could include the Bicycling Advocates of Howard County (BAHC), the Department of Public Works, Department of Planning and Zoning and Columbia Association.

**Recommendation:** Consider establishing a County-wide Safe Routes to School Program (SRTS). Adopt a goal to have 50% of elementary and middle schools participating in SRTS.

To reach this goal and guide school activities the Howard County Public Schools (including the school board) should lead a joint effort that would also include the Howard County Police and Department of Public Works. Federal funding for activities in this program are available through the Maryland Department of Transportation.

**Recommendation:** Establish a Share-the-Path and Road Safety and Respect program

This program would be designed to accomplish three main goals: 1) reduce user conflicts on CA and County paths, many of which are narrow and winding 2) foster unity and social cohesion among path users and supporters, 3) use that unity to continue to advocate for path widening, safer road crossings, wayfinding signs and a host of other needed upgrades to make the path system safe and functional for transportation and recreation. This initiative would be led by a partnership including CA, the County Department of Recreation and Parks, and representatives from a variety of path users groups, village councils, and HOAs.

**Recommendation:** Establish a Youth Ambassadors Program, similar to efforts in other communities, that trains teenagers to be ambassadors of bicycling at public events, educators about bike safety, and promoters of bicycling.

**Recommendation:** Expand existing off-road biking maintenance and youth training programs

These programs can be part of efforts to engage at risk youth in constructive civic activity, or offer young people exposure to future careers in the bicycling field. Due to the extensive pathway and trail system in Columbia and the county, youth ambassadors could be used to support the path safety and respect program described above.

**Recommendation:** Continue the Cycle2Health program and refine it to offer a wide variety of challenge levels. Plan routes and conduct rides in such a way that participants can be educated about bicycling improvements proposed in the BikeHoward plan.

In 2013 the Howard County Office on Aging started a bicycling encouragement program focused on older cyclists. Volunteers from the BAHC and various cycling clubs participated as ride planners and leaders. Throughout the summer and fall weekly rides are offered on routes throughout the County.

**Other Encouragement Recommendations**

**Recommendation:** Establish an active living partnership.

This initiative would target those agencies, businesses and institutions already involved in promoting health and wellness including the Howard County Department of Public Health, Hospital, health practitioner associations, Johns Hopkins University, the Horizon Foundation, private gyms, CA and County recreation centers and programs, etc. These organizations could implement various programs promoting bicycling for health, including prescriptions for outdoor activity and sponsoring a special event in each of the four seasons of the year, targeted to specific at-risk populations.

**Recommendation:** Expand the bicycling-related elements of the County’s existing Transportation Demand Management program.

The County should expand its existing Commuter Solutions program and multimodal commuting reimbursement program, through which local employers receive an incentive to promote the use of transit, walking and bicycling for commuting purposes.
**Recommendation:** Consider establishing a Howard County “Bike-About”

Following the example of the Columbia Association and tied to the county’s economic development plans, the “bike-about” program would designate certain days of the year to have a “celebration” on wheels which would help Howard County residents, rediscover where they live. The initiative would be based on County Council districts and would help increase awareness of bicycling throughout Howard County.

**Enforcement**

Over the past ten years the state of Maryland has regularly updated its bicycle related laws. And while the driver’s license study book has been updated to include good language about how drivers are to operate motor vehicles safely around cyclists, those who already have licenses have no occasion to revisit the study manual or retake the test. For this reason County Police should be actively engaged in leading or supporting efforts to educate the driving public about new laws, such as the 3-foot passing law.

**Recommendation:** Analyze Bicycle Crashes

Track, analyze and report on bicycle crashes in Howard County. This will require coordination with the Maryland Office of Highway Safety, Maryland State Police, as well as with the Howard County Department of Public Works, Department of Planning and Zoning, Police Department, and local Bicycle Advocacy Groups.

**Recommendation:** Consider expanding the Bicycle-Mounted Police Program and Park Ranger Program.

As Downtown Columbia and other more compact locations like Ellicott City and Laurel continue their transformation into more walkable and bikeable communities, and County parks increase in popularity the county should consider expanding its bicycle-mounted police and ranger patrols which will increase the presence of bicyclists and create greater awareness of bicycle safety issues.

**Recommendation:** Continue active enforcement of the Maryland Three Feet law.
Section 9:
Implementation
Implementation

As BikeHoward was being developed in 2012-2015, the implementation of bicycle facilities was underway. This chapter presents a framework to enable the County to keep the process going and intensify its efforts. The framework is based on a set of key components needed to ensure a well-integrated approach to implementing projects, programs and policies. These components play complementary roles in achieving plan goals.

- Network Implementation
- Building Institutional Capacity
- Capital Project Prioritization
- Funding Strategies
- Inter-Agency Coordination

A discussion of each of these topics is provided, followed by recommendations where appropriate.

Network Implementation

BikeHoward recommends implementing the bikeway network by focusing the County’s efforts on developing structured projects and leveraging opportunities.

Structured Projects in the Short-Term Network

BikeHoward developed 49 structured projects comprised of a series of facility improvements along a specific route that are bundled together to create seamless, intuitive, safe and useful connections. Structured projects are expected to be implemented over a 10 year period through the county’s capital improvement program and/or coordination with SHA and CA, as appropriate. Funding support is expected to come from a variety of sources, including County, State, Federal and developer funds.

Structured projects will develop useful travel corridors to connect the core of the county. The cost estimates for structured projects use planning level construction cost estimates, design and engineering cost factors, but do not include any land acquisition costs or permitting fees. Final project costs will be dependent on more detailed analysis during facility design. For additional detail on the costs, please see Appendix L.

The structured projects also include cost estimates for wayfinding, however design and installation of wayfinding is undertaken on a route by route basis. The costs presented are based on a per mile cost and only serve as guidance.

The facilities within a structured project may be comprised of an off-road recommendation, such as a shared use path, an on-road recommendation, such as a bike lane, and/or a spot improvement. A Structured Project may combine construction of new facilities as well as upgrading existing facilities.

A summary of the structured projects is presented in Table 5 along with Map No. 10 outlining the scope of the 49 structured projects. Detail on each structured project is then presented in a series of detail sheets.

Recommendation: Complete the structured projects in the Short-Term Network in the 10 years following adoption.

Opportunities

Opportunities to implement BikeHoward projects will typically arise in four ways.

1. The annual scheduling of County Road resurfacing projects. While resurfacing schedules are generally based on pavement quality and typical pavement life, specific segments of road are typically identified for resurfacing on an annual basis about 4-6 months prior to the beginning of the paving season.

   Recommendation: Annually, the County shall conduct a detailed review of the on-road bikeways in the Bikeway Network and implement recommended projects. The projects selected should be based upon continuity with existing facilities and consideration of the required actions and estimated level of effort as identified in the BikeHoward GIS data. As with all public works projects, field verification of projects identified in a master plan process is necessary prior to implementation.

2. The opportunity for the County to implement recommendations through the development process—sometimes through a requirement, or through a request.

   Recommendation: When development applications are filed, staff within DPZ should be assigned the task of identifying BikeHoward plan recommendations that may be related to the development.
3. Through routine County work to address neighborhood traffic calming applications, traffic signal management, and other traffic management and safety needs at intersections, including crosswalk installation and maintenance, curb ramp retrofits, and installation of curb extensions.

**Recommendation:** Ensure that bicycle accommodations and safety features, especially those identified in BikeHoward, are incorporated into traffic calming, intersection, crosswalk, curb extension and traffic signal projects as a routine part of evaluation and design.

4. The opportunity to relate to activities undertaken in response to the first three opportunities. Improvements undertaken through an opportunity such as 1-3, while contributing to the Network, can end up being disconnected from it due to the limits which must be set for project boundaries. To extend an improvement with some type of action that gives the bicyclist a sense of continuity will have tremendous safety, practicality and public relations benefits, however this also may require additional funding beyond that set aside for the work that is within project boundaries.

**Recommendation:** Allocate 15 percent of BikeHoward’s implementation funding to an opportunity project fund to ensure the short-term utility of the investments realized by repaving, intersection upgrade and private redevelopment projects.

### Network Improvement Implementation Process

The structured projects in BikeHoward depict implementation projects at “planning level” detail that gives sufficient information to convey the route and type of project that is contemplated, but still allows for modifications, based on additional study, design and engineering and public input. Modifications that are generally consistent with the project as described in the Plan would not require a Plan amendment. Modifications that the Office of Transportation deems significant would require a County Council-approved Plan amendment, or approval through another public process such as the Capital Budget process that includes County Council approval.

At the request of the Planning Board, Section 10 of the Plan (Implementation Matrix) was amended to state that a public process for implementation of structured projects will be developed within two years. The following table recommends a framework for this public process:

<table>
<thead>
<tr>
<th>Network Improvement Project Mechanism</th>
<th>Network Improvement Examples</th>
<th>Public Input Process</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improvements project</td>
<td>Bicycle facility with bi-directional path, shared lane, multi-use path (planned)</td>
<td>Public meeting by CoT for street parking would be removed, or if new trail lane patterns would change significantly.</td>
</tr>
<tr>
<td>Development Process (e.g. master planning, neighborhood, corridor)</td>
<td>Parking of residents of structured project (bicycle lane, multi-use path, road walking, connections between neighborhoods)</td>
<td>Bicycle improvement discussions were as part of Department of Planning and Zoning review, approval, and approval process. The CoT shall be included in the process.</td>
</tr>
<tr>
<td>Capital Project</td>
<td>Bicycle lane with bicycle lanes, shared lane parking (planned)</td>
<td>Public meeting by CoT for street parking would be removed, or if new trail lane patterns would change significantly.</td>
</tr>
</tbody>
</table>

### Building Institutional Capacity

To begin implementation of BikeHoward two special initiatives are needed to create a solid foundation for development of the network.

#### Bicycle Route Sign Protocol and Manual

The proposed signage system discussed in Chapter 6 needs to be fully developed and agreed to by stakeholders. Graphic designs, color schemes, and implementation strategies need to be discussed and agreed upon, then documented in a Sign Protocol and Manual.

**Recommendation:** Consider developing a sign Protocol and Manual that is agreed to by all stakeholders, including CA, DRP, DPW, DPZ, and SHA.

#### Bikeway Design Training

Because Howard County has not developed a significant number of on-road bikeways, traffic engineering and roadway design staff do not have extensive experience integrating bicycle facilities into the various roadway types that the County builds and maintains.

**Recommendation:** Prior to developing County-specific Bikeway Design Guidelines, thoroughly train existing traffic engineering and design staff (as well as consulting engineers) using existing curriculum related to the AASHTO Guide for the Development of Bicycle Facilities, and other national and state engineering guidance documents. Conduct four training courses in the year following plan adoption and continue with an annual training program as needed.

**Recommendation:** Ensure the County has adequate engineering and design capacity through the use of on call design firms.

**Recommendation:** Participate in study tours to visit with officials of other jurisdictions to learn about bi-cycling facility design and implementation best practices.

### Annual Capital Project Prioritization

Prioritizing capital projects is an activity that County agencies undertake annually. Related to the bikeway projects in the Plan, there are a number of tasks in this process for which the County should develop routine practices, including the following:

- Setting a dollar amount, or level of effort description, to determine which bikeway projects should be implemented as major capital expenditures
- Determining which bikeway projects should be integrated into roadway projects that are on the capital project list, or likely to be added to the list
- Determining which bikeway projects should be in the capital budgets of other County agencies, such as Recreation and Parks, Schools, Transit, Public Works, Libraries, etc.
- Determining which bikeway projects should be recommended to the State for inclusion in the Consolidated Transportation Program.

To manage implementation of small and medium sized bikeway projects, many jurisdictions establish an on-going Bicycle Infrastructure Funding Program, for which a lump sum is budgeted each year. Selection of the specific projects to fund annually can be done through an inter-agency coordination group that is managing implementation of the BikeHoward Plan. This method keeps funding flexible and thus can be used to respond to new opportunities, critical needs that were not foreseen in the planning pro-cress, and the opportunity projects that are implemented as a part of routine work by County agencies.

**Recommendation:** Annually, determine and develop capital projects for inclusion in the County’s capital budget. Continue to ensure that the capital budget line item for BikeHoward projects maintains a fund balance of at least $750,000 per year.
Funding

Determining how to fund various bikeway improvements is a key strategic issue that communities face when implementing bikeway master plans. While there are many funding options, each source may have limitations making it more appropriate for certain types of bikeway improvement projects.

Some funding sources are targeted to infrastructure, some to safety, education and encouragement efforts. Some sources are not directly bicycle-related but can be applicable to a bikeway project due to its nexus with another public priority such as historic preservation or public health. Some sources may support grants of hundreds of thousands or millions of dollars, other may be targeted to smaller amounts and require citizen volunteers or community involvement.

A wide range of funding options are available to Howard County, (see Table 6 for highlights). For a full discussion and additional details about funding a bikeway project or program please see Appendix M.

**Recommendation:**
- Identify dedicated annual funding in the Department of Recreation and Parks and HC Public Schools for implementation of the BikeHoward Plan
- Identify dedicated annual funding for County Agencies to use as matching funds for grant applications including to match state and federal transportation funds and other grant programs
- Identify dedicated funding for ongoing maintenance of pavement markings and signage, bike parking facilities and County trails

**Interagency and Inter-Jurisdictional Coordination**

Effective implementation of BikeHoward will require ongoing coordination among a significant number of county agencies and other entities.

**Recommendation:** A permanent Bicycle and Pedestrian Advisory Board (BPAB) should be established to provide technical assistance and the perspective of pedestrians and bicyclists.

**Recommendation:** Consider establishing a BikeHoward Implementation Team (BMP), chaired by a senior staffer from the county administration, that meets regularly (monthly or bi-monthly) to which each individual agency can report its progress. This group should be comprised of BPAB, DPW, DPR, HCPSS, CA, DPZ, and OOT staff directly tasked with developing bicycle infrastructure in the county. This group will stay apprised of funding opportunities and monitor grant application deadlines and can also be used to resolve any conflicts that may arise.

**Recommendation:** Consider establishing protocols for coordination with neighboring counties; private railroads (CSX) and utilities (BGE and others); state agencies such as State Highway Administration, Maryland Transit Administration, Maryland Department of Transportation, and the Maryland Department of Natural Resources; and Federal agencies such as the National Security Administration and other Defense Department agencies that are located in or near the county.

**Tracking and Reporting**

In order to encourage involvement by the entire community and continue to be transparent and open in implementing the recommendations of this Plan, a process should be outlined to track the progress of implementation, as well as continue to solicit public input.

**Recommendation:** The Office of Transportation should host an annual, public BikeHoward Open House each winter. At these events, the Office of Transportation should provide updates on the progress of BikeHoward implementation and should solicit feedback on past implementation as well as solicit input regarding future projects and grant applications.

**Recommendation:** The Office of Transportation should produce and disseminate an annual BikeHoward Implementation Progress report to the County Executive and the County Council, as well as post it publicly on the BikeHoward website.

**Recommendation:** The Office of Transportation should comprehensively review the Bicycle Master Plan every five years and recommend changes for approval by the County Council.

**How Projects Can Cost Less Than Forecast**

The project cost estimates in BikeHoward are based on known and unknown factors that influence the estimates. Some factors can be clearly identified and incorporated into the cost estimates, while others cannot be. Therefore BikeHoward sometimes has to assume the worst case cost scenarios when developing estimates. Some examples of these unknown factors are the relationships between the project and the county repaving schedule, road improvements, and utility work. For BikeHoward, the most critical relationship is the repaving schedule. Since BikeHoward cannot forecast the repaving schedule, BikeHoward’s estimates have to assume that a bike lane will have to be developed as a standalone project, the most costly scenario. However, when part of a project can be incorporated into a repaving project, costs can be significantly lower.

One example of this relationship to lower costs is Structured Project No. 63. This project calls for a shared use pathway connection from South Entrance Road following a corridor along the Little Patuxent River up to Stevens Forest Road, then transitioning to a bike lane on Stevens Forest Road to connect with Broken Land Parkway. The Stevens Forest Road bike lanes were estimated at $40,000, however because a portion was able to be completed when the road was repaved, the new bike lanes were installed for $3,880.
**Table 5: Structured Projects**  
Note: Costs listed in these tables are planning level estimates and include high contingency factors. Actual costs for most projects are expected to be lower, particularly when bike lane projects can be aligned with ongoing road resurfacing.

<table>
<thead>
<tr>
<th>Project No.</th>
<th>Primary Locations</th>
<th>From</th>
<th>To</th>
<th>Description</th>
<th>Construction Estimate</th>
<th>Design and Engineering</th>
<th>Signage Cost</th>
<th>Total</th>
<th>Length (Miles)</th>
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<th>Total</th>
<th>Length (Miles)</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>Patuxent Branch Trail (unpaved portion between existing trailhead at Guilford Road to trailhead at Vollmerhausen Road)</td>
<td>Trailhead at Guilford Road</td>
<td>Vollmerhausen Road</td>
<td>The project proposes to pave the existing unpaved portion of the Patuxent Branch Trail to improve conditions for travel and three season use. The project also calls for improvements at the trailhead at Guilford Road to more clearly indicate to users the direction of travel and passage across and through the parking area.</td>
<td>$525,143</td>
<td>$157,543</td>
<td>$13,000</td>
<td>$695,686</td>
<td>1.3</td>
</tr>
<tr>
<td>9</td>
<td>CA Pathway from parking area at Lake Elkhorn, path on southside of lake then on to trail crossing over Dasher Court to Oakland Mills Road (Shared Use Path Upgrade), Oakland Mill Road from Dasher Court to Tunnel (Share Use Path Upgrade)</td>
<td>Broken Land Parkway/Lake Elkhorn</td>
<td>Dobbin Road Commercial Area</td>
<td>Upgrades to existing trails and new trail connections. Path crossings will provide high quality east/west passage. Project also calls for new trail connections to Dobbin Road and McGaw Road. The project includes the tunnel under Oakland Mills Road, but does not propose any improvements. The project proposes building a new shared use path to connect the existing pathway to connect with Dobbin Road at McGaw Court, and upgrade an existing shared use path to improve connections to Dobbin Road.</td>
<td>$683,360</td>
<td>$205,008</td>
<td>$18,000</td>
<td>$906,368</td>
<td>1.8</td>
</tr>
<tr>
<td>10</td>
<td>Martin Road, Owen Brown Road, Jernys Drive</td>
<td>Hickory Ridge Road, Howard County Community College</td>
<td>Seneca Drive</td>
<td>Series of bike lanes, sharrows, and shared use paths to connect Howard County Community College and provide north/south passage.</td>
<td>$671,537</td>
<td>$201,461</td>
<td>$21,000</td>
<td>$893,998</td>
<td>2.1</td>
</tr>
<tr>
<td>11</td>
<td>Columbia Association Pathway and Harpers Farm Road</td>
<td>Little Patuxent Parkway</td>
<td>Harpers Farm Road</td>
<td>The project calls for improvements to a shared use trail and a bike lane that will allow a more direct and effective connection for riders to use the multiuse trail to connect the College, Hospital and Harpers Choice Village Center.</td>
<td>$240,957</td>
<td>$72,287</td>
<td>$6,000</td>
<td>$319,244</td>
<td>0.6</td>
</tr>
<tr>
<td>12</td>
<td>Harpers Farm Road</td>
<td>Cedar Lane</td>
<td>MD 108</td>
<td>The project calls for a series of bike lanes and sharrows to provide north/south passage and allow cyclists to connect to Project No.11.</td>
<td>$101,074</td>
<td>$30,322</td>
<td>$11,000</td>
<td>$142,396</td>
<td>1.1</td>
</tr>
<tr>
<td>13</td>
<td>Thunder Hill Road, Old Annapolis Road, Bendix Road, Edgar Road, Meadowbrook Road</td>
<td>Multiuse Trail</td>
<td>Meadowbrook Road/MD 100</td>
<td>The project proposes a series of bike lanes and multiuse path to develop a high quality north/south connection between Downtown Columbia and Long Gate.</td>
<td>$582,610</td>
<td>$174,783</td>
<td>$39,000</td>
<td>$796,393</td>
<td>3.9</td>
</tr>
<tr>
<td>14</td>
<td>Old Columbia Pike, Main Street</td>
<td>MD 108</td>
<td>Historic Ellicott City</td>
<td>The project calls for a series of bike lanes, sharrows, and climbing lanes to establish a connection to historic Ellicott City. The project calls for improved connections to the trolley trail to allow continuous passage.</td>
<td>$300,678</td>
<td>$90,203</td>
<td>$16,000</td>
<td>$406,881</td>
<td>1.6</td>
</tr>
<tr>
<td>15</td>
<td>W. Running Brook Road</td>
<td>Little Patuxent Parkway</td>
<td>MD 108</td>
<td>The project calls for the development of a neighborhood greenway, climbing lanes and an improvement to a road crossing to provide north/south passage from Downtown Columbia to Centennial Park.</td>
<td>$645,729</td>
<td>$193,719</td>
<td>$12,000</td>
<td>$851,448</td>
<td>1.2</td>
</tr>
<tr>
<td>16</td>
<td>Columbia Road</td>
<td>Little Patuxent Parkway</td>
<td>MD 108</td>
<td>The project will develop a series of bike lanes, cycle tracks and intersection improvements to provide for north/southbound travel to connect to Downtown Columbia. Included in this project are improvements at 108 and Columbia Road.</td>
<td>$730,974</td>
<td>$219,292</td>
<td>$18,000</td>
<td>$968,266</td>
<td>1.8</td>
</tr>
</tbody>
</table>
Table 5: Structured Projects  Note: Costs listed in these tables are planning level estimates and include high contingency factors. Actual costs for most projects are expected to be lower, particularly when bike lane projects can be aligned with ongoing road resurfacing.

<table>
<thead>
<tr>
<th>Project No.</th>
<th>Primary Locations</th>
<th>From</th>
<th>To</th>
<th>Description</th>
<th>Construction Estimate</th>
<th>Design and Engineering</th>
<th>Signage Cost</th>
<th>Total</th>
<th>Length (Miles)</th>
</tr>
</thead>
<tbody>
<tr>
<td>17</td>
<td>Toll House Road, Rogers Avenue</td>
<td>Old Columbia Pike</td>
<td>Government Center</td>
<td>The project calls for a series of bike lanes to continue north/south connections and route from Long Gate area to connect to the Government Center and Rogers Avenue northbound to US 40.</td>
<td>$149,625</td>
<td>$44,888</td>
<td>$19,000</td>
<td>$213,513</td>
<td>1.9</td>
</tr>
<tr>
<td>18</td>
<td>Centennial Lane (Bike Lanes, Sharrows, Paved and Striped Shoulders)</td>
<td>MD 108</td>
<td>Frederick Road</td>
<td>The project will develop a connection from MD 108 northbound to Frederick Road to provide a north/south connection to Centennial Park and Columbia using a series of bike lanes, sharrows and existing paved and striped shoulders.</td>
<td>$240,568</td>
<td>$72,170</td>
<td>$31,000</td>
<td>$343,738</td>
<td>3.1</td>
</tr>
<tr>
<td>19</td>
<td>Gray Rock Drive, Columbia Road, Frederick Road</td>
<td>Old Annapolis Road</td>
<td>Frederick Road</td>
<td>The project will develop a connection from Old Annapolis Road northbound to the Frederick Road, Miller Library. The route proposes a series of bike lanes and climbing lanes.</td>
<td>$363,080</td>
<td>$108,924</td>
<td>$31,000</td>
<td>$503,004</td>
<td>3.1</td>
</tr>
<tr>
<td>20</td>
<td>Centennial Park, Dorsey's Search Area</td>
<td>Centennial Lane</td>
<td>Wood Yard Road, Old Annapolis Road</td>
<td>The project will develop a series of pathway improvements, sharrows and intersection improvements to provide passage using Centennial Park to connect Centennial Lane, Columbia Road and Dorsey's Search Area, allowing passage parallel to MD 108.</td>
<td>$778,893</td>
<td>$233,668</td>
<td>$19,000</td>
<td>$1,031,561</td>
<td>1.9</td>
</tr>
<tr>
<td>21</td>
<td>Old Columbia Road</td>
<td>Old Annapolis Road/ Dorsey Hall Road</td>
<td>The project calls for intersection and linkages at MD 108/ Old Columbia Road and Columbia Road/Old Annapolis Road. These improvements will provide connections to Project No. 19 and No. 20. The project will also develop improvements on Old Columbia Road to connect to the Dorsey's Search Village Center.</td>
<td>$241,812</td>
<td>$72,544</td>
<td>$5,000</td>
<td>$319,356</td>
<td>0.5</td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>Stevens Forest Road</td>
<td>Whiteacre Road</td>
<td>Farewell Road/ Trail</td>
<td>Leverage completed bike lanes on Stevens Forest Road with additional signage.</td>
<td>$25,000</td>
<td>$7,500</td>
<td>$11,000</td>
<td>$43,500</td>
<td>1.1</td>
</tr>
<tr>
<td>23</td>
<td>Existing Pathways, Montgomery Road</td>
<td>Blandair Park</td>
<td>Tamar Drive</td>
<td>Improve existing shared use path and develop bike link to provide east/west travel.</td>
<td>$368,397</td>
<td>$110,519</td>
<td>$11,000</td>
<td>$489,916</td>
<td>1.1</td>
</tr>
<tr>
<td>24</td>
<td>Rivendell Lane, Cedar Lane Park, Longfellow Elementary School</td>
<td>Harpers Farm Road</td>
<td>Existing Trails</td>
<td>Upgrade existing paths and develop bike lanes to provide east/west route to connect to proposed Twin Rivers Trail to Downtown Columbia.</td>
<td>$149,858</td>
<td>$44,957</td>
<td>$7,000</td>
<td>$201,815</td>
<td>0.7</td>
</tr>
<tr>
<td>25</td>
<td>Governor Warfield Parkway from interchange at Governor Warfield and LPP on the Northside of the mall to intersection of LPP at Governor Warfield Parkway (Shared use path), LPP-west side of roadway to intersection at Columbia Road (shared use path upgrade)</td>
<td>Columbia Road</td>
<td>Little Patuxent Parkway / Governor Warfield Parkway/Banneker Road</td>
<td>Build new shared use pathway along Gov. Warfield Pkwy and continue along the west side of Little Patuxent Pkwy to Columbia Rd, enhancing existing sidewalks where they exist along this route. Connects to Hospital to Blandair Park pathway and Columbia Rd improvements (Project No. 16).</td>
<td>$663,323</td>
<td>$198,997</td>
<td>$13,000</td>
<td>$875,320</td>
<td>1.3</td>
</tr>
<tr>
<td>26</td>
<td>Brightfield Road, Old Montgomery Road, Marshalee Drive</td>
<td>Snowden River Parkway</td>
<td>Montgomery Road/Marshalee</td>
<td>Develops a series of bike lanes, upgrades to existing shared use paths, add new shared use path to provide for east/west passage from Snowden River Parkway and Tamar Drive.</td>
<td>$519,370</td>
<td>$155,811</td>
<td>$35,000</td>
<td>$710,181</td>
<td>3.5</td>
</tr>
<tr>
<td>27</td>
<td>Chatham Road, North Chatham Road</td>
<td>Columbia Road</td>
<td>MD 99</td>
<td>Develop a series of bike lanes and sharrows for a north/south connection, spot improvements, address existing traffic calming to better accommodate cycling</td>
<td>$590,547</td>
<td>$177,164</td>
<td>$43,000</td>
<td>$810,711</td>
<td>4.3</td>
</tr>
<tr>
<td>28</td>
<td>River Road, Furnace Road, Levering Avenue, Race Road</td>
<td>Gun Road</td>
<td>Hanover Road</td>
<td>Develop a series of bike lanes, avenue and striped shoulders, and sharrows to provide for passage in this popular cycling area. Provides access to the BWI trail and Grist Mill Trail.</td>
<td>$309,936</td>
<td>$92,981</td>
<td>$36,000</td>
<td>$438,917</td>
<td>3.6</td>
</tr>
</tbody>
</table>
Table 5: Structured Projects

Note: Costs listed in these tables are planning level estimates and include high contingency factors. Actual costs for most projects are expected to be lower, particularly when bike lane projects can be aligned with ongoing road resurfacing.

<p>| Project No. | Primary Locations                      | From               | To                  | Description                                                                 | Construction Estimate | Design and Engineering | Signage Cost | Total       | Length (Miles) |
|------------|----------------------------------------|--------------------|---------------------|------------------------------------------------------------------------------|-----------------------|------------------------|--------------|-------------|----------------|----------------|
| 36         | Frederick Road, Route 40               | Frederick Road     | Triadelphia Road    | Develop bike lanes and sharrows to provide for east/west passage, the balance of Frederick road to the west would bring shoulder improvements and reconfiguration striping. | $1,516,670            | $455,001                | $2,000       | $1,973,671 | 3.3            |                |
| 37         | Triadelphia Road                      | Frederick Road     | Folly Quarter       | Develop shared roadways and safety treatment along this road popular with recreational cyclists. | $601,567              | $180,470                | $40,000      | $822,037   | 4              |                |
| 40         | Little Patuxent Loop at Clary’s Forest | Little Patuxent    | Clary’s Forest Loop | Develop an advisory bike lane to provide passage for riders to connect to multiuse trail that will terminate at the Howard County General Hospital. | $9,557                | $2,867                  | $8,000       | $20,424    | 0.83           |                |
| 41         | Folly Quarter Road                    | Homewood Road      | Frederick Road      | The project proposes signed and spot widening that will improve shoulders in some areas. The project will develop a higher quality north/south connection already popular with recreational cyclists. | $491,173              | $147,352                | $33,000      | $671,525   | 3.3            |                |
| 42         | Windstream Drive, Green Mountain Circle| Governor Warfield  | Twins Rivers Road   | Improve signal at Green Mountain and Windstream Drive to improve connection and access to alternative route out of the mall entrance at Windstream Drive, would also require adjusting signal at Windstream Drive and Governor Warfield Parkway. | $125,000              | $37,500                 | $5,000       | $167,500   | 0.49           |                |
| 43         | Montgomery Road                       | Marshalee Drive    | Rockburn Park Entrance | Develop a bike lane along road to provide access to Rockburn Branch Park, a busy bike related park. | $343,311              | $102,993                | $6,000       | $452,304   | 0.62           |                |
| 44         | Martin Road                           | Owen Brown Road    | Hickory Ridge       | This project calls for sharrows and bike lanes to provide an alternative connection using an access road to connect to Project No. 55 to establish a connection to Downtown Columbia. | $92,126               | $27,638                 | $6,000       | $125,764   | 0.64           |                |
| 45         | Triadelphia Road, Folly Quarter Road  | Sharp Road/Shady Lane | Homewood Road | Develop shared roadways and safety treatment along road popular for triathlon events. | $672,946              | $201,884                | $67,000      | $941,830   | 6.7            |                |
| 46         | Thunder Hill Rd at MD 175             | Thunder Hill Road  | Trail intersection at Thunder Hill Road just north of Soaring Hill Road Upgrade existing shared use path to develop high quality connections under MD 175, using existing tunnel and improve lighting and aesthetic experience. | $465,193              | $139,558                | $9,000       | $613,751   | 0.93           |                |
| 47         | Lake Kittamaqundi/Vantage Point Road  | Little Patuxent    | Vantage Point Road | Complete loop around Lake Kittamaqundi (this CA project is anticipated to be completed in 2014) and widen existing pathway between the north end of the lake and Vantage Point Road; enhance intersection at Vantage Point Road/Little Patuxent Parkway/W. Running Brook, as needed. Connects to Project No. 25 the west side of Little Patuxent Parkway to Columbia Rd as well as to Gov. Warfield Pkwy and Project No. 48 along the east side of Little Patuxent Pkwy. | $153,194              | $45,958                 | $10,000      | $209,152   | 1              |                |
| 48         | Little Patuxent Parkway               | Columbia Road      | Multiuse Trail      | Shared use path to provide north/south travel and connect to DTC Trail. | $442,971              | $132,891                | $11,000      | $586,862   | 1.13           |                |</p>
<table>
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<tr>
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<th>Signage Cost</th>
<th>Total</th>
<th>Length (Miles)</th>
</tr>
</thead>
<tbody>
<tr>
<td>55</td>
<td>Broken Land Parkway, Sebring Drive</td>
<td>Multiuse Trail</td>
<td>Martin Road</td>
<td>The project proposes a series of shared roadways, improved shared use paths, new shared use paths, and bike lanes to develop a north/south connection to connect to Martin Road from Downtown Columbia.</td>
<td>$399,819</td>
<td>$119,946</td>
<td>$11,000</td>
<td>$530,765</td>
<td>1.11</td>
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<tr>
<td>56</td>
<td>McGaw Road</td>
<td>Dobbin Road</td>
<td>Snowden River Parkway and into Snowden Square access roads</td>
<td>The project proposes a series of bike lanes, sharrows and a trail connection to provide access to the Snowden Square Shopping center area.</td>
<td>$435,948</td>
<td>$130,784</td>
<td>$5,000</td>
<td>$571,732</td>
<td>0.5</td>
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<tr>
<td>57</td>
<td>Old Montgomery Road, Mayfield Avenue, Meadowridge Road</td>
<td>Old Montgomery Road</td>
<td>Dorsey MARC Station</td>
<td>The project calls for a series of bike lanes, improved paths, sharrows and an intersection improvement to develop an east/west connection to the Dorsey MARC Station.</td>
<td>$959,998</td>
<td>$287,999</td>
<td>$37,000</td>
<td>$1,284,997</td>
<td>3.7</td>
</tr>
<tr>
<td>58</td>
<td>Longate Parkway, MD 103</td>
<td>Meadowbrook Road/MO 100</td>
<td>MD 103/Old Columbia Road</td>
<td>The project will develop a series of bike lanes, sharrows and roads with safety treatments to provide a connection from Kings Contrivance Village Center to Johns Hopkins Road to allow north/south passage.</td>
<td>$1,758,232</td>
<td>$527,470</td>
<td>$14,000</td>
<td>$2,299,702</td>
<td>1.4</td>
</tr>
<tr>
<td>59</td>
<td>Old Columbia Road</td>
<td>Eden Brook Drive</td>
<td>Johns Hopkins Road</td>
<td>Develop shared roadways and safety treatment along road popular for triathlon events.</td>
<td>$393,907</td>
<td>$118,172</td>
<td>$25,000</td>
<td>$537,079</td>
<td>2.5</td>
</tr>
<tr>
<td>60</td>
<td>Homewood Road</td>
<td>MD 108</td>
<td>Folly Quarter Road</td>
<td>Develop shared roadways and safety treatment along road popular for triathlon events.</td>
<td>$1,123,716</td>
<td>$337,115</td>
<td>$22,000</td>
<td>$1,482,830</td>
<td>2.2</td>
</tr>
<tr>
<td>61</td>
<td>Tamar Drive</td>
<td>Tamar Drive/Hayshed Lane</td>
<td>Old Montgomery Road</td>
<td>The project calls for a series of bike lanes to develop an east/west connection and connect with Project No. 57.</td>
<td>$111,153</td>
<td>$33,346</td>
<td>$10,000</td>
<td>$154,499</td>
<td>1</td>
</tr>
<tr>
<td>62</td>
<td>Frederick Road (MD 144)</td>
<td>Triadelphia Road</td>
<td>MD 32</td>
<td>The plan calls for improving this segment of road by improving shoulders to provide a paved and striped shoulder, would entail working with SHA, would improve access to MD 32 and western portion of county.</td>
<td>$1,066,884</td>
<td>$320,065</td>
<td>$19,000</td>
<td>$1,405,949</td>
<td>1.9</td>
</tr>
<tr>
<td>63</td>
<td>Downtown Columbia</td>
<td>South Entrance Road/US 29</td>
<td>Broken Land Parkway/Stevens Forest Road</td>
<td>The plan calls for developing a shared use path from the multi use pathway that would follow the Little Patuxent River to allow passage under US 29 and Broken Land Parkway, develop bike lanes on Stevens Forest Road south of Broken Land Parkway and connect to existing bicycle facilities on Stevens Forest Road north of Broken Land Parkway. (Cost based on results of Downtown Columbia Patuxent Branch Trail Extension Feasibility Study plus a wayfinding factor)</td>
<td>$13,000</td>
<td>$802,000</td>
<td></td>
<td></td>
<td>1.3</td>
</tr>
<tr>
<td>64</td>
<td>Clarksville Pike/MD 108</td>
<td>Guilford Road</td>
<td>Trotter Road</td>
<td>The plan calls for developing a shared use path from Guilford Road to Trotter Road on the west side of Clarksville Pike/MD 108, including pedestrian related improvements, including signal and crosswalk improvements. (Costs are based on preliminary results of Clarksville Streetscape Design Guidelines Study and includes estimated construction, design and engineering, utility and right of way costs).</td>
<td>$17,000</td>
<td>$1,617,000</td>
<td></td>
<td></td>
<td>1.7</td>
</tr>
<tr>
<td>TTL</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>$32,436,561</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Estimated Cost: $240,138
Length (Miles): 3.4

Project Description:
The project will develop bike lanes to extend the existing bike lanes on Great Star Drive in River Hill to provide connections to the east. This project leverages a connection that will be built as part of the Simpson Mill housing development. This project is also coordinated with SHA’s Fort Meade/NSA signed bike route.

Primary Location/Streets:
Grace Drive (Bike Lanes), Summer Sunrise Drive (Sharrows)

Start: River Hill
End: Cedar Lane
Estimated Cost: $438,910
Length (Miles): 1.7

Project Description:
The project proposes a series of bike lanes to develop an east/west connection, it is aligned with SHA’s Fort Meade Signed Route.

Primary Location/Streets:
Harriett Tubman Lane (Bike Lanes, Climbing Lanes), Martin Road (Bike Lane)

Start: Cedar Lane
End: Seneca Drive

Linear Recommendations
- Shared Use Path Construct New
- Shared Use Path Upgrade
- Sidewalk w/ Bikes Permitted
- Neighborhood Greenway
- Bike Lane/Climbing Lane/Buffered Bike Lane
- Sharrow
- Cycletrack
- Shared Roadway/Paved and Striped Shoulder
- Advisory Bike Lane

Existing Facilities
- Bike Lane/Buffered Bike Lane
- Paved Shoulder/Shared Roadway
- Existing Pathways (CA, HC and Others)

Spot Recommendations
- Bike Link or Signs Needed
- Bridge (Improvement/build)
- Crossing Improvement or Pathway Crossing
- Tunnel (Minor Improvements)
Structured Projects

Estimated Cost: $643,598
Length (Miles): 2

Project Description:
The project will develop a series of trail access improvements, bike lanes, upgrades to shared use paths to provide a north/south connection across MD 32 and better connect the village center and the Patuxent Branch Trail.

Primary Location/Streets:
Seneca Drive (Bike Lane) Shaker Drive (Sharrows) Eden Brook Drive (Bike Lane from S. Carlinda to KC VC), Path upgrades on path section from Wesleigh Drive to S. Carlinda, spot improvements at Wesleigh Drive/ Seneca Drive and trail crossing at Cape Anne Drive, signal improvement at Old Columbia Road and Eden Brook Drive

Start: Martin Road
End: Guilford Road/Kings Contrivance Village Center

Existing Facilities
- Bike Lane/Buffered Bike Lane
- Paved Shoulder/Shared Roadway
- Existing Pathways (CA, HC and Others)

Linear Recommendations
- Shared Use Path Construct New
- Shared Use Path Upgrade
- Sidewalk w/ Bikes Permitted
- Neighborhood Greenway
- Bike Lane/Climbing Lane/Buffered Bike Lane
- Sharrow
- Cycletrack
- Shared Roadway/Paved and Striped Shoulder
- Advisory Bike Lane

Spot Recommendations
- Bike Link or Signs Needed
- Bridge (Improvement/build)
- Crossing Improvement or Pathway Crossing
- Tunnel (Minor Improvements)
Estimated Cost: $630,283
Length (Miles): 4.4

Project Description:
The project will develop a series of bike lanes, sharrows and roads with safety treatments to provide a connection from Johns Hopkins Road to Laurel to improve north/south passage.

Primary Location/Streets:
Gorman Road (Paved and Striped Shoulder, Shared Roadway w/ ST, sharrows, Bike Lanes), Stephens Road (Bike Lanes)

Start: Johns Hopkins Road
End: North Laurel
**Structured Projects**

**Estimated Cost:** $631,439

**Length (Miles):** 3.2

**Project Description:**

This project will develop a series of on road and off road connections to connect North Laurel to Savage and establish connections to existing destinations and Prince Georges County.

**Primary Location/Streets:**

All Saints Road (Bike Lanes), North Laurel Road from Stephens Road to All Saints Road (Bike Lanes), Whiskey Bottom Road from All Saints Road to access road to N. Laurel Community Center (Sharrows), Manorwood Road from Whiskey Bottom Road to Kings Grant Road (Shared Roadway-exists), Kings Grant Road, Chaton Road, Woodsong Court, Royal Path Cove (Shared Roadway-Existing), New Shared Use path connection between Whiskey Bottom Road/All Saints Road junction north across to Chaton Road, New Shared Use Path on informal trail between end of Royal Path Cove to Ridings Way with a spot improvement at transition to Ridings Way. Intersection improvement at All Saints Road at Scaggsville Road and Baltimore

**Start:** Savage

**End:** North Laurel/Prince Georges County

**Structured Project Number: 5**

**Project Description:**

This project will develop a series of on road and off road connections to connect North Laurel to Savage and establish connections to existing destinations and Prince Georges County.
Structured Projects

Estimated Cost: $219,732
Length (Miles): 1.9

Project Description:
This project will develop connections to the Savage Historic Mill Trail and through Savage to connect to the Patuxent Branch Trail, including sharrow to indicate path of travel for cars and cyclists the parking area at trailhead in park.

Primary Location/Streets:

Ridings Way at proposed junction with Project No. 5 to Knights Bridge Road (Sharrows), Knights Bridge Road (Bike Lane), Gorman Road between intersection at Gorman Road and Foundry Street (Bike Lanes), Foundry Street (Sharrows), Washington Street between Foundry Street and William Street (Sharrows), Baltimore Street between Williams Street and Savage Guilford Road (Sharrows)

Start: Maxwell Court
End: Baltimore Street/Savage Park

Linear Recommendations
Existing Facilities
- Shared Use Path Construct New
- Bike Lane/Buffered Bike Lane
- Shared Use Path Upgrade
- Paved Shoulder/Shared Roadway
- Sidewalk w/ Bikes Permitted
- Existing Pathways (CA, HC and Others)
- Neighborhood Greenway

Spot Recommendations
- Bike Link or Signs Needed
- Bridge (Improvement/build)
- Crossing Improvement or Pathway Crossing
- Tunnel (Minor Improvements)
Structured Projects

Estimated Cost: $398,874
Length (Miles): 3

Project Description:
The project will develop a series of bike lanes, sharrows, and paved striped shoulders to allow continuous passage via the Patuxent Branch Trail to the Savage TOD / MARC station and establish connections to the southside of Laurel.

Primary Location/Streets:
Vollmerhausen Road (Buffered Bike Lane), Savage Guilford Road (Sharrows), Baltimore Street (Shared Roadway-Existing), Corridor Road (Paved And Striped Shoulders (Existing)), Howard Street (Sharrows), Junction Drive between Corridor Road and Dorsey Road (Bike Lanes, includes access to MARC station access roads), intersection improvement at Junction Drive/Dorsey Run Road and Rt. 1 and Corridor Road.

Start: Terminus of Patuxent Branch Trail/ Vollmerhausen Road
End: Savage TOD/MARC Station

Linear Recommendations
- Existing Facilities
  - Bike Lane/Buffered Bike Lane
  - Paved Shoulder/Shared Roadway
  - Existing Pathways (CA, HC and Others)
- Bike Lane/Climbing Lane/Buffered Bike Lane
- Sharrow
- Cycletrack
- Shared Roadway/Paved and Striped Shoulder
- Advisory Bike Lane

Spot Recommendations
- Bike Link or Signs Needed
- Bridge (Improvement/build)
- Crossing Improvement or Pathway Crossing
- Tunnel (Minor Improvements)
Structured Project Number: 8

Estimated Cost: $695,686
Length (Miles): 1.3

Project Description:
The project proposes to pave the existing unpaved portion of the Patuxent Branch Trail to improve conditions for travel and three season use. The project also calls for improvements at the trailhead at Guilford Road to more clearly indicate to users the direction of travel and passage across and through the parking area.

Primary Location/Streets:
Patuxent Branch Trail (unpaved portion between existing trailhead at Guilford Road to trailhead at Vollmerhausen Road)

Start: Trailhead at Guilford Road
End: Vollmerhausen Road
Structured Projects

Estimated Cost: $906,368
Length (Miles): 1.8

Project Description:
Upgrades to existing trails and new trail connections. Path crossings will provide high quality east/west passage. Project also calls for new trail connections to Dobbin Road and McGaw Road. The project includes the tunnel under Oakland Mills Road, but does not propose any improvements. The project proposes building a new shared use path to connect the existing pathway to connect with Dobbin Road at McGaw Court, and upgrade an existing shared use path to improve connections to Dobbin Road.

Primary Location/Streets:
CA Pathway from parking area at Lake Elkhorn, path on southside of lake then on to trail crossing over Dasher Court to Oakland Mills Road (Shared Use Path-Upgrade), Oakland Mill Road from Dasher Court to Tunnel (Share Use Path-Upgrade)

Start: Broken Land Parkway/Lake Elkhorn
End: Dobbin Road Commercial Area

Existing Facilities
- Bike Lane/Buffered Bike Lane
- Paved Shoulder/Shared Roadway
- Existing Pathways (CA, HC and Others)

Linear Recommendations
- Shared Use Path Construct New
- Shared Use Path Upgrade
- Sidewalk w/ Bikes Permitted
- Neighborhood Greenway
- Bike Lane/Climbing Lane/Buffered Bike Lane
- Sharrow
- Cycletrack
- Shared Roadway/Paved and Striped Shoulder
- Advisory Bike Lane

Spot Recommendations
- Bike Link or Signs Needed
- Bridge (Improvement/build)
- Crossing Improvement or Pathway Crossing
- Tunnel (Minor Improvements)
**Structured Projects**

**Bike Howard**

**Estimated Cost:** $893,998  
**Length (Miles):** 2.1

**Project Description:**
Series of bike lanes, sharrows, and shared use paths to connect Howard County Community College and provide north/south passage.

**Primary Location/Streets:**
Martin Road, Owen Brown Road, Jerrys Drive

**Start:** Hickory Ridge Road, Howard County Community College  
**End:** Seneca Drive

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**Existing Facilities**
- Bike Lane/Buffered Bike Lane
- Paved Shoulder/Shared Roadway
- Existing Pathways (CA, HC and Others)

**Linear Recommendations**
- Shared Use Path Construct New
- Shared Use Path Upgrade
- Sidewalk w/ Bikes Permitted
- Neighborhood Greenway
- Bike Lane/Climbing Lane/Buffered Bike Lane
- Sharrow
- Cycletrack
- Shared Roadway/Paved and Striped Shoulder
- Advisory Bike Lane

**Spot Recommendations**
- Bike Link or Signs Needed
- Bridge (Improvement/build)
- Crossing Improvement or Pathway Crossing
- Tunnel (Minor Improvements)
Structured Projects

Project Description:
The project calls for improvements to a shared use trail and a bike lane that will allow a more direct and effective connection for riders to use the multiuse trail to connect the College, Hospital and Harpers Choice Village Center.

Primary Location/Streets:
Columbia Association Pathway and Harpers Farm Road

Estimated Cost: $319,244
Length (Miles): 0.6

Start: Little Patuxent Parkway
End: Harpers Farm Road

Existing Facilities
- Bike Lane/Buffered Bike Lane
- Paved Shoulder/Shared Roadway
- Existing Pathways (CA, HC and Others)

Linear Recommendations
- Shared Use Path Construct New
- Shared Use Path Upgrade
- Bike Lane/Climbing Lane/Buffered Bike Lane
- Sharrow
- Cycletrack
- Shared Roadway/Paved and Stripped Shoulder
- Advisory Bike Lane

Spot Recommendations
- Bike Link or Signs Needed
- Bridge Improvement/build
- Crossing Improvement or Pathway Crossing
- Tunnel (Minor Improvements)
**Structured Projects**

**Bike Howard**

Estimated Cost: $142,396

Length (Miles): 1.1

**Project Description:**

The project calls for a series of bike lanes and sharrow to provide north/south passage and allow cyclists to connect to project number 11.

**Primary Location/Streets:**

Harpers Farm Road

**Start:** Cedar Lane

**End:** MD 108

**Existing Facilities**

- Bike Lane/Buffered Bike Lane
- Paved Shoulder/Shared Roadway
- Existing Pathways (CA, HC and Others)

**Linear Recommendations**

- Shared Use Path Construct New
- Shared Use Path Upgrade
- Sidewalk w/ Bikes Permitted
- Neighborhood Greenway
- Bike Lane/Climbing Lane/Buffered Bike Lane
- Sharrow
- Cycletrack
- Paved Shoulder/Shared Shoulder
- Advisory Bike Lane

**Spot Recommendations**

- Bike Link or Signs Needed
- Bridge (Improvement/build)
- Crossing Improvement or Pathway Crossing
- Tunnel (Minor Improvements)
Structured Projects

Estimated Cost: $796,393
Length (Miles): 3.9

Project Description:
The project proposes a series of bike lanes and multiuse path to develop a high quality north/south connection between Downtown Columbia and Long Gate.

Primary Location/Streets:
Thunder Hill Road, Old Annapolis Road, Bendix Road, Edgar Road, Meadowbrook Road

Start: Multiuse Trail
End: Meadowbrook Road/MD 100

Linear Recommendations
- Shared Use Path Construct New
- Shared Use Path Upgrade
- Sidewalk w/ Bikes Permitted
- Neighborhood Greenway
- Bike Lane/Climbing Lane/Buffered Bike Lane
- Sharrow
- Cycletrack
- Shared Roadway/Paved and Striped Shoulder
- Advisory Bike Lane

Existing Facilities
- Bike Lane/Buffered Bike Lane
- Paved Shoulder/Shared Roadway
- Existing Pathways (CA, HC and Others)

Spot Recommendations
- Bike Link or Signs Needed
- Bridge (Improvement/build)
- Crossing Improvement or Pathway Crossing
- Tunnel (Minor Improvements)
**Main Street**

**Estimated Cost:** $406,881  
**Length (Miles):** 1.6

**Project Description:**
The project calls for a series of bike lanes, sharrows, and climbing lanes to establish a connection to historic Ellicott City. The project calls for improved connections to the trolley trail to allow continuous passage.

**Primary Location/Streets:**
Old Columbia Pike, Main Street

**Start:** MD 108  
**End:** Historic Ellicott City

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**Linear Recommendations**
- Bike Lane/Buffered Bike Lane
- Paved Shoulder/Shared Roadway
- Existing Pathways (CA, HC and Others)

**Existing Facilities**
- Bike Lane/Buffered Bike Lane
- Paved Shoulder/Shared Roadway
- Existing Pathways (CA, HC and Others)

---

**Spot Recommendations**
- Bike Link or Signs Needed
- Bridge (Improvement/build)
- Crossing Improvement or Pathway Crossing
- Tunnel (Minor Improvements)
**Structured Projects**

**Bike Howard**

**Estimated Cost:** $851,448

**Length (Miles):** 1.2

**Project Description:**

The project calls for the development of a neighborhood greenway, climbing lanes and an improvement to a road crossing to provide north/south passage from Downtown Columbia to Centennial Park.

**Primary Location/Streets:**

W. Running Brook Road

**Start:** Little Patuxent Parkway

**End:** MD 108

### Linear Recommendations

- Shared Use Path Construct New
- Shared Use Path Upgrade
- Sidewalk w/ Bikes Permitted
- Neighborhood Greenway
- Bike Lane/Climbing Lane/Buffered Bike Lane
- Sharrow
- Cycletrack
- Shared Roadway/Paved and Striped Shoulder
- Advisory Bike Lane

### Spot Recommendations

- Bike Link or Signs Needed
- Bridge (Improvement/build)
- Crossing Improvement or Pathway Crossing
- Tunnel (Minor Improvements)
Structured Projects

Bike Howard

Estimated Cost: $968,266
Length (Miles): 1.8

Project Description:
The project will develop a series of bike lanes, cycle tracks and intersection improvements to provide for north/southbound travel to connect to Downtown Columbia. Included in this project are improvements at 108 and Columbia Road.

Primary Location/Streets:
Columbia Road

Start: Little Patuxent Parkway
End: MD 108
Structured Projects

B i k e  H o w a r d

Structured Projects

Estimated Cost: $213,513
Length (Miles): 1.9

Project Description:
The project calls for a series of bike lanes to continue north/south connections and route from Long Gate area to connect to the Government Center and Rogers Avenue northbound to Route 40.

Primary Location/Streets:
Toll House Road, Rogers Avenue

Start: Old Columbia Pike
End: Government Center

Existing Facilities
- Bike Lane/Buffered Bike Lane
- Paved Shoulder/Shared Roadway
- Existing Pathways (CA, HC and Others)

Linear Recommendations
- Shared Use Path Construct New
- Shared Use Path Upgrade
- Sidewalk w/ Bikes Permitted
- Neighborhood Greenway
- Bike Lane/Climbing Lane/Buffered Bike Lane
- Sharrow
- Cycletrack
- Shared Roadway/Paved and Striped Shoulder
- Advisory Bike Lane

Spot Recommendations
- Bike Link or Signs Needed
- Bridge (Improvement/build)
- Crossing Improvement or Pathway Crossing
- Tunnel (Minor Improvements)
**Structured Project Number: 18**

**Project Description:**
The project will develop a connection from MD 108 northbound to Frederick Road to provide a north/south connection to Centennial Park and Columbia using a series of bike lanes, sharrows and existing paved and striped shoulders.

**Length (Miles):** 3.1

**Estimated Cost:** $343,738

**Primary Location/Streets:**
Centennial Lane (Bike Lanes, Sharrows, Paved and Striped Shoulders)

**Start:** MD 108
**End:** Frederick Road

**Existing Facilities**
- Bike Lane/Buffered Bike Lane
- Paved Shoulder/Shared Roadway
- Existing Pathways (CA, HC and Others)

**Linear Recommendations**
- Shared Use Path Construct New
- Shared Use Path Upgrade
- Sidewalk w/ Bikes Permitted
- Neighborhood Greenway
- Bike Lane/Climbing Lane/Buffered Bike Lane
- Sharrow
- Cycletrack
- Shared Roadway/Paved and Striped Shoulder
- Advisory Bike Lane

**Spot Recommendations**
- Bike Link or Signs Needed
- Bridge (Improvement/build)
- Crossing Improvement or Pathway Crossing
- Tunnel (Minor Improvements)
Estimated Cost: $503,004
Length (Miles): 3.1

Project Description:
The project will develop a connection from Old Annapolis Road northbound to the Frederick Road, Miller Library. The route proposes a series of bike lanes and climbing lanes.

Primary Location/Streets:
Gray Rock Drive, Columbia Road, Frederick Road

Start: Old Annapolis Road
End: Frederick Road
Structured Projects

Project Description:
The project will develop a series of pathway improvements, sharrows and intersection improvements to provide passage using Centennial Park to connect Centennial Lane, Columbia Road and Dorsey's Search Area, allowing passage parallel to MD 108.

Primary Location/Streets:
Centennial Park, Dorsey's Search Area

Start: Centennial Lane
End: Wood Yard Road, Old Annapolis Road

Linear Recommendations
- Shared Use Path Construct New
- Shared Use Path Upgrade
- Sidewalk w/ Bikes Permitted
- Neighborhood Greenway
- Bike Lane/Climbing Lane/Buffered Bike Lane
- Sharrow
- Cycletrack
- Shared Roadway/Paved and Striped Shoulder
- Advisory Bike Lane

Existing Facilities
- Bike Lane/Buffered Bike Lane
- Paved Shoulder/Shared Roadway
- Existing Pathways (CA, HC and Others)

Spot Recommendations
- Bike Link or Signs Needed
- Bridge (Improvement/build)
- Crossing Improvement or Pathway Crossing
- Tunnel (Minor Improvements)
Estimated Cost: $319,356
Length (Miles): 0.5

Project Description:
The project calls for intersection and linkages at MD 108/Old Columbia Road and Columbia Road/Old Annapolis Road. These improvements will provide connections to projects 19 and 20. The project will also develop improvements on Old Columbia Road to connect to the Dorsey’s Search Village Center.

Primary Location/Streets:
Old Columbia Road

Start: Old Annapolis Road
End: Old Annapolis Road/Dorsey Hall Road
**Structured Projects**

**Estimated Cost:** $43,500

**Length (Miles):** 1.1

**Project Description:**
Leverage completed bike lanes on Stevens Forest Road with additional signage.

**Primary Location/Streets:**
Stevens Forest Road

**Start:** Whiteacre Road

**End:** Farewell Road/Trail
Structured Projects

Bike Howard

Structured Projects

Estimated Cost: $489,916
Length (Miles): 1.1

Project Description:
Improve existing shared use path and develop bike link to provide east/west travel.

Primary Location/Streets:
Existing Pathways, Montgomery Road

Start: Blandair Park
End: Tamar Drive
Structured Projects

Estimated Cost: $201,815
Length (Miles): 0.7

Project Description:
Upgrade existing paths and develop bike lanes to provide east/west route to connect to proposed Twin Rivers Trail to Downtown Columbia.

Primary Location/Streets:
Rivendell Lane, Cedar Lane Park, Longfellow Elementary School

Start: Harpers Farm Road
End: Existing Trails

<table>
<thead>
<tr>
<th>Linear Recommendations</th>
<th>Existing Facilities</th>
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<tr>
<td>Shared Use Path Construct New</td>
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<td>Cycltrack</td>
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<tr>
<td>Shared Roadway/Paved and Striped Shoulder Advisory Bike Lane</td>
<td></td>
</tr>
</tbody>
</table>

Spot Recommendations:
- Bike Link or Signs Needed
- Bridge (Improvement/build)
- Crossing Improvement or Pathway Crossing
- Tunnel (Minor Improvements)
**Structured Projects**

**Estimated Cost:** $875,320
**Length (Miles):** 1.3

**Project Description:**
Description: Build new shared use pathway along Gov. Warfield Pkwy and continue along the west side of Little Patuxent Pkwy to Columbia Rd, enhancing existing sidewalks where they exist along this route. Connects to Hospital to Blandair Park pathway and Columbia Rd improvements (project #16)

**Primary Location/Streets:**
Governor Warfield Parkway—from interchange at Governor Warfield and LPP on the Northside of the mall to intersection of LPP at Governor Warfield Parkway (Shared use path), LPP-west side of roadway to intersection at Columbia Road (shared use path upgrade)

**Start:** Columbia Road  
**End:** Little Patuxent Parkway /Governor Warfield
Structured Projects

Estimated Cost: $710,181
Length (Miles): 3.5

Project Description:
Develops a series of bike lanes, upgrades to existing shared use paths, add new shared use path to provide for east/west passage from Snowden River Parkway and Tamar Drive.

Primary Location/Streets:
Brightfield Road, Old Montgomery Road, Montgomery Road, Marshalee Drive

Start: Snowden River Parkway
End: Montgomery Road/Marshalee

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Linear Recommendations

- Shared Use Path Construct New
- Shared Use Path Upgrade
- Sidewalk w/ Bikes Permitted
- Neighborhood Greenway
- Bike Lane/Climbing Lane/Buffered Bike Lane
- Sharrow
- Cycltrack
- Shared Roadway/Paved and Striped Shoulder
- Advisory Bike Lane
- Bike Link or Signs Needed
- Bridge (Improvement/build)
- Crossing Improvement or Pathway Crossing
- Tunnel (Minor Improvements)

Existing Facilities

- Bike Lane/Buffered Bike Lane
- Paved Shoulder/Shared Roadway
- Existing Pathways (CA, HC and Others)

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Graphical representation of the proposed/initial project with linear and existing facilities marked.

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Structured Projects

**Estimated Cost:** $810,711

**Length (Miles):** 4.3

**Project Description:**
Develop a series of bike lanes and sharrows for a north/south connection, spot improvements, address existing traffic calming to better accommodate cycling

**Primary Location/Streets:**
Chatham Road, North Chatham Road

**Start:** Columbia Road

**End:** MD 99

**Linear Recommendations**
- Shared Use Path Construct New
- Shared Use Path Upgrade
- Sidewalk w/ Bikes Permitted
- Neighborhood Greenway
- Bike Lane/Climbing Lane/Buffered Bike Lane
- Sharrow
- Cyletrack
- Shared Roadway/Paved and Striped Shoulder
- Advisory Bike Lane

**Existing Facilities**
- Bike Lane/Buffered Bike Lane
- Paved Shoulder/Shared Roadway
- Existing Pathways (CA, HC and Others)

**Spot Recommendations**
- Bike Link or Signs Needed
- Bridge (Improvement/build)
- Crossing Improvement or Pathway Crossing
- Tunnel (Minor Improvements)
Estimated Cost: $438,917
Length (Miles): 3.6

Project Description:
Develop a series of bike lanes, avenue and striped shoulders, and sharrows to provide for passage in this popular cycling area. Provides access to the BWI trail and Grist Mill Trail.

Primary Location/Streets:
River Road, Furnace Road, Levering Avenue, Race Road

Start: Gun Road
End: Hanover Road
Structured Projects

Estimated Cost: $1,973,671
Length (Miles): 3.3

Project Description:
Develop bike lanes and sharrows to provide for east/west passage, the balance of Fredrick road to the west would bring shoulder improvements and reconfiguration striping.

Primary Location/Streets:
Frederick Road, Route 40

Start: Frederick Road/Bethany Lane
End: Triadelphia Road

Existing Facilities
- Bike Lane/Buffered Bike Lane
- Paved Shoulder/Shared Roadway
- Existing Pathways (CA, HC and Others)

Linear Recommendations
- Shared Use Path Construct New
- Shared Use Path Upgrade
- Sidewalk w/ Bikes Permitted
- Neighborhood Greenway
- Bike Lane/Climbing Lane/Buffered Bike Lane
- Sharrow
- Cycletrack
- Shared Roadway/Paved and Striped Shoulder
- Advisory Bike Lane

Spot Recommendations
- Bike Link or Signs Needed
- Bridge (Improvement/build)
- Crossing Improvement or Pathway Crossing
- Tunnel (Minor Improvements)
Structured Projects

Estimated Cost: $822,037
Length (Miles): 4

Project Description:
Develop shared roadways and safety treatment along this road popular with recreational cyclists.

Primary Location/Streets:
Triadelphia Road

Start: Frederick Road
End: Folly Quarter
**Structured Projects**

**Structured Project Number: 40**

**Project Description:**
Develop an advisory bike lane to provide passage for riders to connect to multiuse trail that will terminate at the Howard County General Hospital.

**Primary Location/Streets:**
Little Patuxent Loop at Clary's Forest

**Start:**
Little Patuxent Parkway/Cedar Lane

**End:**
Little Patuxent Parkway/Clary's Forest Loop

**Estimated Cost:** $20,424

**Length (Miles):** 0.8

**Existing Facilities**
- Bike Lane/Buffered Bike Lane
- Paved Shoulder/Shared Roadway
- Existing Pathways (CA, HC and Others)

**Linear Recommendations**
- Shared Use Path Construct New
- Shared Use Path Upgrade
- Sidewalk w/ Bikes Permitted
- Neighborhood Greenway
- Bike Lane/Climbing Lane/Buffered Bike Lane
- Sharrow
- Cyletrack
- Shared Roadway/Paved and Striped Shoulder
- Advisory Bike Lane

**Spot Recommendations**
- Bike Link or Signs Needed
- Bridge (Improvement/build)
- Crossing Improvement or Pathway Crossing
- Tunnel (Minor Improvements)
Structured Projects

Bike Howard

Structured Project Number: 41

Estimated Cost: $671,525
Length (Miles): 3.3

Project Description:
The project proposes signed and spot widening that will improve shoulders in some areas. The project will develop a higher quality north/south connection already popular with recreational cyclists.

Primary Location/Streets:
Folly Quarter Road

Start: Homewood Road
End: Frederick Road

Linear Recommendations
- Shared Use Path Construct New
- Shared Use Path Upgrade
- Sidewalk w/ Bikes Permitted
- Neighborhood Greenway
- Bike Lane/Climbing Lane/Buffered Bike Lane
- Sharrow
- Cycletrack
- Shared Roadway/Paved and Striped Shoulder
- Advisory Bike Lane

Spot Recommendations
- Bike Link or Signs Needed
- Bridge (Improvement/build)
- Crossing Improvement or Pathway Crossing
- Tunnel (Minor Improvements)

Existing Facilities
- Bike Lane/Buffered Bike Lane
- Paved Shoulder/Shared Roadway
- Existing Pathways (CA, HC and Others)
Structured Projects: Bike Howard

Primary Location/Streets:
Windstream Drive, Green Mountain Circle

Estimated Cost: $167,500
Length (Miles): 0.5

Project Description:
Improve signal at Green Mountain and Windstream Drive to improve connection and access to alternative route out of the mall entrance at Windstream Drive, would also require adjusting signal at Windstream Drive and Governor Warfield Parkway.

Start: Governor Warfield Parkway
End: Twins Rivers Road

Existing Pathways (CA, HC and Others):
- Bike Lane/Buffered Bike Lane
- Paved Shoulder/Shared Roadway
- Existing Pathways (CA, HC and Others)

Linear Recommendations:
- Shared Use Path Construct New
- Shared Use Path Upgrade
- Sidewalk w/ Bikes Permitted
- Neighborhood Greenway
- Bike Lane/Climbing Lane/Buffered Bike Lane
- Sharrow
- Cycletrack
- Shared Roadway/Paved and Striped Shoulder
- Advisory Bike Lane
- Bike Lane/Climbing Lane/Buffered Bike Lane
- Spot Recommendations
- Bike Link or Signs Needed
- Bridge (Improvement/build)
- Crossing Improvement or Pathway Crossing
- Tunnel (Minor Improvements)
**Structured Projects**

**Primary Location/Streets:**
Montgomery Road

**Start:** Marshalee Drive
**End:** Rockburn Park Entrance

**Project Description:**
Develop a bike lane along road to provide access to Rockburn Branch Park, a busy bike related park.

**Estimated Cost:** $452,304
**Length (Miles):** 0.6

**Proposed/Preliminary**
**Structured Project Number: 43**
Structured Projects

Bike Howard

Estimated Cost: $125,764
Length (Miles): 0.6

Project Description:
This project calls for sharrows and bike lanes to provide an alternative connection using an access road to connect to project no. 55 to establish a connection to Downtown Columbia.

Primary Location/Streets:
Martin Road

Start: Owen Brown Road
End: Hickory Ridge and Neighborhood roads

Existing Facilities
- Bike Lane/Buffered Bike Lane
- Paved Shoulder/Shared Roadway
- Existing Pathways (CA, HC and Others)

Linear Recommendations
- Shared Use Path Construct New
- Shared Use Path Upgrade
- Sidewalk w/ Bikes Permitted
- Neighborhood Greenway
- Bike Lane/Climbing Lane/Buffered Bike Lane
- Sharrow
- Cycletrack
- Shared Roadway/Paved and Striped Shoulder
- Advisory Bike Lane

Spot Recommendations
- Bike Link or Signs Needed
- Bridge (Improvement/build)
- Crossing Improvement or Pathway Crossing
- Tunnel (Minor Improvements)
Structured Projects

**Estimated Cost:** $941,830

**Length (Miles):** 6.7

**Project Description:**
Develop shared roadways and safety treatment along road popular for triathlon events.

**Primary Location/Streets:**
Triadelphia Road, Folly Quarter Road

**Start:** Sharp Road/Shady Lane

**End:** Homewood Road

### Linear Recommendations

- Shared Use Path Construct New
- Shared Use Path Upgrade
- Sidewalk w/ Bikes Permitted
- Neighborhood Greenway
- Bike Lane/Climbing Lane/Buffered Bike Lane
- Sharrow
- Cycletrack
- Shared Roadway/Paved and Striped Shoulder
- Advisory Bike Lane

### Existing Facilities

- Bike Lane/Buffered Bike Lane
- Paved Shoulder/Shared Roadway
- Existing Pathways (CA, HC and Others)

### Spot Recommendations

- Bike Link or Signs Needed
- Bridge (Improvement/build)
- Crossing Improvement or Pathway Crossing
- Tunnel (Minor Improvements)
Estimated Cost: $613,751
Length (Miles): 0.9

Project Description:
Upgrade existing shared use path to develop high quality connections under MD 175, using existing tunnel and improve lighting and aesthetic experience.

Primary Location/Streets:
Thunder Hill Rd at MD 175

Start: Thunder Hill Road
End: Trail intersection at Thunder Hill Road just north
Structured Projects

Project Description:
Complete loop around Lake Kittamaqundi (this CA project is anticipated to be completed in 2014) and widen existing pathway between the north end of the lake and Vantage Point Road; enhance intersection at Vantage Point Road/Little Patuxent Parkway/W. Running Brook, as needed. Connects to project no. 25 the west side of Little Patuxent Parkway to Columbia Rd as well as to Gov. Warfield Pkwy and project no. 48 along the east side of Little Patuxent Pkwy.

Primary Location/Streets:
Lake Kittamaqundi /Vantage Point Road

Start: Kennedy Gardens at Lake Kittamaqundi
End: Little Patuxent Parkway/Vantage Point Road

Estimated Cost: $209,152
Length (Miles): 1

Existing Facilities
- Bike Lane/Buffered Bike Lane
- Paved Shoulder/Shared Roadway
- Existing Pathways (CA, HC and Others)

Linear Recommendations
- Shared Use Path Construct New
- Shared Use Path Upgrade
- Sidewalk w/ Bikes Permitted
- Neighborhood Greenway
- Bike Lane/Climbing Lane/Buffered Bike Lane
- Sharrow
- Cycletrack
- Shared Roadway/Paved and Striped Shoulder
- Advisory Bike Lane

Spot Recommendations
- Bike Link or Signs Needed
- Bridge (Improvement/build)
- Crossing Improvement or Pathway Crossing
- Tunnel (Minor Improvements)
**Structured Projects**

**Estimated Cost:** $586,862  
**Length (Miles):** 1.1

**Project Description:**  
Shared use path to provide north/south travel and connect to DTC Trail.

**Primary Location/Streets:**  
Little Patuxent Parkway

**Start:** Columbia Road  
**End:** Multiuse Trail at South Entrance Road

---

**Linear Recommendations**

-.Shared Use Path Construct New
- Shared Use Path Upgrade
- Sidewalk w/ Bikes Permitted
- Neighborhood Greenway
- Bike Lane/Climbing Lane/Buffered Bike Lane
- Sharrow
- Cycletrack
- Shared Roadway/Paved and Striped Shoulder
- Advisory Bike Lane

**Existing Facilities**

- Bike Lane/Buffered Bike Lane
- Paved Shoulder/Shared Roadway
- Existing Pathways (CA, HC and Others)

**Spot Recommendations**

- Bike Link or Signs Needed
- Bridge (Improvement/build)
- Crossing Improvement or Pathway Crossing
- Tunnel (Minor Improvements)
Estimated Cost: $530,765
Length (Miles): 1.1

Project Description:
The project proposes a series of shared roadways, improved shared use paths, new shared use paths, and bike lanes to develop a north/south connection to connect to Martin Road from Downtown Columbia.

Primary Location/Streets:
Broken Land Parkway, Sebring Drive

Start: Multiuse Trail
End: Martin Road

Linear Recommendations
- Shared Use Path Construct New
- Shared Use Path Upgrade
- Sidewalk w/ Bikes Permitted
- Neighborhood Greenway
- Bike Lane/Climbing Lane/Buffered Bike Lane
- Sharrow
- Cycletrack
- Shared Roadway/Paved and Striped Shoulder
- Advisory Bike Lane

Existing Facilities
- Bike Lane/Buffered Bike Lane
- Paved Shoulder/Shared Roadway
- Existing Pathways (CA, HC and Others)

Spot Recommendations
- Bike Link or Signs Needed
- Bridge (Improvement/build)
- Crossing Improvement or Pathway Crossing
- Tunnel (Minor Improvements)
Structured Project Number: 56

**Estimated Cost:** $571,732

**Length (Miles):** 0.5

**Project Description:**
The project proposes a series of bike lanes, sharrows and a trail connection to provide access to the Snowden Square Shopping center area.

**Primary Location/Streets:**
McGaw Road

**Start:** Dobbin Road

**End:** Snowden River Parkway and into Snowden

![Map of proposed project routes and facilities]

**Linear Recommendations**
- Shared Use Path
- Bike Lane
- Neighborhood Greenway
- Tunnel

**Spot Recommendations**
- Bike Link or Signs
- Bridge
- Crossing Improvement
- Tunnel

**Existing Facilities**
- Bike Lane/Buffered Bike Lane
- Paved Shoulder/Shared Roadway
- Existing Pathways (CA, HC and Others)
Structured Projects

Estimated Cost: $1,284,997
Length (Miles): 3.7

Project Description:
The project calls for a series of bike lanes, improved paths, sharrows and an intersection improvement to develop an east/west connection to the Dorsey MARC Station.

Primary Location/Streets:
Old Montgomery Road, Mayfield Avenue, Meadowridge Road

Start: Old Montgomery Road
End: Dorsey MARC Station

Linear Recommendations
- Bike Lane/Buffered Bike Lane
- Paved Shoulder/Shared roadway
- Existing Pathways (CA, HC and Others)

Spot Recommendations
- Bike Link or Signs Needed
- Bridge (Improvement/build)
- Crossing Improvement or Pathway Crossing
- Tunnel (Minor Improvements)
Estimated Cost: $2,299,702
Length (Miles): 1.4

Project Description:
The project proposes a series of sharrows, bike lanes and cycle tracks to allow cyclists to transition through this very busy area to continue a quality north/south connection between Downtown Columbia through the Long Gate area and onto Historic Ellicott City.

Primary Location/Streets:
Longate Parkway, MD 103.

Start: Meadowbrook Road/MD 100
End: MD 103/Old Columbia Road
**Primary Location/Streets:**
Old Columbia Road

**Project Description:**
The project will develop a series of bike lanes, sharrows and roads with safety treatments to provide a connection from Kings Contrivance Village Center to Johns Hopkins Road to allow north/south passage.

**Start:** Eden Brook Drive  
**End:** Johns Hopkins Road

**Estimated Cost:** $537,079  
**Length (Miles):** 2.5

**Linear Recommendations**
- Shared Use Path Construct New
- Shared Use Path Upgrade
- Sidewalk w/ Bikes Permitted
- Neighborhood Greenway
- Bike Lane/Climbing Lane/Buffered Bike Lane
- Sharrow
- Cycletrack
- Shared Roadway/Paved and Striped Shoulder
- Advisory Bike Lane

**Existing Facilities**
- Bike Lane/Buffered Bike Lane
- Paved Shoulder/Shared Roadway
- Existing Pathways (CA, HC and Others)

**Spot Recommendations**
- Bike Link or Signs Needed
- Bridge (Improvement/build)
- Crossing Improvement or Pathway Crossing
- Tunnel (Minor Improvements)
**Structured Projects**

**Bike Howard**

**Structured Projects**

- **Estimated Cost:** $1,482,830
- **Length (Miles):** 2.2

**Project Description:**
Develop shared roadways and safety treatment along road popular for triathlon events.

**Primary Location/Streets:**
Homewood Road

**Start:** MD 108
**End:** Folly Quarter Road

**Linear Recommendations**
- Shared Use Path Construct New
- Shared Use Path Upgrade
- Sidewalk w/ Bikes Permitted
- Neighborhood Greenway
- Bike Lane/Climbing Lane/Buffered Bike Lane
- Bike Lane/Buffered Bike Lane
- Paved Shoulder/Shared Roadway
- Existing Pathways (CA, HC and Others)

**Existing Facilities**
- Bike Lane/Buffered Bike Lane
- Paved Shoulder/Shared Roadway
- Existing Pathways (CA, HC and Others)

**Spot Recommendations**
- Bike Link or Signs Needed
- Bridge (Improvement/build)
- Crossings Improvement or Pathway Crossing
- Tunnel (Minor Improvements)
Structured Projects

Estimated Cost: $154,499
Length (Miles): 1

Project Description:
The project calls for a series of bike lanes to develop an east/west connection and connect with project number 57.

Primary Location/Streets:
Tamar Drive

Start: Tamar Drive/Hayshed Lane
End: Old Montgomery Road

Linear Recommendations
- Shared Use Path Construct New
- Shared Use Path Upgrade
- Sidewalk w/ Bikes Permitted
- Neighborhood Greenway
- Bike Lane/Climbing Lane/Buffered Bike Lane
- Sharrow
- Cycletrack
- Shared Roadway/Paved and Striped Shoulder
- Advisory Bike Lane

Existing Facilities
- Bike Lane/Buffered Bike Lane
- Paved Shoulder/Shared Roadway
- Existing Pathways (CA, HC and Others)

Spot Recommendations
- Bike Link or Signs Needed
- Bridge (Improvement/build)
- Crossing Improvement or Pathway Crossing
- Tunnel (Minor Improvements)
Estimated Cost: $1,405,949
Length (Miles): 1.9

Project Description:
The plan calls for improving this segment of road by improving shoulders to provide a paved and striped shoulder, would entail working with SHA, would improve access to MD 32 and western portion of county.

Primary Location/Streets:
Frederick Road (MD 144)

Start: Triadelphia Road
End: MD 32
Structured Projects

Estimated Cost: $802,000
Length (Miles): 1.3

Project Description:
The plan calls for developing a shared use path from the multi-use pathway that would follow the Little Patuxent River to allow passage under Rt. 29 and Broken Land Parkway, develop bike lanes on Stevens Forest Road south of Broken Land Parkway and connect to existing bicycle facilities on Stevens forest road north of Broken Lane Parkway. (Cost based on results of Downtown Columbia Patuxent Branch Trail Extension Feasibility Study plus wayfinding factor)

Primary Location/Streets:
Downtown Columbia

Start: South Entrance Road/Rt. 29
End: Broken Land Parkway/Stevens Forest Road
Project Description:
The plan calls for developing a shared use path from Guilford Road to Trotter Road on the west side of Clarksville Pike/MD 108, including pedestrian related improvements, including signal and crosswalk improvements. (Costs are based on preliminary results of Clarksville Streetscape Design Guidelines Study and includes estimated construction, design and engineering, utility and right of way costs).

Primary Location/Streets:
Clarksville Pike/MD 108

Estimated Cost: $1,617,000
Length (Miles): 1.7

Start: Guilford Road
End: Trotter Road

Linear Recommendations
- Shared Use Path Construct New
- Shared Use Path Upgrade
- Sidewalk w/ Bikes Permitted
- Neighborhood Greenway
- Bike Lane/Climbing Lane/Buffered Bike Lane
- Sharrow
- Cycletrack
- Shared Roadway/Paved and Striped Shoulder
- Advisory Bike Lane

Existing Facilities
- Bike Lane/Buffered Bike Lane
- Paved Shoulder/Shared Roadway
- Existing Pathways (CA, HC and Others)

Spot Recommendations
- Bike Link or Signs Needed
- Bridge (Improvement/build)
- Crossing Improvement or Pathway Crossing
- Tunnel (Minor Improvements)
# Table 6: Summary of State and Federal Funding Programs

<table>
<thead>
<tr>
<th></th>
<th>Bicycle Facilities*</th>
<th>Supplemental Infrastructure*</th>
<th>Bicycle Parking Facilities*</th>
<th>Safety, Education, Encouragement and Enforcement*</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(bike lanes, shared-use paths, etc.)</td>
<td>(Signs, crosswalks, etc.)</td>
<td>(bike racks, secure bike stations, etc.)</td>
<td>(education staff, maps, etc.)</td>
</tr>
<tr>
<td><strong>Federal</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transportation Alternatives Program</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Congestion Mitigation and Air Quality Improvement</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Surface Transportation Program</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Non-Infrastructure: Highway Safety Funds 402</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Infrastructure: Highway Safety Improvement Program</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Federal Transit Administration</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Associated Transit Improvements</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td><strong>State (Maryland)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Recreational Trails Program</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Highway User Revenues</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Maryland Bikeways Program</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Bicycle Retrofit Program</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Program Open Space (POS)</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

* This funding stream may only be available for some types of projects in this category (e.g. bike lanes but not recreational trails). For more detailed information, see Appendix M.
Section 10:
Implementation Matrix
Implementation Matrix

Throughout the document, BikeHoward has included a range of recommendations and actions. This chapter compiles all the policy recommendations into a summary table. This table includes the following elements:

- The recommendation or action
- The agencies or organizations responsible for implementing the recommendation
- The implementation timeframes for the recommendations

The implementation periods are below:

- On-going actions are activities that are occurring now and are expected to continue to occur
- “Short-Term” actions are recommendations that should be initiated within 1-2 years following plan adoption
- "Mid-Term" actions are recommendations that should be initiated within 2-5 years of plan adoption
- “Long-Term” actions include recommendations which may not be initiated until 5 or more years after plan adoption and may be dependent on the initiation and/or completion of mid and short term actions
### IMPLEMENTATION MATRIX

<table>
<thead>
<tr>
<th>Section 3: Policy and Planning</th>
<th>Policy and Program Timeframes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Transportation Planning</strong></td>
<td>Principal Organizations</td>
</tr>
<tr>
<td>Develop a public participation process for implementation of structured projects</td>
<td>OOT, DPZ, DPW &amp; DRP</td>
</tr>
<tr>
<td><strong>Road System Design</strong></td>
<td>Develop a Bicycle and Pedestrian Coordinator Position</td>
</tr>
<tr>
<td>Consider the establishment of a bicycle counting program that would allow the County to measure annual changes in bicycle ridership and traffic counts to better understand the impacts of enhanced bicycle facilities</td>
<td>DPW, DRP &amp; OOT</td>
</tr>
<tr>
<td>Ensure that the practice of scoping transportation studies always includes elements related to bicycling and other relevant intermodal and multi-modal topics</td>
<td>DPZ, DPW &amp; OOT</td>
</tr>
<tr>
<td>In coordination with the Baltimore Regional Transportation Board develop long-range transportation forecasting methods and models for bicycle and pedestrian trips.</td>
<td>DPZ, DPW &amp; OOT</td>
</tr>
<tr>
<td><strong>Road System Design</strong></td>
<td>Develop a “complete streets” policy and a Complete Streets Design Manual to ensure that Howard County streets are designed, built, and operated to enable safe access for all users, including pedestrians, bicyclists, motorists and transit riders of diverse ages and abilities. This could include requiring the development of site and location specific bicycle and pedestrian circulation plans.</td>
</tr>
<tr>
<td>Consider the adoption of the specific roadway and bikeway design guidelines related to the facilities proposed in this Plan as outlined in Appendix A</td>
<td>DPW, DRP,OOT</td>
</tr>
<tr>
<td>Monitor DPW and SHA roadway resurfacing and design projects. In rural areas, where by-pass lanes are provided on two lane roads, if the roadway section approaching the by-pass lane has a shoulder it is essential that the shoulders are continued through the widened roadway section.</td>
<td>DPW, OOT</td>
</tr>
<tr>
<td>Consider revising traffic volume warrants for slip lanes, including the review of design standards to include: a) a pocket bike lane and a dashed bike lane showing the cyclist’s left merging movement, b) the radii of slip lanes should be designed to reduce entry and exit speeds, and c) high quality bicycle and pedestrian crossing accommodations should be provided for those traveling on the crossing roadway</td>
<td>DPW, SHA</td>
</tr>
<tr>
<td>Consider retrofitting existing roundabouts and traffic circles with appropriate signs and striping to provide bicycle accommodations and appropriate directives and warnings for bicyclists and motorists.</td>
<td>DPW, SHA</td>
</tr>
<tr>
<td>Update design guidance that will be used to design future roundabouts. Review all traffic calming treatments, such as speed humps, curb extensions, chicanes, etc. to allow easy passage for cyclists. When travel lanes are narrowed at intersections or mid-block crossings to reduce crossing distances for pedestrians, slots should be provided so that bicyclists traveling on the right do not have to merge into the travel lane to pass through the narrowed section of roadway.</td>
<td>DPW,OOT</td>
</tr>
<tr>
<td>Given their low impact on stormwater runoff and water quality, the county should consider advocating for and work with state officials to identify and encourage alternate best practices for stormwater management appropriate for non-motorized lanes and pathways.</td>
<td>DPW</td>
</tr>
<tr>
<td>Trail projects should consider utilizing Low Impact Development (LID) and other design treatments as a part of trail and path projects to ensure that trail designs do not promote erosion and appropriately direct runoff to pervious areas that can filter and absorb water.</td>
<td>DPW</td>
</tr>
<tr>
<td>Roadway improvement projects should consider utilizing pavement reduction strategies that support bicycling.</td>
<td>DPW</td>
</tr>
<tr>
<td>Consider amending Howard County Scenic Roads legislation.</td>
<td>DPZ</td>
</tr>
</tbody>
</table>
### IMPLEMENTATION MATRIX

<table>
<thead>
<tr>
<th>Land Development Policies that Govern Private Development and Site Plan Review</th>
<th>County zoning, subdivision policy, and the County Design Manual, all of which regulate new development, redevelopment and site design should be, where feasible, updated to achieve the objectives related to implementing BikeHoward and improving conditions for bicycling:</th>
<th><strong>Principal Organizations</strong></th>
<th><strong>Policy and Program Timeframes</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>DPZ</td>
<td><strong>Ongoing</strong></td>
<td><strong>Short-Term</strong> (1-2 Years)</td>
<td><strong>Mid-Term</strong> (2-5 Years)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Howard County Public School Policy Governing Site and Road Design for Public Schools</th>
<th>The following recommendations are provided for guidance and direction on how public school property can contribute to a bicycle-friendly Howard County. The Howard County Public Schools and School Board should consider adopting the following policies.</th>
<th><strong>HCPSS</strong></th>
<th><strong>✓</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Replace existing substandard bicycle parking equipment with racks that meet standards described in this plan and begin a process of providing covered bicycle parking where bicycle access is highest.</td>
<td>Manage bicycle parking supply in response to use and need, to ensure that all schools have sufficient supply to meet the needs of students, teachers, staff, visitors and school and non-school events that use school facilities.</td>
<td><strong>✓</strong></td>
<td></td>
</tr>
<tr>
<td>Provide pathways through school grounds and around athletic fields as identified in the BikeHoward, and as may be identified in future updates of BikeHoward to ensure that school properties can contribute to a continuous and connected bikeway network. Funding may be provided through HCPSS capital improvement funds, county transportation funds, and other funding sources, including state and federal grants.</td>
<td>Provide direct bicycle and pedestrian access paths to existing and new schools from adjacent neighborhoods. Where ever possible these paths shall be provided by residential property developers.</td>
<td><strong>✓</strong></td>
<td></td>
</tr>
<tr>
<td>Consider siting new schools in locations that will: a) maximize access by walking, bicycling and use of public transit; b) ensure that school site design minimizes conflicts between motorized and non-motorized access modes and c) favors student and other arrivals by walking, bicycling, public transit and school bus, not motor vehicle drop-off.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>County Policy Governing Park Design and Development</th>
<th>The following recommendations are provided for guidance and direction on how parks can contribute fully to a bicycle-friendly Howard County. The Howard County Department of Recreation and Parks (DRP) should consider adopting the following policies.</th>
<th><strong>DRP</strong></th>
<th><strong>✓</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Replace existing substandard bicycle parking equipment with racks that meet standards described in this plan and begin a process of providing covered bicycle parking where bicycle access is highest.</td>
<td>Manage bicycle parking supply in response to use and need, to ensure that all parks have sufficient supply to meet the needs of park visitors.</td>
<td><strong>✓</strong></td>
<td></td>
</tr>
<tr>
<td>Provide temporary bicycle parking for special events as it may be requested by event sponsors.</td>
<td>Promote bicycle access to parks as an alternative to motor vehicle access and as a way to: a) reduce the need for asphalt surface parking lots, b) reduce car trips and resulting air pollution, and c) promote healthy and active living.</td>
<td><strong>✓</strong></td>
<td></td>
</tr>
<tr>
<td>Provide appropriate bicycle facilities on and/or adjacent to park entry roads drive ways, parking lots and park circulation roadways.</td>
<td>Provide appropriate bicycle facilities on and/or adjacent to park entry roads drive ways, parking lots and park circulation roadways.</td>
<td><strong>✓</strong></td>
<td></td>
</tr>
<tr>
<td>Develop pathways through park lands as identified in the Bicycle Master Plan, and as may be identified in future updates of the Plan. Funding may be provided through DRP capital improvement funds, County transportation funds, or other sources.</td>
<td>Design and build Transportation Trails (as so designated in this Plan) to width and surface standards detailed in Appendix A.</td>
<td><strong>✓</strong></td>
<td></td>
</tr>
<tr>
<td>Update the Blandair Park Development Plan based upon consideration of proposed adjustments to a small number of proposed path alignments. These alignments will improve directness and user experience in the bikeway network and better enable park paths to contribute to a continuous and connected county-wide system of bikeways.</td>
<td>Implement the on-road, off-road and spot recommendations in this plan that are on or directly related to Howard County park lands. These may be in Centennial Lake Park, Meadowbrook Park, Rockburn Branch Park, Cedar Lane Park, and on the Patuxent Branch Trail.</td>
<td><strong>✓</strong></td>
<td></td>
</tr>
<tr>
<td>Provide direct bicycle and pedestrian access paths to existing and new parks from adjacent neighborhoods.</td>
<td>In regional parks with large pathway systems, DRP should consider creation of a hierarchy of paved paths, providing sufficient width for high volumes of mixed use, and through bicycle movements on select paths, and providing narrowed, varied-surface paths for pedestrian strolling, hiking, nature observation, etc.</td>
<td><strong>✓</strong></td>
<td></td>
</tr>
<tr>
<td>IMPLEMENTATION MATRIX</td>
<td>Policy and Program Timeframes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-----------------------</td>
<td>-----------------------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Bikeway Management &amp; Maintenance</strong></td>
<td><strong>Principal Organizations</strong> Ongoing Short-Term (1-2 Years) Mid-Term (2-5 Years) Long-term (5+ Years)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Use the County’s mobile app. (Tell HoCo) and/or online reporting systems system to identify road hazards that pose a safety risk for cyclists.</td>
<td>DPW, DRP</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Develop a bike lane and shoulder sweeping program that focuses on the roads with the worst debris build up and those with the highest user levels.</td>
<td>DPW, DRP</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Restripe bicycle lanes and reapply shared lanes markings as needed.</td>
<td>DPW, DRP</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Develop an asset management database for maintenance of wayfinding and other signs used in the bikeway system.</td>
<td>DPW, DRP</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Develop a coordination protocol between County roadway maintenance officials and State Highway Administration roadway maintenance offices.</td>
<td>DPW, DRP</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Expand the geo-coded emergency response location system to include CA and other pathway tunnels and other regularly spaced markers to ensure that the trail systems are fully covered</td>
<td>DPW, DRP</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Develop program that involves volunteers in trail maintenance, especially youth on County paths and trails.</td>
<td>DPW, DRP</td>
<td>✓</td>
<td></td>
</tr>
</tbody>
</table>

**Section 4: The Bikeway Network**

<table>
<thead>
<tr>
<th>Small Area Plans</th>
<th>Ongoing Short-Term (1-2 Years) Mid-Term (2-5 Years) Long-term (5+ Years)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Review the following areas to determine which solutions should be pursued in the near term and which can be delayed or should be coordinated with expected future road improvements or development:</td>
<td>DPZ, OOT</td>
</tr>
<tr>
<td>Dobbin Road Commercial Area</td>
<td></td>
</tr>
<tr>
<td>Gateway Commerce Center</td>
<td></td>
</tr>
<tr>
<td>Route 40 Corridor in Ellicott City</td>
<td></td>
</tr>
<tr>
<td>MD 216 Corridor</td>
<td></td>
</tr>
<tr>
<td>Maple Lawn</td>
<td></td>
</tr>
<tr>
<td>Various segments of the Route 1 Corridor</td>
<td></td>
</tr>
<tr>
<td>Clarksville (River Hill)</td>
<td></td>
</tr>
<tr>
<td>Historic Ellicott City</td>
<td></td>
</tr>
</tbody>
</table>

**Section 6: Components of the Network**

| The County’s Traffic Engineering Division should consider initiating a review of all traffic signals in the County to ensure that bicycles will be detected on the minor road approaches which may be given a green cycle only when cross traffic is present. Various treatments are available to remedy any location where bicycles are not currently detected. | DPW | ✓ | | |
| Utility corridors and rights of way present important opportunities to make key connections throughout the County. The plan recommends that the county conduct additional research and develop strategies, including working with key federal, state and local stakeholders to develop clear technical and policy guidance on the development of linear shared use trails on utility rights of way. | OOT, DPW, DPZ | ✓ | | |
| BikeHoward did not fully explore further trail potential in the Patapsco Heritage Greenway Corridor (primarily state DNR lands), nor the protected lands along the main branch of the Patuxent River. BikeHoward recommends exploring trail potential and road linkages in these areas, including the concept of a loop trail to link Ellicott City, Mt Airy and Laurel. | OOT, DRP | ✓ | | |
| Request that major bicycle facilities be included in the SHMA maintained Highway Needs Inventory, which includes lists of priority projects consisting of new and upgraded highway and transit facilities and requests BikeHoward’s recommendations be included into SHA Fund 76. | OOT | ✓ | ✓ | |
| Request bicycle facilities proposed in BikeHoward be included into the BRTB long range transportation plan and TIP, including bridge resurfacing projects | OOT | ✓ | | |
| Consider engaging the SHA Scenic Byway office regarding any plans to implement the paved striped shoulders recommended for MD 144 which is part of the National Road Scenic Byway. | OOT, DPZ | ✓ | | |
| Develop an integrated bikeway sign protocol and manual. | OOT, DPW, DRP | ✓ | | |
| Develop and advance, in coordination with state and local stakeholders, paper and electronic directional applications and devices to enable navigation, including expanding CA’s existing directional app outside its current limits | OOT, CA | ✓ | ✓ | |
| Consider developing an On-Road County Recreational Route System in western Howard County, the southwest area around Fulton, in and around Historic Ellicott City and Savage, as well as in the Patapsco Heritage Greenway and Elkridge Area | DRP, DPW, OOT | ✓ | | |
### IMPLEMENTATION MATRIX

<table>
<thead>
<tr>
<th>Section 7: End of Trip Facilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Howard County should initiate a publically supported Bicycle Parking retrofit program</td>
</tr>
<tr>
<td>Howard County should consider initiating an interagency program to evaluate, replace and add bike parking at all County owned public facilities.</td>
</tr>
<tr>
<td>Consider amending zoning and subdivision codes to require new development to provide appropriate types, quantities and locations of bicycle parking as a part of development approval.</td>
</tr>
<tr>
<td>Study and based on findings, consider implementing a pilot bicycle sharing program</td>
</tr>
<tr>
<td>Consider upgrading bicycle parking at MARC stations and Park &amp; Ride (P&amp;R) lots. In the near term, a minimum of two bike lids (i.e. individual, on-demand, covered racks) should be placed at each of the following transit hubs.</td>
</tr>
<tr>
<td>Prioritize and implement access improvements to the following transit hubs: Broken Land East and West, Long Gate, Oakland Ridge, Snowden River Parkway, Dorsey MARC and Savage MARC Access. improvements at Broken Land Parkway East and West should be completed before bike parking at these locations is upgraded. Coordination with MTA and/or SHA may be required.</td>
</tr>
<tr>
<td>Explore the potential to provide bicycle storage in the under carriage on commuter bus services.</td>
</tr>
<tr>
<td>Request state leadership in providing a system of higher quality on-demand bike storage lockers throughout the MTA and Park &amp; Ride systems in Maryland.</td>
</tr>
<tr>
<td>Consider purchasing a bus shelter that includes covered bicycle parking as a part of the structure’s design.</td>
</tr>
<tr>
<td>Consider offering a special weekend service (periodically) to take recreational cyclists to a location in Western Howard County for a day of recreational riding. This may be attractive to entry level recreational riders.</td>
</tr>
<tr>
<td>Market transit routes and bike-on-bus services that cross or travel along major barriers for bicyclists, such as I-95, US 29, US 40, MD 32, MD 100, MD 175, the CSX railroad and US 1.</td>
</tr>
</tbody>
</table>
### IMPLEMENTATION MATRIX

<table>
<thead>
<tr>
<th>Section 8: Programs for Safety Education, Encouragement &amp; Enforcement</th>
<th>Principal Organizations</th>
<th>Policy and Program Timeframes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Short-Term (1-2 Years)</td>
</tr>
<tr>
<td><strong>Policy and Program Timeframes</strong></td>
<td><strong>Principal Organizations</strong></td>
<td><strong>Ongoing</strong></td>
</tr>
<tr>
<td><strong>Section 8: Programs for Safety Education, Encouragement &amp; Enforcement</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Seek a bronze level Bicycle-Friendly Community Designation from the League of American Bicyclists by 2018.</td>
<td>DPZ, DPW</td>
<td></td>
</tr>
<tr>
<td>Provide BIKEHOWARD materials at Howard County Public Libraries—Because libraries are a well-used and supported component of community life, develop a multi-dimensional bicycling education and encouragement program; using all of the media resources available to the Library system.</td>
<td>OOT, HCPL</td>
<td></td>
</tr>
<tr>
<td>Consider establishing a County-wide Safe Routes to School Program (SRTS). Adopt a goal, to have 50% of elementary and middle schools participating in SRTS activities.</td>
<td>OOT, HCPSS</td>
<td></td>
</tr>
<tr>
<td>Establish a Share-the-Path and Road Safety and Respect program.</td>
<td>CA, DRP, DPW, HCPD</td>
<td></td>
</tr>
<tr>
<td>Establish a Youth Ambassadors Program, similar to efforts in other communities, that trains teenagers to be ambassadors of bicycling at public events, educators about bike safety, and promoters of bicycling.</td>
<td>OOT, DPR, CA, DRP</td>
<td></td>
</tr>
<tr>
<td>Expand on existing off road biking maintenance and youth training programs (DRP)</td>
<td>DRP</td>
<td></td>
</tr>
<tr>
<td>Expand the bicycling-related elements of the County’s existing TDM program.</td>
<td>OOT</td>
<td></td>
</tr>
<tr>
<td>Track and analyze Bicycle Crashes.</td>
<td>HCPD</td>
<td></td>
</tr>
<tr>
<td>Consider expanding the Bicycle-Mounted Police Program and Park Ranger Program.</td>
<td>HCPD, DRP</td>
<td></td>
</tr>
<tr>
<td>Continue the Cycle2Health program and refine it to offer a wide variety of challenge levels. Plan routes and conduct rides in such a way that participants can be educated about bicycling improvements proposed in the BikeHoward plan.</td>
<td>Citizens Services</td>
<td></td>
</tr>
<tr>
<td>Continue active enforcement of the Maryland Three Feet law.</td>
<td>HCPD</td>
<td></td>
</tr>
<tr>
<td><strong>Section 9: Implementation</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Conduct a detailed review of the on-road bikeways in the Bikeway Networks and implement recommended on-road facilities. Identifying BikeHoward plan recommendations that may be related to the development. Ensure that bicycle accommodations and safety features, especially those identified in the Plan, are incorporated into these projects as a routine part of evaluation and design.</td>
<td>DPZ, DPW</td>
<td></td>
</tr>
<tr>
<td>Allocate 15 percent of BikeHoward’s implementation funding to an opportunity project fund to ensure the Short-Term utility of the investments realized by repaving, intersection upgrade and private redevelopment projects.</td>
<td>OOT</td>
<td></td>
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<tr>
<td>Consider developing a sign Protocol and Manual that is adopted by all stakeholders, including CA, DRP, DPW, DPZ, and SHA.</td>
<td>OOT, CA, DRP, DPW, SHA, DPZ</td>
<td></td>
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<tr>
<td>Ensure the County has adequate engineering and design capacity through the use of on call design firms.</td>
<td>DPW</td>
<td></td>
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<tr>
<td>Prior to developing County-specific Bikeway Design Guidelines, thoroughly train existing traffic engineering and design staff (as well as consulting engineers) using existing curriculum related to the AASHTO Guide for the Development of Bicycle Facilities, and other national and state engineering guidance documents. Conduct four training courses in the year following plan adoption and continue with an annual training program as needed.</td>
<td>DPW, OOT</td>
<td></td>
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<tr>
<td>Participate in study tours to visit with officials of other jurisdictions to learn about bicycling facility design and implementation best practices.</td>
<td>DPW, OOT</td>
<td></td>
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<tr>
<td>Determine and develop projects for inclusion in the County’s capital budget. Continue to ensure that the capital budget line item for BikeHoward projects maintains a fund balance of at least $750,000 per year.</td>
<td>DPW, OOT</td>
<td></td>
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<tr>
<td>Identify dedicated annual funding in the Department of Recreation and Parks and HC Public Schools for implementation of the BikeHoward Plan.</td>
<td>DRP, HCPSS</td>
<td></td>
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<tr>
<td>Identify dedicated annual funding for County Agencies to use as matching funds for grant applications including to match state and federal transportation funds and other grant programs.</td>
<td>OOT</td>
<td></td>
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<tr>
<td>Identify dedicated funding for ongoing maintenance of pavement markings and signage, bike parking facilities and County trails.</td>
<td>OOT, DPW</td>
<td></td>
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<tr>
<td>Ensure that the County is a regular applicant for key funding programs such as Transportation Alternatives, Safe Routes to School, Maryland Bikeways Program, CMAQ, and Recreational Trails.</td>
<td>OOT, DPW</td>
<td></td>
</tr>
<tr>
<td>Consider establishing a Bicycle Master Plan Implementation Team</td>
<td>OOT, DPZ, DPW, DRP</td>
<td></td>
</tr>
</tbody>
</table>
Section 11:
Conclusion
Conclusion

Howard County has become one of the most popular destinations for bicycling in the State of Maryland, due to our central location, health conscious and active citizenry, our stream valleys, pathways and our beautiful residential and agricultural landscapes.

Vision

BikeHoward sets forth a vision to make Howard County a more bicycle-friendly and inviting community where all members of the community, from children to seniors, men and women, feel comfortable and safe bicycling on our roads and pathways as a means of daily transportation and healthy recreation.

BikeHoward addresses bicycling primarily from a transportation perspective, but to the degree that recreational bicycling also takes place on the county’s roads and pathways, it advocates development of bikeways that will serve both needs.

Goals

The plan establishes goals for County agencies and makes recommendations to achieve those goals, through policy actions, program implementation and development of a bikeway network.

To achieve the goal of promoting active living by including bicycling as an active component of a livable community that is physically healthy, economically sound and environmentally sustainable.

The plan proposes a series of progressive outreach and educational programs, the development of a safe and connected network and a path to stronger coordination, all of which will be needed to meet the goal.

To achieve the goal of updating County policies to ensure that the County’s infrastructure and land development policies fully accommodate and encourage bicycling.

The plan provides policy recommendations for new actions and supporting policy information to guide and inform the update of the county’s policies as they relate to cycling and land development.

To achieve the goal of accommodating bicycle travel across the county.

The plan provides an outline for coordinating with Maryland legislators and agency officials on bicycle travel through:

- State highways and public transit services
- Regulation of utility rights-of-way
- Administration of storm water treatment and water quality regulations

To achieve the goal of increasing participation and safety through bicycle educational programs for school-aged children and youth, and awareness campaigns for motor vehicle users, to make bicycling normal, popular and accepted transportation option.

The plan proposes a series of comprehensive programs and outreach that will develop cycling as a normal and popular option for all of the county’s citizens.

To achieve the goal of creating a seamless cycling network that is safe, intuitive, and easily connects residents to where they want to go: schools, shops, parks and work, with facilities that will serve people of all skill and comfort levels.

The plan has developed a safe, connected, useful and seamless network of bicycle facilities for all ages and abilities.

Getting there, one bike ride at a time

This plan seeks to capitalize on these actions and resources to achieve its vision. Reaching this vision will not be simple and will not happen overnight; there will be setbacks, wins and lost opportunities. However, as James Rouse, the founder of Columbia said;

“Visions describe what best should be, could be - if and when mankind has the will to make them real”

This is a vision that can be achieved by Howard County.
For appendix, please go to www.BikeHoward.com