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Metrorail Bicycle & Pedestrian ACCESS IMPROVEMENTS STUDY

metro

Acknowledgements

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Executive Summary

Executive Summary

Washington Metropolitan Transit Authority (Metro) ridership is increasing in tandem with population and employment growth in the Washington, DC region. Metro currently operates the second largest rail transit system in the U.S. and its ridership is expected to grow by 42 percent by 2030. This growth in ridership is likely to occur during an era of increasingly constrained finances. And while the share of those who walk and bicycle to Metrorail Stations has been increasing over time, there remain significant opportunities for growth in both these cost-effective modes of access.

This plan identifies strategies to enhance pedestrian and bicycle access and connectivity in and around Metrorail Stations. It provides recommendations for a range of physical infrastructure improvements, as well as policies and programs to encourage multi-modal trips.

Accommodating more walking and bicycling access trips will enable Metro to realize projected increases in ridership in the most cost effective manner possible. It will enable Metro to address existing access-related challenges in the system in order to make it safer and more comfortable for existing and future Metro riders to walk and bike to and from stations.

Planning Process and Goals

This plan included an outreach strategy to engage Metro's customers and staff, the public, and other stakeholders. Metro riders provided feedback through an interactive public meeting and an online questionnaire. This information was supplemented by interviews with Metro staff and representatives from other transit agencies throughout the U.S. The following project goals were identified through this process:

Goals

- Improve safety of the entire trip for all Metro customers.
- Increase the mode share percentages of customers walking

Figure ES-1: Pedestrians and Bicycles at Columbia Heights Station

and bicycling to and from Metrorail Stations, thereby helping to accommodate Metro's projected growth in ridership.

- Improve customer satisfaction for people who walk and bike to Metrorail Stations.

- Identify cost effective solutions for improving pedestrian and bicycle access and mobility.

- Support the integration of the user hierarchy in the *Station Site and Access Planning Manual*, which places pedestrians, bicyclists, and transit users as top priorities in planning and designing stations, into Metro's institutional culture and station designs.

Recommendations

The recommendations in this plan are organized into two sections according to whether they will be led by Metro or through partnerships between Metro and other agencies. The "Metro-Led Elements" are focused on organizational and operational changes within Metro and primarily address facilities on Metro-owned property. The "Partner/Joint-Led Elements" are initiatives that Metro may initiate, but that will require coordination with surrounding property owners and local jurisdictions. The recommendations included in this plan are organized into the topic areas below.

Metro-Led Elements

- *Multi-Modal Policy*: Provide clear policy and design guidance for the planning and design of pedestrian and bicycle facilities.

- *Station Assessment Tools*: Identify and formalize a set of pedestrian and bicycle analysis techniques that Metro can utilize on an ongoing basis.

- *Customer Information and Encouragement*: Implement a multifaceted communications and marketing initiative specifically targeted to Metro's walking and bicycling customers.

- *Operations and Maintenance*: Ensure that station operations and maintenance procedures are designed to facilitate pedestrian and bicycle travel to and from stations.

- *Institutional Capacity*: Ensure that pedestrian and bicycle access is considered a priority at all levels of the Metro organization.

- *Bicycle Parking*: Provide secure and covered bicycle parking at all Metrorail Stations to meet current and future demand.

- *Transit Oriented Development (TOD)*: Implement targeted improvements to the TOD process to ensure that all projects near Metrorail Stations are pedestrian and bicycle friendly and enhance nonmotorized connections to surrounding neighborhoods.

Metro Partner/Joint-Led Elements

- *Off-Site Connections and Programs*: Continue to coordinate with local government staff, elected officials and private groups to enhance pedestrian and bicycle connectivity and support education and encouragement programs.

- *Wayfinding*: Establish partnerships with neighboring landowners and local jurisdictions to enhance on and off-site pedestrian and bicycle wayfinding to improve the ability of Metro customers to navigate to/from Metrorail Stations.

Figure ES-2: Cyclist at the Shaw-Howard U Station

- *Adjacent Development*: Implement targeted improvements to the adjacent development process to ensure that all projects near Metrorail Stations are pedestrian and bicycle friendly.

Implementation Plan

This plan identifies a series of "early action" recommendations to be implemented within eighteen months (0-18 months) of the completion of this plan. These actions require relatively modest investments of resources. Key early action recommendations are noted below.

Early Action Recommendations

- Establish a systemwide goal of tripling the bike access mode share by 2020 (from 0.7 percent in 2007 to 2.1 percent in 2020) and quintupling the bike access mode share by 2030 (from 0.7 percent in 2007 to 3.5 percent in 2030).
- Address motor vehicle (including cars, buses, vans, shuttles, etc.) traffic safety issues as they relate to pedestrian and bicycle issues within station sites.
- Develop official guidelines for the design and placement of bicycle parking facilities.
- Develop and implement a formal station-specific pedestrian and bicycle focused assessment process utilizing a range of evaluation tools.
- Require multimodal circulation and access studies (including existing and potential on and off-site connections) as part of adjacent/ joint development.
- Improve and enhance the metroopensdoors.com website to better communicate pedestrian and bicycle-related customer relations and social marketing efforts.
- Provide secure and covered bicycle parking at all Metrorail Stations.
  - Continue to replace "Rally Rack III" bicycle racks with "Inverted U" bicycle racks.
  - Add shelters over existing bicycle racks and/or move bicycle parking to existing covered areas.
  - Study the feasibility of locating bicycle parking within the unpaid portion of station interiors and, where safe, comfortable, and secure, in existing motor vehicle parking garages. Identify and implement pilot locations for each improvement.
  - Establish a system wide goal of providing bike parking at a level consistent with Metro's bike access mode share goal (e.g. provide bike parking for 2.1 percent of the projected AM peak ridership by 2020 and for 3.5 percent of the projected AM peak ridership by 2030).
- Identify and implement a pilot location to install a secure standalone bicycle parking structure with key/card access.
- Ensure that joint developments are providing appropriate amounts of bicycle parking in safe, convenient, and accessible locations.
- Develop a long-term strategy for secure bicycle parking that acknowledges new advances in bicycle parking technologies.
- Require on and off-site pedestrian and bicycle circulation and access studies for new developments adjacent to Metrorail Stations.
- Require pedestrian and bicycle facilities on Metro properties as part of TOD development and as part of ongoing station enhancements.
- Ensure that safe and convenient bicycle and pedestrian access is maintained during construction of projects on Metro properties.
- Review pedestrian and bicycle improvements in Metro's 10-year Capital Improvement Program (CIP) and local jurisdictions' CIP's on a regular basis to ensure that capital improvement plans are coordinated and mutually supportive.
- Evaluate traffic signals in the vicinity of Metrorail Stations to improve crossing conditions for pedestrians and bicyclists.
- Actively participate in local Transportation Demand Management (TDM) initiatives that impact Metro to ensure that solutions facilitate pedestrian and bicycle travel.

Short-Term Recommendations

This plan highlights short-term recommendations that should be initiated within the first three years (0-3 years) after the completion of this plan. These recommendations may require more time and resources than the early action recommendations; however, they can still be addressed within a short time horizon and are critical to meeting the established goals. Key short-term recommendations are noted below.

- Fully utilize Metro's marketing, communications and public affairs offices to expand public knowledge of pedestrian and bicycle opportunities and programs.
- Provide pedestrian and bicycle-related planning and design training to a variety of staff including those working in station area planning, joint development, adjacent construction, and real estate.

- Create a Bike Program Manager position as part of Metro's broader parking function that will be responsible for coordinating all bicycle-related initiatives throughout the Metro organization.

- Develop a sign protocol that utilizes the sign and symbol system in the Manual on Uniform Traffic Control Devices (MUTCD) to ensure consistency amongst all Metrorail Stations and with the areas surrounding them.

- Support jurisdictional policies that require inter-parcel access to facilitate non-motorized travel to and from Metrorail Stations.

- Improve coordination with local jurisdictions to ensure that proffer improvements enhance pedestrian and bicycle access to Metrorail Stations.

Medium and Long-Term Recommendations

This plan also highlights medium and long-term recommendations to improve pedestrian and bicycle access to Metro. These recommendations are very important to fully achieve the goals set out in this plan. However, by their nature these improvements will likely require an ongoing commitment. While implementation will take longer, opportunities for implementation may occur sooner. Metro and other stakeholders should take advantage of these opportunities as they arise. Key medium and long-term recommendations include:

- Provide direct access to stations along pedestrian and bicycle desire lines.

- Update maintenance policies and reporting procedures and develop procedural clarifications to improve maintenance of pedestrian and bicycle infrastructure.

Figure ES-3: Pedestrians and Bicycles at Twinbrook Station

- Ensure that funding for pedestrian and bicycle facility maintenance is included in the budgeting process.

- Develop clear procedures for accepting jurisdiction-funded bike access projects at Metro facilities for which Metro accepts full operating responsibility, as it does for new entrances, new parking structures, and other jurisdiction-funded access improvements.

- Coordinate with jurisdictions to provide consistently designed wayfinding directing travelers to off-site destinations such as trails, parks, and schools.

Conclusion

Though the growth rate for pedestrian and bicycle access has exceeded the growth rate for the system as a whole and a large number of Metro's customers currently access transit on foot, there remains significant room for growth in the bicycle access mode share.

This plan identifies specific strategies to meet Metro's projected growth in ridership in the most cost effective manner possible. By setting new mode share and bike parking goals, improving pedestrian and bicycle infrastructure, and implementing targeted outreach and encouragement efforts, Metro can improve the safety and comfort of existing customers that access stations on foot and by bike, while encouraging more customers to choose to walk and bike to Metrorail Stations in the years ahead.

Chapter 1
Introduction

Introduction

The Washington Metropolitan Area Transit Authority (Metro) has a long and evolving history of accommodating pedestrians and bicyclists at its Metrorail stations. Pedestrian access to stations from nearby communities has been part of the Metro plan since the very beginning, with stations located in the heart of downtown and many local planning agencies' deliberately developing station areas into dense, walkable environments. Today, at many stations, the walk share exceeds 90 percent.

Metro's bicycle accommodation began in the late 1970s—not long after the first rail service began—with around 100 lockers made available for rental at a limited number of stations. The "Bike 'N Ride" program began in 1981 to issue permits for customers to bring their bicycles on trains on weekends from June through November. Today, Metro maintains approximately 1,700 bicycle racks system-wide, almost 1,300 bicycle lockers at 50 stations, and customers are allowed to bring their bicycles on trains without a permit at all times except weekday peak hours and a select number of other high passenger volume days such as Fourth of July. However, unlike the walk mode of access, the bicycle mode share remains low. It is this area that is ripe for growth, and one of the reasons for the development of this plan.

Metro continues to actively plan for pedestrians and bicyclists. Ongoing initiatives include updating and expanding bicycle parking facilities, improving station wayfinding and providing safety improvements such as lighting and canopies throughout the system. Metro has incorporated bicycle and pedestrian needs into long term planning efforts including station access studies, the 10-year Capital Needs Inventory, and ongoing Transit Oriented Development (TOD) projects. The *Metrorail Bicycle & Pedestrian Access Improvements Study* is the next logical step towards meeting its multi-modal goals and objectives. Recent growth in Metro ridership, the cost of providing parking, and increasing demand for station

Figure 1: Bicycle Parking at Metrorail Station

accessibility make this an especially timely occasion to plan for pedestrian and bicycle access.

Overview and Purpose

The purpose of this study is to identify strategies to improve pedestrian and bicycle facilities, access, and connectivity at and around Metrorail Stations with a goal of encouraging more people to access Metro on foot and by bike. Development of increasing densities within the areas immediately surrounding Metrorail Stations are specifically intended to facilitate multimodal trips instead of motor vehicle trips. The success of this Transit Oriented Development depends on direct and safe bicycle and pedestrian connections between Metrorail Stations and the surrounding land uses. This changing land use trend provides both the context and opportunities to enhance and extend the non-motorized catchment area of each Metrorail Station and potentially to avoid the necessity of expanding expensive roadway and parking facilities.

This study identifies recommendations for a range of physical infrastructure improvements such as more and better bicycle parking, improved wayfinding, and better connections to nearby trails and on-road bicycle lanes. It also includes recommendations for partnership opportunities and programmatic improvements such as outreach and marketing strategies to encourage multi-modal trips.

This Plan specifically addresses pedestrian and bicycle issues by doing the following:

- Recommends system-wide improvements to enhance pedestrian and bicycle conditions at and around stations
- Recommends a system-wide bike mode share goal to accommodate projected ridership growth
- Recommends official bicycle parking policies, guidelines, and procedures
- Provides site-specific recommendations at case study stations that include both infrastructure and programmatic elements
- Identifies partnerships needed to meet Metro's pedestrian and bicycle-related goals
- Identifies a process to identify and evaluate station-specific pedestrian and bicycle issues on an ongoing basis
- Presents strategies for improving communication, marketing, and encouragement efforts relating to pedestrian and bicycle issues
- Presents strategies for ensuring pedestrian and bicycle access and connectivity as part of adjacent construction, joint development, and other transit oriented development projects
- Provides recommendations to inform the Bike/Pedestrian Facilities section of Metro's 10 year Capital Improvement Plan (CIP) as well as integration with TPB's Transportation Improvement Program (TIP) and local agency CIP processes

Project Goals and Outcomes

The following goals build on Metro's strengths and are designed to achieve its strategic vision as an agency through the provision of pedestrian and bicycle accommodations system wide.

Goal 1

Improve safety of the entire trip for all Metro customers.

Goal 2

Increase the mode share percentages of customers walking and bicycling to and from Metrorail Stations, thereby helping to accommodate Metro's projected growth in ridership.

Goal 3

Improve customer satisfaction for people who walk and bike to Metrorail Stations.

Figure 2: Bike Lockers (in the foreground) at Medical Center Metrorail Station

Goal 4
Identify cost effective solutions for improving pedestrian and bicycle access and mobility.

Goal 5
Support the integration of the user hierarchy in the *Station Site and Access Planning Manual*, which places pedestrians, bicyclists, and transit users as top priorities in planning and designing stations, into Metro's institutional culture and station designs.

These goals encompass all Metro activities related to walking and bicycling and provide the underpinning for all of the Plan recommendations. The goals above are important in order to achieve the following outcomes:

- *Facilitate Transit Oriented Development*: Metro will have greater opportunities to capitalize on the value of its existing surface parking lots through its Joint Development program if more current drivers decide to switch to walking and bicycling and larger percentages of future riders choose not to drive.

- *Provide Transportation Options*: By improving walking and bicycling facilities and creating safer walking and bicycling environments around stations, Metro is expanding the choices that its customers have for accessing stations.

A Note about this Plan

The recommendations in this plan focus on improving pedestrian and bicycle access at Metrorail Stations. While station-specific recommendations are provided, for example as a part of the case studies in Appendix B, this plan focuses on systemwide improvements. The recommendations in this plan are meant to serve as a long range planning framework for more detailed station level project recommendations to be provided in a six-year implementation plan for pedestrian and bicycle improvements, which will be developed following this planning process. Issues such as motor vehicle parking and Metrobus access are discussed broadly as they relate to walking and bicycling; however, they are not the focus of this plan and will require additional study.

Report Organization

The *Metrorail Bicycle & Pedestrian Access Improvements Study* is organized into six sections:

Chapter 1 introduces the project purpose and highlights project goals and intended outcomes.

Chapter 2 provides an overview of the Metro system as a whole, highlighting previous studies and existing policies, pedestrian and bicycle-related trends, challenges, and opportunities to provide the planning context for the study methodology and recommendations.

Chapter 3 describes the planning process and methodology used to categorize stations, select case studies, and identify key issue areas.

Chapter 4 provides system-wide recommendations for Metro to implement within its own organization and recommendations for initiatives for Metro to undertake in cooperation with surrounding jurisdictions and other stakeholders.

Chapter 5 provides a phased implementation plan for the recommendations in the previous chapter. It includes cost estimates for projects recommended for immediate implementation and a discussion of funding strategies for system-wide initiatives.


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Chapter 2

Metrorail System Overview and Planning Context

Metrorail System Overview and Planning Context

This chapter describes the existing Metrorail system, highlighting system-wide access and ridership trends relevant to the goals of this Plan. It discusses important pedestrian- and bicycle-related issues and opportunities for Metro and partnerships with local jurisdictions. The system overview in this chapter provides the context for the methodology and recommendations provided in the following chapters.

Previous Metro Plans and Studies

Several previous Metro plans and studies helped to provide a foundation for the recommendations in this study. They are highlighted below. The plans that are underlined below are available on the Planning and Development section of Metro's website at http://www.wmata.com.

The *Metrorail Station Access & Capacity Study* (2008) is a system-wide analysis of future passenger demand and available capacity that suggests "If the access mode split were to remain constant and station area land is developed according to MWCOG forecasts, as many as 44,000 new parking spaces could be needed by 2030." Based on current parking capacity (including planned Silver Line stations), at current rates, demand for parking will continue to outpace Metro's ability to provide it. A multimodal approach will be needed to expand system capacity and meet future demand.

The *Core Capacity Study* (2002) analyzes operating strategies and capital investments required to meet normal growth on the Metro System as well as the impacts of service expansions. It recommends immediate improvements to pedestrian and bicycle access in order to provide service to more residents of the region.

The *Station Site and Access Planning Manual* (2008) provides design guidelines for station site and access planning for use by Metro, local jurisdictional planners, government agencies, and Metro Joint Development partners. It illustrates how station site facilities should be planned to optimize access to the station for all modes of arrival, with a focus on physical design and operational issues. The manual establishes an access hierarchy to

Figure 3: Bike Lockers (in the foreground) at Medical Center Metrorail Station

provide a rationale for station site planning and design. This hierarchy places pedestrians, bicyclists, and transit users as top priorities in planning and designing stations.

Metro also conducts station-specific studies on an ongoing basis as requested and funded by its local jurisdictions to identify opportunities to improve access to stations by all modes. Station access studies have been completed for the Medical Center, Franconia-Springfield, East Falls Church, Rockville, Minnesota Avenue, Crystal City, Court House, and Rosslyn Metrorail Stations. Studies are also currently underway or recently completed at the following Metrorail Stations: New York Ave – Florida Ave – Gallaudet U, Fort Totten, and White Flint, as noted in Figure 5.

In 2006, Metro evaluated the condition and use of bicycle facilities including lockers and racks. Subsequent to this, the agency began a program to replace many of the racks that had deteriorated over the years. The data compiled from this bicycle facilities inventory were used in the preparation of this study.

Metro regularly conducts surveys of existing customers in order to better plan for their needs. The most recent Rail Passenger Survey was conducted in 2007. Survey data were incorporated into the identification of the station typology and the selection of case study stations as part of this plan.

Finally, in addition to the Rail Passenger Survey, Metro has other ongoing mechanisms for gathering and incorporating customer feedback in its day-to-day operations. These include customer service phone centers, email contacts, and direct communication with the Planning Staff.

About Metro's Access Hierarchy

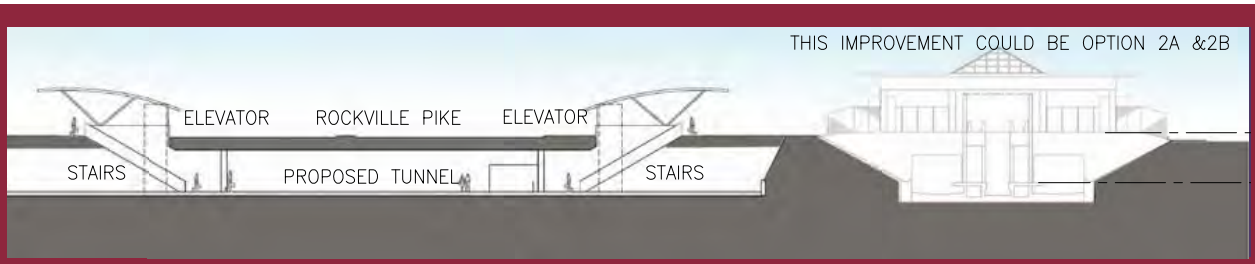
Metro's access hierarchy provides a rationale for station site planning and design. This hierarchy places pedestrians, bicyclists, and transit users as top priorities in planning and designing stations. The recommendations in this plan build on the hierarchy by improving pedestrian and bicycle facilities and enhancing pedestrian and bicycle access and connectivity at and around Metrorail stations.

Figure 4: Metro's Mode of Access Hierarchy
Source: Station Site and Access Planning Manual

Relevant Existing Metro Policies and Guidelines

Over the years, policies have been developed by Metro to support overall operations with applicability to non-motorized access to Metrorail Stations. Selected relevant policies include:

- Metro's vision is to provide "the best ride in the nation." To reach that vision, Metro's General Manager and Executive Leadership Team (ELT) adopted five strategic goals in August 2007. These strategic goals were designed to guide decision-making at Metro. They include the following: Create a Safer Organization; Deliver Quality Service; Use Every Resource Wisely; Retain, Attract and Reward the Best and the Brightest; and Maintain and Enhance Metro's Image.
- The *Metro Transit Service Expansion Plan* (1999) established a goal of doubling Metro ridership by 2025.



Station Assessment Process Highlight

One of the ways that Metro plans for pedestrian and bicycle access at Metrorail stations is through the station assessment process. An example of a recent station assessment plan that identified pedestrian and bicycle needs and opportunities is the *White Flint Station Access Plan*, which identified and evaluated options to improve station accessibility for all transportation modes.

Figure 5: White Flint Station Access Plan
Source: White Flint Station Access Plan

- Metro Board Resolution 2008-29 enables Metro to transfer authority of real property at no cost to local jurisdictions or state governments for projects that will provide new transit improvements or enhance existing transit operations. The authority given under this resolution allows local jurisdictions to fund the construction of non-motorized access facilities on Metro property.

Metro also has many guidelines that inform the provision and design of pedestrian and bicycle facilities at stations, including:

- Manual of Design Criteria—Facilities
- Manual of Design Criteria—Systems
- Standard Specifications, Standard Drawings and Design Directive Drawings
- Tram/LRT Guideline Design Criteria
- ADA Accessibility Checklist Forms in Section
- General Requirements of the Specifications
- Adjacent Construction Design Manual
- Guidelines for the Design and Placement of Transit Stops

Other Plans and Policies

Plans and policies external to Metro also contributed to background information for this Plan, including the 2006 TPB Bicycle and Pedestrian Plan for the National Capital Region, municipal and county pedestrian and bicycle master plans, small area plans, corridor studies, and Americans with Disabilities Act (ADA) compliance studies.

The Regional Transportation Planning Board also has been supportive of multi-modal connections as noted in its Transportation Vision for the 21st Century (1998), which calls for convenient, safe bicycle and pedestrian access, walkable regional activity centers and urban cores, and increased walk and bike mode shares. It also calls for the inclusion of bicycle and pedestrian facilities in new transportation projects and improvements and the implementation of a regional bicycle and pedestrian plan.

More recently, *Region Forward: COG's Comprehensive Guide for Regional Planning and Measuring Progress in the 21st Century* envisions a transportation system that maximizes community connectivity and walkability, while minimizing reliance on single occupancy automobiles. The plan includes specific targets meant to give priority to management, performance, maintenance, and safety of all transportation modes and facilities. It seeks to increase the rate of construction of bike and pedestrian facilities from the TPB's Plan and to increase the share of walk, bike, and transit trips in the region.

Overview of Current Facilities

Metro was created in 1967 to plan, develop, finance, and build a rail mass transit system for the Washington, DC region. Metro's mandate was eventually expanded to include the operation of the new system as well as the region's bus transit systems. Metro began building the rail system in 1969 and initiated rail service in 1976. The Metrorail system currently consists of 86 stations and 106 miles of track. Metro serves a population of 3.4 million within a 1,500-square mile area through its Metrorail, Metrobus, and MetroAccess paratransit operations, collectively providing over 360 million transit trips in 2009.

Passengers access Metrorail by a variety of modes including by foot, bicycle, bus, automobile (driving alone, carpooling, or being dropped off), or other transit providers.

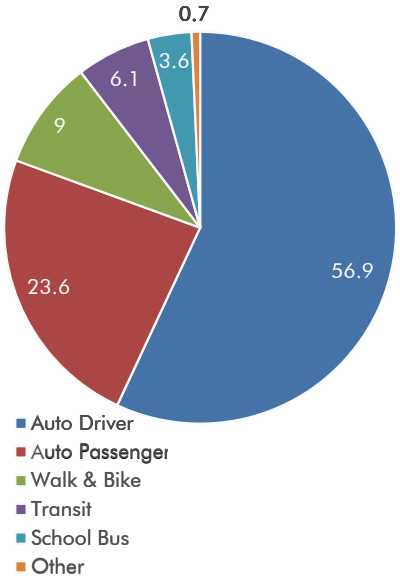


Figure 6: Transportation Mode Share in Metropolitan Washington
Source: COG/TPB Regional Household Travel Survey (2008)

Pedestrian infrastructure such as sidewalks, crosswalks, curb ramps, tunnels and bridges are located at and around stations throughout the system. These facilities connect station entrances to Kiss and Ride lots, bus bays and stops, Park and Ride lots, and the surrounding pedestrian network with varying levels of connectivity. Guidance on the design and placement of these facilities is provided in Metro's *Station Site and Access Planning Manual*.

In addition to the urban sidewalk network, Metrorail Stations are often adjacent to local and regional trail systems and bikeways. These trail systems provide additional bicycle and pedestrian access, and encourage walking and bicycling. Bicycle lanes on the roadway network provided by state or local jurisdictions also provide dedicated routes for bicycles to access stations. A map of existing bicycle facilities in the vicinity of stations is provided in Appendix EA-4.

Bicycle parking facilities are provided by Metro, with approximately 1,700 Metro-owned bicycle racks

Figure 7: Bike Lockers at Fort Totten Metrorail Station

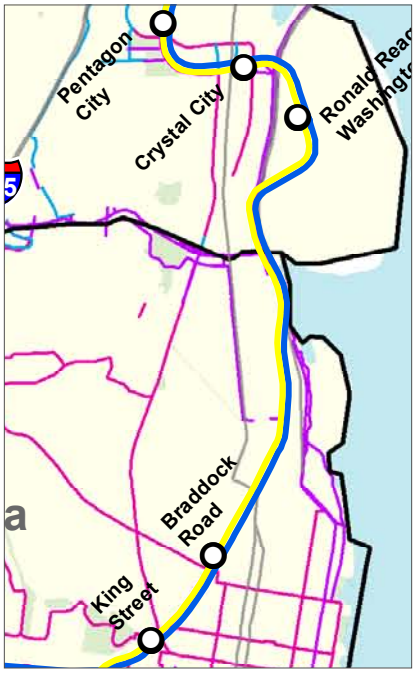


Figure 8: Existing Bike Facility Analysis

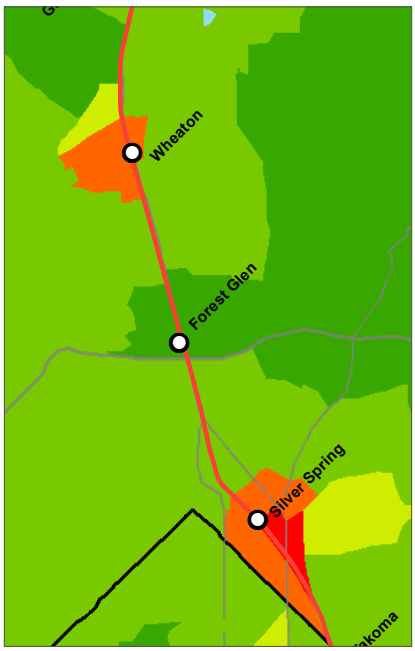


Figure 9: Projected Increases in Density around Stations

distributed at Metrorail Stations. In addition to the bicycle racks, there are approximately 1,300 bike lockers distributed at 50 Metrorail Stations. Metro–owned bicycle parking is generally not provided at underground stations in downtown DC (the Urban Core). The majority of bicycle parking provided by Metro at stations is distributed between Maryland (53 percent) and Virginia (28 percent), with the remaining 19 percent of bicycle parking located in the District. Additional bicycle racks have been added to the areas surrounding the stations by local jurisdictions and private landowners to varying levels throughout the system. In addition, all of Metro's buses are equipped with front-mounted racks that carry two bikes each.

Critical System-Wide Trends

Regional and system-wide trends that are directly relevant to the goals of this Plan were identified through the analysis of existing conditions, review of previous plans and studies, and stakeholder feedback. System-wide trends include the following:

The Washington, DC Region is Growing

According to the TPB's Round 7.2 Cooperative Forecasts, regional employment will total more than 5.7 million jobs by 2040, a 67 percent increase over the 2005 employment base of 3.8 million jobs. Regional population is anticipated to increase by nearly 2.4 million (72 percent) during the forecast period, reaching nearly 8.7 million in 2040. The number of households is projected to grow by 1.1 million (68 percent) over the forecast period to more than 3.4 million, reflecting the growth in jobs and in-migration to the region.

Previous forecasts predict that some of the highest growth in employment and population densities will be around Metrorail Stations, including Silver Spring, the New York Avenue corridor (between the New York Avenue and Mt. Vernon Square stations), the Rosslyn-Ballston Corridor, near southeast, Braddock Road, Eisenhower Ave, and various red line stations in Montgomery County. A map of anticipated growth in the region, as predicted by MWCOG's land-use forecast, is provided as Electronic Appendix EA-2.

Metro Ridership is Increasing

Metro operates the second largest rail transit system and the sixth largest bus network in the U.S. In 2009, there

were approximately 222.9 million trips by rail, and 133.8 million by bus. In addition, MetroAccess paratransit service is projected to carry 2.4 million passengers in 2010. MetroAccess ridership is projected to increase by 50 percent by 2014 to 3.6 million annual trips.

According to Metro's Station Access and Capacity Study, between 2005 and 2030, average daily rail ridership is expected to grow by 42 percent, or 1.5 percent annually, from 683,000 to 970,000. Of the 2030 average daily ridership, 50 percent will be within the core, 12 percent in non-core areas of the District, 19 percent in non-core areas of Maryland, and 19 percent in non-core areas of Virginia. Forty-four thousand additional daily riders are expected upon completion of the Silver Line extension to Dulles Airport.

Recent ridership trends reflect the agency's projections. For example, Metrorail ridership in the AM peak increased by 11 percent from 2002 to 2007. The increases in daily ridership expected by 2030 (970,000) could make the record-setting 2009 Inauguration Day experience (1,120,000) seem like a busy but otherwise ordinary weekday event. Improving access options will enable Metro to reach and potentially exceed its projected ridership numbers. As such, its goals for ridership go "hand in hand" with its goals for access.

The Number of People Walking to Metrorail is Increasing

Interestingly, the growth rate for pedestrian and bicycle access has exceeded the growth rate for the system as a whole (see Table 1).[1] While overall ridership increased by 11 percent in the AM peak between 2002 and 2007, the number of people accessing stations as pedestrians increased by 18 percent. The number of people accessing stations by bicycle increased 60 percent in the AM peak between 2002 and 2007. Pedestrian access currently accounts for 1/3 of all AM peak ridership and almost 40 percent of total daily ridership.

Currently, in the AM peak, 33 of 86 stations experience a pedestrian access mode share greater than 50 percent. Eleven stations have a pedestrian access mode share greater than 80 percent. Of those, one is in Arlington, and the rest are in DC, either in downtown or areas just outside of downtown. Table 2 highlights the top ten Metrorail stations with the highest number of pedestrian access. Mt. Vernon Square has the highest overall pedestrian access mode share for all stations at 95.6 percent, as shown in Table 3.

Table 1: Changes in Mode Share, 2002-2007 (AM Peak)

Mode	2002	2007	+/-
Walk	66,432	78,460	18%
Park & Ride	69,995	68,969	-1%
Metrobus	28,543	34,952	22%
Other Bus	13,033	17,620	35%
Dropped Off	21,000	21,911	4%
Commuter Train	8,675	9,002	4%
Ride Sharing	2,606	2,463	-5%
Bicycle	969	1,550	60%
Total AM Peak Trips Reported	216,854	240,512	11%

Table 2: Highest Number Pedestrians by Station (AM Peak)

Rank	Station	# Walk	% Walk	Total Boardings
1	Dupont Circle	3,686	83.6%	4,410
2	Court House	2,964	90.0%	3,292
3	Columbia Heights	2,789	84.7%	3,293
4	Silver Spring	2,773	42.0%	6,599
5	Ballston-MU	2,772	59.7%	4,644
6	Woodley Park-Zoo/Adams Morgan	2,596	88.6%	2,929
7	Pentagon City	2,489	48.5%	5,133
8	Crystal City	2,277	66.4%	3,428
9	Vane Ness-UDC	2,216	82.3%	2,692
10	Rosslyn	2,213	47.6%	4,650

Table 3: Highest Walking Mode Share by Station (AM Peak)

Rank	Station	% Walk	# Walk	Total boardings
1	Mt Vernon Sq/7th St-Convention Center	95.6%	1,037	1,084
2	Waterfront-SEU	92.3%	781	846
3	Court House	90.0%	2,238	2,477
4	U Street/African-Amer Civil War Memorial/Cardozo	89.3%	1,646	1,843
5	Woodley Park-Zoo/Adams Morgan	88.6%	2,596	2,929
6	Capitol South	87.1%	573	658
7	Eastern Market	85.5%	1,923	2,250
8	Columbia Heights	84.7%	2,789	3,293
9	Dupont Circle	83.6%	3,686	4,410
10	Van Ness-UDC	82.3%	2,216	2,692

[1] Table 1 shows the percent change of riders accessing Metro by various modes between 2002 and 2007. The percent change noted is in relation to the 2002 percentage.

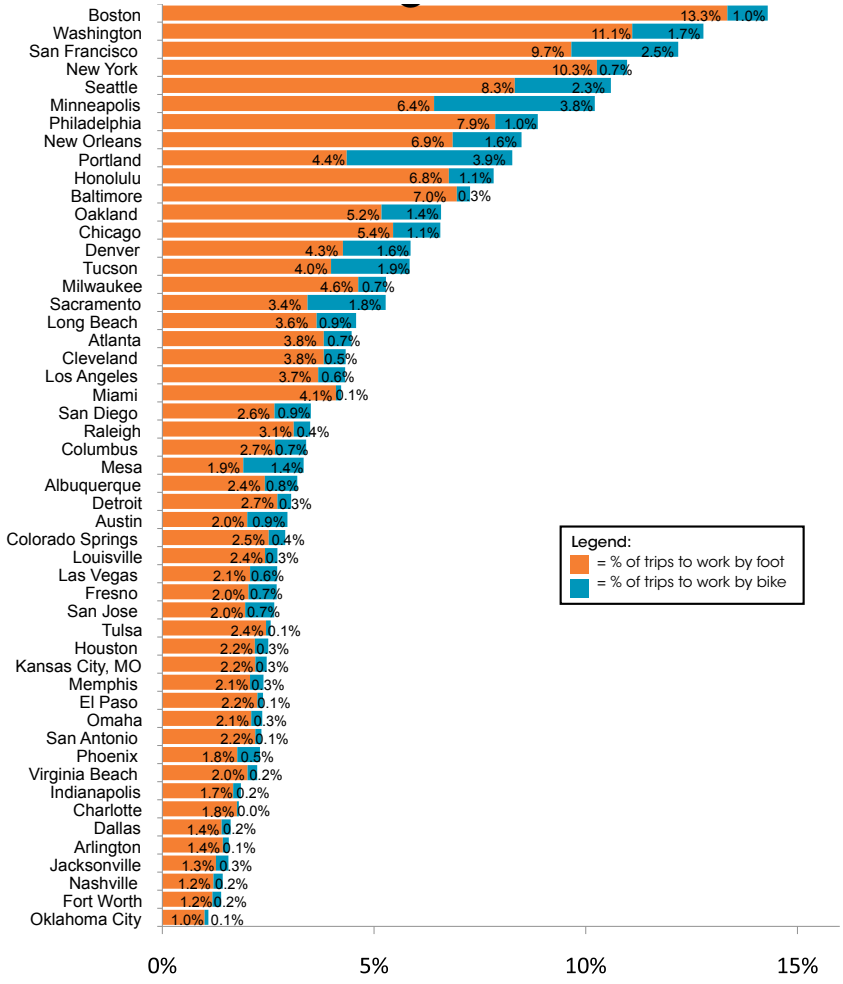


Figure 10: Mode Share from Largest U.S. Cities

Source: Bicycling and Walking in the U.S.: 2010 Benchmarking Report, Alliance for Biking and Walking

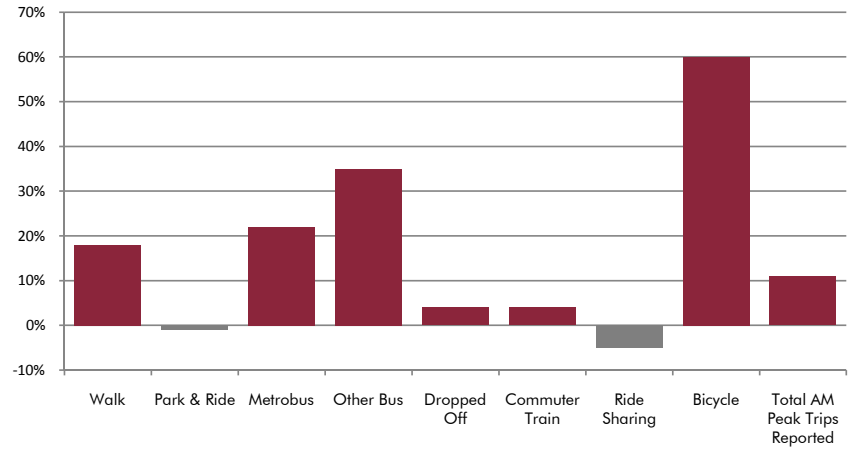


Figure 11: Changes in Ridership Characteristics (AM Peak)

Source: WMATA 2007 Rail Passenger Survey

Walking and Bicycling are Increasingly Important Transportation Modes Throughout the DC Region

According to the TPB's 2007/2008 Household Travel Survey, there were almost two million total weekday walk trips and almost 100,000 total weekday bike trips in the DC region. Of these daily trips, 24 percent of walking and four percent of biking were for Metrorail access. Between 1994 and 2007/2008, the proportion of commuting trips made by bicycle increased from 0.7 percent to one percent of all trips. Transit trips also increased from 15.1 percent to 17.2 percent of all trips. The walking mode share for all daily trips increased from 7.7 percent to 8.5 percent.

These relatively high levels of walking and bicycling have resulted in Washington being ranked second in the country for the proportion of people traveling on foot or by bicycle. As indicated in Figure 10 from the *Bicycling and Walking in the U.S.: 2010 Benchmarking Report* by the Alliance for Walking and Bicycling, Washington, DC is second only to Boston for the percentage of people walking and bicycling to work and is before cities such as San Francisco, New York and Seattle.

More People are Bicycling to Metrorail Stations

According to mode of access data from Metro's 2007 Rail Passenger Survey (Figure 11), the percentage of people bicycling to stations in the AM peak increased by 60 percent between 2002 and 2007. In total, bicycles account for about one percent of the access mode share, though it varies by station. For example, in the AM peak, Medical Center and East Falls Church have the highest bicycle access mode share at 7.1 and 3.4 percent, respectively. The next five stations, shown in Table 5, have bicycle mode shares with at least two percent.

Table 4: Highest Number of Bicyclists by Station (AM Peak)

Rank	Station	# Bike	% Bike	Total Boardings
1	East Falls Church	92	3.4%	2,709
2	Medical Center	78	7.1%	1,098
3	Bethesda	78	2.3%	3,405
4	Silver Spring	74	1.1%	6,599
5	Woodley Park-Zoo/Adams Morgan	61	2.1%	2,929
6	Friendship Heights	57	1.8%	3,162
7	West Hyattsville	55	2.4%	2,327
8	Dunn Loring-Merrifield	54	2.0%	2,734
9	Ballston-MU	47	1.0%	4,644
10	Vienna/Fairfax-GMU	47	0.5%	9,481

Source: WMATA 2007 Rail Passenger Survey

Table 5: Highest Bicycling Mode Share by Station (AM Peak)

	Station	% Bike	# Bike	Total Boardings
1	Medical Center	7.1%	78	1,098
2	East Falls Church	3.4%	92	2,709
3	Forest Glen	2.8%	40	1,432
4	West Hyattsville	2.4%	55	2,327
5	Bethesda	2.3%	78	3,405
6	Woodley Park-Zoo/Adams Morgan	2.1%	61	2,929
7	Dunn Loring-Merrifield	2.0%	54	2,734
8	Friendship Heights	1.8%	57	3,162
9	Braddock Road	1.7%	41	2,379
10	Capitol South	1.6%	11	658

Source: WMATA 2007 Rail Passenger Survey

Parking is, and Will Increasingly be, in Limited Supply

The current system-wide Park & Ride capacity is about 58,000 parking spaces. The *Station Access and Capacity Study* suggests that if Metro continues along the existing growth trajectory and maintains current access mode shares, another 30-40,000 vehicle parking spaces would be needed by 2030 to meet demand. While additional parking may be provided in satellite locations and as part of TODs, the new parking associated with the Silver Line Metrorail extension to Dulles airport will likely be the only major WMATA-funded addition to system parking capacity in the future. System wide in 2009, park-and-ride lots were about 90 percent full on average, and nine stations were running over 100 percent capacity, meaning that there was turnover during the day. Five of seven stations in Virginia with Park & Ride are over 100 percent capacity. In aggregate, station parking lots in Virginia were 99 percent occupied. Many parking garages at Metrorail Stations in Maryland are also nearing capacity.

Opportunities and Challenges

There are many opportunities to build upon and challenges to address in facilitating walking and bicycling *trips to and from Metrorail Stations*. Some best practices for pedestrian and bicycle access throughout the Metro system are shown in Figure 12, while Figure 13 highlights some of the system's challenges.

Opportunities

Pedestrian and Bicycle-Friendly Ridership Trends

The percentage of people accessing stations on foot or by bicycle is likely to continue increasing, as trends continue toward more intense land uses surrounding stations. There are also many existing trips to Metrorail Stations that are ripe to be switched from driving to walking and bicycling. For example, at selected stations, a large portion of those driving to Metro travel less than three miles, and many are travelling less than one mile. The three stations where this is the most common are located in sequence on the Green Line: Fort Totten, West Hyattsville, and Prince George's Plaza.

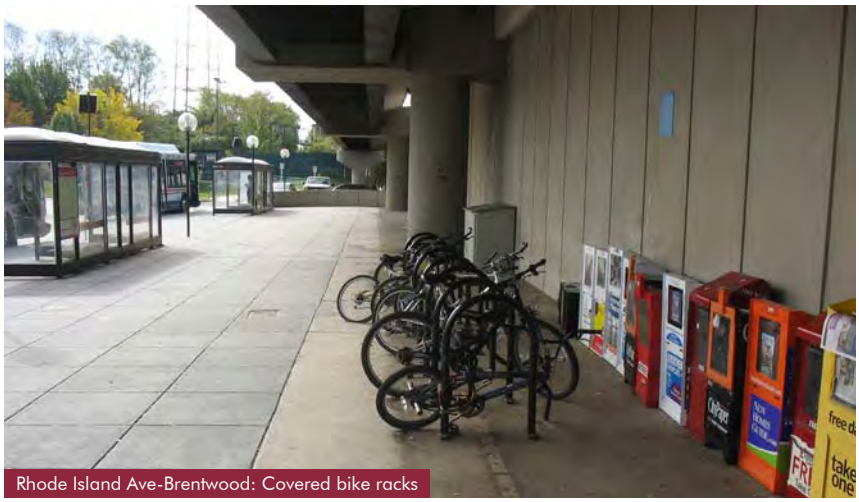
Pedestrian and Bicycle-Friendly Land Use, Population and Employment Trends

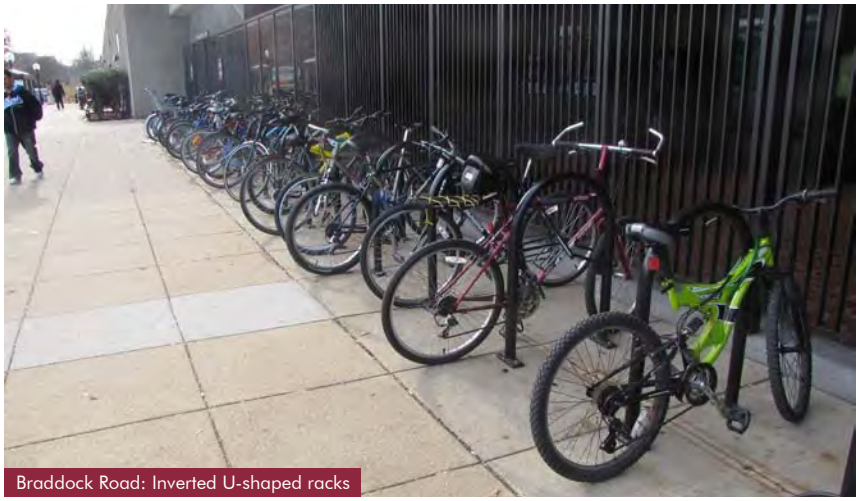
The density of population and employment within Metro's service area is expected to grow in the coming years, and much of the anticipated development will be occurring in direct proximity to Metrorail Stations. This increased number of potential customers will mostly be within walking and biking distance of the stations.

Supportive Leadership and a Record of Success

Over the years, Metro's leadership has consistently supported pedestrian and bicycle improvements. From the Bike 'N Ride program in the 1970s through the initiation of this Plan, walking and bicycling have been recognized as essential modes of access to Metrorail Stations. Continued support for multi-modal transportation will be increasingly important given anticipated changes in land uses, densities, and ridership. In an era of constrained resources, bicycling and walking are extremely cost effective ways to get riders to and from Metrorail Stations.

Ballston-MU: Pedestrian crossing signage


Rhode Island Ave-Brentwood: Covered bike racks


Braddock Road: Inverted U-shaped racks

College Park-UMD: Sign highlighting the most direct way to destination


Vienna/Fairfax-GMU: Trails connecting to sidewalks


Gallery Place- Chinatown: Wide crosswalks and sidewalks

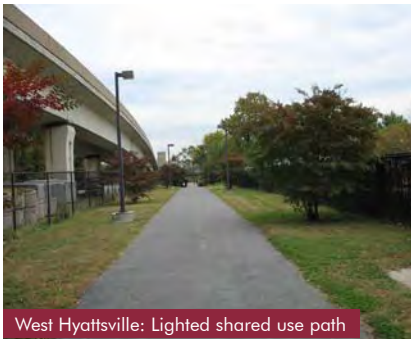

West Hyattsville: Lighted shared use path

Figure 12: Sample Best Practices in Metro's System

Existing Precedents in the System
There are many examples of innovative and effective pedestrian and bicycle facilities that exist today throughout Metro's system. These include targeted wayfinding and safety signage, a state of the art high capacity bicycle parking facility at Union Station, a new pedestrian bridge improving access to the Rhode Island Ave Metrorail Station, and comprehensive and accessible pedestrian networks around stations. These existing precedents offer examples that can be replicated at other stations. Selected pedestrian and bicycle best practices that exist at and around Metrorail Stations today are highlighted in Appendix G.

Meeting Peak Demand Challenges
Increased levels of walking and bicycling can help to address "peak demand" challenges in Metro's system by reducing the large amount of people arriving early at Metrorail Stations to find a parking space, effectively spreading the peak over a longer period of time. Increased levels of walking and bicycling can also improve mid-day access issues, for example at a station such as Rhode Island Avenue where parking fills up early, and is then not available to those that need it throughout the course of the day (when bus service is less frequent).

Challenges

Limited Direct Authority to Impact Off-Site Changes
The ability of Metro's customers to access stations by walking and bicycling is dependent on conditions both on and off the station site. While Metro can initiate improvements on its own property, it does not control the roadways and intersections immediately surrounding its stations. In some cases, these can serve as significant barriers to non-motorized access. Therefore, continued and expanded coordination with local jurisdictions is essential.

Inter-Jurisdictional Coordination
One of Metro's unique challenges is that it must coordinate with numerous jurisdictional partners and other regional transit systems. This coordination is critical to addressing the off-site improvements noted above, and for all levels of operations and funding.

Constrained Sites
Metrorail Stations must serve the full range of users, including pedestrians, bicyclists, transit users, and drivers within often very constrained sites. In many cases, the needs of one user group must be balanced against the needs of another. For example, in many cases the space and operational requirements of buses in the current station configurations make preferred pedestrian and bicycle improvements impractical.

Constrained Finances and Competing Interests
Metro is operating and will continue to operate in the context of a constrained fiscal environment for the foreseeable future. The Metrorail system is more than 30 years old and so will require increasing maintenance over the years. As a result, certain system-wide improvements will likely take precedent over others. For example, safety-related improvements and other investments intended to keep the system in a state of good repair are likely to consume a large portion of Metro's available funds, which will reduce the amount available for enhancing the capacity of the system. Uncertainty in the primary funding sources and competing maintenance needs will make addressing pedestrian and bicycle-related maintenance issues more challenging.

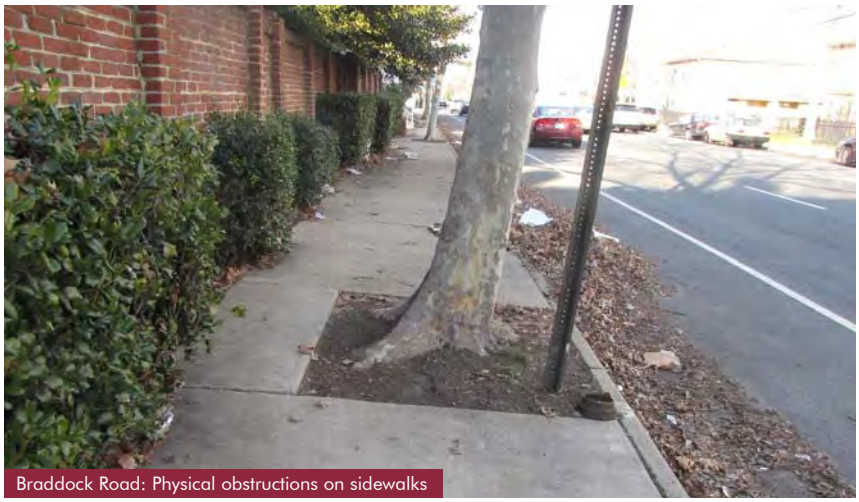
Significant Growth in Ridership
While projected increases in ridership are a significant opportunity, they also represent a serious challenge as the system moves to accommodate this volume on station platforms, escalators, elevators and stairs, through faregates, and in the railcars. The number of rail trips has grown from about 150 million taken per year in the 1990s to nearly 223 million last year. This consistent increase in ridership is anticipated to continue into the future. Accommodating the projected increases is one of Metro's greatest challenges moving forward.

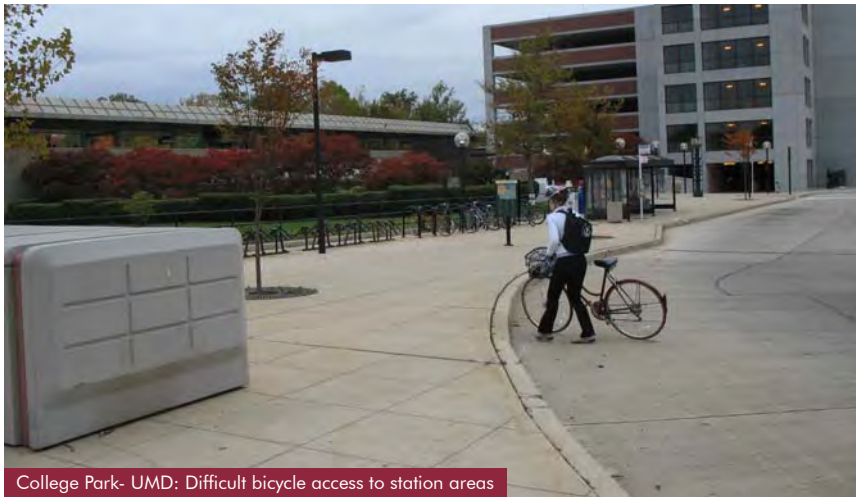
Existing Precedents in the System
There are also many examples of challenging pedestrian and bicycle conditions that exist throughout Metro's system today. These include indirect pedestrian and bicycle routes, insufficient bicycle parking located in non-ideal locations, passenger concerns about personal and property safety, and missing or difficult connections to nearby walking and bicycling routes. Examples of some of the difficult pedestrian and bicycle conditions that exist throughout Metro's system today are highlighted in Appendix G.

Regional Significance of Bicycle and Pedestrian Trips

Projected changes in land uses and densities around stations and increases in daily ridership accentuate the importance of Metro's multi-modal transportation planning efforts. Facilitating pedestrian and bicycle access will help Metro meet future demands on its system, while also helping the region meet other mobility and air quality goals. Metro's 2002 *Core Capacity Study* estimated that, on a daily basis Metro removes around 500,000 vehicles from the regional roadways (when accounting for rail and bus trips) and eliminated the need for 1,400 miles of highway lane miles.

Ballston-MU: Pedestrians conflicting with bus pathways


Braddock Road: Physical obstructions on sidewalks


College Park- UMD: Difficult bicycle access to station areas

Rhode Island Ave-Brentwood: Construction obstructing pedestrian route


West Hyattsville: Faded and poorly oriented crosswalks


Vienna/Fairfax-GMU: Vegetation obstructing pedestrian crossing buttons

Figure 13: Sample Challenges in Metro's System

Focused and targeted pedestrian and bicycle infrastructure and program improvements will improve safety for all riders, facilitate the sustainability benefits of Transit Oriented Development (TOD), and reduce costs required to provide parking for motor vehicles. In fact, facilitating walking and biking trips is an extremely cost effective way to serve customers and accommodate growth in ridership. These improvements are also closely aligned with Metro's commitment to customer service. The following chapter outlines stakeholder involvement efforts and the process for analyzing pedestrian and bicycle conditions undertaken as part of this Plan, in order to provide a framework for the recommendations that will follow in Chapter 4.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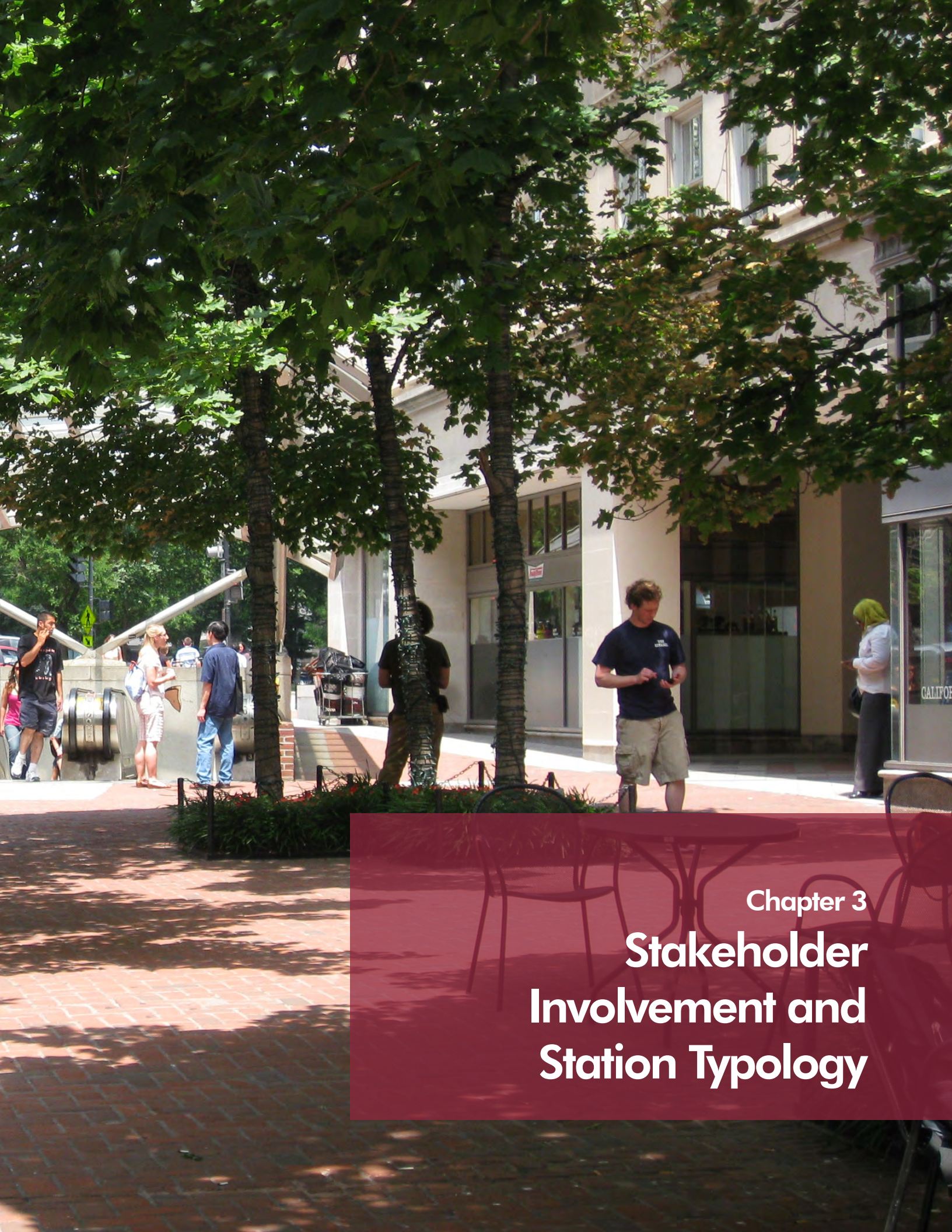

Chapter 3

Stakeholder Involvement and Station Typology

Stakeholder Involvement and Station Typology

This chapter provides a brief description of the study process that was undertaken to develop recommendations that meet the goals identified in Chapter 1 given the system context detailed in Chapter 2. Additional information on the methodology is provided in Appendix D.

How this Plan was Developed

The planning process for the *Metrorail Bicycle & Pedestrian Access Improvements Study* involved extensive public outreach, coordination with stakeholders and staff from Metro and other agencies, discussions with local bicycle and pedestrian transportation planners throughout region, and on-site review of a representative sample of stations. The planning process included the following:

Public Meeting

A public meeting was held on July 22, 2009 at Metro's headquarters in Washington, DC. More than 100 members of the public attended. A formal presentation was provided, followed by a public question and answer session. Attendees had the opportunity to participate in one-on-one discussion with members of the project team. The following series of maps highlighting bicycle and pedestrian-related issues and trends was provided at the meeting:

- Metro Owned Bicycle Lockers and Racks
- Increases in Population and Employment Density within Three Miles of Stations, 2005-2030
- Existing Bicycle Facilities
- Mode of Access (by station)
- Distances Riders Traveled by Car (by station)
- Passengers Walking to Metro by Place of Residence

These maps are provided as Electronic Appendices. Attendees also had the opportunity to complete the online questionnaire at the meeting. This meeting provided an opportunity for participants to voice concerns and discuss opportunities. Their feedback has been integrated into this study.

Figure 14: Bike Parking at the Dupont Circle Metrorail Station

Online Questionnaire
An online questionnaire was developed to gather comprehensive information about Metro customers' mode choices, perceptions of barriers and existing facilities, preferred upgrades to facilities, and awareness of bicycle parking and rental options. The survey was available online in both English and Spanish from July 22, 2009 through September 23, 2009 and over 1,000 responses were received. A summary of the results is provided later in this chapter. A memo outlining the full survey results is included in Appendix C.

Metro Staff Engagement
Metro staff, representing a diverse range of departments and disciplines, were engaged throughout the planning process to identify effective strategies and shape the recommendations. The departments engaged include Long Range Planning, Marketing, Plant Maintenance, Transit Police, ADA programs, Architecture, Government Relations, Parking, Asset Management, Joint Development/ Adjacent Construction, Station Access Planning, and Bus Operations Planning.

Regional Transportation Planning Board's (TPB) Bicycle and Pedestrian Subcommittee
The TPB Bicycle and Pedestrian Subcommittee provided guidance throughout the development of this Plan. This committee is composed of municipal bicycle and pedestrian transportation planners in the DC region. An overview of the project was provided at the July 15, 2009 sub-committee meeting and a conference call to discuss and gather feedback on the proposed station typology (discussed later in this chapter) was held in August 2009. Local planners were also integrally involved in outreach and meetings for the case studies discussed below.

Best Practices Interviews
Interviews were conducted with representatives from transit agencies in other U.S. cities that have conducted similar studies, including MUNI (San Francisco), King County Metro (Seattle), CTA (Chicago), LACMTA (Los Angeles), and TriMet (Portland, OR). These agencies were selected because of their work to improve bicycle and pedestrian facilities.


Figure 15: July 22, 2009 Public Meeting

Case Study Stakeholder Engagement
As part of the planning process, nine case study stations were identified and studied in detail. A stakeholder meeting was held for each of the nine case study stations in the local jurisdiction where the case study station was located. These meetings included local and regional government staff, advocacy organizations, developers, and private citizens.

Key Findings from the Public Meeting and Online Questionnaire

General themes emerged from the public meeting and online questionnaire based around several key issue areas. These themes informed the recommendations in this plan, and at the same time contributed to the identification of the key issue areas highlighted in Chapter 4.

Key Issue Areas from Public Comments
- Bicycle theft and vandalism
- Safety
- Gaps and inconsistencies of wayfinding and signage
- Maintenance needs
- Bicycle parking (e.g. type, placement, rental procedures and time frames, etc.)
- Need for better education and encouragement
- Need for coordination (e.g. in upcoming transportation projects such as the Purple Line, between jurisdictions, on wayfinding to and from stations, etc.)
- Recommended partnerships

General Themes from the Online Questionnaire
An online questionnaire was developed to supplement information gathered at stakeholder meetings, during field observations, and at the public meeting. The survey was

advertised on Metro's website, as well as through numerous blogs and email list-serves in the Washington region. Generally, survey respondents were regular Metrorail customers (three or more times per week), tended to live and/or work within two miles of a Metrorail Station, and used all modes to reach the station. Highlights of the questionnaire responses are noted in Figures 16 and 17, and a more detailed survey results memorandum can be found in Appendix C.

- In general, over half of the respondents that drive said they would consider walking or biking to or from Metrorail Stations if certain changes were made:
  - 55 percent would consider walking to Metrorail Stations
  - 67 percent would consider biking to Metrorail Stations
  - 60 percent would consider walking from Metrorail Stations
  - 50 percent would consider biking from Metrorail Stations

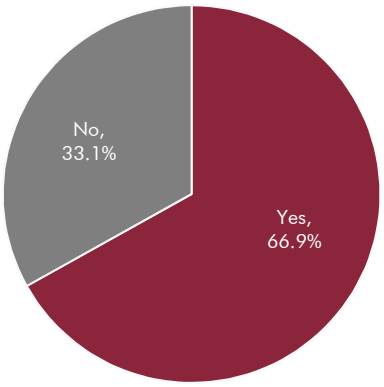

Figure 16: Responses to the survey question "Would you consider biking to Metro instead of driving if certain changes were made?"

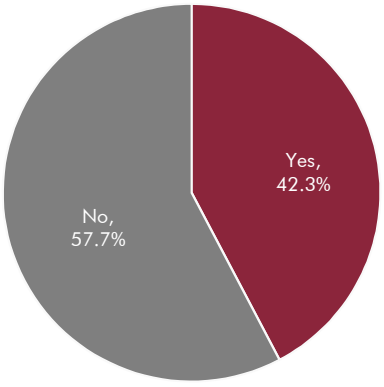

Figure 17: Responses to the survey question "Is parking for your bike adequate at the station at the beginning of your trip?"

- Respondents that drive ranked the most important barriers to biking or walking to a station as: (1) The distance between my residence and the station; (2) Uncomfortable crossing conditions at intersections and; (3) High traffic volume and speed.

- 25 percent of respondents that drive to Metrorail Stations said that they choose to drive because "I do not know a safe walking or biking route."

- Of the respondents that routinely bike to Metrorail Stations, 58 percent said that existing bicycle parking facilities are not adequate at the station where they start their trip and 71 percent said bicycle parking facilities are not adequate at the station at the end of their trip.

- Respondents who ride bicycles were asked to name the three most important ways to improve bicycling travel to and from Metrorail Stations. The following responses were ranked highest: (1) "More on-road bicycle facilities such as bike lanes leading to and from the station;" (2) "More connections to off-road facilities such as trails in the vicinity of the station;" and (3) "Intersection and crossing improvements on routes leading to and from the station."

- Respondents that routinely walk ranked the most important ways to improve the experience walking to and from the station as: (1) "Improved crossing conditions at intersections;" (2) "Improved lighting;" (3) "Improved sidewalk surfaces" and; (4) "Decreased traffic volume and speed."

Best Practices from Other Transit Agencies

Interviews were conducted with representatives from transit agencies in other U.S. cities that have done similar studies and work to improve bicycle and pedestrian facilities, including San Francisco, Seattle, Chicago, Los Angeles, and Portland. The findings from these interviews provide examples of innovative policies, designs, and programs to enhance non-motorized access to transit. Selected best practices from around the country identified through the interview process, which have the most applicability to the Metrorail system, are included below. These best practices have been incorporated into the recommendation elements in the following chapter. The full results of the best practice interviews are included in Appendix A.

- Publicize information on biking on Metro annually as King County Metro does. It could include updates on rack replacement, new facilities and a review of bike policies on trains and buses. This will show riders the progress that Metro is making as well as remind riders that biking on Metro vehicles is convenient. King County distributes this information in the form of attractive door hangers and distributes them to residences within 1.5 miles of their stations.

- Reach out to businesses to assist them in reaching Transportation Demand Management (TDM) goals. By providing information on how TDM goals and objectives can be achieved, businesses can be better informed and may be more likely to participate in the program.

- Partner with local universities in all jurisdictions so that tuition covers transit fares. Student IDs could be used as SmartTrip cards.

- Partner with the local advocacy groups to have volunteers assist with several bike-activities. This could include running the bike station; conducting bike counts and evaluations at each station, and organizing bike expos to show riders how easy and convenient it can be to combine bike trips with transit.

- Provide secure, covered, on-demand parking options with cages supplementing existing lockers and replacing lockers as they "age out."

- Create a method for evaluating when more racks or other bike parking options should be provided. Sound Transit regularly monitors the waiting list for annual locker rentals as well as consistently full bike racks. Metro could partner with a local advocacy group to make the spot checks for the racks.

- With the help of local bicycle and pedestrian advocates, maintain a pedestrian and bicycle focus group to "test" ideas for improving pedestrian and bicycle experiences with Metro services. Metro could start the focus group with local advocate group members.

- Include information that pertains to bicyclists in one location on the website. This includes excerpts of policies that affect the bicycle experience.

- In an effort to provide more inexpensive covered bike parking, place some U-racks in the mezzanine free areas (where space exists).

- Recruit local bicycle and pedestrian advocacy groups to facilitate a public bicycle and pedestrian "gap" audit. Similar to BART's strategy, the effort would only ask the public to identify where they believe gaps exist. These lists would be turned over to the appropriate jurisdictions for further investigation.

- Incorporate bicycle and pedestrian facility maps into Metro's own physical and online (digital) maps to help pedestrians and bicyclists make decisions on mode of travel when reaching their destination.

- Utilize bar codes that can be read by mobile phones to help communicate walking and biking-related information at stations. This would enable users to scan a bar code using their mobile phones and then be taken to a web page with targeted information such as recommended walking and biking routes to nearby destinations and locations of bike parking in the vicinity. The City of Manor, Texas uses this technology to provide information to residents such as event schedules, rules, and regulations. To reduce paper, but also promote partnership with other surrounding institutions, Metro could offer space for bar codes from other entities such as universities, municipalities, institutions, etc.

Metrorail Station Typology Case Studies Overview

In order to better understand pedestrian and bicycle issues throughout the Metro system, Metro's 86 stations were organized into nine categories corresponding to existing conditions for walking and bicycling to and from stations. These categories were based primarily on the existing and future land-use and transportation characteristics of the areas surrounding the stations. By categorizing the stations, the project team was able to more fully understand the range of conditions that exist throughout Metro's system. The process also highlighted similarities, both positive and negative, among stations.

Metrorail Station Characteristics

TPB's population and employment projections, U.S. Census data, and station area studies completed by Metro were used to capture projected changes in employment and population around stations. Bike locker and rack counts and usage were assessed along with other pertinent information from Metro's ridership surveys. Input was also gathered and incorporated from an online questionnaire, the public meeting, and from the TPB Bike/Ped Sub-Committee. Using these data sources, a range of characteristics was considered in the evaluation of stations system wide, and in determining in which category each station would be placed. These considerations included the following:

Existing and Future Land Use Densities

These land use were evaluated including the existing employment and population density and projected future employment and population density. Other land use-related factors were also assessed, for example a Walk Score (www.walkscore.com) was calculated for each station. This provides a walkability score based on the number of amenities within walking distance of a point. In addition, the project team used aerial photography and land use maps to evaluate the existing and projected land use mix around stations.

Transportation Network

The surrounding transportation layout was assessed using Geographic Information System (GIS) maps and through the analysis of aerial photography and roadway

centerlines, existing and proposed trails, and sidewalk data (where available).

Station Site
The station site was assessed including the amount and design (surface or garage) of motor vehicle parking, the various modes accessing the station, the size of the station site, the average Daily Ridership, and the number of bus lines and physical bus bays at the station.

Mode Split
The mode split was assessed for all modes including pedestrians, bicycles, transit users, and drivers.

Bicycle Access
Existing bicycle access levels were assessed using variables such as the number of riders accessing the station by bike (an indicator of access levels and volumes for bikes), as well as the placement, amount, and percent utilization of bike parking, the waiting list to rent bike lockers, access to on and off-road bicycle routes and trails, and the current bike mode share.

Motor Vehicle Access
Existing motor vehicle access levels were evaluated using variables such as the existing car mode share at each station, the character and number of motor vehicle access points, and the extent and utilization of existing motor vehicle parking.

Metrorail Station Typology Categories

Based on the analysis of station characteristics, nine station types were developed and all of Metro's stations were placed into one of the categories. The only station excepted from categorization or analysis in this study is the Pentagon station because it was determined that there was little flexibility to implement pedestrian and bicycle improvements given security concerns in the vicinity of the station. A brief description of each type is provided below. Additional information is provided in Appendix D.

Type 1: High Density Urban Mixed-Use in a Grid Network
These are stations in high density mixed-use areas. While the surrounding areas are largely built out, many are experiencing an intensification of land uses around the station. There are significant space constraints, and the pedestrian and bicycle mode shares tend to be relatively high. The stations in this typology tend to have higher walking and bus mode shares.

Type 2: Urban Residential Center
These are stations in moderate density areas. While the proportion of residential land uses is higher, there is some mixing of land uses around the station. The stations in this typology also tend to have higher bus mode shares.

Type 3: Urban Residential Area with a Bus/Automobile Orientation
These stations are in areas with low to moderate densities and largely single-use development patterns. The proportion of residential land uses is relatively high. A distinguishing characteristic of the stations is that there tends to be a stronger bus and automobile orientation of the station and often more parking is provided. The stations in this typology tend to have higher bus mode shares.

Type 4: Campus and Institutional
These are stations with a large campus or institution in the vicinity of the station, which is generally not located right at the station. There are often significant residential populations in the area and also small amount of commercial land uses in the vicinity. The campus/community dynamic is a unifying element of the stations.

Type 5: Mixed-Use in a "Pod" Layout
These are stations with "pods" of commercial activity in the vicinity of stations, which are often separated by underutilized land uses. There is generally a significant amount of parking provided. Surrounding the station, there tends to be very little mixing of uses. There are often high traffic volumes and difficult street crossings around the stations.

Type 6: Long-Term Potential for High Density Transit Oriented Development (TOD) or Planned Unit Development (PUD)
These are stations with a large amount of underutilized property surrounding the station, often in the form of surface parking lots. They are often surrounded by lower density residential uses and have large arterial roadways near the stations.

Type 7: Suburban Residential Area
These are stations with a large amount of parking available, which are located in predominantly residential areas with low to medium densities. Suburban land use and street patterns surround the station and ingress/egress often involves crossing major arterial roads.

Type 8: Auto Collector/Suburban Freeway
These are stations with large station sites and a great deal of parking. They are often at the end (or near the end) of the line. They are generally located next to interstate highways and large collectors with suburban land use patterns. Ramps and intersections tend to serve as barriers to pedestrian and bicycle access at these stations. The stations in this typology tend to have higher car mode shares.

Type 9: Employment Center/ Downtown/Urban Core
These are stations in heavily urban, high density areas surrounded by predominantly office and commercial land uses. The streets are laid out in a

grid network and there are relatively high existing pedestrian and bicycle mode shares. There are significant space constraints at the stations; however, many of the access issues occur away from the immediate station area.

Metrorail Station Typology Case Study Stations

The project team assessed a broad range of land use and transportation considerations in order to group Metro's 86 stations into the nine categories noted above. These categories are specifically relevant to the needs of pedestrians and bicyclists.

The project team conducted field analyses and engaged local stakeholders for one case study station drawn from each station type. A detailed analytical process was undertaken to select the representative case study station to further explore each station type. A great deal of thought was put into the selection of these case study stations to ensure that the resulting recommendations were as transferable as possible to the other stations in the same category. Considerations evaluated as part of this process included the following:

- Does the station exhibit key attributes of the station type?
- Is it representative of other stations in the group?
- Could the recommendations at the case study station be transferable to other stations?
- Does it exhibit issues and opportunities that exist system wide?
- Are there important upcoming developments, land use changes, planning processes, or other factors that make it a particularly "ripe" time to asses pedestrian and bicycle conditions?

The case study process enabled the project team to develop specific recommendations to improve bicycle and pedestrian access at the selected stations. In many cases, the station specific recommendations also informed system wide recommendations discussed in the following chapter. The case studies selected for each station type are noted in Table 6 Detailed recommendations for each case study station are provided in Appendix B.

Key Issue Areas

Organizing Metro's stations into categories provided a framework for assessing conditions on a station-specific basis, while still retaining a focus on system-wide issues and opportunities. It ensured that the project team assessed the full range of conditions at Metrorail Stations, both urban and suburban, and in various jurisdictions. The project team also wanted to ensure that the key issue areas identified by stakeholder and public input were not lost in the analysis. Key system-wide issues that were specifically assessed as part of the case study process include the following:

- Bicycle parking
- Metrorail Station assessment process
- On-site bicycle barriers
- Off-site pedestrian & bicycle barriers
- Education, encouragement, and enforcement programs
- Design considerations with future development
- Access to trails
- Partnerships

Primary and secondary key issue area topics were assigned to each case study. Members of the project team focused on the issue areas in the stakeholder meetings, during the field work, and in follow-up assessments and analysis. A detailed discussion of the focus areas and results of the case study review process is provided in Appendix B. The recommendations that resulted from the analysis of the case studies are detailed in Appendix B.

Table 6: Metrorail Station Typology and Selected Station Case Studies

Station Types	Case Study
High Density Urban Mixed-Use in a Grid Network	Ballston
Urban Residential Center	Braddock Road
Urban Residential Area with a Bus/Automobile Orientation	Rhode Island Avenue
Campus and Institutional	College Park
Mixed-Use in a "Pod" Layout	Vienna-Fairfax
Long-Term Potential for High Density Transit Oriented Development (TOD) or Planned Unit Development (PUD)	West Hyattsville
Suburban Residential Area	Huntington
Auto Collector/Suburban Freeway	Shady Grove
Employment Center/Downtown/Urban Core	Gallery Place

Conclusion

This chapter provided an overview of the methods used to strategically assess pedestrian and bicycle conditions throughout Metro's system. The planning process included public outreach, focused stakeholder involvement, review of best practices at transit agencies across the U.S., and analysis of issues at individual Metrorail Stations through a typology lens. This approach enabled the project team to

evaluate station specific issues and opportunities, while still remaining focused on system-wide needs. The following chapter provides detailed recommendations for pedestrian and bicycle improvements that resulted from this process.

Chapter 4

Recommendations

Recommendations

Overview

This chapter provides a broad range of system-wide recommendations to increase the percentage of people walking and bicycling to and from Metrorail Stations. The recommendations are intended to improve safety, access, and mobility for all users, helping Metro achieve the goals highlighted in Chapter 1.

Recommendations are provided at varying degrees of cost and effort. The general priority of each recommendation (*essential, important,* or *desirable*) is noted in this chapter. More detailed information on the implementation and prioritization of recommendations is provided in Chapter 5. Implementation will involve a wide variety of partners within various divisions of Metro, local jurisdictions, and members of the walking and bicycling community.

Recommendations Development

This chapter identifies recommendations for a range of physical infrastructure improvements such as more and better bicycle parking, improved wayfinding, and better connections to nearby trails and on-road bicycle lanes. It also includes recommendations for partnership opportunities and programmatic improvements such as outreach and marketing strategies to encourage multi-modal trips.

The recommendations are based on the extensive public outreach effort detailed in Chapter 3, including the public meeting, the online questionnaire, and coordination with stakeholders and staff from Metro and other agencies. Interviews with other transit systems throughout the U.S., discussions with local bicycle and pedestrian transportation planners in the region, and an on-site review of a representative sample of Metrorail Stations also fed into the formulation of the recommendations detailed here.

Metro should implement these recommendations as time and resources allow, while continuing efforts already underway that encourage walking and bicycling.

Figure 18: Existing crosswalk near the Ballston-MU Metrorail Stop

Efforts underway that should be continued are noted below.

Metro's Pedestrian and Bicycle Efforts Underway (To Continue)

- *Identifying recommendations from station area planning studies*
  To improve implementation, consider requiring that a top 10 and/or top 20 short-term project list be created as a part of each station access study. It should then identify an internal team responsible for ensuring that these top priority projects are completed in a timely manner.

- *Working to expand high-security bike parking opportunities throughout the system*
  Move toward a system where high security spaces can be provided on an "on-demand" basis. Metro is installing increasingly more bike racks throughout the system. The quantity should be sufficient to accommodate current demand with surplus capacity to accommodate increases. Bike parking should be located under covered areas (within structures, under overhangs, or dedicated bike parking shelters) where possible. Provide bike racks at bus stops with high volumes of bicycle access.

- *Working with local jurisdictions' planning and zoning staff to coordinate on transit access needs*
  Continue to play a liaison/education role to local governments. Transit access coordination with Metro should be incorporated into the scope of development review at the local level.

- *Finalizing a coordinated private shuttle strategy and policy*
  Developing a coordinated approach to addressing private shuttles at Metrorail Stations. Metro and local jurisdictions are working together to address this issue.

- *Addressing Americans with Disabilities Act and other accessibility issues along pathways leading to and from the Metrorail Station*

- *Exploring opportunities to improve the Request for Qualifications (RFQ) process to ensure coordinated development surrounding Metrorail Stations*

- *Supporting the TPB in its efforts to develop a database of contacts*
  This database should include contacts from local governments, state Departments of Transportation, and others with whom Metro staff should coordinate regarding pedestrian and bicycle issues. It should identify areas of responsibility and decision making authority.

- *Auditing existing station area maps and updating where necessary*
  Ensure that maps are displayed at a walking scale, and that they indicate pedestrian and bicycle facilities. Pedestrian and bike-specific wayfinding signs with compelling high quality graphics should also be considered.

Organization of Recommendations

The recommendations in this chapter are organized into two sections according to whether they will be led by Metro or through partnerships between Metro and others. The Metro-Led Elements are focused on organizational and operational changes within Metro and facilities on Metro-owned property. The Partner/Joint-Led Elements are initiatives that Metro may initiate, but require coordination with the surrounding property owners and local jurisdictions. Generally, each recommendation includes a statement outlining the current practice along with an overall recommendation followed by specific action steps.

The set of symbols below indicates the general priority of each recommendation on the following pages. The prioritization of recommendations is discussed in detail in the following chapter. Chapter 5 focuses on the recommendations classified as essential. It breaks apart these recommendations into two categories. The first are early action items, which can be completed in 0-18 months. The second are short-term items, which can be completed in 0-3 years.

● Essential
● Important
○ Desirable

In addition to the system-wide recommendations described in this chapter, the review of individual Metrorail Stations as a part of the typology case studies identified specific improvements at the representative case study stations. These detailed site-specific recommendations, as well as cost estimates, are found in Appendix B.

Metro-Led Elements

1. Multimodal Policy
2. Station Assessment Tools
3. Customer Information and Encouragement
4. Operations and Maintenance
5. Institutional Capacity
6. Bicycle Parking
7. Transit Oriented Development

Metro Partner/Joint-Led Elements

8. Off-Site Connections and Programs
9. Wayfinding
10. Adjacent Development

Metro-Led Elements

It is anticipated that Metro will play the lead role in the recommendations contained in this section. Some may be entirely under the purview of the agency, while others would involve Metro working in concert with outside entities.

Element 1: Multimodal Policy

Current: Numerous documents guide Metro's station access and design policies. Examples include the *Station Site and Access Planning Manual, Manuals of Design Criteria, Standard Specifications, Standard Drawings and Design Directive Drawings,* and *Adjacent Construction Design Manual*.

Recommendation: In order to meet its multi-modal goals, provide clear policy and design guidance for the planning and design of pedestrian and bicycle facilities. In some cases, this will involve clarifying or revising existing policies and procedures. In other cases, it will involve developing new resources to guide the design and implementation of pedestrian and bicycle facilities across all disciplines.

The following specific actions should be undertaken:

1.1: Policy Statements

● **1.1a: Mode Share Goal.** Establish a systemwide goal of tripling the bike access mode share by 2020 (from 0.7 percent in 2007 to 2.1 percent in 2020) and quintupling the bike access mode share by 2030 (from 0.7 percent in 2007 to 3.5 percent in 2030). There are precedents for this in the DC region, for example the District of Columbia currently has a 3.3 percent bike commuting share and the City of Alexandria has a 2.7 percent bike mode share, according to the 2007-2008 TPB Household Travel Survey.

As a result of projected increases in Metro ridership, tripling the bike access mode share will more than quadruple the total number of bicyclists accessing Metro between 2007 and 2020. As shown in Table 7, quintupling the mode share by 2030 will increase the total number of bicyclists accessing stations during the AM peak period from around 1,600 today to more than 12,000 in 2030.

Table 7: Bicycle Mode Share Goal

2007	
Mode Share[2]	0.7%
Total Number of Bicyclists Accessing Metrorail Stations in the AM Peak[3]	1,648
2020	
Recommended Mode Share	2.1%[4]
Total Number of Bicyclists Accessing Metrorail Stations in the AM Peak[5]	7,113
2030	
Recommended Mode Share	3.5%[6]
Total Number of Bicyclists Accessing Metrorail Stations in the AM Peak[7]	12,435

● **1.1b: Safety.** Address motor vehicle (including cars, buses, vans, shuttles, etc.) traffic safety issues as they relate to pedestrian and bicycle issues within station sites by implementing lane/road diets, installing bicycle facilities such as bike lanes, improving pedestrian crossing conditions, and implementing traffic calming strategies.

● **1.1c: Multimodal Access.** Establish safety, access, and comfort for all transportation modes as primary design objectives for physical infrastructure and facilities. These multi-modal objectives should guide Metro's various design guidelines, standard drawings, and standard specifications.

Figure 19: Direct connection through a parking lot near the Prince George's Plaza Metrorail Station

● **1.1d: Direct Connections.** Orient station facilities to provide direct access along pedestrian and bicycle desire lines. Connections should be provided through parking lots via direct pedestrian pathways, wayfinding, safety striping, and signage. Identifying and preserving formal and informal pedestrian and bicycle connections to and from Metrorail Stations is a critical first step in improving pedestrian and bicycle access, as noted in Element 2.

1.2: Revise and Clarify Design Guidelines

● **1.2a:** Develop official guidelines for the design and placement of bicycle parking facilities including coverage, the need for short-term high security parking, seamless connections, better utilization of parking garages, and better location decisions (e.g. monitored locations).

● **1.2b:** Undertake a comprehensive evaluation of existing Metro design guidelines and criteria to establish

[2] Bicycle mode share cited in AM peak mode of access data, 2007 Metrorail Survey.

[3] AM peak mode share percentage multiplied by total AM peak ridership (235,365), 2007 Metrorail Survey.

[4] Proposed goal of tripling the bike access mode share by 2020 (from 0.7 percent in 2007 to 2.1 percent in 2020).

[5] Total system wide projected 2020 AM peak ridership (338,713), 2009 WMATA Ridership Forecasts.

[6] Proposed goal of quintupling the bike access mode share by 2030 (from 0.7 percent in 2007 to 3.5 percent in 2030).

[7] Total system wide projected 2030 AM peak ridership (355,280), 2009 WMATA Ridership Forecasts.

consistent design for pedestrian and bicycle-related facilities. This includes bicycle lanes, shared lane markings, wayfinding signage, curb ramps, crosswalks, signal timing adjustments, pedestrian safety-related signage and striping, bike gutters, and signs to the location of bicycle parking. The pedestrian and bicycle facilities in these guidelines should serve as a "toolbox" of pedestrian and bicycle accommodations to be provided at Metrorail Stations throughout the system. Opportunities to incorporate innovative pedestrian and bicycle treatments, for example the "Barnes Dance" traffic signalization outside of the Gallery Place – Chinatown Metrorail Station, should be explored.

○ **1.2c**: Clarify and revise "Kiss and Ride" facility design and placement policies to accommodate safe and direct pedestrian travel from cars parked in Kiss and Ride lots and through the Kiss and Ride from destinations beyond.

○ **1.2d:** Ensure that in the application of recently developed bus stop design and placement guidelines (updated in 2009) that there is safe and direct pedestrian and bicycle access to and from Metrorail Station entrances and ensure accessible pathways to and from bus stops in proximity to Metrorail Stations.

1.3: Coordination and Partnerships

● **1.3a**: Conduct internal training of Metro staff and contractors to provide orientation to bicycle and pedestrian policies and design practices.

● **1.3b**: Collaborate with local jurisdictions and TOD developers to articulate mode share goals for new developments, including mode share targets for phased approval of developments. For example, the new Johns Hopkins Science City project near Gaithersburg, MD is to be developed in phases, with approval of successive phases contingent on the built portions of the project satisfying transit ridership goals. This could serve as a model for other locations. Developing design standards that are clear and specific will contribute to the realization of mode share goals for new developments.

Element 2: Metrorail Station Assessment Tools

Current: Metro evaluates stations on an ongoing basis. Station Managers have a daily inspection circuit; however, this often does not cover the entire property. Parking lot attendants conduct regular inspections. There are inspections relating to ADA compliance at least once per year. Formal station enhancement reviews occur roughly every 3.5 years. In addition, Metro conducts station access studies on a station-by-station basis as needs arise. These studies provide detailed recommendations for pedestrian and bicycle improvements.

Metro has a solid base of information for evaluating and monitoring pedestrian and bicycle access at stations. This includes:

- Bicycle and pedestrian access counts and mode split percentages for all Metrorail Stations, based on patron user surveys conducted periodically
- Bicycle locker rental rates
- Bicycle rack usage estimates, based on surveys of select stations conducted periodically
- Passenger comments either by telephone, mail, or email

Recommendation: Identify and formalize a set of pedestrian and bicycle analysis techniques that Metro can utilize on an ongoing station-by-station basis. Establish pedestrian and bicycle performance measures in the areas of use (volume), safety, security, maintenance, and customer satisfaction. Establishing frequency of evaluation for each performance measure as well as responsibility for collecting and reporting relevant data will contribute to successful implementation. Establish baseline measures so that as improvements are made, results can be measured, quantified and correlated to specific actions. Development of certain data elements may require assistance from state and local government partners and/or regional organizations and stakeholders. Systematically share data with state and local governments and regional partners.

The following specific actions should be undertaken:

2.1: Data Collection

● **2.1a**: Establish a bicycle rack and locker inventory and usage tracking program. Metro can measure locker usage by regularly conducting an electronic survey of renters. Coordinate with station managers, Metro staff, and volunteers in this effort.

● **2.1b**: Establish a bicycle and pedestrian security tracking program by working with the Metro Transit Police Department (MTPD), local jurisdiction police forces, station managers, and maintenance crews to establish a system to collect and report on the following data:

- Reported bicycle thefts
- Reported crimes against pedestrians or bicyclists on Metro property while in route to or from a Metrorail Station
- Reported bicycle or pedestrian crashes on or adjacent to Metrorail Station property

- Numbers of abandoned bicycles removed from bicycle racks or lockers
- Numbers of lockers found to be used for purposes other than bicycle storage
- Bicycle locker usage patterns (by regularly conducting an electronic survey of renters

● **2.1c**: Work with Metro information technology (IT) and customer services staff to identify and capture more detailed information about pedestrian and bicycle needs, missing connections, bike parking, abandoned bikes, and other information from customer comments. Data can be collected electronically via issue-specific forms and used to assess future needs and customer satisfaction.

○ **2.1d**: In conjunction with local jurisdictions, establish a comprehensive GIS inventory of existing, planned and needed bicycle and pedestrian infrastructure that is within 0.5 miles of each Metrorail Station.[8] This infrastructure should include the following existing and proposed facilities: signed bike routes, bike lanes, streets marked with shared lane markings, shared use trails, bus stops, public easements, special pass-through routes or non-traditional points of access, signalized street crossings, crosswalks, signal and crossing improvement needs, sidewalk gaps, needs for curb ramps/or curb ramp replacement. It should also highlight locations where pedestrians and bicyclists can enter/exit station areas.

○ **2.1e**: Establish separate bicycle access, pedestrian access and non-bike/ped access focus groups for electronic and face-to-face polling about overall customer satisfaction and to measure the impact of future marketing initiatives. A Facebook page established and managed by Metro and dedicated to bike access may be an effective way to communicate with customers and gather pertinent information on an ongoing and "real time" basis.

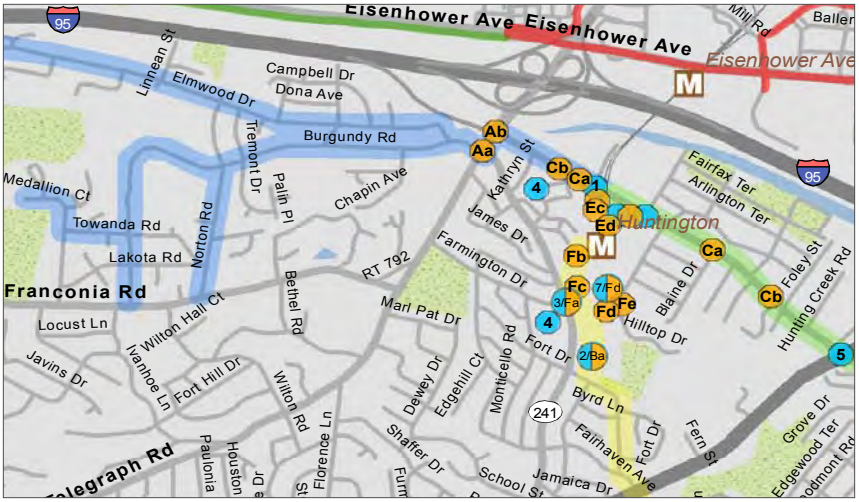

Figure 20: Sample bike shed analysis, Huntington Metrorail Station (included in Appendix B)

2.2: Adopt and Apply Evaluation and Analysis Tools

● **2.2a**: Assess the utility of evaluation tools such as pedestrian and bicycle demand assessments, bicycle and pedestrian Level of Service (LOS) evaluations, and bike-shed analyses. A bike-shed analysis would enable Metro to document likely bicycling routes to and from stations where access conditions warrant, such as where topographical barriers, major roadways, hydrologic features, or a suburban pod layout results in limited roadway network connectivity. A sample bike shed analysis is provided in the case study for the Huntington Metrorail Station in Appendix B.

● **2.2b**: Develop and implement a formal, station-specific pedestrian and bicycle access and mobility assessment process. This could entail the development of pedestrian and bicycle audit templates that can be used to evaluate pedestrian and bicycle conditions at stations. A sample template is provided in Appendix F. This could be incorporated into Metro's ongoing station access studies. In addition, pedestrian and bicycle facility elements should be added to all assessment forms currently being used. These efforts could be supplemented by volunteers and/or local advocacy groups.

● **2.2c**: Require multimodal circulation and access studies (including existing and potential on and off-site connections) as part of adjacent/joint development. In order to have maximum effect, this should happen at the beginning of the redevelopment design process to ensure that important connections are preserved and enhanced by new projects.

[8] This GIS inventory will be a powerful planning tool; however, it will require a significant level of effort. It is recommended that the region begin moving in the direction of compiling and maintain a comprehensive GIS inventory.

● **2.2d**: Develop mechanisms and processes for dialogue with current and potential bicyclists and pedestrians that use a particular station. This could include a variety of engagement strategies including online surveys for specific stations that could be advertised by banners, tags on bikes, and post cards. An important outcome of this effort is to enhance the relationship between Metro and customers regarding pedestrian and bicycle issues.

● **2.2e**: Clarify and inform the public on existing mechanisms for receiving and addressing pedestrian and bicycle access related comments and concerns. Determine whether the existing procedures are the most efficient method of addressing customer concerns

2.3: Performance Measures and Benchmarks

● **2.3a**: Establish benchmarks for bicycle and pedestrian access volumes so that changes in access mode share can be tracked over time and correlated with various improvements to conditions, changes in service routines or marketing efforts.

2.4: Coordination & Partnerships

● **2.4a**: Coordinate with local police forces to identify and address safety and security issues (such as a rash of bike thefts), and to implement crime prevention and awareness measures. At Metrorail Stations with particularly high instances of bike thefts, consider installing close circuit security cameras and implementing other crime prevention strategies.

○ **2.4b**: Work with local governments to periodically assess bicycle and pedestrian networks connecting to Metrorail Stations. This could occur as a part of ongoing local planning efforts.

Element 3: Customer Information and Encouragement

Current: The primary methods that Metro uses to communicate with its walking and bicycling customers are the metroopensdoors.com website, advertisements, and notices at stations and on Metrobus. The website provides information on the Bike 'N Ride program, which includes detailed information on bicycle parking. The Trip Planner tool on the website provides walking directions to and from destinations. Metro's communications department undertakes a range of marketing-related activities geared towards bicyclists and pedestrians. At a regional level, the TPB has a regional transit marketing group and a bicycle committee, both of which undertake various communications and encouragement efforts.

Recommendation: Implement a multi-faceted communications and marketing initiative specifically targeted to its walking and bicycling customers.

The following specific actions should be undertaken:

3.1: Customer Information

● **3.1a**: Improve and enhance the metroopensdoors.com website to better communicate pedestrian and bicycle-related customer relations and social marketing efforts. The website should be user-friendly. It should provide critical information, such as a bike-to-transit map and the location of bike parking at stations, up front and in an easy to access format. The website should include bike locker rental information, mechanisms for reporting and tracking problems, smart phone applications as they become available, bike registration information, and avenues for dynamic feedback loops. A biking module should be provided on Metro's Trip Planner. As an encouragement measure, the Trip Planner could also provide information on supplementary benefits such as carbon offset or calories burned by walking and bicycling. Taken together, the website should create a compelling "quality of life" argument to existing and potential walkers and bicyclists.

● **3.1b**: Allow Metro bus and rail routes to be incorporated into programs such as Google maps. This, combined with the online mapping service's bicycle route mapping tools, will allow users to create truly multimodal travel itineraries.[9]

○ **3.1c**: Provide consistent maps and wayfinding signage for station areas, including maps at a pedestrian scale (e.g. emphasizing walkable destinations, the presence of sidewalks, traffic signals, access to transit, safe walking routes, etc).

○ **3.1d**: Improve coordination of mapping resources. Online and hard copy maps should provide information in a consistent manner to aid in navigation. As technologies develop, where appropriate provide station-specific pedestrian and bicycle data, for example highlighting the best routes to and from stations.

3.2: Signage and Wayfinding

● **3.2a**: Outside of station entrances, provide bike on rail guidelines including elevator usage and rush hour restrictions. Improve existing signage at elevators, adding bikes to

[9] Detailed information including real-time bus and train locations will be made available for use in various software applications as part of a program currently in development by Metro's Information Technology (IT) department.

the list of those who get preference for boarding the elevator (note that wheelchairs, persons with disabilities, and seniors will continue to have preference over bicycles).

● **3.2b**: Provide walking and bicycling informational kiosks at stations with targeted information such as maps and other educational and encouragement material. The kiosks could also provide space to post bar codes that can be scanned by a mobile phone in order to obtain station-specific maps and directions, recommended walking and biking routes to nearby destinations, and locations of bike parking in the vicinity. See the Best Practices section in the previous chapter for additional information.

○ **3.2c**: Consider using a changeable electronic sign for wayfinding at stations such as LCD screens. These can be used to display a variety of information and can include advertising to subsidize the cost of the sign.

3.3: Outreach

● **3.3a**: Improve pedestrian and bicycle educational opportunities, for example by providing bike-on-bus practice opportunities at Metrorail Stations and directions on how to use bike racks correctly. This would allow new bicycle-to-transit riders to practice loading bicycles onto front-mounted bus racks in a stress-free environment.

○ **3.3b**: Create and rotate bike information kiosks among high ridership stations. Provide educational signs about theft, how to use racks, how to register bikes, and about bicycle traffic laws. Provide customers with information about routes to off-site destinations (walking and bicycling), directions to bike parking and elevators, access to trails, and important through routes.

○ **3.3c**: Conduct safety and security education campaigns at selected Metrorail Stations in conjunction with the Metro Transit Police Department.

3.4: Coordination & Partnerships

● **3.4a**: Use Metro's marketing, communications and public affairs offices to expand public knowledge of bicycle issues and programs. Explore whether a dedicated revenue stream for bicycle and pedestrian programs and infrastructure could be established through the sale of advertising on bicycle parking units or through other similar revenue generating streams.

● **3.4b**: Improve systems for disseminating, publicizing, and marketing bicycle- and pedestrian-related policy, procedure and program recommendations within the organization.

Element 4: Operations and Maintenance

Current: The cost of system maintenance is a major budgetary issue, and thus the maintenance of existing, and installation of new, infrastructure should be carried out with full understanding of how it will affect future operations and maintenance routines and budgets.

Recommendation: Ensure that station operations procedures are designed to facilitate travel to and from stations by walking and bicycling. Update maintenance policies and reporting procedures, and clarify procedures to achieve improved maintenance of bicycle and pedestrian infrastructure. Update maintenance-related criteria used in the procurement of new infrastructure to ensure that new maintenance requirements are minimized. Clarify how the access modal hierarchy should be applied to Metrorail Station operations and maintenance and communicate this with relevant Metro personnel. Additional staffing and funding may be required to fully implement existing and proposed pedestrian and bicycle-related operations and maintenance procedures. Every effort should be made to implement programs and policies that increase performance while decreasing operations and maintenance requirements. The following specific actions should be undertaken:

4.1: Operations

● **4.1a**: Clarify and/or revise policies regarding private shuttle access to Metrorail Stations to provide guidance regarding the location of drop off/pick up areas and to ensure that locations do not impede pedestrian and bicycle access.

● **4.1b**: Metro should be directly involved in local policy discussions regarding shuttles picking up and dropping off at Metrorail stations. Work with local jurisdictions on Transportation Demand Management (TDM) policies that support walking and bicycling to stations as a primary station access consideration, prior to the provision of shuttles as an alternative access solution and ensure that the provision of shuttles does not discourage walking and bicycling to and from Metrorail Stations.

○ **4.1c**: Near Metrorail Stations, carefully consider the location of Metrobus stops. Factors to consider include: locating stops on the far side of intersections where appropriate (as is the current/preferred common practice) to improve pedestrian crossing visibility and safety; locating stops as near as possible to transit-oriented developments; and ensuring that bus stop locations do not create a safety hazard for bicyclists or pedestrians accessing the station.

4.2: Maintenance

4.2a: Improve maintenance procedures by implementing the following recommendations.

- Provide an easy to use system for reporting maintenance issues. For example, many municipalities are starting to use smart phone-enabled online interactive mapping programs, such as SeeClickFix.com, to allow citizens to easily report maintenance issues. Many programs provide the ability to upload photographs and georeference the precise location of the problem.

- Continue to inspect and repair/replace broken and non-functioning bicycle racks and lockers on a regular basis.

- Remove abandoned bicycles from racks. A potential disconnect was identified between when a bike is tagged for removal and, after the specified time period has elapsed, the removal request is processed. This disconnect should be addressed to ensure that abandoned bikes are not taking up limited bike parking spaces at Metrorail Stations.

- Develop safety audits and countermeasures that Metro personnel can use during routine station assessments.

- Continue to inspect and repair/replace broken and non-functioning pedestrian lighting as a part of ongoing and routine assessments at Metrorail Stations.

4.2b: Continue to implement existing snow and ice removal procedures with an emphasis on maintaining pedestrian and bicycle pathways. The recommendations below can be implemented on site. For off-site locations, coordinate with jurisdictions to ensure continuous walking and bicycling pathways and connections.

- At stations with high levels of walking and bicycling access, prioritize removal of snow from pathways connecting to the surrounding pedestrian and bicycle networks.

- Ensure that Metrorail snow plowing procedures (Metro and private contractor) do not result in blocking curb ramps, sidewalks or any bicycle or pedestrian routes to Metrorail Stations. A memo is distributed at the beginning of every snow season reminding employees that clearing curb ramps is a high priority. Adding other pedestrian and bicycle-related reminders to this memo should be considered.

- At the borders of station properties determine who is responsible for snow removal and de-icing, and develop a communication protocol to ensure that pedestrian and bicycle routes to the station are clear and passable for Metro patrons.

- For sidewalks and pedestrian areas in Metrorail Stations, evaluate snow melt and slip protection materials with the goal of identifying products that minimize damage to concrete and other sidewalk surfaces.

4.2c: Incorporate maintenance costs throughout planning and budgeting processes by implementing the following:

- Include lifetime maintenance costs when evaluating capital improvements.

- Establish dedicated budget line items for routine maintenance and repair of bicycle and pedestrian facilities and equipment.

- Consider selling advertising space on bicycle parking facilities and dedicate this revenue to maintaining and enhancing bicycle and pedestrian infrastructure and programs.

Figure 21: Targeted snow removal is needed to clear pathways for pedestrians walking to and from Metrorail Stations (included in Appendix B)

4.3: Coordination & Partnerships

4.3a: Coordinate with local authorities to develop a protocol for maintaining clear and passable pedestrian and bicycle routes to the station from off-site locations, including identifying who is responsible for snow removal and de-icing, routine maintenance and repairs. If not already available, provide station managers and other Metro personnel with a local government contact list so they may report off site issues to the appropriate authority.

4.3b: Consider partnering with bicycle advocacy groups and others to ensure ongoing maintenance of

bicycle parking, sidewalks, and other pedestrian and bicycle facilities.

Element 5: Institutional Capacity

Current: Numerous departments within Metro are involved in pedestrian and bicycle planning in one way or another, including policy, planning and design (Long Range Planning, Asset Management, Joint Development/Adjacent Construction, Station Access Planning, Bus Operations Planning, ADA programs, Architecture, Government Relations), marketing (Customer Service, Website Design and Maintenance, Information Resources), and operations (Plant Maintenance, Transit Police, Parking, Bike lockers).

Recommendation: Bike and pedestrian needs should assume a more prominent position at various levels of the Metro organization. Towards this end, staff at all levels of Metro should receive training designed to increase awareness of the unique needs of bicyclists and pedestrians accessing the Metro system and direction about how their job responsibilities relate to bicycle and pedestrian access. This training should be integrated into existing staff training programs. As needed, staff should receive task specific tools and training to enable them to successfully market to, communicate with or otherwise serve Metrorail passengers that access rail and bus systems by bicycle or on foot. The following specific actions should be undertaken:

5.1: Training and Education

● **5.1a**: Provide pedestrian and bicycle-related planning and design training to a variety of staff including those working in station area planning, joint development, adjacent construction and real estate. Training should: a) educate and inform staff about existing and emerging bike design standards/guidelines and the terminology used in the field, b) inform staff about the bicycle and pedestrian accommodation policies employed by each jurisdiction in the region, and c) inform staff about the role and structure of various local planning and transportation agencies (and specific contact persons) involved in bicycle and pedestrian planning.

● **5.1b**: For station managers, bus operators, key maintenance staff and others who may be in contact with the public at Metrorail Stations, clarify Metro policy and practice with regard to pedestrian and bicycle accommodation in and around stations. Additionally, educate staff about applicable state and local laws regarding bicycling on public streets and sidewalks. Provide staff a reference document describing where pedestrian and bicycle access is allowed and where it is restricted.

● **5.1c**: Identify which Metro staff have responsibility for specific pedestrian and bicycle access issues and who must coordinate with whom around which issues. This procedural clarification should address who should be involved in intra- and inter-department dialogue when bicycle and pedestrian access policy or design decisions are being made.

5.2: Staffing Resources

● **5.2a**: In appropriate job descriptions and in job applicant interviews, include specific bicycle/pedestrian planning, design and operations management experience and/or skills that are required and those that may be preferred.

● **5.2b**: Create a Bike Program Manager position as part of Metro's broader parking function that will be responsible for coordinating all bicycle related initiatives throughout the Metro organization, including existing and future bike parking, joint and adjacent development provisions, and encouragement/outreach efforts.

5.3: Coordination & Partnerships

● **5.3a**: Build institutional partnerships within Metro to foster an interdepartmental approach to providing and maintaining pedestrian and bicycle access to stations.

Element 6: Bicycle Parking

Current: There are approximately 1,700 Metro-owned bicycle racks in the system. Local jurisdictions and others have added many more near stations. Additionally, there are 1,268 bike lockers at 50 stations (912 occupied as of 2010). Of all bicycle parking in the system, around 28 percent is located in Virginia, 53 percent is in Maryland, and 19 percent is in the District of Columbia. Each locker has its own physical key. Currently, the only way to rent lockers is to submit a paper application and a check; however, Metro is developing a system to accept web-based reservations. The security of bike parking and bicycle theft were identified as significant issues at the public meeting held as part of this plan.

Recommendation: Provide modern and well-maintained bike parking facilities to meet the demand of the full range of bicyclists and encourage more Metrorail customers to feel comfortable leaving their bicycles at stations. The need for secure, on demand, covered bicycle parking was a key theme heard at the public meeting held early in this planning process. This request was echoed in the results of the online survey as a key factor in a person's determination of whether to ride a bicycle to a Metrorail Station.

The following near-term strategic actions should be implemented:

Near Term Strategic Actions

- Continue to replace Rally Rack IIIs with inverted U racks
- Initiate dynamic public feedback process to document need, broken equipment, abandoned bikes, etc.
- Relocate existing U racks to take advantage of opportunities to provide cover under existing overhangs
- Provide stand alone cover for existing U racks
- Relocate poorly located U racks and move existing underutilized bike lockers to locations where they are likely to be used more frequently
- Add inverted U racks to covered areas outside fare gates
- Identify pilot location to add inverted U racks (not fixed) to interior station free areas

Additionally, the following specific actions should be undertaken:

Figure 22: Replacing Rally Rack IIIs with Inverted U Racks

6.1: Security

● **6.1a**: Increase the actual and perceived security of bicycle parking at Metrorail Stations. Approaches may include relocating bicycle parking to more visible locations, video monitoring, and modifying the design of the parking to provide additional security.

● **6.1b**: Continue to provide high security bicycle parking opportunities. Move toward a system where high security spaces can be provided on an "on-demand" basis. Identify and implement a pilot location to install a secure standalone bicycle parking structure with key/card access. A modular unit will be easy to construct, flexible enough to meet site design requirements at different stations, and could be moved between stations as needed.

● **6.1c**: Increase the bicycling community's awareness of Metro's bicycle registration program through use of the website, advertisements at and near bicycle parking, and advertisements on the train cars themselves.

● **6.1d**: Evaluate stations to determine when it may be possible to locate bicycle parking in the unpaid portion of station interiors in places that are visible to the station manager and the general public. Bicycle parking could be located in these interior areas either on a permanent or temporary (seasonal) basis during summer months when snow removal equipment does not need to be stored on-site. Bike parking cannot interfere with pedestrian circulation, Americans with Disabilities Act (ADA) access, or Metro facility space requirements. In addition, a bike dismount policy may need to be considered in cases where bike parking is provided in the mezzanine free area. Consider a pilot project to locate bicycle parking within the mezzanine (outside of the paid areas).

A recent study evaluated potential opportunities to provide retail in and around Metrorail Stations. This study collected data on station interiors system wide, which could potentially inform discussions regarding bike parking in the mezzanine free area.

● **6.1e**: Inventory parking garages to identify appropriate and safe locations for bike parking. Garages that have space for bike parking that is near the station entrance and that can be accessed separately from the motor vehicle entrance/exit should be identified. A secure and enclose bike storage area would include such features as closed circuit and/or web security cameras, storage spaces for a bike helmet and other items, and places to lock the bike. Design guidance for this type of facility could be provided in the design guidelines discussed in Recommendation 1.2b.

Through the study process for this plan, the parking garage at the College Park Metrorail Station was identified as a potential pilot location to provide bike parking in an existing Metro parking garage. Additional potential locations that have been identified include the parking garages at the Wheaton, Vienna, and White Flint Metrorail Stations.

6.2: Capacity

● **6.2a**: Provide secure and covered bicycle parking at all Metrorail Stations. Routinely evaluate bicycle parking at stations to ensure that capacity is sufficient to accommodate demand and ensure that long term growth is factored into facilities planning. In addition to physical assessment of the bicycle parking, approaches may include on-line web-based tools and rail passenger surveys.

● **6.2b**: Provide on-demand, high capacity, shared bicycle parking facilities when there is demand. This could involve placing bike racks in "cages" that can be accessed by a SmarTrip card. As noted, Metro may also consider placing bike parking in underused locations in parking garages.

● **6.2c**: Establish a systemwide goal of providing bike parking at a level consistent with the bike access mode share goal identified in Recommendation 1.1a. As noted in Table 8, provide bike parking for 2.1 percent of the projected AM peak ridership by 2020 and for 3.5 percent of the projected AM peak ridership by 2030. Short and long-term bicycle parking should be provided at roughly the same proportion (3.3 "long-term" bicycle parking spaces to every "short-term" bicycle parking space) as recommended for "rail/bus terminals and stations/airports" in the APBP Bicycle Parking Guidelines, 2nd Edition, 2010. This parking will be provided by Metro, as well as by private developers through the joint development process.

6.3: Quality

● **6.3a**: Add shelters over existing bicycle racks or move bicycle parking to covered areas. To every extent possible, provide covered parking at every station.

Table 8: Bicycle Parking Goal

Category	2020		2030	
Bicycle Parking Goal	2.1% (of Projected 2020 AM Peak Ridership[10])		3.5% (of Projected 2030 AM Peak Ridership[11])	
Total Bicycle Parking Spaces Needed	7,113[12]		12,435[13]	
Bicycle Parking Currently Provided[14]	4,113		4,113	
Total New Bicycle Parking Spaces Needed	3,000[15]		8,322[16]	
Bicycle Parking Type[17]	New Short-Term Parking Spaces[18]	693	New Short-Term Parking Spaces	1,922
	New Long-Term Parking Spaces[19]	2,307	New Long-Term Parking Spaces	6,400

● **6.3b**: Develop a long-term strategy for secure bicycle parking at Metrorail Stations that acknowledges new advances in bicycle parking technologies. This policy should clarify Metro's strategic direction regarding bike lockers. It should also clearly outline Metro's underlying priorities for bike parking. For example, the policy would state that the organization will move toward high performance, on demand parking and that low ongoing maintenance requirements and safety will be important considerations in selecting between various types of parking facilities. This policy should guide the type of bike parking that is provided by Metro and private developers as part of joint and adjacent development. It should also inform bike parking decisions related to future Silver Line Metrorail Stations.

6.4: Management

● **6.4a**: Provide online locker rental applications and an online system for customers to report problems and service requests. Implement the web-based locker administration

[10] Based on recommended 2020 AM peak bicycle mode share goal.
[11] Based on recommended 2030 AM peak bicycle mode share goal.
[12] Recommended bicycle parking rate multiplied by the total system wide projected 2020 AM peak ridership (338,713), 2009 WMATA Ridership Forecasts.
[13] Recommended bicycle parking rate multiplied by the total system wide projected 2030 AM peak ridership (355,280), 2009 WMATA Ridership Forecasts.
[14] Metro currently provides around 3,000 bicycle parking spaces (racks plus lockers) system wide.
[15] Total bicycle parking needed in 2020 minus bicycle parking currently provided. Note that this bicycle parking will be provided by Metro as well as by private developers through the adjacent and joint development process.
[16] Total bicycle parking needed in 2030 minus bicycle parking currently provided. Note that this figure is inclusive of bicycle parking provided to meet the 2020 goal and that bicycle parking will be provided by Metro as well as by private developers through the adjacent and joint development process.
[17] Short and long-term bicycle parking should be provided at roughly the same proportion (3.3 "long-term" bicycle parking spaces to every "short-term" bicycle parking space) as recommended for "rail/bus terminals and stations/airports" in the APBP Bicycle Parking Guidelines, 2nd Edition, 2010.
[18] Short term bike parking refers to bike racks in unsecured locations. Additional detail on short and long term bike parking is provided in the guidelines referenced above.
[19] Long term bike parking includes modular bike parking, lockers, and bike rooms/cages in secured areas that prevent non-users from accessing the bicycle.

and conduct a pilot on digital access technology.

● **6.4b**: Conduct a pilot on digital access technology. Massachusetts Bay Transportation Authority's (MBTA) Bike Charlie program offers an example of improved technology. MBTA provides bike parking access using a card similar to Metro's SmarTrip.

○ **6.4c**: Explore options for providing up-to-date information about bicycle parking availability in lockers and in modular units. As Metro transitions to a more technology-based system of reserving and accessing bicycle parking facilities, it may be possible to integrate this with an online service that allows riders to see a current snapshot of bicycle parking availability to make informed travel choices or even to monitor their own bikes via a web-based security camera.

Encourage the development of smart phone applications for bike parking at Metrorail Stations that would allow riders to reserve bicycle parking on a flexible basis by making use data available to application developers. This would increase the effective capacity of bicycle parking units as they would not be dedicated to one person. A rider should be able to reserve a bicycle parking space at any station.

6.5: Coordination & Partnerships

● **6.5a**: Partner or contract with local bike advocacy organizations to help manage the bike locker program.

● **6.5b**: Provide a model bike parking ordinance and encourage jurisdictions to adopt the regulations for the areas in the vicinity of Metrorail Stations

Element 7: Transit Oriented Development (TOD)

Current: Metro has a very active public/private joint development program, governed by its Joint Development Policies and Guidelines. The Metro Office of Joint Development and Adjacent Construction (JDAC) reviews and approves joint development projects on and adjacent to Metro property. There are many policies that govern these processes. For example, Resolution 2008-29 authorizes the conveyance of Metro property at no cost to jurisdictions for transit projects assuming the project will improve Metro or regional transit facilities and will be permanently maintained for transit purposes.

Recommendation: Implement targeted improvements to the TOD process to ensure that all projects near Metrorail Stations are pedestrian and bicycle friendly and enhance, rather than impair, nonmotorized connections to surrounding neighborhoods. The goal is to balance direct access with safety. In this effort, it is critical to consider how bicycles and pedestrians interact with various modes.

The following specific actions should be undertaken:

7.1: Requirements

● **7.1a**: Require on- and off-site pedestrian and bicycle circulation and access studies for every potential development on or adjoining a Metrorail Station. This will entail a formal process of analyzing and documenting existing and proposed pedestrian paths, on-road bicycle facilities, trails, crossing improvements, bike parking, and other features.

● **7.1b**: Require pedestrian and bicycle facilities as part of any development. When pedestrian and bicycle facilities are installed on potential development sites, consider how they will be integrated with future development. Consider the use of incentives to further encourage pedestrian and bicycle facilities.

● **7.1c**: Ensure that safe and convenient bicycle and pedestrian access is maintained during construction.

● **7.1d**: Ensure that joint developments are providing appropriate amounts of bicycle parking in safe, convenient, and accessible locations. Bike stations and bike shops should be encouraged within developments in proximity to Metro. These could include bike sales and rentals, as well as features such as lockers and commuter showers. Where additional features are not possible, partnerships with gyms and employer facilities should be pursued.

● **7.1e**: Promote more extensive use of agreements between Metro and private developers to ensure pedestrian and bicycle connectivity as part of TOD projects.

7.2: Processes

● **7.2a**: Improve the process for designing and implementing pedestrian and bicycle facilities as part of the TOD process. This can be accomplished by the following:

- Develop a mechanism to identify and preserve formal and informal pedestrian and bicycle connections at the beginning of the planning and design process.
- Clarify bike program and future facility requirements to developers at the outset of projects.
- Integrate all modes into the early stages of station area space allocation and planning.

- Integrate bicycle parking space in the programmatic/scoping phase.

- Develop a methodology for assessing future pedestrian and bike demand as a way to determine requirements.

● **7.2b**: Develop partnerships, similar to the stakeholder implementation committee formed for the area around the Braddock Road Metrorail Station in Alexandria, VA, to oversee the implementation of TOD projects.

7.3: Joint Development Design Considerations and Guidelines

● **7.3a**: Incorporate Metro's mode of access hierarchy as a guiding principle in the Joint Development Guidelines and Policies.

● **7.3b**: Update the Station Access Planning Manual to provide more current and specific bicycle parking, wayfinding and travel facility requirements.

● **7.3c**: Improve short and long-term coordination on projects through the use of memoranda of understanding. Ensure that developers are aware of mode of access share goals for stations, and that specific strategies are identified to attain those goals.

● **7.3d**: Improve coordination with jurisdictions regarding the allocation of and requirements for motor vehicle parking around Metrorail Stations, to minimize parking overdesign.

Metro Partner/Joint Led Elements

It is anticipated that many of the recommendations contained in this section will involve Metro partnering with an outside entity, such as a local government, advocacy organization or private sector businesses.

Element 8: Off-Site Connections & Programs

Current: One of Metro's unique challenges is that there are many jurisdictional partners. There are many avenues for coordination today, including the TPB regional bike/pedestrian committee, regional transit marketing group, and Metro's Jurisdictional Coordinating Committee. Many local jurisdictions have TDM programs aimed at reducing single occupancy vehicle trips. As a result, many of these programs emphasize shifting car trips to transit, walking, bicycling or some combination of multiple modes. This has a direct impact on Metro as they must be prepared to accommodate this increased ridership, including ensuring access to Metrorail Stations and Metrobus stops.

Recommendation: Continue to coordinate where appropriate with local government staff, elected officials and private groups to enhance connectivity between pedestrian and bicycle infrastructure and programs and address mutually beneficial bike and pedestrian needs.

The following specific actions should be undertaken in collaboration with State DOTs and local governments:

8.1: Infrastructure

● **8.1a**: Review pedestrian and bicycle improvements in Metro's 10-year Capital Improvement Program (CIP) and local jurisdictions' CIPs on a regular basis to coordinate improvements and capitalize on overlapping and abutting project schedules.

● **8.1b**: Ensure that funding for maintenance needs is included in capital project cost development and incorporates "life cycle" costs. Explore the possibility of using development generated fees (e.g. impact fees) or developer agreements to assist in maintaining existing pedestrian and bicycle levels of service. In addition, determine whether there are opportunities to share impact fees collected by local governments to mitigate impacts to Metro's bicycle and pedestrian facilities. If possible, these fees should be structured to account for ongoing maintenance costs.

● **8.1c**: Address intersections and difficult crossings of arterials near stations through station level planning processes.

● **8.1d**: Evaluate traffic signals in the vicinity of Metrorail Stations to ensure that opportunities to improve crossing conditions for pedestrians and bicyclists are captured, for example by providing Leading Pedestrian Intervals. LPIs allow pedestrians to begin crossing 2 to 4 seconds before the vehicle traffic on the parallel street is given a green light. Note that this will involve coordination with local jurisdictions as Metro doesn't own any traffic signals and many are located off-site.

● **8.1e**: Provide and highlight connections to trails, bike lanes on adjacent roads, and major regional destinations with consistent and recognizable on- and off-site wayfinding. In addition, consistent, safety-related pedestrian signage and striping should be provided.

8.2: Travel Demand Management (TDM) Programs

● **8.2a**: Metro should be involved in local TDM discussions to the extent possible (see shuttle discussion in Recommendation 4.1b). Improve coordination with commuter programs in order to better facilitate seamless multi-modal connections. For example, explore whether SmarTrip could be used for securing car and bike sharing vehicles or provide station maps on bike

sharing program bikes and improve wayfinding to car sharing locations.

8.3: Ongoing/Upcoming Projects

● **8.3a**: Coordinate bike and pedestrian access needs with upcoming transit projects that intersect with Metrorail Stations including the Purple Line (MTA) and Silver Line (Metro), streetcars (DDOT), and trolleys. Evaluate future Metrorail Stations for opportunities to provide high capacity and high performance bike parking, for example through the provision of modular bike parking facilities, as well as support facilities such as bike gutters.

● **8.3b**: Coordinate with entities involved in military Base Realignment and Closure (BRAC) planning process. This process will result in major shifts in employment and residential population around the region, which will likely lead to significant increases in ridership at specific locations such as the Medical Center and Springfield Metrorail Stations.

8.4: Coordination & Partnerships

● **8.4a**: Metro should be represented on relevant pedestrian and bicycle committees, either by a staff member or by proxy through the local pedestrian and bicycle planner. For example, Metro's interests should be represented on the Braddock Road station stakeholder implementation committee in Alexandria, VA, as discussed above.

● **8.4b**: Improve interface with local Business Improvement Districts (BIDs). Consider using the NOMA BID as a pilot for partnerships to provide bike parking and encourage walking and bicycling trips.

● **8.4c**: Develop a methodology for identifying and creating a list of pedestrian and bicycle projects in the regional TIP (as requested by the TPB Citizens Advisory Committee).

● **8.4d**: Partner with others in providing safety and access education for all users, local planning officials, and staff.

○ **8.4e**: Look to partner with public health and arts agencies, as well as with health insurance companies, schools, hospitals, and others to encourage more walking and bicycling.

Element 9: Wayfinding

Current: Metro's current signage standards dictate the design, content and placement of wayfinding signage on the station site. Station area maps that illustrate major destinations in the surrounding area are provided in the stations. Bicycle racks and lockers are generally not signed nor are there directions to the parking areas. Some signage exists to restrict bicycle parking (e.g. prohibitions on locking bicycles to railings). Metro is conducting a Pilot Signage Program to refine sign design. The Station Masters maps available online are provided by an outside vendor and are not subject to Metro review.

Recommendation: Establish partnerships with neighboring landowners and local jurisdictions to develop and enhance on-site and off-site pedestrian and bicycle wayfinding to improve a traveler's ability to navigate to their destination(s).

The following specific actions should be undertaken:

9.1: Consistency

● **9.1a**: Develop a pedestrian and bicycle wayfinding sign protocol that utilizes the Manual on Uniform Traffic Control Devices' (MUTCD) sign and symbol system to ensure consistency amongst all Metrorail Stations and with the areas surrounding them.

● **9.1b**: Provide consistent safety-related signage and striping at pedestrian crossings (e.g. crosswalks, "Yield" or "Stop" for pedestrian signage).

9.2: Targeted Audiences

● **9.2a**: Improve wayfinding resources such as "take away" maps for non-routine trips (e.g. providing a space for the Smithsonian Museum to provide museum area maps in nearby stations).

○ **9.2b**: Establish gateways to stations with multiple entrances with branding and iconic artistic elements so that travelers can better identify and remember their location. One example of this is the maple leaf statue at the New York Ave Florida Ave Metrorail Station.

9.3: Products and Technologies

● **9.3a**: Provide maps at satellite locations (where people need them) to facilitate navigation to the station.

9.4: Coordination and Partnerships

○ **9.4a**: Improve coordination of mapping resources (Metro, local jurisdiction, bus shelters, etc.) to ensure consistency of information within the Metro system and region-wide. Provide consistently designed wayfinding directing travelers to off-site destinations such as trails, parks, schools, neighborhoods, etc. Consistent naming conventions should be used on maps produced by different organizations/entities.

Element 10: Adjacent Development

Current: Metro has a very active public/private joint development program, governed by the Joint Development Policies and Guidelines. The Metro Office of Joint Development and Adjacent Construction (JDAC) reviews and approves joint development projects and projects adjacent to Metro property.

Recommendation: Implement targeted improvements to the adjacent development process to ensure that all projects near Metrorail Stations are pedestrian and bicycle friendly. Additional staff resources may be required to ensure that Metro can fully review proposed development plans and participate in the negotiation and approval process. The proposed mode share and bike parking goals discussed in Recommendation 1.1a should inform this process.

The following specific actions should be undertaken:

10.1: Adjacent Development

● **10.1a**: Improve coordination with local jurisdictions to avoid the provision of proffer improvements on or impacting Metro property without Metro's knowledge or consent.

● **10.1b**: Clarify the process for providing property access agreements for facilities on Metro property built and maintained by private developers. In some cases, an annual access fee, which could be reinvested in pedestrian and bicycle infrastructure and programs, might be possible.

● **10.1c**: Encourage jurisdictions to require inter-parcel access that facilitates non-motorized travel to and from Metrorail Stations.

○ **10.1d**: Develop a methodology for determining the incremental value gained by being located near Metrorail Stations, as a first step to capturing some of the increased value that Metro brings to the region. Ensure that some is reinvested in bicycle and pedestrian infrastructure and programs.

10.2: Joint Development Partnerships

● **10.2a**: Develop a methodology for programming funds remaining after the completion of a development project. This methodology should employ a cost-benefit analysis to aid in the decision-making process.

Chapter 5

Implementation

Implementation

This Plan provides a variety of recommendations for encouraging bicycling and walking to and from Metrorail Stations. This chapter provides strategies for implementing the recommendations, which include station specific design and facility improvements as well as system-wide policy and operational changes.

Many of the recommendations will be implemented by Metro, while others will require coordination with outside entities such as local governments. This chapter describes a prioritization strategy and timeline for implementation that will be used by Metro moving forward.

As described in Chapter 1, this Plan sets forward five primary goals:

Goal 1
Improve safety of the entire trip for all Metro customers.

Goal 2
Increase the mode share percentages of customers walking and bicycling to and from Metrorail Stations, thereby helping to accommodate Metro's projected growth in ridership.

Goal 3
Improve customer satisfaction for people who walk and bike to Metrorail Stations.
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Goal 4
Identify cost effective solutions for improving pedestrian and bicycle access and mobility.

Goal 5
Support the integration of the user hierarchy in the Station Site and Access Planning Manual, which places pedestrians, bicyclists, and transit users as top priorities in planning and designing stations, into Metro's institutional culture and station designs.

The recommendations in the previous chapter, combined with the station specific recommendations identified in Appendix B, are designed to achieve these goals.

Figure 23: Multi-Use Trail at the West Hyattsville Metrorail Station

A detailed implementation table is provided in Appendix E. It provides a general timeframe for achieving all of the system-wide recommendations in Chapter 4, as well as the lead department (if within Metro) or entity (if outside of Metro). The priority recommendations are discussed briefly in the following section.

Priority Recommendations

Early Action Recommendations (0-18 months)

Early action recommendation items comprise a set of actions for which barriers to implementation are relatively minor. These items include policy recommendations and high-priority, low-capital improvements. In many cases, short-term recommendations provide needed support to longer-term recommendations. Table 9 highlights early action recommendations. In many cases, the early action will be to raise awareness of the issue and to start the process for addressing

Table 9: Early Action Recommendations (0-18 months)

Rec. #	Description
1.1a	Establish a systemwide goal of tripling the bike access mode share by 2020 (from 0.7 percent in 2007 to 2.1 percent in 2020) and quintupling the bike access mode share by 2030 (from 0.7 percent in 2007 to 3.5 percent in 2030).
1.1b	Address motor vehicle traffic safety issues as they relate to pedestrian and bicycle issues within station sites.
1.2a	Develop official guidelines for the design and placement of bicycle parking facilities.
2.1a	Establish a bicycle rack and locker inventory and usage tracking program.
2.2b	Develop and implement a formal station-specific pedestrian and bicycle focused assessment process utilizing a range of evaluation tools.
2.2c	Require multimodal circulation and access studies (including existing and potential on and off-site connections) as part of adjacent/joint development.
3.1a	Improve the bike section of the metroopensdoors.com website.
3.4b	Improve systems for disseminating, publicizing, and marketing bicycle- and pedestrian-related policy, procedure and program recommendations within the organization.
4.3a	Coordinate with local authorities to develop a protocol for maintaining clear and passable pedestrian and bicycle routes to the station from off-site locations
5.1b	For station managers, bus operators, key maintenance staff and others who may be in contact with the public at Metrorail Stations, clarify Metro policy and practice with regard to pedestrian and bicycle accommodation in and around stations.
5.1c	Identify which Metro staff have responsibility for specific pedestrian and bicycle access issues and who must coordinate with whom around which issues.
5.3a	Build institutional partnerships within Metro to foster an interdepartmental approach to providing and maintaining pedestrian and bicycle access to stations.
6.1a	Increase the actual and perceived security of bicycle parking at Metrorail Stations.
6.1b	Identify and implement a pilot location to install a secure standalone bicycle parking structure with key/card access.
6.1c	Increase the bicycling community's awareness of Metro's bicycle registration program through use of the website, advertisements at and near bicycle parking, and advertisements on the train cars themselves.
6.1e	Inventory parking garages to identify appropriate locations for bike parking.
6.2a	Provide secure and covered bicycle parking at all Metrorail Stations.
6.2c	Establish a systemwide goal of providing bike parking at a level consistent with Metro's bike access mode share goal (e.g. provide bike parking for 2.1 percent of the projected AM Peak ridership by 2020 and for 3.5 percent of the projected AM Peak ridership by 2030).
6.3b	Develop a long-term strategy for secure bicycle parking that acknowledges new advances in bicycle parking technologies.
6.4a	Provide online locker rental applications and an online system for customers to report problems and service requests.
7.1a	Require on and off-site pedestrian and bicycle circulation and access studies for new developments adjacent to Metrorail Stations.
7.1b	Require pedestrian and bicycle facilities on Metro properties as part of TOD development and as part of ongoing station enhancements.
7.1c	Ensure that safe and convenient bicycle and pedestrian access is maintained during construction of projects on Metro properties.
7.1d	Ensure that joint developments are providing appropriate amounts of bicycle parking in safe, convenient, and accessible locations.
7.3b	Update the Station Access Planning Manual to provide more current and specific bicycle parking, wayfinding and travel facility requirements.
8.1a	Review pedestrian and bicycle improvements in Metro's 10-year Capital Improvement Program (CIP) and local jurisdictions' CIPs on a regular basis to coordinate improvements and capitalize on overlapping and abutting project schedules.
8.1b	Ensure that funding for maintenance needs is included in capital project cost development and incorporates "life cycle" costs.
8.1d	Evaluate traffic signals in the vicinity of Metrorail Stations to ensure that opportunities to improve crossing conditions for pedestrians are captured.
8.2a	Actively participate in local Transportation Demand Management (TDM) initiatives that impact Metro to ensure that solutions facilitate pedestrian and bicycle travel.

it. While it may not be solved in the immediate term, it should be addressed soon after this plan is completed so that improvements are incorporated moving forward.

Short-Term Recommendations (0-3 years)

Short-term recommendations are highlighted below. These recommendations may require more time and resources than the early action recommendations; however, they can still be addressed within a short time horizon (0-3 years) and are critical to meeting the goals established in this plan.

Table 9 (continued): Early Action Recommendations (0-18 months)

Rec. #	Description
8.49a	Metro should be represented on relevant pedestrian and bicycle committees, either by a staff member or by proxy through the local pedestrian and bicycle planner.
9.1b	Provide consistent safety-related signage and striping at pedestrian crossings (e.g. crosswalks, "Yield" or "Stop" for pedestrian signage).
10.1a	Improve coordination with local jurisdictions to avoid the provision of proffer improvements on or impacting Metro property without Metro's knowledge or consent.

Table 10: Short-Term Recommendations (0-3 years)

Rec. #	Description
1.3a	Conduct internal training of Metro staff and contractors to provide orientation to bicycle and pedestrian policies and design practices.
2.1b	Establish a bicycle and pedestrian security tracking program.
2.1c	Work with Metro information technology (IT) and customer services staff to identify and capture more detailed information about pedestrian and bicycle needs, which can be used to assess future needs and customer satisfaction.
2.2a	Assess the utility of evaluation tools such as pedestrian and bicycle demand assessments, bicycle and pedestrian Level of Service (LOS) evaluations, and bike-shed analyses.
2.3a	Establish benchmarks for bicycle and pedestrian access volumes so that changes in access mode share can be tracked over time and correlated with various improvements to conditions.
3.1b	Allow Metro bus and rail routes to be incorporated into programs such as Google maps.
3.4a	Use Metro's marketing, communications and public affairs offices to expand public knowledge of bicycle issues and programs.
4.1a	Clarify and/or revise policies regarding private shuttle access to Metrorail Stations
4.1b	Metro should be directly involved in local policy discussions regarding shuttles picking up and dropping off at Metrorail stations.
5.1a	Provide pedestrian and bicycle-related planning and design training to a variety of staff including those working in station area planning, joint development, adjacent construction and real estate.
5.2b	Create a Bike Program Manager position that will be responsible for coordinating all bicycle related initiatives throughout the Metro organization.
6.1d	Evaluate stations to determine when it may be possible to locate bicycle parking in the unpaid portion of station interiors in places that are visible to the station manager and the general public.
6.2b	Provide on-demand, high capacity, shared bicycle parking facilities when there is demand.
6.3a	Add shelters over existing bicycle racks or move bicycle parking to covered areas.
6.5a	Partner or contract with local bike advocacy organizations to help manage the bike locker program.
7.2a	Improve the process for designing and implementing pedestrian and bicycle facilities as part of the TOD process.
7.3a	Incorporate Metro's mode of access hierarchy as a guiding principle in the Joint Development Guidelines and Policies.
8.1c	Address intersections and difficult crossings of arterials near stations through station level planning processes.
9.1a	Utilize the Manual on Uniform Traffic Control Devices' (MUTCD) sign and symbol system to ensure consistency amongst all Metrorail Stations and with the areas surrounding them.
10.1a	Improve coordination with local jurisdictions to avoid the provision of proffer improvements on or impacting Metro property without Metro's knowledge or consent.
10.1b	Clarify the process for providing property access agreements for facilities on Metro property built and maintained by private developers. In some cases, an annual access fee, which could be reinvested in pedestrian and bicycle infrastructure and programs, might be possible.
10.1c	Encourage jurisdictions to require inter-parcel access that facilitates non-motorized travel to and from Metrorail Stations.

Medium and Long-Term Recommendations (3+ years)
This plan also highlights medium and long-term recommendations to improve pedestrian and bicycle access to Metro. These recommendations are very important to fully achieve the goals set out in this plan. However, by their nature these improvements will likely require an ongoing commitment. While implementation will take longer, opportunities for implementation may occur sooner. Metro and other stakeholders should take advantage of these opportunities as they arise. Medium and long-term recommendations are noted as "Important" or "Desirable" in Chapter 4.

Bicycle Parking Recommendations
Improving bicycle parking at and around Metrorail Stations is an important step in encouraging bicycling. As noted, Metro has a long history of providing bike parking at stations. It is providing more and better parking on an ongoing basis. To build on efforts already underway, Metro should embark on a strategic effort to make existing parking more desirable and to move existing lockers to locations that are likely to be used more often. Near-term strategic actions are noted below.

Near Term Strategic Actions
- Initiate a dynamic web-based public feedback process to document the need for additional bike parking, report broken equipment and abandoned bikes, and to serve other purposes.
- Continue to replace Rally Rack IIIs with inverted U racks.
- Relocate poorly located existing U racks and move existing U racks to provide cover under existing overhangs and to provide better opportunities to monitor racks.
- Move existing underutilized bike lockers to locations where they are likely to be used more frequently.
- Provide stand alone cover for existing U racks.
- Add inverted U racks to covered areas near station entrances.
- Identify pilot locations to add inverted U racks (not fixed) in the mezzanine area of selected stations (outside of the paid area).

In order to make better use of existing bike lockers in the system, Metro should evaluate opportunities to move lockers that are not currently being used to locations where there appears to be an unmet demand for lockers. The goal is to better align the supply of lockers to meet demand. Locker utilization rates should inform these decisions. A list of stations that have large numbers of unused lockers and stations that appear to have unmet demand for lockers is included in Table 11. An adequate number of lockers to meet existing and projected demand should remain at all stations. Where there is a low locker utilization rate, Metro should work with local jurisdictional on education and encouragement efforts to promote higher locker utilization rates.

Covered bike parking provides protection from the weather, which dramatically improves the comfort and practicality of bike parking at stations. In some cases, existing

Figure 24: Existing wayfinding signage at the College Park Metrorail Station

Table 11: Stations with Large Numbers of Unused Lockers and Stations with Unmet Demand

Station	Lockers		
	Total	Rented	Unused
Large Numbers of Unused Lockers			
Largo Town Center	48	10	38
Glenmont	48	14	34
Morgan Boulevard	40	6	34
Southern Avenue	40	11	29
Pr. George's Plaza	24	4	20
Shady Grove	61	43	18
Unmet Locker Demand			
Braddock Road	12	12	0
Forest Glen	16	16	0
Eastern Market	20	19	1
West Falls Church	22	20	2
Pentagon City	22	19	3
Grosvenor	30	26	4

bike parking can be moved under a covered area that already exists at a station. In others, a cover should be provided to make existing parking more desirable. The recommended locations for these improvements are noted below.

Cover Existing Parking
- Ballston
- College Park
- Huntington
- West Hyattsville

Investigate Possibility of Moving Parking inside Station Free Area
- College Park
- Huntington
- Fort Totten
- New York Avenue

In other locations, additional covered inverted U racks should be provided. A subset of stations, as noted below, was identified that may especially benefit from additional bike parking capacity. These stations tend to have a higher utilization of existing bike parking and are considered to be "ripe" for increases in ridership. At many of these stations, bikes were observed to be locked to fences, signs, and other objects, indicating an unmet demand for bike parking. The project team did not observe every Metrorail Station as part of this study; therefore, additional stations can and should be added to this list.

Add Additional Inverted U Racks (with cover)
- Braddock Road
- Greenbelt
- Grosvenor
- Landover
- Medical Center
- New Carrollton
- Potomac
- Prince George's Plaza
- Rosslyn
- West Hyattsville

When the demand for bike parking at particular stations increases beyond that which can be accommodated by inverted U racks alone, compact modular bike parking and bike stations should be considered. These facilities provide high capacity, secure, and covered bike parking. Compact modular bike parking can be provided in a standalone modular unit as a replacement for existing facilities while adding more capacity. A bike station would provide some form of high capacity, secure, and covered bike parking similar to the modular unit, while also serving as a location for additional bike related services and resources such as bike mechanics, bike rentals, restroom/changing rooms, bike route maps, and information to help plan commute trips. Stations that should be considered for modular bike parking and eventually bike stations are noted below.

Add Modular Bike Parking
- Ballston
- Braddock
- College Park
- Dunn Loring
- East Falls Church
- Fort Totten
- Prince George's Plaza
- Silver Spring
- Takoma
- Vienna
- West Hyattsville
- Woodley Park

Add Bike Station
- College Park
- Crystal City
- Eastern Market or Navy Yard
- Foggy Bottom
- Medical Center
- New York Avenue
- Silver Spring
- Shady Grove
- Vienna
- West Hyattsville

Recommendations for the Case Study Stations

During the case study portion of this project, a number of discrete physical improvements were identified that would facilitate bicycle and pedestrian access to stations. Table 12 on the following page highlights these recommendations and provides an overall cost estimate for all improvements at and near a station. While this section presents an aggregated cost of all improvements, more detailed cost estimates that

Figure 25: Existing modular bike parking facility in Covina, CA

differentiate between on- and off-site improvements are included in Appendix B. These recommendations are presented at a planning level and most would require more detailed analysis to refine the recommendations and estimated costs.

Many of these recommendations are entirely off-site, or require collaboration with one or more local governments, state DOTs or private landowners. Coordinate with the appropriate agency or entity to integrate desired improvements into jurisdictional Capital Improvement Plans, road improvement projects, redevelopment projects, and all other available avenues.

Recommendations by Station Type

By categorizing the stations under the typology described in Chapter 3, the project team was able to more fully understand the range of conditions that exist throughout Metro's system. The process also highlighted similarities, both positive and negative, among stations. Some recommendations are particularly relevant to certain station types. Table 13 notes recommendations that are especially applicable to the various station types.

Funding Improvements

Metro should review the proposed improvements noted in Tables 9 and 10 and identify candidate projects for inclusion in the agency's six-year implementation plan (recommended as an area of future study) and the Capital Improvements Plan (CIP). Furthermore, Metro staff should review the station improvement/rehabilitation schedule and incorporate projects for which Metro is responsible (i.e. on-site improvements) into planned station improvements. Funding for ongoing operations and maintenance will need to be addressed for any new walking and bicycling facilities.

In addition to the CIP, there are other sources available to fund bicycle and pedestrian infrastructure improvements.

For example, the Transportation Enhancements Program administered by the Federal Transit Administration (FTA) provides over $2 billion per year to urbanized areas with over

Table 12: Case Study Recommendations

Station	Categories of Improvements	Cost Estimate
Ballston (Arlington, VA)	Wayfinding and Signage; Crossing Improvements; Curb Ramps; Modular Bicycle Parking ; Signal Improvements	$170,000
Braddock Road (Alexandria, VA)	Lighting; Connectivity; Curb Ramps; Maintenance; Pedestrian Facilities; Modular Bicycle Parking	$260,000
College Park (College Park, MD)	Bike Lane Striping; Wayfinding and Signage; Bike Racks; Shelter Over Bike Racks	$130,000
Gallery Place (Washington, DC)	Wayfinding and Signage; Bicycle Parking; Street Crossings; Temporary Lane Closures	$20,000
Huntington (Fairfax County, VA)	Road Crossing Improvements; Trails/Paths; Bicycle Racks; Bike Lane Striping; Stairway; Wayfinding and Signage; Streetscape	$5,740,000
Rhode Island Avenue (Washington, DC)	Street Crossings; Streetscape; Signal Improvements; Curb Radii Reduction	$200,000
Shady Grove (Montgomery County, MD)	Signage and Wayfinding; Pavement Striping; Pedestrian Bridge; Pavement Treatments	$110,000
Vienna/GMU (Fairfax County, VA)	Modular Bicycle Parking; Bicycle racks Curb Ramps; Wayfinding and Signage; Paths; Crossing Improvements	$3,121,000
West Hyattsville (Hyattsville, MD)	Full Service Bike Station; Pedestrian Bridge Repairs; Bicycle Racks; Lighting; Street Crossing; Traffic Calming; Trail and Path	$3,125,000

Table 13: Recommendations by Station Type

Station	Categories of Improvements
High Density Urban Mixed-Use in a Grid Network	2.1b, 3.1c, 3.2a, 6.1d, 8.1d, 8.4b
Urban Residential Center	2.1b, 3.2a, 8.1d, 9.2b
Urban Residential Area with a Bus/Automobile Orientation	1.1b, 1.1c, 1.1d, 1.2d, 3.1d, 4.1c, 5.1b, 9.1b
Campus and Institutional	1.3b, 2.1b, 2.2d, 3.1d, 4.1a, 6.1e, 9.3a
Mixed-Use in a "Pod" Layout	1.1b, 1.1d, 2.2c, 4.1a, 6.5b, 7.1a-7.1d, 8.1b, 10.1a-10.1d, 10.2a
Long-Term Potential for High Density Transit Oriented Development (TOD) or Planned Unit Development (PUD)	1.1d, 1.3b, 2.2c, 6.5b, 7.1a-7.1d, 7.2a, 10.1a-10.1d, 10.2a
Suburban Residential Area	1.2c, 2.2d, 6.1e, 8.1b, 8.1d
Auto Collector/Suburban Freeway	1.1b, 1.1c, 1.1d, 2.2a, 2.4b, 6.1e, 8.1d, 8.1c
Employment Center/Downtown/Urban Core	2.4b, 3.1c, 3.2a, 7.1c, 8.1d, 8.4b, 9.2a

200,000 population for a wide variety of transit related improvements. According to the FTA website, the funds can be used for enhancing bicycle and pedestrian access to transit. For bicycle-related projects, the transit agency is required to provide a five percent match. For all other projects, the grantee is required to provide a 20 percent match.

Another example is the "TIGER II" grant program, which is similar to the Transportation Investment Generating Economic Recovery (TIGER) grant program that was part of the American Recovery and Reinvestment Act of 2009. This program will provide $600 million in competitive grants. Preliminary information indicates that this program will require a local match of at least 20 percent and minimum grant awards will be approximately $10 million. The maximum amount for planning grants will be approximately $35 million, while infrastructure grants may be up to $200 million. More information may be found online at: http://www.dot.gov/recovery/ost/tigerii/

In addition, the Sustainable Communities Planning Grant program administered by the Department of Housing and Urban Development (HUD) provides $150 million in competitive grants to aid in the development of multi-jurisdictional regional planning efforts that "integrate housing, economic development, and transportation decision-making..."[20] The program has three categories, including the development of "detailed execution plans and programs to implement existing regional sustainable development plans."[21] The maximum award a large urban area may receive is $5 million and there is a 20 percent local match requirement.

Areas of Future Study

While this Plan resulted in numerous actionable recommendations, it also identified several areas in need of additional analysis. These studies should occur as soon as possible to allow for potential implementation of resulting recommendations. Areas for further study include:

- Develop six-year implementation plan for bike and pedestrian improvements at Metrorail Stations
- Evaluate/develop bike to transit mapping and navigational tools
- Detailed follow-up analysis and implementation of proposed locker reallocations
- Detailed follow-up analysis, identification of pilot locations, and implementation of a modular bike parking facility
- Comparative cost analysis of various access modes
- Develop the framework for a comprehensive GIS inventory of existing, planned and needed bicycle and pedestrian infrastructure that is within 0.5 miles of each Metrorail Station

[20] Source: Department of Housing and Urban Development, Sustainable Communities Planning Grant Program Advance Notice and Request for Comment, [Docket No. FR-5396-N-01].
[21] Ibid

Appendix A – Best Practice Interview Results

City	Transit System	Best Practice	
Seattle, WA	King County Metro Transit	1	King County Metro Transit develops an annual brochure (Bike Around the Sound) that compiles information from each transit system in the region. It identifies the location of lockers, directions to key destinations, information on bike sharing opportunities, and bicycle and pedestrian-related policies.
		2	Partners in Transit is a King County Metro Transit Business Development Group program. It is a partnership between KCMT and private businesses and developers to achieve TDM goals. Businesses agree to promote transit over single-car travel using both information and incentives. King County helps distribute related information.
		3	KCMT partners with the Redmond R-Trip TDM program, which includes incentives to major employers and other strategies. KCMT provides matching funds for tracking and incentives. The program won an EPA Clean Air Award.
		4	KCMT partners with the University of Washington. They provide staff time and provided grant money to start the program. The cost of transit passes for students is incorporated into student tuition.
		5	King County Metro Transit is spearheading a regional group focused on implementing a bike share program. The team includes local jurisdictions, major employers, and institutions. They held a bike sharing expo and RFI with vendors and stakeholders as part of the process of deciding on a system.
		6	KCMT partnered with the Cascade Bicycle Club to start the "Major Taylor" program to diversify bike culture in King County. This program forms after-school biking clubs at city schools, conducts weekend trips, teaches bike safety and maintenance skills, and encourages biking as transportation. Bicycles are provided for use during the program with options to "earn-a-bike".
		7	There is a new policy to allow bicycles to use all transit vehicles at all times in all locations. Previously, bicycles could not board vehicles in the downtown Ride Free Zone.
		8	The local bicycle advocacy organization (Bicycle Alliance of Washington) administers the bike locker program, including reporting on routine inspections. Usage is not tracked and lockers are allocated with a one-time $50 key deposit.
		9	On demand bike parking is being pursued that will enable advanced reservations and integration with the "Orca" transit pass.
		10	Three position racks will be provided on all buses by March 2010.

City	Transit System	Best Practice	
		11	The Transit Route Facilities Group conducts field inspections of facilities, but not specifically bikes, and currently focuses on transit hubs.
Seattle, WA	Sound Transit	1	ST recently adopted a new Bicycle Policy (M2009-36). The policy establishes the promotion of bicycling connectivity, direction to track demand and usage, and revise design guidelines as appropriate.
		2	The agency provides funding and technical support to local jurisdictions for them to do station area planning.
		3	Sound Transit has created a Station Access Plan program to study multi-modal access on current projects. The program has been created with capital funds allocated to specific parking facility upgrades to ensure that the station designs have "Flexible Access". An RFP to develop the Station Access Plans is forthcoming (Note this is distinct from local jurisdictions Station Area Plans).
		4	Sound Transit has its own TOD policies that guide the agency's processes for acquiring and developing land near their stations. In one instance, the agency successfully relocated a business at Mount Baker Station to promote TOD design.
		5	The "System Access Program" will provide $75 million over 15 years.
		6	Sound Transit has its own internal regular bicycle committee and participates in ad hoc external committees
		7	Sound Transit is planning on expanding its secure parking options to include on-demand lockers in cooperation with King County Transit. The agency currently manages and maintains its own locker program with annual key deposits. It is still a relatively new system; however, they have found the greatest demand for locker storage at their Sounder Commuter Rail stations.
		8	Prioritization for additional bike racks are given to those stations where there is a long waiting list for bike lockers and where there are high counts of bike racks being used.
Portland, OR	Tri-Met	1	Tri-Met has a Bicycle Facilities Plan that includes specific Bike Parking Guidelines that include a methodology for determining the number of spaces required. These Guidelines refer to the Danish Parking Manual.
		2	There is a Safe Routes to Transit Plan, which identifies where riders are coming from and going to around stations.
		3	There is a strong partnership with the City of Portland's Smart Trip TDM program.
		4	Tri-Met has undertaken a pedestrian network analysis process for identifying areas with the potential for pedestrian trips and the greatest need.

City	Transit System	Best Practice	
		5	Tri-Met maintains both a focus group and various listservs to run ideas by riders. Currently there are over 1,200 people subscribed to the pedestrian listserv.
		6	Stations that do not have Park and Ride facilities are given more bike racks and lockers than other stations.
Oakland, CA	BART	1	A checklist of pedestrian and bicycle considerations is included as part of the TOD process.
		2	Mode targets by station were identified as part of a previous planning effort.
		3	The current plan includes a compilation of all relevant policy statements in one central location.
		4	Some bicycle racks are located within the "paid area" of the station.
		5	Each station has a profile that helps guide future capital improvements, such as how and where to expand bicycle parking options.
		6	BART has 200 on-demand lockers that are rented on a first-come first-serve basis. BART is exploring the option of allowing people to reserve these on-demand lockers in advance.
Chicago, IL	CTA	1	When CTA is approached during the plan review process (for properties nearby stations) CTA weighs in with recommendations on how to improve connectivity to the station for all modes. Whether or not CTA is approached is on a case by case basis.
		2	CTA conducts bike counts at all stations two times per year, even though the racks are provided by the City of Chicago.
		3	The CTA is part of an advisory committee to the Mayor which meets monthly over lunch to discuss upcoming issues and projects. The committee also has representation from bicycle advocacy groups and municipal transportation departments. Their purpose is to advise the Mayor on actions towards improving bicycle and pedestrian transportation.
		4	CTA works with the City of Chicago on comprehensive transportation plans. Currently CTA and Chicago are working together on the 2015 Bike Plan.
		5	The CTA has a contract with a consulting firm to manage real-estate investments that support Transit-Oriented Development. The consultant helps develop requirements or criteria for leasing CTA-owned land. CTA generally does not get involved with TOD developments on adjacent properties.

City	Transit System	Best Practice	
San Francisco, CA	SFMTA	1	SFMTA works with San Francisco land use and economic development agencies and private developers to secure revenues that in turn support increased transit service to serve the nation's highest population density of any large city outside New York, while also accommodating bicyclists, pedestrians, taxis through traffic and parking strategies.
		2	The SFMTA's Off Street Parking operation manages 40 City-owned garages and metered parking lots. It also manages all traffic engineering functions within San Francisco, including the placement of signs, signals, traffic striping, curb markings, and parking meters. In addition, SFMTA oversees bicycle transportation, pedestrian movement and administers taxi regulations.
		3	SFMTA has publicized its TOD Policy Statement: SFMTA will use TOD to:(1)increase the use of public transit through-coordinate land use policies and development without negatively impacting transit operations; (2) generate revenue; and (3) promote a high-quality, sustainable urban lifestyle.
		4	The Pedestrian Program (under the umbrella of the Livable Streets Program) envisions San Francisco as becoming the most walkable city in the Country and World. Its mission is to promote walking as a sustainable and healthy mode of transportation and to reduce pedestrian collisions in San Francisco. This project includes a 5-year Prioritization Plan (2009), a school safety program (which included repainting several faded crosswalks near schools), and a pedestrian safety advisory committee. Being a quasi public agency, SFMTA reaches out beyond the realm of the transit system with other programs and projects.
		5	SFMTA also has a Traffic Calming program (under the umbrella of the Livable Streets Program) which aims to improve the safety of San Francisco's Streets for all modes. It is possible to submit requests for traffic calming on line on the agency's website.
		6	SFMTA sponsors San Francisco's annual Walk to School Day (held in conjunction with International Walk to School Day in October). The event, like other Walk to School Day event, promotes health, safety and physical activity, but also shows students at an early age that it is possible and convenient to travel without a private car.
		7	SFMTA provides a SmartPhone App for both the iPhone and Android models, which acts as a travel survey. Users are encouraged to log their travel and answer a few questions about their trips. The incentive for using the app is transportation is that it will help planners better understand the needs of cyclists and they will get to see maps and statistics of other people's rides.

City	Transit System	Best Practice	
Manor, TX	City Planning Department	1	Being a small municipality (with a relatively small staff), communication with residents and visitors was a challenge. When service status need to be updated daily, paper fliers become expensive, and LED signs can be tricky to maintain. In response, the City has been experimenting with two-dimensional barcodes (QR Codes) that can be scanned by SmartPhones (iPhones, Droid) to get up-to-the-minute status reports on anything. These have been used on recreational fields (who has the permit for the time period), and anywhere else people would need updated information. Using the technology, residents can use their mobile phones to scan a code (say on a sign posted at a city park), and then be taken to an up-to-date web page with information about, say, schedule events and park rules and regulations.

Appendix B: Case study recommendation tables and reference maps

Overview

This plan groups Metro's 86 stations into nine categories based on a broad range of land use and transportation considerations. These categories are specifically relevant to the needs of pedestrians and bicyclists. The project team engaged local stakeholders for one case study station drawn from each station type as described in Chapter 3. These meetings included local and regional government staff, advocacy organizations, developers, and private citizens. In addition, the project team conducted one site visit for each case study station.

A primary outcome of the case study process was to inform the recommendations in Chapter 4. The case study process also enabled the project team to develop specific recommendations to improve bicycle and pedestrian access at a number of selected stations. These recommendations are included on the following pages. Each case study includes an overview of pedestrian and bicycle-related issues and observations and recommendations for improvements. Planning level cost estimates for the recommendations are provided where possible. It is assumed that additional analysis will be needed prior to implementation.

Cost Estimates

Construction cost estimates were developed for various improvement recommendations by identifying pay items and establishing rough quantities. Unit costs are in 2010 dollars and were assigned based on historical cost data from a variety of sources including local departments of transportation. The costs shown only reflect the cost of constructing the particular facility indicated, and do not reflect other costs that may be associated with a larger project. The costs are intended to be general and used for long-range planning purposes. A 25% contingency is applied to the cost for each item.

The construction estimates **do not** include costs for planning, surveying, engineering design, right-of-way acquisition, mobilization, maintenance of traffic during construction, utility adjustments, lighting, or future maintenance. Construction costs will vary based on the ultimate project scope (i.e. combination with other projects) and economic conditions at the time of construction.

BALLSTON-MU METRORAIL STATION – ISSUES AND OBSERVATIONS

Map Key	Issue/ Observation
1	A pedestrian plaza with street level retail serves as the primary station access point.
2	The station is located near the Custis and Bluemont Junction Trails.
3	I-66 is a barrier to access for residential neighborhoods to the north and west.
4	Elevators are located on Fairfax Drive in between North Taylor Street and North Stuart Street.
5	The station is a bus transfer location for Metrobus, ART-Arlington Transit, and private shuttles. There is a bus access road on Fairfax Drive directly outside of the station.
6	There are additional bus stops on Stuart Street and Stafford Street.
7	There are currently 54 bike racks available outside of the station in two central bike parking areas. The racks are generally fully utilized and additional bikes are locked to fences and signs in the area. The bike access mode share in the AM Peak at the Ballston Station is around 1%.
8	Pedestrians being dropped off by private shuttles on the median on Fairfax Drive are forced to cross the bus access road, causing potential conflicts with buses.
9	Potential pedestrian/motor vehicle conflicts were observed at the intersection of North Glebe Road and Fairfax Drive due to the speed of turning vehicles.
10	Bicyclists traveling along Fairfax Drive were observed to be having difficulty negotiating around buses and shuttles entering and exiting the bus access drive.

Ballston Metrorail Station

Legend

- Issues and Observations
- Opportunities
- Bike Parking
- Bike Lane
- Shared Use Path

Feet
0 310 620

Data Source: ESRI

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BALLSTON-MU METRORAIL STATION – INFRASTRUCTURE RECOMMENDATIONS

Map Key	Location	Recommendation	Cost Estimate (Total cost, capital only)	Jurisdiction
A	Offsite	Provide additional wayfinding and guidance to the station	$2,400 (assumes 12 signs)	Arlington County/VDOT
B	Offsite Glebe Road	Extend existing median crossing islands to provide better pedestrian refuges on North Glebe Road.	$1,000	VDOT
C	Intersection of North Glebe Road and Wilson Boulevard Offsite	Consider signal timing, operation adjustments, and curb extensions to slow turning vehicles and reduce potential car/pedestrian conflicts.	$80,000	VDOT
D	Offsite Glebe Road	Provide pedestrian crossing and other improvements to enhance the connection between the 900 Glebe Road development and the station.		VDOT
E	Several offsite locations	Provide curb ramps and wayfinding signage to improve bike access on closed access roads and cul-de-sacs. (	$12,000 (assumes 8 curb ramps)	VDOT
F	Offsite Fairfax Drive	Provide wayfinding signage to connect bicyclists traveling in bike lanes on Fairfax Drive to the Custis Trail.	$800 (assumes 4 signs)	VDOT
G[1]	Offsite N. Stuart Street	1. Evaluate current and future users of the Stuart Street Promenade. 2. Evaluate whether it would be possible to narrow Stuart Street and/or restrict access to only buses to allow for the ability to install medians and/or extend the sidewalk area. 3. Provide a mid-block pedestrian crossing on Stuart Street. Improve pedestrian seating and other amenities. 4. Consider moving shuttle pickups/drop-off areas to Stuart Street to reduce activity at the bus transfer station.	5. $6,000 (assumes raised crosswalk and 5 benches).)	Arlington County, WMATA, VDOT

[1] Note for items G, H and I, Arlington County has commissioned a study of pedestrian improvements in this area that will address these in further detail.

Map Key	Location	Recommendation	Cost Estimate (Total cost, capital only)	Jurisdiction
H	On site pedestrian plaza	1. Evaluate existing bus operations to determine if it would be possible to close the bus access road (pull out) on Fairfax Drive, create bus bays, and reprogram the space to expand/enhance the existing pedestrian environment and potentially provide additional bike parking. 2. Provide bigger and more bus layover space to reduce instances where buses overhang into the crosswalk on Stuart Street. 3. Create a continuous bike route with special transition striping as bikes cross the bus travelway on Fairfax Drive.	$160 (assumes 80 lf of bike lane striping)	WMATA, Arlington County, VDOT
I	Onsite bike pit	1. Conduct a general study of users of the existing bike pit to determine if this is the best location for centralized parking and/or if other needs exist. 2. Improve existing bike parking by providing a covered facility, as well as new inverted U-racks 3. Implement improvements to enhance visibility, maintenance, and signage to ensure that racks are being used correctly to maximize existing capacity	$20,600	WMATA, Arlington County
J	Various	Consider physical design improvements to distinguish driveways from sidewalks.		Arlington County / VDOT
K	Various	Address instances where brick pavers pose a tripping hazard and/or maintenance challenge.		Arlington County
		Subtotal	**$123,000**	
		Mobilization (10%) and Contingency (25%)	**$46,000**	
		Total	**$170,000**	

BRADDOCK ROAD METRORAIL STATION – ISSUES AND OBSERVATIONS

Map Key	Issue/ Observation
1	There is a traditional urban grid of streets surrounding the station. The station is located in a low to medium density neighborhood.
2	There are "main street" type areas with low to medium density mixed use walkable/bikable neighborhoods in the vicinity including King Street and Mount Vernon Avenue.
3	There are many schools in the vicinity, including George Washington School, Jefferson Houston School, and Maury School.
4	The elevated tracks serve as a significant barrier between the areas east and west of the station and also are a break in the grid network of streets.
5	There are many parks in the vicinity including Buchanan Park, Hunter/Miller Park, and Pendleton Park.
6	Metro Linear Park, a shared-use path parallel to the Metrorail tracks, connects the Braddock Road and King Street Metrorail Stations.
7	There are other trails in the vicinity including the Mount Vernon Trail, Four Mile Run Trail, and Mount Jefferson Park and Greenway.
8	There is a large amount of bike parking currently, but there appears to be high demand as the racks were observed to be nearly full even on a cold day.
9	The pedestrian safety signs around the station could serve as a best practice for other stations.
10	There are good examples of median design in the vicinity. The city is planning to install a Rapid Flash Beacon outside of the station to improve the trail crossing at East Braddock Road. With this and other planned improvements, the trail crossing design at the station will likely be a best practice.

Legend

- Bike Lane
- Shared Use Path
- Opportunities
- Issues

Braddock Road Metro Station

Feet
0 480 960

Data Source: ESRI

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WMATA Station Access Plan

February 2010

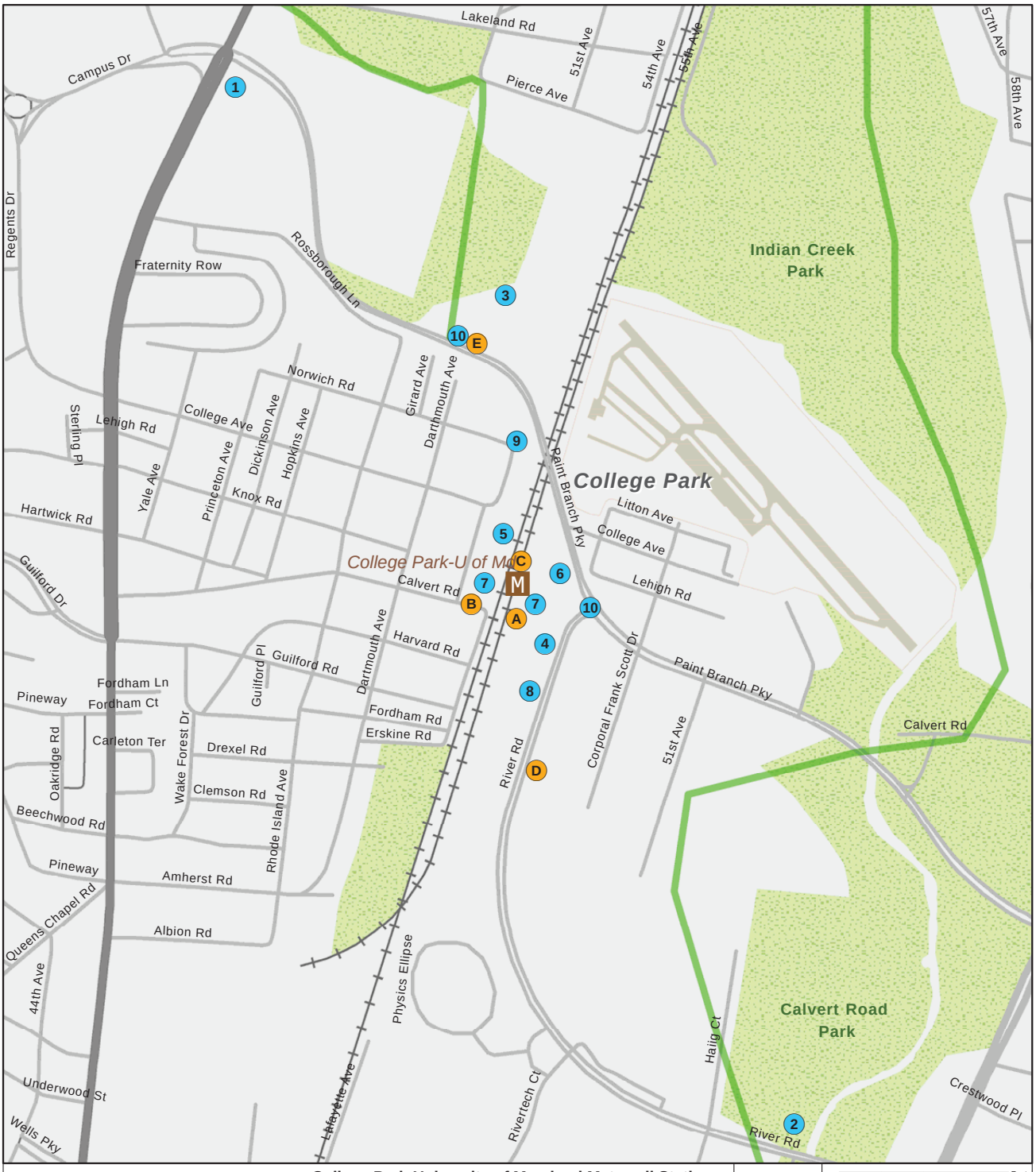
BRADDOCK ROAD METRORAIL STATION – INFRASTRUCTURE RECOMMENDATIONS

Map Key	Location	Recommendation	Cost Estimate	Jurisdiction
A	Offsite	Pedestrian crossing conditions under the railroad tracks could be improved through better lighting.	$30,000 (assume 6 lights)	Alexandria/CSX/ Amtrak/WMATA/ VDOT
B	Offsite	Bike access to the station could be improved by adding curb ramps on West Street directly in front of the station.	$3,000 (assumes 2 curb ramps)	Alexandria
C	Onsite	More and better bike parking could be provided at the station, possibly through the provision of a modular type bike structure.	$130,000 (+$5k annual operating cost)	WMATA/ Alexandria
D	Offsite	The bike lanes on East Braddock Road near the railroad tracks were observed to be full of snow and debris. These bike lanes should be swept more frequently.	N/A	Alexandria
E	Onsite	There is a need to provide direct pedestrian access to the station. The pedestrian path through the parking lot should be improved.	$240 (assume 120 LF of striping)	Alexandria/ WMATA/ Landowner
F	Offsite	The City should consider whether to formalize the “goat path” connecting George Washington School and East Braddock Road.	$22,750 (assume 650 LF of 6’ wide asphalt path)	Alexandria
G	Offsite	Difficult intersections in the vicinity should be evaluated for potential pedestrian and bicycle improvements including East Braddock Road/North West Street, Jefferson Davis Highway/Bashford Lane, and North Henry Street/North Patrick Street (near Vernon Street).	N/A	Alexandria/ VDOT
H	Offsite	Access around the station should be fully evaluated as some sidewalks were observed to be narrow and/or obstructed.	$600 (assume 20 LF of sidewalk widening)	Alexandria

Map Key	Location	Recommendation	Cost Estimate	Jurisdiction
I	Offsite	Opportunities to extend the Metro Linear Park from its current terminus at East Braddock Road north to near the intersection of North Henry Street and Slaters Lane and eventually to Four Mile Run should be fully examined.	N/A	Alexandria
J	Onsite	Opportunities to enliven the blank wall to the north of the station through public art should be considered.	N/A	Alexandria
		Subtotal	**$187,000**	
		Mobilization (10%) and Contingency (25%)	**$70,000**	
		Total	**$260,000**	(rounded to the nearest $10,000)

College Park-UMD Metrorail Station – Issues and Observations

Map Key	Issue/ Observation
1	The station is located within walking distance of the University of Maryland's main entrance.
2	The station is located near the Anacostia Tributary Trail system.
3	The station is located near the Paint Branch Trail.
4	Elevators are located on the River Road Entrance.
5	Elevators are also located on the Calvert Road entrance.
6	The station is a bus transfer location for Metrobus and UM Shuttles.
7	There are currently 46 bike racks available at 3 locations on the Metrorail Station site.
8	Potential motor vehicle and bicycle conflicts were observed on River Road.
9	Pedestrians walking southbound on the western side of Paint Branch Parkway must cross the entrance/exit to the parking garage. There is limited visibility for both the pedestrians and drivers.
10	There are pedestrian signals located at key intersections.



Legend

- Bike Lane
- Shared Roadway
- Shared Use Path
- Opportunities
- Issues

Feet
0 580 1,160

Data Source: ESRI

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College Park-UMD Metrorail Station – Infrastructure Recommendations

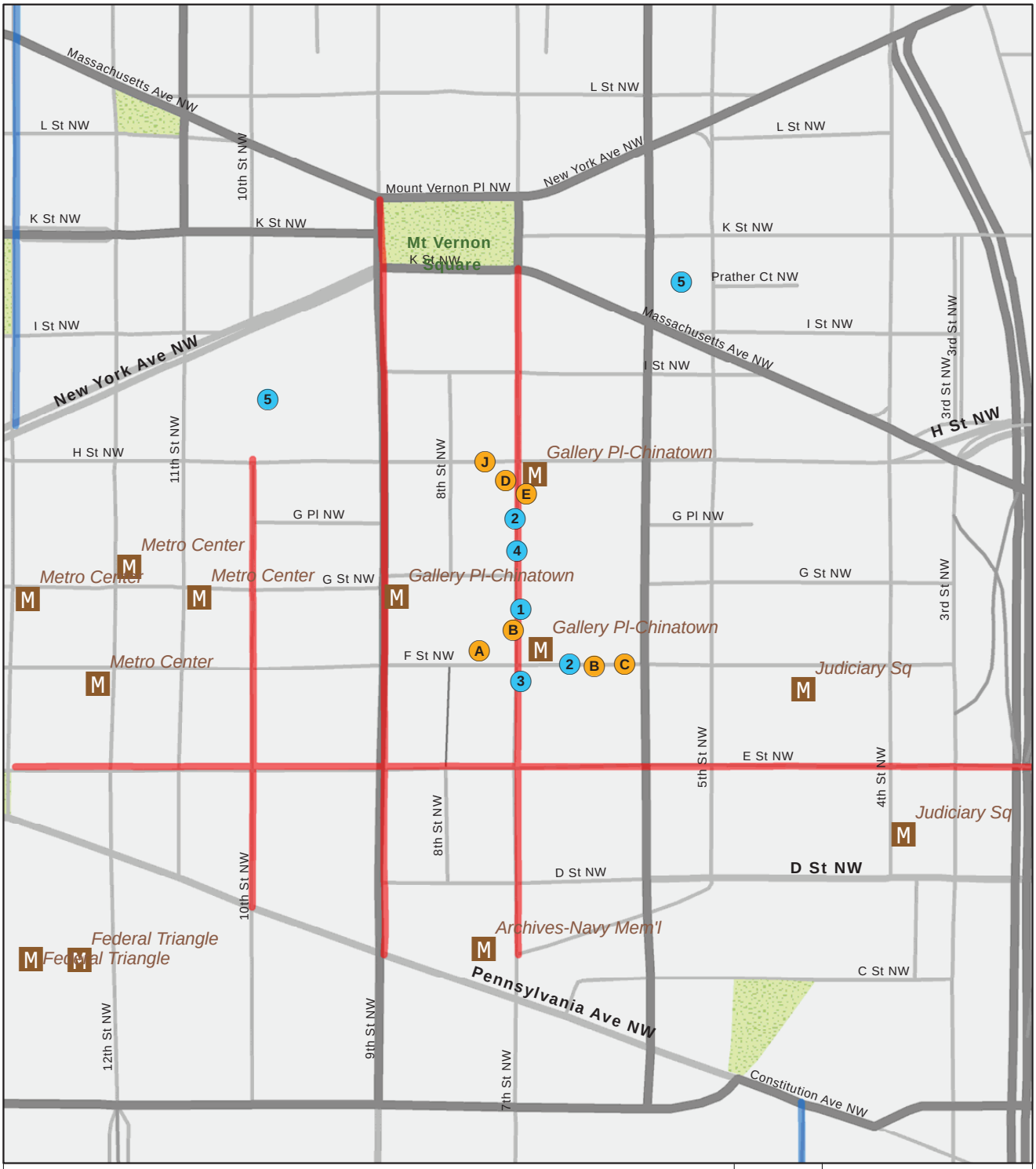
Map Key	Location	Recommendation	Cost Estimate	Jurisdiction
A	River Road Entrance	Provide additional wayfinding from the Metrorail station to popular destinations.	$1,000 (assume 5 signs)	WMATA
		Provide bus and station display maps (similar to the bus information maps currently provided at stations) that will help people navigate between the Metrorail Station and major destinations such as the University of Maryland campus, M Square development, and significant locations in downtown College Park.	$6,000 (assume 2 maps)	WMATA
		Consider installing instructional bike parking signage in the area on the ground or on posts near bike racks to ensure that U racks are being used correctly to maximize existing capacity.	$400 (assume 2 signs)	WMATA
		Continue to replace old bike racks in the area with inverted U racks (in process).	$4,000 (assume 20 racks)	WMATA
		Provide bike to transit maps especially in areas near the University campus and on M Square.	$1,600 (assume 8 signs)	College Park
		Provide covered temporary bike parking and better signage for the existing bicycle parking areas. Consider moving the bicycle parking to the lower level of the station, where surveillance could provide better security.	$32,000 (assume 2 bike parking shelters)	WMATA

B	Calvert Road Entrance	Provide bus and station display maps (similar to the bus information maps currently provided at stations) that will help people navigate between the Metrorail Station and major destinations such as the University of Maryland campus, M Square development, and significant locations in downtown College Park.	$6,000 (assume 2 maps)	WMATA
		Provide covered temporary bike parking and better signage for the existing bicycle parking areas. Consider moving the bicycle parking to the lower level of the station, where surveillance could provide better security.	$32,000 (assume 2 bike parking shelters)	WMATA
		Consider providing ramps along the stairs for bicyclists. This would reduce the burden on the elevators.	$400 (assume 20 LF steel channel)	WMATA
C	Within the Station	Provide updated wayfinding tools such as maps and signage to the location of bike parking and other important areas within the site.	$800 (assume 4 signs)	WMATA
		Using both maps and signage, indicate where both kiss-and-ride areas are located. The current site maps in the station reflect the earlier design of the station (before the parking garage was installed) and are therefore incorrect.	$600 (assume 3 signs)	WMATA
		Provide bus and station display maps (similar to the bus information maps currently provided at stations) that will help people navigate between the Metrorail Station and major destinations such as the University of Maryland campus, M Square development, and significant locations in downtown College Park.	$6,000 (assume 2 maps)	WMATA
		Develop educational and promotional materials for bicycle lockers	$400 (assume 2 signs)	WMATA

	Along River Road	Create a continuous bike route with special transition striping as bikes cross the bus travel lane on River Road.	$11,000 (assume 5,500 LF striping)	MNCPPC – PG/ PG DPWT
D	Along Paint Branch Parkway	Realign the northbound UM Shuttle stop on Paint Branch Road so that it lines up with the Paint Branch Trail junction and the existing pedestrian actuated signal.		U MD / PG DPWT
		Subtotal	**$94,000**	
		Mobilization (10%) and Contingency (25%)	**$40,000**	
		Total	**$130,000**	(rounded to the nearest $10,000)

GALLERY PLACE-CHINATOWN METRORAIL STATION – ISSUES AND OBSERVATIONS

Map Key	Issue/ Observation
1	The location of the elevator is not clearly signed, even from directly in front of it
2	Nights, weekends, and special events result in heavy sidewalk congestion- people spilling out into 7th Street and F Street. Congested pedestrian waiting areas at corners of 7th/H Streets NW
3	There is only one curb ramp on the SE corner of 7th/F Streets NW (directing peds into intersection)
4	Metro service vehicles park in and obstruct the bike/bus lane or bus stops for extended periods
5	Development in the area: a. Increasing residential development is occurring to the northeast b. City Center development to the northwest (on what was previously a large surface parking lot)
NA	*General Issues and Observations* • There are currently multiple wayfinding schemes surrounding the station with varying accuracy and effectiveness. • Downtown SAM guides are employed by the Downtown BID to assist with navigation. • Metro ventilation grates on the sidewalk reduce the effective width of walking space. • There is no official WMATA bike parking provided, but racks of various designs are present in the Right of Way throughout the area. Most racks have been provided by the BID and DDOT. The racks were observed to be heavily used. Scooters were also observed parked and chained to bicycle racks. • Publicly available bicycle parking is often available in private garages, but there is often no signage in place directing to bicycle racks. • Existing bicycle facilities include: Northbound bike and bus only lane is located on a portion of 7th Street NW; Southbound bicycle lane or bike and bus only lane is located on 9th Street NW; Bicycle lanes in each direction are located on E Street NW. • There is a shared bike program station located at NW corner of 7th/F streets. • DDOT is pilot testing a “Barnes Dance” at the intersection of 7th Street and H Street.



Gallery Place - Chinatown Metrorail Station

Legend

- Bike Lane
- Shared Roadway
- Shared Use Path
- Opportunities
- Issues

Feet
0 380 760

Data Source: ESRI

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GALLERY PLACE-CHINATOWN METRORAIL STATION – INFRASTRUCTURE RECOMMENDATIONS

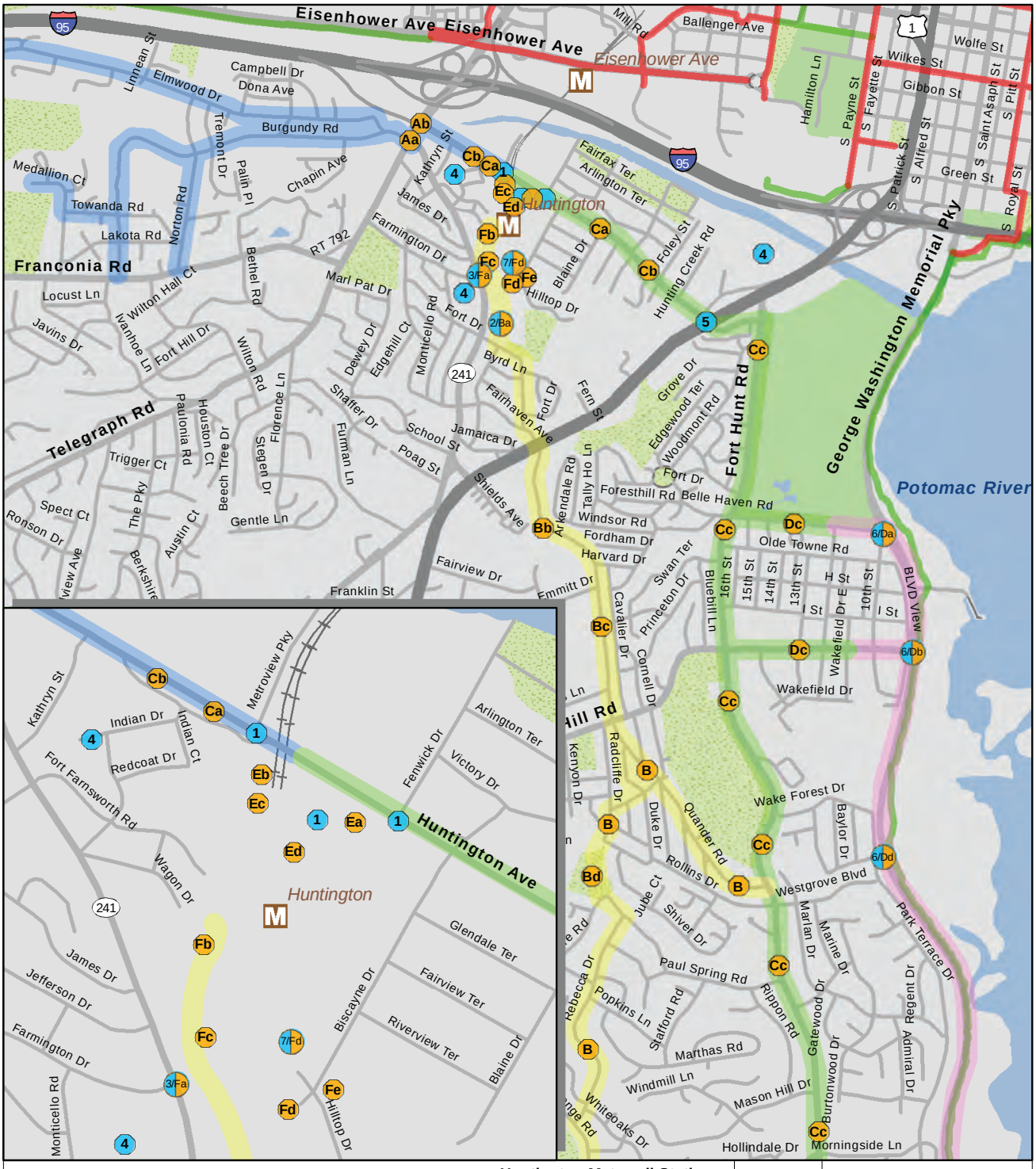
Map Key	Location	Recommendation	Cost Estimate	Jurisdiction
A	Offsite	Improve the visibility and quality of bicycle parking by: Providing bicycle parking and signage that it is intended for Metro riders; Improving security for bicycle parking; and Enforcing the requirement to sign the location of bicycle parking provided in private parking garages.	$8,000 (assume 20 bike racks)	DDOT
B	Offsite	Temporarily close vehicle lanes during peak sidewalk crowding conditions and special events.	N/A	DDOT
C	Offsite	Evaluate making F Street a one-way to allow more sidewalk space.	N/A	DDOT
D	Offsite	Evaluate enforcing no left turn from northbound 7th Street onto H Street.	N/A	DDOT
E	Offsite	Evaluate removing on-street parking along 7th St between F & H to add sidewalk capacity outside the Verizon Center	Additional study required	DDOT
NA	Offsite	Improve wayfinding to and from the Metrorail Station and to nearby destinations	$1,600 (assume 8 signs)	DDOT
NA	Offsite	Provide signage to and from the Metrorail Station and to nearby destinations	$1,600 (assume 8 signs)	DDOT

Map Key	Location	Recommendation	Cost Estimate	Jurisdiction
NA	Offsite	*General Opportunities* • Improve wayfinding by: Updating potentially confusing or incorrect signs; Moving signs for Metro elevators to a more visible location than high on the poles; Educating the BID SAMS guides on bicycle facilities in the area. • Analyze signal timing modifications including leading pedestrian intervals, all-pedestrian intervals, and no turns on red. • Consolidate bus stops to minimize conflict points. • Research creating a storefront bike station (possibly partnering with shared bike or other bicycle related vendors). • Ensure that sidewalks and frontages are improved as part of all development.	Future study required	DDOT

		Subtotal	**$11,200**	
		Mobilization (10%) and Contingency (25%)	**$4,000**	
		Total	**$20,000**	(rounded up to nearest 10,000)

HUNTINGTON METRORAIL STATION – ISSUES AND OBSERVATIONS

Map Key	Issue/ Observation
1	At the north entrance, no direct line of travel or wayfinding guidance from Huntington Avenue across the station site to the station entrance.
2	New residential development between Fort Drive and the upper station entrance appears to be designed to allow through public access.
3	Fairfax County proposed to install a mid-block pedestrian crossing with a median refuge.
4	Redevelopment proposals for the Huntington Station Shopping Center and Jefferson Manor, Huntington Club, as well as properties along Route 1 near Huntington Avenue.
5	New sidewalks and crosswalks at Route 1 and Huntington Avenue.
6	The Mount Vernon Trail has some potential for providing station access for cyclists.
7	The Montebello property has made a proffer to improve pedestrian access from Hilltop Drive to the WMATA parking garage/station entrance
8 (Not included on map)	*General Issues and Observations* • Surrounding intersections: lack of crosswalks and sidewalks, missing pedestrian signal heads, etc. • Pedestrians observed walking through bus drive aisles, poorly lit parking garage drive aisles, and climbing eroded slopes to get to the station gate. • Station entrances: narrow and poorly maintained sidewalks, erosion issues, degraded landscaping. • Lack of direct access to the station from the residential neighborhoods immediately east and west of the Northern station entrance.



WMATA Bicycle and Pedestrian Facility Planning Study | February 2010

HUNTINGTON METRORAIL STATION – INFRASTRUCTURE RECOMMENDATIONS

Map Key	Location	Recommendation	Cost Estimate	Jurisdiction
Aa	Offsite, Elmwood Drive/Burgundy Road Route	Re-examine crossing distances and signal cycles; ensure protection from turning vehicles.	$3,000 (assumes 1 signal)	VDOT
Ab	Offsite, Elmwood Drive/ Burgundy Road Route	Evaluate a bike/ped bridge over Telegraph Road.	$3,000,000 (assumes 1 275 LF, 14' wide pedestrian bridge)	VDOT
Ba	Offsite, Quander Road Route	Ensure that the new development between Fort Drive and station provides through public access.	N/A	Fairfax County
Bb	Offsite, Quander Road Route	Restripe Quander Road with a southbound climbing bike lane from Route 1 to Emmitt Dr.	$5,600 (assumes 2800 LF striping)	VDOT
Bc	Offsite, Quander Road Route	Widen Quander Road In front of West Potomac High School; build a wider concrete sidewalk	$136,000 (assumes 1700 LF 10' road widening and 6' wide sidewalk)	VDOT/Fairfax County Public Schools
Bd	Offsite, Quander Road Route	Pave or use crushed stone & fines surface on an existing hiking trail through White Oak Park; install a couple short bridges. (A 6' path should be sufficient for near-year-round bicycle commuting access.	$100,000 (assumes 1200 LF of 6' asphalt path and two bridges)	Fairfax County Parks
Ca	Offsite, Fort Hunt Road Route	Install shared lane markings along Huntington Avenue and improve pavement surface	$342,720 (assumes 5,600 LF of road repaving and SLM)	VDOT
Cb	Offsite, Fort Hunt Road Route	Rehabilitate Huntington Avenue: widen the sidewalks, tree buffers and outside lanes.	$500,000	VDOT

Map Key	Location	Recommendation	Cost Estimate	Jurisdiction
Cc	Offsite, Fort Hunt Road Route	Restripe Fort Hunt Road shoulders to be bike lanes.	$29,000	VDOT
Cd	Offsite, The Mount Vernon Trail	Install a short access path, crosswalk, striped median refuge, full signal and directional signage.	$16,000	NPS
Da	Off Site, The Mount Vernon Trail	Install a short access path, crosswalk, striped (or curbed) median refuge, safety signage and pedestrian actuated signal; provide signage indicating metro access from the trail.	[Cost needed]	NPS
Db	Off Site, The Mount Vernon Trail	Install a short access path, crosswalk, striped median refuge and full signal and add directional signage for trail users.	[Cost needed]	NPS
Dc	Offsite, The Mount Vernon Trail	Install bike lanes on Belle Haven Road; and bike lanes or shared lane markings on Belle View Blvd.	$44,000	VDOT
Dd	Offsite, The Mount Vernon Trail	Improve the crossing at Tulane Drive.	$3,000 (assumes 150 LF high visibility sidewalk)	VDOT
Ea	Onsite, North Station Area	Install a stair from the sidewalk to the parking lot	$1,500	WMATA
Eb	Onsite, North Station Area	Stripe and sign bicycle route from Huntington Ave. at Metroview Parkway through the Kiss-n-Ride/Bus Loop to the station entrance gate; improve sight distances	$5,200	WMATA
Ec	Onsite, North Station Area	Double the number of bicycle racks at entrance. (assume 20 bike racks)	$8,000	WMATA
Ed	Onsite, North Station Area	Study an East-West trail across the hillside at the elevation of the station entrance (a sidewalk to the garage is already constructed at this elevation) that links the station entrance directly to the Huntington Club community and streets to the east (Biscayne Blaine, Fifer, Mount Vernon and Wyomissing). Coordinate with redevelopment of the Huntington Club	$30,000	WMATA

Map Key	Location	Recommendation	Cost Estimate	Jurisdiction
		property.		
Fa	Onsite, South Station Area	Implement the County's proposed mid-block crossing with a median refuge, as well as an additional crosswalk at Kings Highway North.	$28,000	VDOT
Fb	Onsite, South Station Area	Double the number of bike racks and lockers provided and either cover them in their current location or move them near the station entrance. To move them a bicycle rolling tray should be added to the stairway.		WMATA
Fc	Onsite, South Station Area	Realign and widen the new sidewalks.		WMATA
Fd	Onsite, South Station Area	Re-establish the pedestrian linkage from the station to Hilltop Drive.		WMATA, Private Property Owners
Fe	Offsite, South Station Area	In coordination with Fairfax County, construct a stair connection from Hilltop Drive to Biscayne Drive; provide a bicycle rolling tray on the new staircase and address drainage and erosion problems.		Fairfax County

		Subtotal	$4,252,000	
		Mobilization (10%) and Contingency (25%)	$1,488,000	
		Total	$5,740,000	(rounded to the nearest $10,000)

Sample Bike Shed Analysis

To increase the number of people bicycling to the station, improvements to on-road bicycling conditions are needed. To determine the most cost-effective facilities, prioritize improvements and organize actions, an analysis of the station's bike-sheds is necessary.

A bike-shed is like a pedestrian shed; it is the area within which people are likely to travel by bike to the destination around which the shed is focused. For the Huntington station, a three-mile distance has been selected as the outer limit and bikeable routes to the station have been identified. Because Route 1, Kings Highway and Telegraph Road are uncomfortable for most bicyclists and making them attractive to cyclists would be both expensive and difficult, these roads have been eliminated as possible routes.

As a result the potential routes that remain include the following:

- Elmwood Dr./Burgundy Rd./Huntington Avenue from the west
- Fort Drive, Rixey Drive and Quander Road from the south
- Fort Hunt Drive /Huntington Avenue from the near southeast
- The Mt. Vernon Trail from the far southeast

These routes are shown on the Huntington Metrorail Station map on the previous page. It should be noted that two small bike-sheds exist near each station entrance—a) the Riverside Park area east of the northern entrance surrounding Huntington Avenue, and b) the Jefferson Village & Penn Daw Village areas southwest of the southern entrance. These areas would generally be considered within the walk-shed of the station, however portions of these neighborhoods are more than a quarter mile from the station and might generate short bicycle trips for those looking to save time. Due to the layout of the local streets, bicyclists from these areas might use a variety of routes, so a single route has not been identified.

After field review of the four primary bike routes listed above and the sheds that they serve, it became apparent that each could be further improved at relatively low cost, signed, mapped and marketed to the local population as an alternative to driving to the station. Following is a summary of each route, the neighborhoods it serves and what is recommended for improving accommodations and safety.

Elmwood/Burgundy Roads /Huntington Avenue

Elmwood Road was recently designated a good connecting route on the Fairfax County bike map, due to its low traffic volumes and speeds, its length, levelness and connectivity. Elmwood and Burgundy provide easy bicycle access to the Huntington station for a number of neighborhoods immediately west of the station However, the route has been degraded somewhat by the Telegraph Road Interchange Project which has made the crossing of Telegraph and Kings Highway North even more daunting than before the intersections were reconfigured.

- Near Term—re-examine the geometric design and signal cycles at East Drive and Telegraph, and at Telegraph and Kings Highway North; modify the intersections to shorten the crossing distances and ensure protection from turning vehicles for both bicyclists and pedestrians; sign this route along Huntington Avenue, through the intersections noted above and along Elmwood Drive, Burgundy Road and Norton Road.

- Mid-Term—rehabilitate Huntington Avenue: widen the sidewalks, tree buffers and outside lanes to better provide for bicyclists and pedestrians.

- Long Term—construct a bicycle and pedestrian bridge, parallel to the new Beltway ramp bridge to Huntington Avenue that connects the south sidewalk of Huntington Avenue with the ends of Elmwood and Burgundy Drives.

Fort Drive/Rixey/Quander Road

This route generally runs along the top of the ridge line and provides the least hilly and only through route to the station for those living south and east of Route 1. Quander is generally a low volume road and has a signalized crossing at Route 1 where it becomes Rixey Drive. The many side street linkages to Quander make it accessible to a sizable population, spanning from Route 1 to Mount Vernon District Park; this includes Belle Haven Heights, Memorial Heights and Bucknell Estates. A 0.2-mile trail extension through White Oaks Park would extend the route to White Oak, Woodly Hills, Hollin Hills and other neighborhoods still further south.

- Near Term--Restripe Quander Road with a southbound climbing bike lane from Route 1 to Emmitt Dr. (sufficient width between existing curbs is available); install shared lane markings on Fort Drive, Rixey Drive, in front of West Potomac High School, and from Beacon Hill Road to Fort Hunt Road. Ensure that the new development under construction between Fort Drive and the station provides public bicycling and walking access through the development. Sign the route from Quander and Fort Hunt Drive to the south entrance of the station including the feeder linkages from Memorial Heights and Bucknell Woods and key linkage streets such as Harvard Drive and Rollins Drive.

- Mid Term—In front of West Potomac High School there are no shoulders--the road should be widened to provide bike lanes; also, the narrow asphalt path along the east side of this segment should be converted to a wider concrete sidewalk;

- Long Term-- Pave or provide a crushed stone & fines surface on an existing hiking trail through White Oak Park; install a couple short bridges. (In this nature preserve, a 6’ wide path should be sufficient to provide near-year-round bicycle commuting access.)

Huntington Avenue/Fort Hunt Road

This route serves the lower elevation communities of Belle Haven, Belle View and Westgrove located along the Potomac River shoreline. To access the station cyclists will use Huntington Avenue to reach the northern entrance, avoiding unnecessary hill climbs. Currently, Fort Hunt Road has striped shoulders and gentle grades making it attractive to bicyclists; however Huntington Avenue is relatively busy road with poor pavement and little space for bicycling. While the Quander Road route is usable as is, this route will need improvements to attract larger numbers of cyclists.

- Near Term—Install shared lane markings along Huntington Avenue and improve pavement surface as needed; sign the route including feeder streets such as Woodmont Road, Belle Haven Road, Belle View Blvd., Wake Forest Drive, Westgrove Blvd., and Paul Spring Road.

- Mid-Term— Restripe Fort Hunt Road to convert shoulders to bike lanes (narrow lanes slightly and widen shoulder space to 5 feet; add street lighting to Fort Hunt Road, especially along the Mount Vernon District Park; install bike lanes on Belle Haven Road; and install bike lanes or shared lane markings on Belle View Blvd.

- Long Term--rehabilitate Huntington Avenue: widen the sidewalks, tree buffers and outside lanes to better provide for bicyclists and pedestrians; improve Huntington/Route 1 intersection for bicyclists and pedestrian safety;

Mount Vernon Trail (National Park Service)

Due to the location of the Belle Haven Country Club and the alignment of the Mt. Vernon Trail, the trail is useful as an access route to Huntington station only for populations that live south of Tulane Drive. To gain access to the station, users of the trail must leave the trail at either Belle View Blvd. or Belle Haven Road and travel west to Fort Hunt Road. Crossing the GWP at either of these intersections is daunting, especially during peak hours, because no pedestrian crossing accommodations are provided. Generally, the trail is not a useful resource for those within 3 miles of the station, however, the further south one lives the more the value of using the Trail goes up. None-the-less, for safe access to the station GWP crossings must be made safe for pedestrians and cyclists.

- Near Term—Install a short access path, crosswalk, striped median refuge, safety signage and pedestrian actuated signal at Belle Haven Road; provide signage indicating metro access from the trail at this location.

- Mid-Term—Install a short access path, crosswalk, striped median refuge and full signal at Belle View Blvd and add directional signage for trail users.

- Long Term—Upgrade the accommodations at the two previously noted crossings with curb separated medians, and improve the crossing at Tulane Drive.

Riverside Park, Jefferson Manor, Jefferson Village & Penn Daw Village

- Near Term—Sign bike routes and bike/pedestrian linkages between isolated neighborhoods to improve public awareness of the shortest bicycle and access routes to the station entrances; it is important to pair this action with the crossing improvements of Kings Highway North and Huntington Avenue, which are described in other recommendations.

RHODE ISLAND AVE-BRENTWOOD METRORAIL STATION – ISSUES AND OBSERVATIONS

Map Key	Issue/ Observation
1	The single vehicular access point is a signalized access road off of Rhode Island Avenue that also provides entry to the large Home Depot/Giant parking lot, located across the park-and-ride lot to the east from the primary station entrance.
2	The access road includes only partial sidewalks.
3	Numerous conflicts between modes were observed where pedestrians are using direct paths across both vehicular lanes and freight tracks. Pedestrians use social routes throughout the station area despite attempts to channelize pedestrian traffic via railings and paved pedestrian ramps. For example, pedestrians were observed to be: • Walking directly across the station parking lot, climbing under or over the railings • Walking across active freight tracks and along a shear drop off of 20+ feet, climbing over retaining walls • Shortcutting switch-backed paved trails.
4	There are currently 12 bicycle racks available in a covered location directly adjacent to the station entrance.
5	DDOT is constructing a ped/bike bridge across the CSX tracks to connect to the Met Br Trail and neighborhoods on the west side.
6	There is a Metro Joint Development Project underway that will change the character of the east side of the Metrorail Station.

Rhode Island Ave-Brentwood Metrorail Station

Legend

- Bike Lane
- Shared Roadway
- Shared Use Path
- Opportunities
- Issues
- Future Trail
- Missing Connection

Feet
0 380 760

Data Source: ESRI

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WMATA Bicycle and Pedestrian Facility Planning Study

February 2010

RHODE ISLAND AVE-BRENTWOOD METRORAIL STATION – INFRASTRUCTURE RECOMMENDATIONS

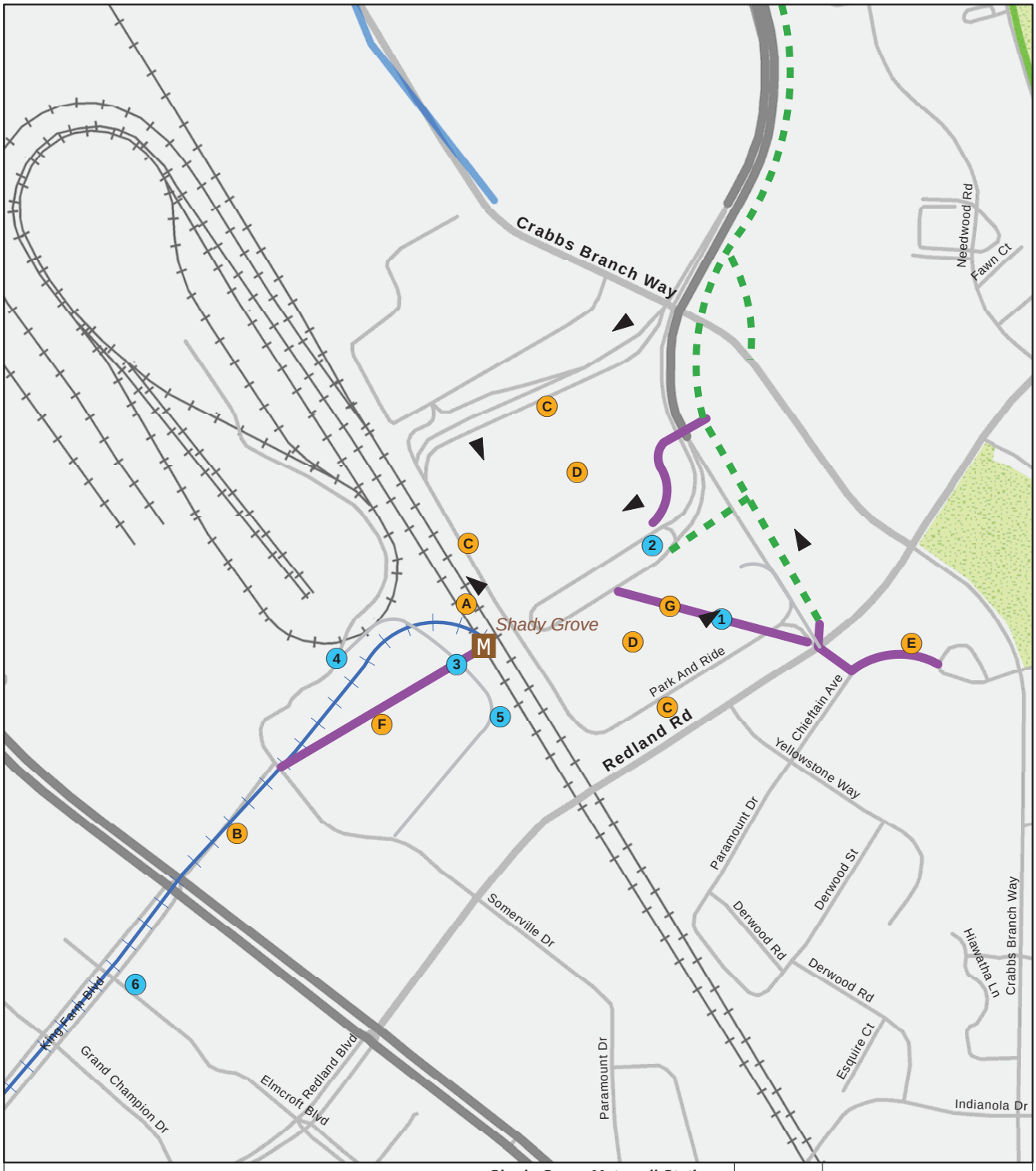
Map Key	Location	Recommendation	Cost Estimate	Jurisdiction
A	Onsite	DDOT recently added new fencing to block pedestrian access to the active freight tracks and shear drop off to Rhode Island Avenue as part of the pedestrian bridge project. All stakeholders should continue to ensure that pedestrian access to this route is blocked.	N/A	District of Columbia/ WMATA/CSX
B	Offsite	Provide additional wayfinding and signage to the Metro station via the existing sidewalks, ramps, bridges, and stairways along Rhode Island Ave.	$2,400 (assumes 12 signs)	District of Columbia
C	Offsite	Repair the stairs leading from Rhode Island Avenue to the Metrorail station entrance.	N/A	WMATA
D	Offsite	Improve the sidewalk along Rhode Island Avenue, especially under the bridge: widen, add a buffer, consider a road diet (e.g. lane reduction), fix sidewalk heaving, pick up trash, etc.	$21,000 (assumes 400 LF of 8' sidewalk, 4' buffer and 20 street trees)	District of Columbia/Joint Developer
E	Onsite	To the extent possible, incorporate the following into the design for the TOD Joint Development: • Examine ways to improve pedestrian access and mobility through the site once the pedestrian bridge is built and as a part of any additional future development • Do not locate loading areas and other "back of house" uses along the primary pedestrian route through the site • Provide full sidewalks on each side of all roadways in the station area • Use crosswalks, speed tables, advanced stop lines, signage, refuge islands, etc.	N/A	WMATA
F	Onsite	Pave the pedestrian goat path connecting Rhode Island Ave NE to the Home Depot parking lot and minimize the existing sidewalk switchbacks.	$8,000 (assumes 360 LF of 6' wide stairwell)	WMATA

Map Key	Location	Recommendation	Cost Estimate	Jurisdiction
G	Offsite	Incorporate design solutions to make the station access roadway from Rhode Island Ave NE more pedestrian oriented • Create medians and pedestrian refuges • Remove the double right into station and double right onto eastbound Rhode Island Ave NE and replace with landscaping to provide a buffer between the sidewalks and roadway • Reduce the curb radii to slow traffic and reduce pedestrian crossing lengths • Install Leading Pedestrian Intervals for signal timings to reduce potential car/pedestrian conflicts • Expand the pedestrian refuge island on Rhode Island outside of the main entrance/exit	$110,000	District of Columbia
H	Offsite	Emphasize the primary vehicle entrance for Giant/Home Depot as the entrance to the east off of Brentwood Rd NE	N/A	District of Columbia
I	Onsite	Provide secure and covered bicycle parking in any unused areas within the station that remain after the pedestrian bridge is constructed.	N/A (move existing)	WMATA
J	Onsite	Fully assess the future design of the Kiss and Ride facility after the planned TOD development at the station. Evaluate potential opportunities to improve conditions for all modes, including the possibility of: • Providing only one or two lanes to serve the parking lanes and passenger drop off and remove the pull-through parking spaces • Providing landscaping in the removed lane(s) • Adding bike lanes, bike wayfinding signs, and pedestrian crossing improvements	$2,000	WMATA

		Subtotal	**$143,000**	
		Mobilization (10%) and Contingency (25%)	**$54,000**	
		Total	**$200,000**	(rounded up to the nearest $10,000)

SHADY GROVE METRORAIL STATION – ISSUES AND OBSERVATIONS

Map Key	Issue/ Observation
1	*East side of the station:* The primary pedestrian desire line is southeast from the station entrance to the intersection of I-370 and Redland Road. This route is obstructed by vehicle access lanes, parking structures and the orientation of parking rows.
2	*East side of the station:* The sidewalks along the Kiss-and-Ride and bus access lanes all dead end exiting the station area to the east.
3	*West side of the station:* The crosswalk through the Kiss-and-Ride area exiting the station entrance on the west side of the tracks: a. Is visually obstructed by vehicles parked in the handicap space (directly adjacent) b. Needs greater pavement surface differentiation c. Leads into the first row of the Park-and-Ride lot where it abruptly terminates without connecting facilities or directions for pedestrians
4	*West side of the station:* The sidewalk around the north perimeter of the parking lot was not observed to be used frequently as it is outside of the direct pedestrian desire line.
5	*West side of the station:* Bicycle racks and lockers obstruct walking paths.
6	*West side of the station:* The King Farm development runs shuttle buses to the west side of the Shady Grove Metrorail Station, and the buses include a bicycle rack on the front. Further station traffic will be generated from this direction as the Corridor Cities Transitway and Trail are completed.



Legend

Bike Lane
Shared Roadway
Shared Use Path

Opportunities
Issues

Future Corridor Cities Transitway
Future Trail
Missing Connection

Shady Grove Metrorail Station

Feet
0 350 700

Data Source: ESRI

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WMATA Bicycle and Pedestrian Facility Planning Study

February 2010

SHADY GROVE METRORAIL STATION – INFRASTRUCTURE RECOMMENDATIONS

Map Key	Location	Recommendation	Cost Estimate	Jurisdiction
A	Onsite	Update and consolidate signs that locate bus connections across multiple carriers to a more visible location. Also, name and identify the east and west station areas on each side of the tracks.	$2,000 (assumes 10 signs)	WMATA
B	Offsite	Install surface design treatments and stop bars to continue sidewalks across driveways.	$17,200	Montgomery County
C	Onsite	Evaluate the network of one-way vehicular station access lanes for integration into future TOD road network and land use.	N/A	WMATA
D	Offsite	Better accommodate the needs of pedestrians in the parking lot by providing more direct walking routes that incorporate pedestrian desire lines.	N/A	Montgomery County
E	Offsite	Provide a non-motorized connection across the concrete drainage culvert connecting the south side of Redland Road to Chieftain Ave and the adjacent residential developments.	$47,600	Montgomery County
F	Onsite	Provide a central pedestrian route through the west parking lot with clearly marked crosswalk markings along the pedestrian desire lines from the station entrance to King Farm Boulevard and the daycare center.	$7,000	WMATA
G	Onsite	Provide a central pedestrian route through the east parking lot, connecting the sidewalks from the east station entrance and bus loading bays to the intersection of Redland Road and I-370. A seamless integration with the Corridor Cities Transitway (CCT) should be pursued to ensure that pedestrian and bike access needs are accommodated and that the access hierarchy is integrated into future plans.	$7,000	WMATA

		Subtotal	**$81,000**	
		Mobilization (10%) and Contingency (25%)	**$31,000**	
		Total	**$110,000**	(rounded to the nearest $10,000)

VIENNA-FAIRFAX-GMU METRORAIL STATION – ISSUES AND OBSERVATIONS

Map Key	Issue/ Observation
1	There are station entrances on the north and south sides of I-66.
2	I-66 is a barrier to north/south bicycle and pedestrian connectivity in the region.
3	There is a sidepath/wide sidewalk on the east side of Vaden Drive from Saintsbury Drive to Virginia Center Boulevard. Repairs are needed to maintain continuity. The path crosses a three lane driveway entrance/exit of a parking structure on the north side of the station.
4	A paved asphalt path parallels I-66 under Vaden Drive from the Metrorail Station to Roesh Way. This path does not connect to Vaden Drive.
5	There are worn pedestrian paths across the Nutley Street median and the westbound entrance/exit ramps of I-66. Pedestrians reportedly walk along the entrance ramp.
6	There are bike parking areas (racks and lockers) to the north and south of the Metrorail Station. Parking is located to the east of the station entrances. Available parking does not appear to be sufficient as bikes were observed to be chained to railing and trees.
7	Missing curb ramps / sidewalk were observed on the traffic island at the intersection of Virginia Center Boulevard and Centerboro Drive.
8	There are narrow paved paths connecting the townhouse neighborhoods to the north (specifically Pembsley Drive and Lagersfield Circle) to Virginia Center Boulevard. These paths are steep and have poor pavement quality.
9	The Fairfax City Connector Trail (8' asphalt) starts at a dead end off of Hunters Glen Way and extends south to Lee Highway (US 29).
10	A paved trail extends through Nottoway Park (north of the Metrorail Station) to Courthouse Road and Tapawingo Road near the Town of Vienna.
11	A paved path extends through East Blake Lane Park.
12	Pedestrians travel along Maple Drive and Fairlee Drive in vacant areas south of the station. These two streets will be abandoned as part of the MetroWest redevelopment.
13	Washington & Old Dominion Trail passes within 2 miles of station in the Moore Place neighborhood (not shown on map).
14	Both parking garages might be able to safely and comfortably accommodate bike parking given the entrance/exit characteristics and proximity to the station.

Legend

- Opportunity
- Issues
- Bike Lane
- Shared Roadway
- Shared Use Path

Vienna / Fairfax-GMU Metrorail Station

0 370 740 Feet

Data Source: ESRI

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WMATA Bicycle and Pedestrian Facility Planning Study

February 2010

VIENNA/FAIRFAX-GMU METRORAIL STATION – INFRASTRUCTURE RECOMMENDATIONS

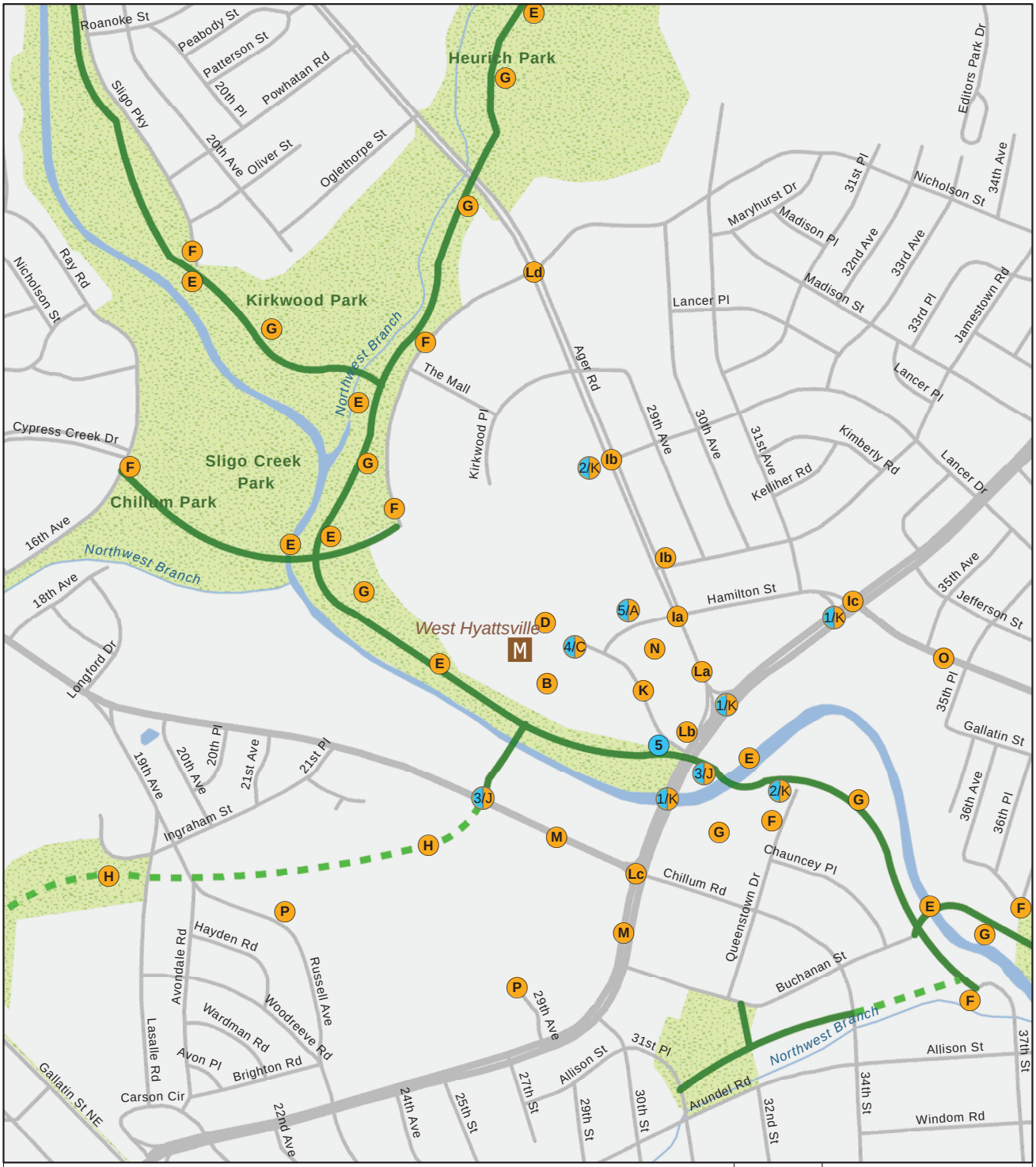
Map Key	Location	Recommendation	Cost Estimate	Jurisdiction
A	Offsite	Provide additional wayfinding and guidance to the station from the following destinations around the station: 1. Areas inside/near Nottoway Park 2. W&OD Trail 3. Fairfax City Connector Trail 4. Fairfax County Cross Country Trail (through East Blake Lane Park from Lee Highway to south side of station) 5. City of Fairfax (in progress by Fairfax County) 6. George Mason University (in progress by Fairfax County)	$4,000 (assumes 20 signs)	Fairfax County
B	Onsite	Replace bike lockers with modular bike parking unit on the north side of the station.	$130,000	WMATA
C	Onsite	Explore the feasibility of placing bicycle parking inside both parking structures (in the unused space in the exit areas closest to station entrance).	$1,600 (assumes 8 racks)	WMATA
D	Onsite	Consider modular bicycle parking to the east of the south parking structure.	$130,000	WMATA
E	Offsite, Intersection of Centerboro Drive and Virginia Center Boulevard	Undertake access improvements on the traffic island at the intersection of Centerboro Drive and Virginia Center Boulevard	$3,000 (assumes 2 curb ramps)	VDOT
F	Onsite	Consider an enhanced 'bicycle entrance' off of Vaden Drive on the north side of I-66. This could either connect to the existing path or pass through the south side of the parking structure. If it connects to the existing path, grading to transition from street level to path level may be required.	$800 (assumes 20 LF of 8' wide paved path)	WMATA
G	On Site	Create a full service Bicycle Station.	$2,000,000	WMATA

H	Offsite	Explore the feasibility of installing a striped climbing lane (bicycle lane) on westbound Saintsbury Drive (uphill).	$2,600 (assumes 1,300 LF of bike lane striping)	VDOT
I	Offsite	Improve the narrow and steep asphalt paths extending north into the neighborhood from Virginia Center Boulevard to Pembsley Drive and Lagersfield Circle.	$1,750	Private
J	Offsite	Explore the feasibility of reducing the crossing distance on the southern leg of the Vaden Drive/Virginia Center Boulevard intersection.	$10,000 (assumes 2 median refuges)	VDOT
K	Onsite	Explore the feasibility of installing a bicycle lane in the bus entry lane on the north side of the station.	$900 (assumes 450 LF of striping)	WMATA
L	Onsite	Install curb ramps to facilitate bicycle travel from the bus lane to the sidewalk level on the north side of the station. Install signage to direct bicyclists to the ramp.	$1,500 (assumes 1 curb ramp)	WMATA
M	Onsite	Explore the feasibility of installing a shared use path from Vaden Drive to the station entrance on the southern side of I-66 (between the parking structure and I-66).	$17,200 (assumes 430 LF of 8' wide paved path)	WMATA
N	Offsite	Install a crosswalk on the northern leg of the Saintsbury Drive/Nutley Street intersection.	$2,600 (assumes 130 LF of high visibility crosswalk)	VDOT
0	Offsite	Evaluate Virginia Center Boulevard, Vaden Drive and Creek Crossing for possible road diet (e.g. lane reduction) to provide additional space for bicycle and pedestrian accommodations within the existing right-of-way.	N/A	VDOT

P	Onsite	Redesign the driveway apron to improve crossing conditions across the driveway entrance for pedestrians and bicyclists traveling north/south on Vaden Drive. Evaluate the possibility of reducing crossing distances and slowing cars by tightening turning radii and installing additional islands. Consider raised crosswalk across the driveway to bring it to sidewalk level, slow cars, and enhance visibility of bicycles and pedestrians.	$6,000 (assumes 120 LF raised crosswalk)	WMATA
		Subtotal	**$2,312,000**	
		Mobilization (10%) and Contingency (25%)	**$810,000**	
		Total	**$3,121,000**	(rounded t o the nearest $10,000)

WEST HYATTSVILLE METRORAIL STATION – ISSUES AND OBSERVATIONS

Map Key	Issue/ Observation
1	Queens Chapel Road (MD Route 500) lacks sidewalks near the station, between Chillum Road and Hamilton Street.
2	The sidewalk on WMATA property provides direct bicycle and pedestrian access from the adjacent apartment complex; however, this sidewalk is not continuous to Agar Road and lacks linkages on the apartment complex grounds.
3	The following Trail/Roadway intersections need crossing safety improvements: • Queens Chapel Road / NW Branch trail • Chillum Road / Prince George's Gateway Trail • 38th Street / NW Branch Trail • Route 1 / NW Branch Trail • Sligo Creek Trail / Riggs Road • Sligo Creek Trail / East West Highway
4	Bike parking at the station is heavily used; however, none of it is covered. Old Type 3 racks are in very poor condition and need to be replaced.
5	Pedestrian desire lines are well defined around the station by worn "goat paths" and degraded landscaping areas.
6 (not included on map)	The Transit Development Plan for the West Hyattsville Station was reviewed as part of the case study process. The plan lays out the vision for TOD around the West Hyattsville Metrorail Station. It provides recommendations on zoning, land use, and the street network in the vicinity of the station, while also providing a bike parking requirements. With regards to pedestrian and bicycle elements, the plan: • Includes no provision for bike/ped access for three large high rise residential buildings on Queens Chapel Road. • Does not address the existing access barriers at the northwest corner of the Queenstown Apartment complex, which also impacts access for most of the residents of Mount Rainier, MD. • Recommends structured parking garages that would cut off the direct access route along the Metrorail tracks to the north of the station, adversely affecting the existing community to the northwest of the station. • Recommends aligning the new streets in Hamilton Park and North Park to match up with existing local streets on the northeast side of Ager Road, such as Jamestown Road.



Legend

- Existing Trail
- Future Trail
- Issues
- Opportunity
- Issue & Opportunity

West Hyattsville Metrorail Station

0 560 1,120 Feet

Data Source: ESRI

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WMATA Bicycle and Pedestrian Facility Planning Study | February 2010

West Hyattsville Metrorail Station – Infrastructure Recommendations

Map Key	Location	Recommendation	Cost Estimate	Jurisdiction
A	Onsite	Safely accommodate pedestrian desire line (curb ramps, crosswalks striping, signs, missing sidewalk, and curb realignment).	$33,200	WMATA
B	Onsite	Modify wheel stops in the parking area to disallow motor vehicles from overhanging (and serving as an obstruction) in the sidewalk. In addition, lighting poles should be relocated, and striping and signage should be installed to improve access and safety coming and going from the Northwest Branch Trail and the trail bridge to access Chillum Road.	$64,400	WMATA
C	Onsite	Replace all Rack III type bike parking with covered, inverted U-racks. Experiment with on-demand high security racks such as the Bike Lid placed adjacent to existing bike lockers.	$20,000	WMATA
D	Onsite	Stock the station kiosk with Anacostia Tributary Trail brochure/maps.	N/A	MNCPPC
E	Offsite	Repair all the trail bridge entries within 1 mile of the station.	$9,000	MNCPPC – PG
F	Offsite	Improve trail access for adjacent neighborhoods with stairs, curb ramps, trail pavement realignments, and removal of gates	$14,200	MNCPPC – PG / PG DPWT
G	Offsite	Extend trail lighting systems.	$40,000	MNCPPC - PG
H	Offsite	Complete the Prince George's Connector Trail	Unknown	MNCPPC – PG / NPS / DDOT
I	Offsite	Upgrade arterial intersections within 0.5 mile of the station to current urban SHA and PGDPW standards: • Ager Road & Hamilton St. • Ager Road, Lancer Drive, & Jamestown Road • MD 500 & Hamilton Street	N/A	PG DPWT / MD SHA
J	Offsite	Upgrade mid-block trail crossings at Queens Chapel Road and Chillum Road (lighting, effective speed control, promote vehicle yielding behavior, shorten crossing distances, and aesthetic treatments)	N/A	PG DPWT / MD SHA

Map Key	Location	Recommendation	Cost Estimate	Jurisdiction
K	Offsite	Install additional sidewalks and bikeways on public and private property for public access to the station	$18,000	PG DPWT / Private Owner
L	Offsite	Implement design changes to calm traffic at the following intersections: 1. MD 500 & Ager Road 2. MD 500 & Jamestown Road 3. MD 500 & MD 501 4. Ager Road & Nicholson Street	$20,000	PG DPWT / MD SHA
M		Implement streetscape improvements on Queens Chapel Road including buffers between the sidewalk and road, landscaping, street trees, crossing improvements, and pedestrian crossing islands.	Unknown	PG DPWT / MD SHA
N	Onsite	Create a full service Bicycle Station.	$2,000,000	WMATA / MNCPPC - PG
O	Offsite	Develop the Artway Central (NW Br. Trail) and Artway South (34th St.) corridors, as called for in the Gateway Arts District Sector Plan (2004).	N/A	MNCPPC - PG
P	Offsite	Create direct stairway linkages between the Prince George's Connector Trail and the Avondale neighborhood by: • Widening and upgrading the trail surfaces and relocating bridges • Expanding trail lighting to the northwest along the Sligo Trail and north along the NW Branch Trail.	$96,200	MNCPPC – PG / PG DPWT

		Subtotal	**$2,315,000**	
		Mobilization (10%) and Contingency (25%)	**$810,000**	
		Total	**$3,125,000**	(rounded to the nearest $10,000)

Appendix C: Online Questionnaire Results Memorandum

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MEMORANDOM

Subject: Online Questionnaire Results
Project: Metrorail Station Area Bicycle and Pedestrian Improvements Study
Date: January 15, 2010

The WMATA Metrorail Station Area Bicycle and Pedestrian Improvements Study was initiated to identify physical and programmatic improvements to encourage more people to walk and ride their bicycles to and from Metrorail stations. An online questionnaire was developed to supplement information gathered at stakeholder meetings, during field observations, and at a public meeting on July 22, 2009. The online questionnaire was used to broaden the reach of public input; however, the results are not statistically significant.

The questionnaire was developed and administered in summer 2009 and was available in English and Spanish. It was distributed electronically by WMATA. It was publicized on various email listservs, at the public meeting, and on WMATA's website. The questionnaire was available online from July 22, 2009 through September 23, 2009. Over 1,000 responses were received. Key highlights of the questionnaire responses are shown below:

Key Highlights

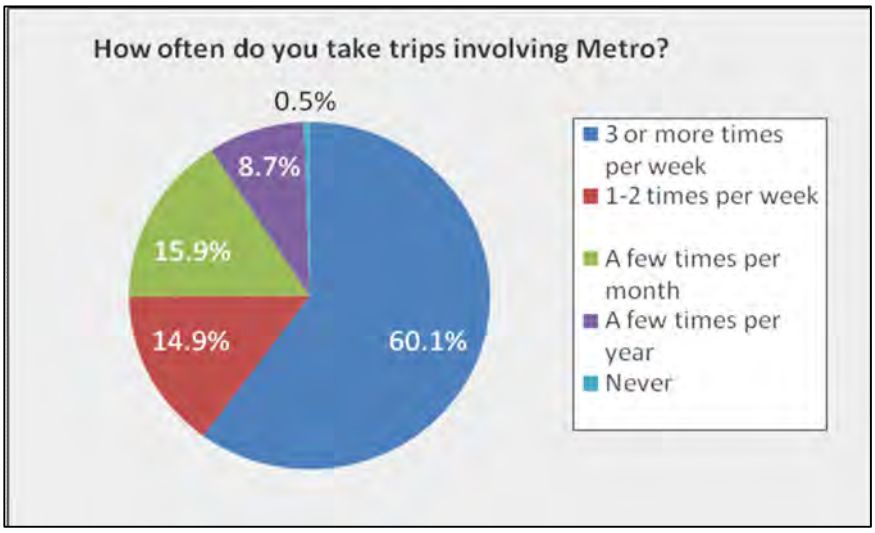
- 60% of respondents take trips involving Metro 3 or more times per week.
- The most common purpose of trips was "To commute to work" (62%). The second most common purpose was to "Meet friends and sightsee during the weekend" (15%).
- More than 80% of respondents live within 2 miles of a station. 85% of respondents said there was a Metro station within 2 miles of their work.
- Respondents use the following modes to get the station.
    - Bus: 12%
    - Bike: 16%
    - Walk: 52%
    - Drive: 16%
    - Passenger (Taxi, kiss and ride, carpool, commuter train): 4%
- Of those that bike, 42% of respondents said that bike parking is adequate at the beginning of their trip. 58% said that it is not adequate. 71% of bikers said parking for their bike is not adequate at the station at the end of their trip.
- In response to a question about ways to improve bike parking at the station at the beginning of their trip, the top three responses (of those that bike) were:
    - More racks (55%)
    - Improved lighting and security (53%)

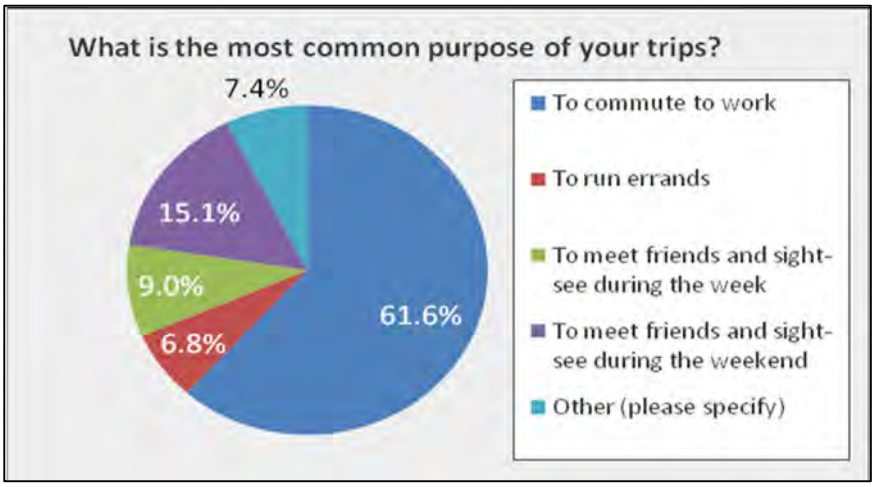
    - More lockers (44%)
- In response to a question about the most important ways to improve bicycle trips to Metro Stations, the three responses (of those that bike) most often considered "Very Important" were:
    - More on-road bike facilities such as bike lanes leading to and from the station.
    - More connections to off-road facilities such as trails in the vicinity of the station.
    - Intersection and crossing improvements on routes leading to and from the station.
- When asked why they drive to the Metro station, 25% of drivers said that it was because "I do not know a safe walking or biking route." 55% of drivers said they would consider walking to Metro instead of driving if certain changes were made.
- In response to a question about the most important barriers to biking or walking to a station, the three responses (of those that drive) most often considered "Very Important" were:
    - The distance between my residence and the station.
    - Uncomfortable crossing conditions at intersections.
    - High traffic volume and speed.
- 67% of drivers said they would consider biking to Metro instead of driving if certain changes were made.
- In response to a question about the most important barriers, the three responses (of those that drive) most often considered "Very Important" were:
    - Not enough trails (off-road pathways).
    - Not enough bike lanes (on-road).
    - High traffic volume and speed.
- In response to a question about ways to improve the experience walking to the station, the three responses (of those that walk) most often considered "Important" were:
    - Improved crossing conditions at intersections.
    - Improved lighting conditions.
    - Improved sidewalk surfaces.
- Respondents use the following modes to their destination from the station.
    - Bus: 6%
    - Bike: 8%
    - Walk: 80%
    - Drive: 2%
    - Passenger (Taxi, kiss and ride, carpool, commuter train): 3%
- Of those that bike to a station, 95% use their own personal bike, while 5% use Smart Bikes or another rental bike service.
- To improve bike parking at the station at the end of their trip, the following responses were cited most often by those that bike:
    - More racks (60%)
    - Improved lighting and security (60%)
    - More lockers (55%)
- In response to a question about ways to improve their bicycle trips from Metro Stations, the three responses (of those that bike) most often considered "Very Important" were:
    - More on-road bike facilities such as bike lanes leading to and from the station.
    - Intersection and crossing improvements on routes leading to and from the station.
    - More connections to off-road facilities such as trails in the vicinity of the station.
- In response to a question about ways to improve their experience walking to the station, the three responses (of those that walk) most often considered "Important" were:
    - Improved crossing conditions at intersections.

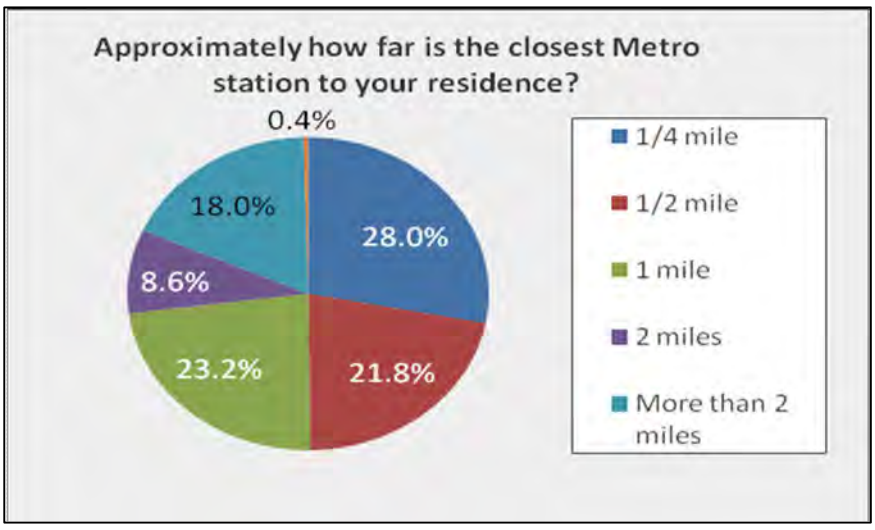
    - Decreased traffic volume and speed.
    - Improved sidewalk surfaces.
- When asked why they drive from the Metro station, 13% of drivers said it is because "I do not know a safe walking or biking route."
- 60% of drivers said they would consider walking from Metro instead of driving if certain changes were made. 50% of drivers said they would consider biking from Metro instead of driving if certain changes were made.
- 76% of respondents were aware of the Smart Bike DC bike sharing program; however, only 5% of respondents said they participate in the program.
- 27% of respondents have used the bike racks on the front of buses. 22% said they had been denied access on a bus because the bike racks were full. When this occurred, 60% rode all the way to their destination, 42% waited for the next bus, and 15% rode to another bus stop.
- In response to a question about what would encourage them to bring a bike on a bus trip, the most often cited response was "Training for the rack users" (45%).
- Only 4% of respondents have ever rented a bike locker at the Metro station. If they had not rented a locker, the most common responses for why they had not were:
    - I'm not interested in renting a locker (47%).
    - I don't know how to rent a locker (29%).
    - I did not know that lockers were available to rent (28%).
- 56% of respondents said they would be interested in using a short-term bike locker, as opposed to the long-term lockers (12-month rental) that are available now.
- 83% of respondents felt that they had the information that you need to plan a walking and/or biking route to Metro Stations.
- When asked what would help them to plan their route, the most common responses were:
    - Better wayfinding and signage (61%).
    - Make the WMATA website more user friendly (49%).
    - More hard copy maps of the bus routes at rail stations (42%).
- When asked how they receive information and news about the DC Metro Area, the most common responses were:
    - Online sources (includes blogs, newspapers and other websites not including the WMATA website) (74%).
    - Newspapers (print) (54%).
    - WMATA's website (53%).
- 80% of respondents felt that the WMATA website serves their needs

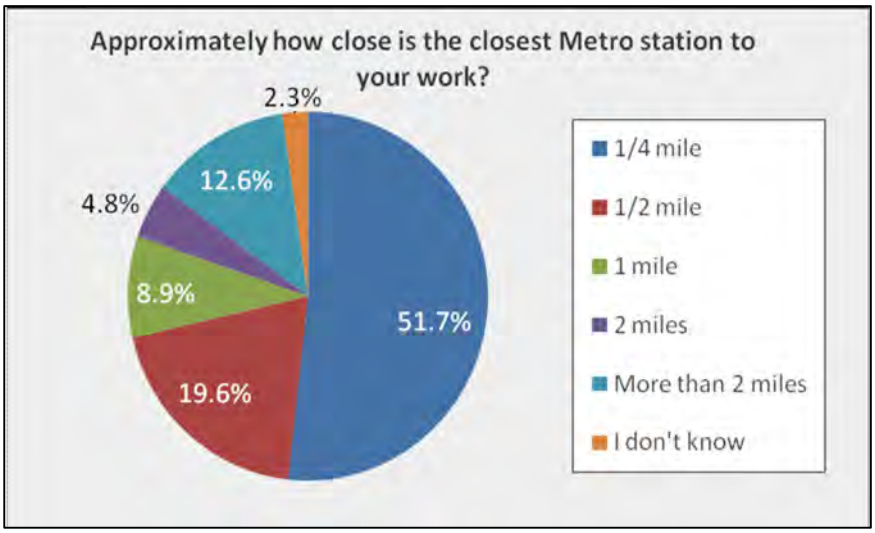
Summary Tables and Charts

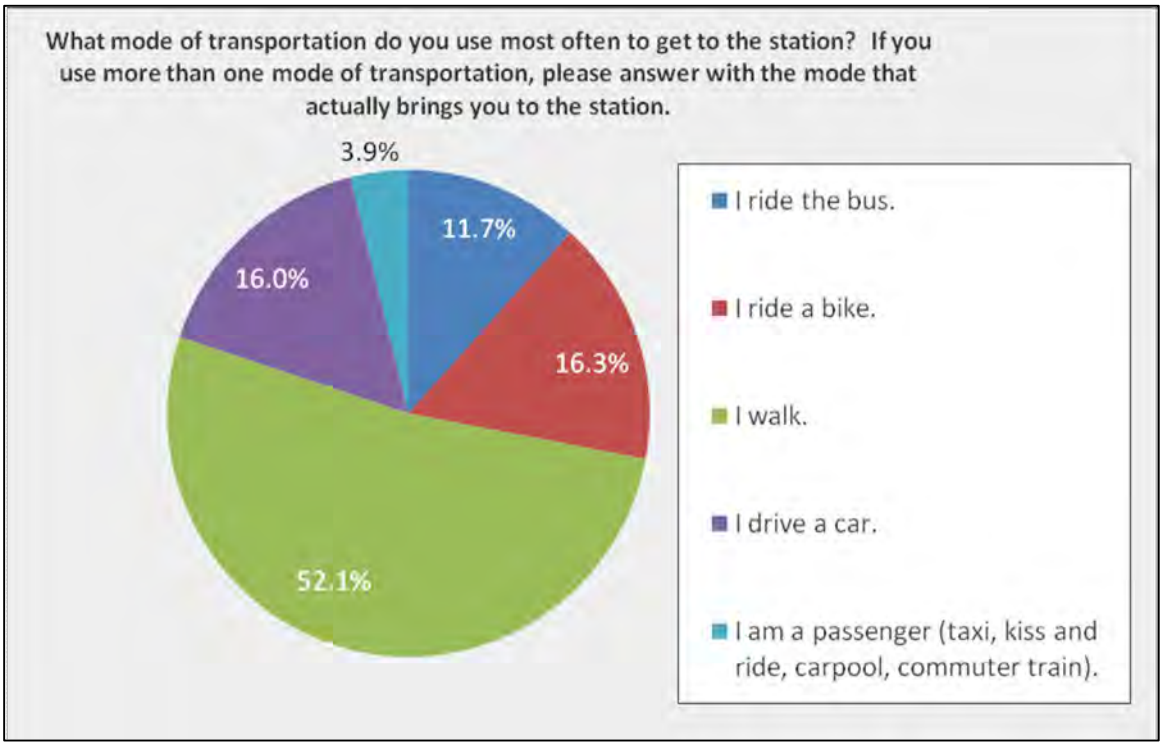
Summary tables and charts illustrating the results of the questionnaire are included on the following pages.

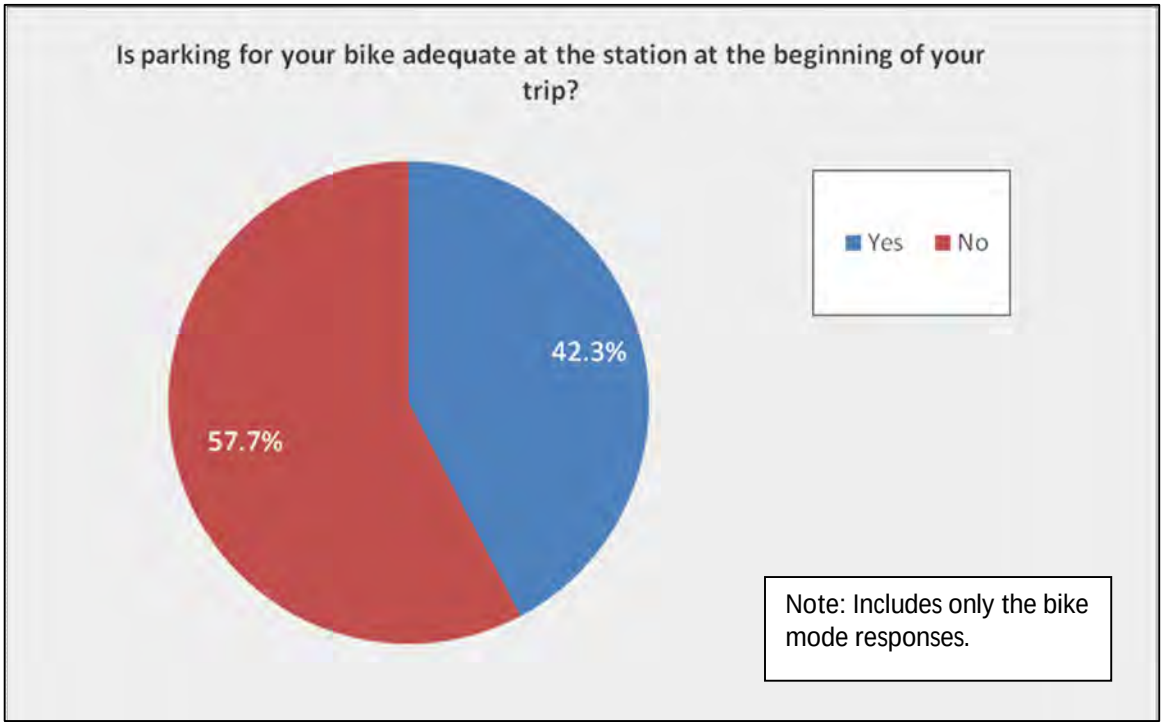

How often do you take trips involving Metro?
0.5%
8.7%
15.9%
14.9%
60.1%
3 or more times per week
1-2 times per week
A few times per month
A few times per year
Never

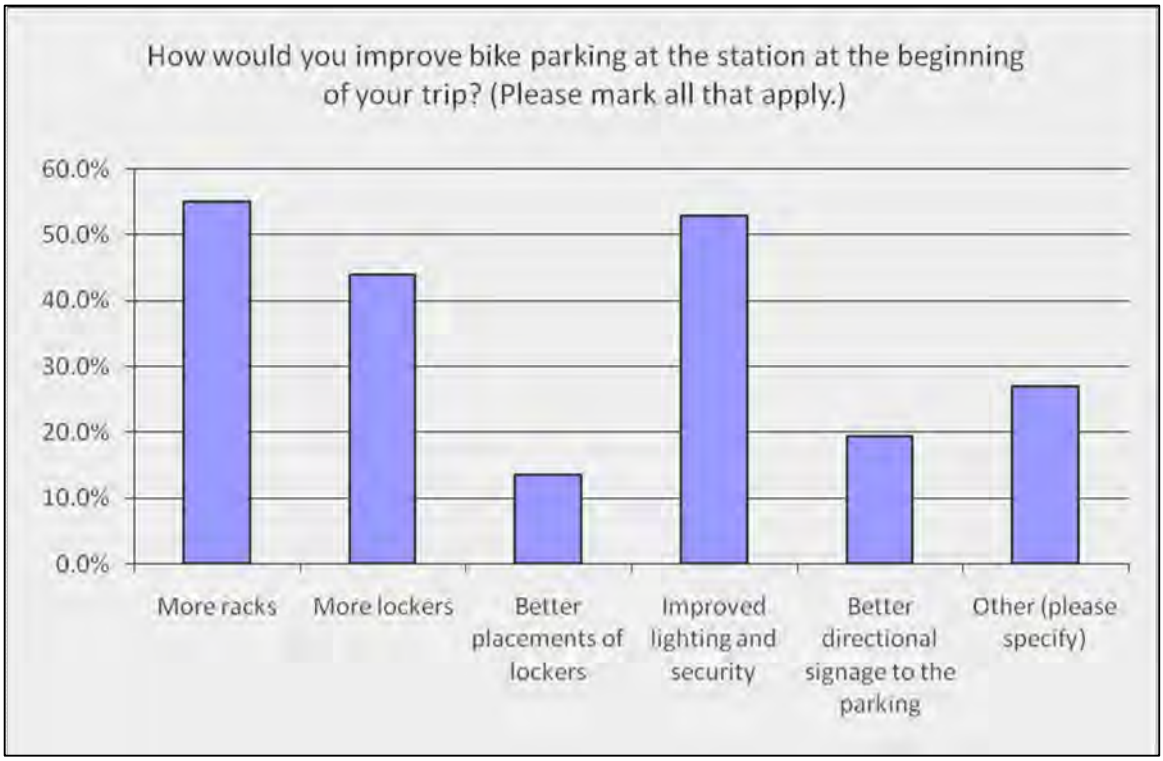

What is the most common purpose of your trips?
7.4%
15.1%
9.0%
6.8%
61.6%
To commute to work
To run errands
To meet friends and sight-see during the week
To meet friends and sight-see during the weekend
Other (please specify)


Approximately how far is the closest Metro station to your residence?
0.4%
18.0%
28.0%
8.6%
23.2%
21.8%
1/4 mile
1/2 mile
1 mile
2 miles
More than 2 miles

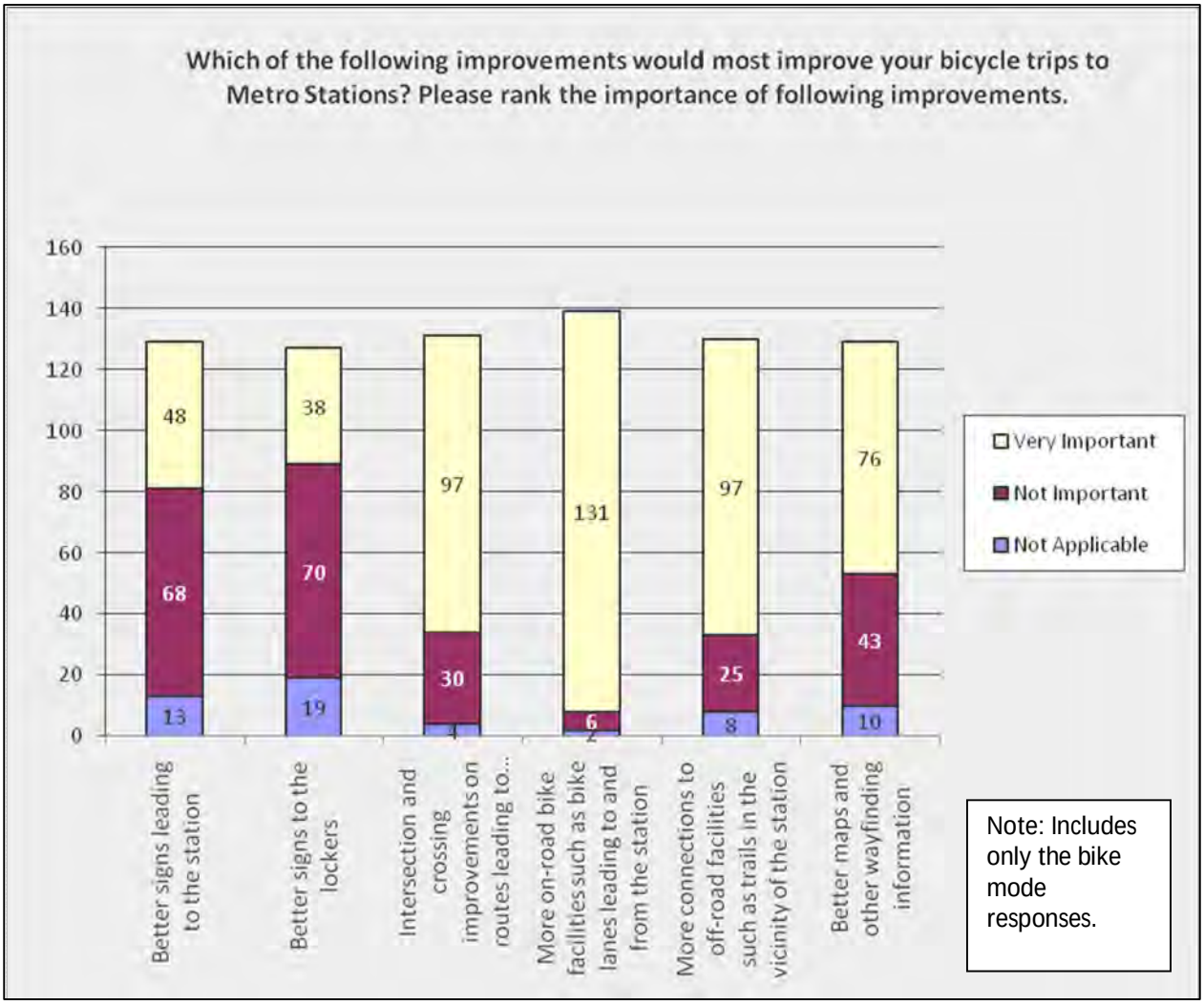

Approximately how close is the closest Metro station to your work?
2.3%
12.6%
4.8%
8.9%
51.7%
19.6%
1/4 mile
1/2 mile
1 mile
2 miles
More than 2 miles
I don't know


What mode of transportation do you use most often to get to the station? If you use more than one mode of transportation, please answer with the mode that actually brings you to the station.
3.9%
11.7%
16.0%
16.3%
52.1%
I ride the bus.
I ride a bike.
I walk.
I drive a car.
I am a passenger (taxi, kiss and ride, carpool, commuter train).

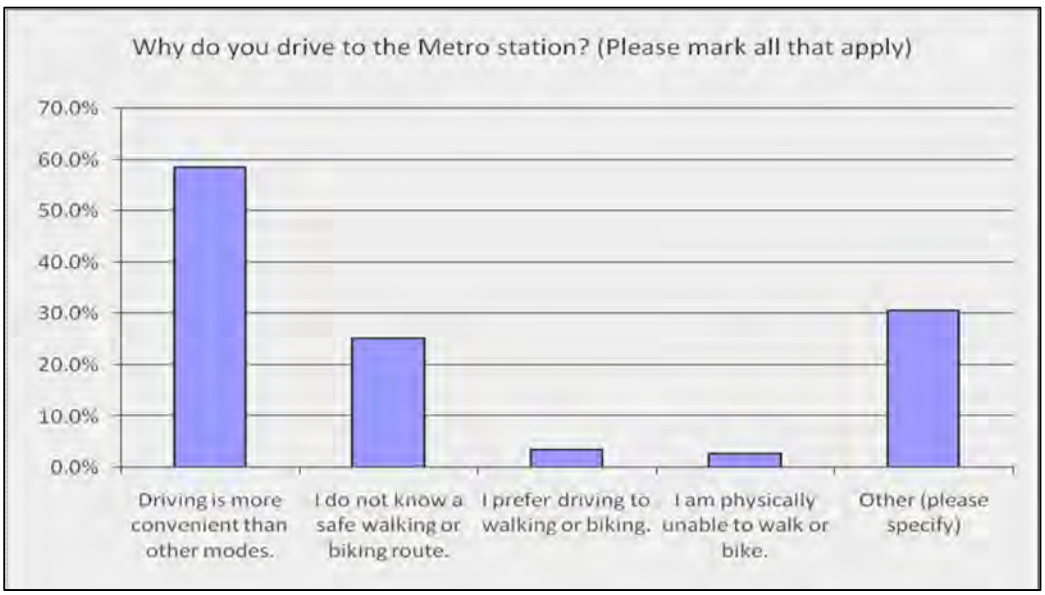




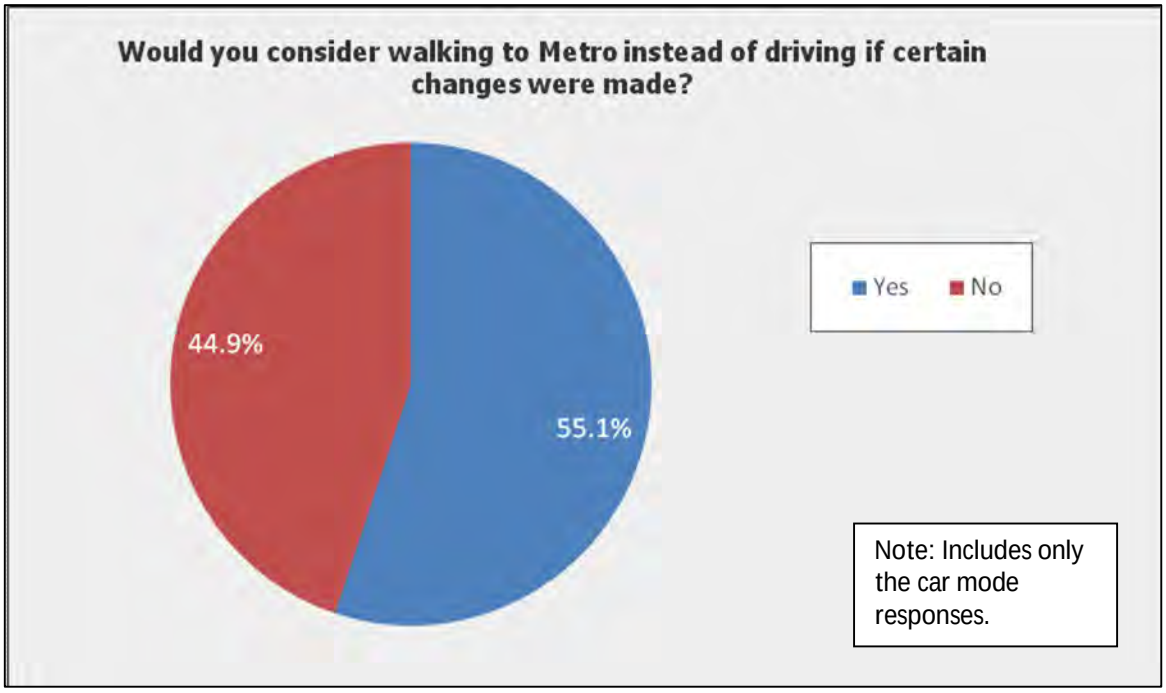
Note: Includes only the bike mode responses.

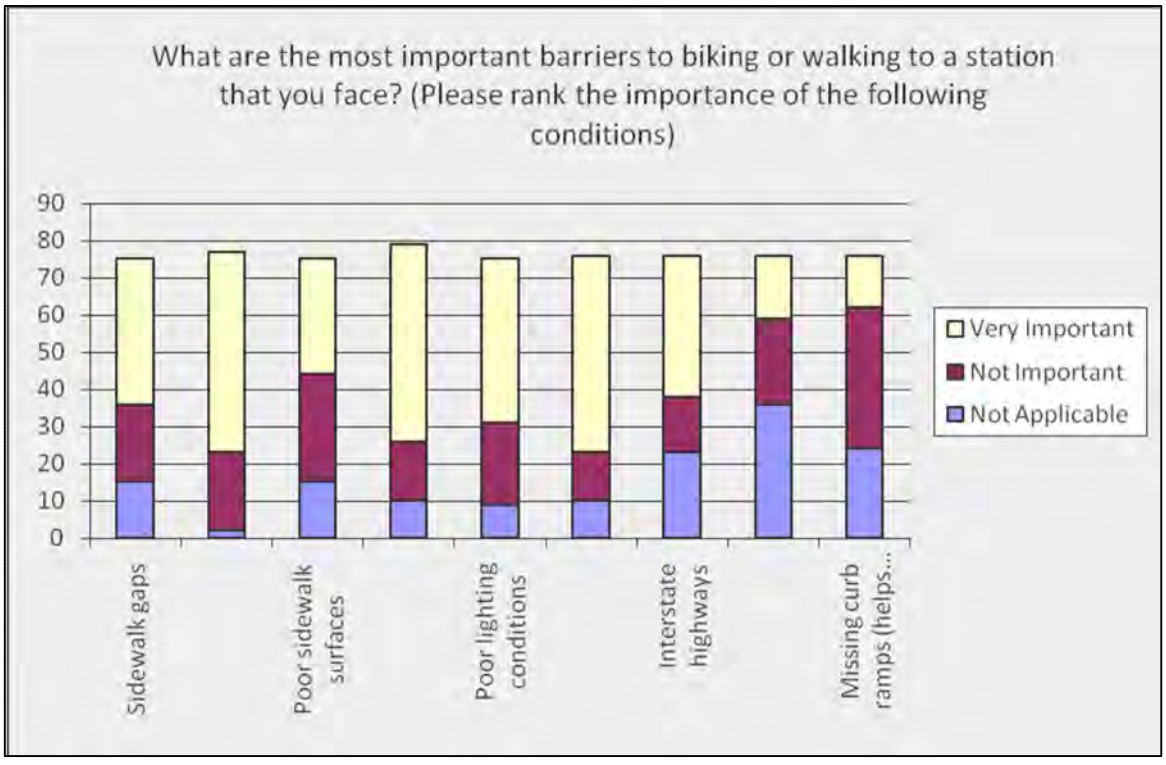


Note: Includes only the bike mode responses.

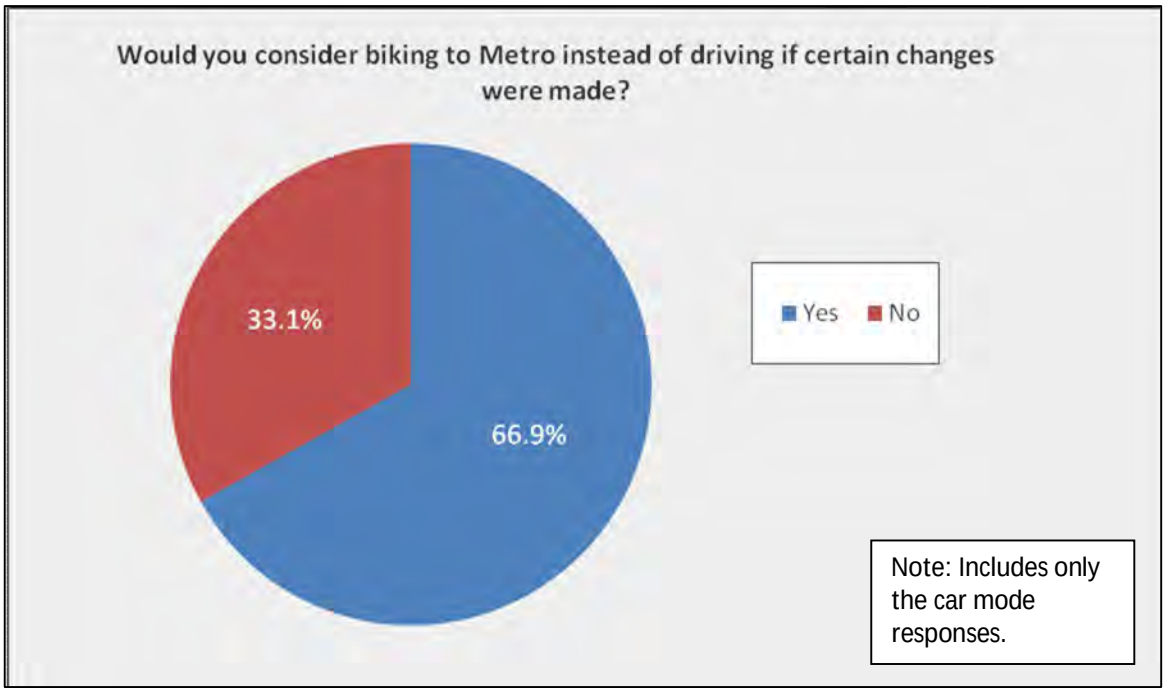


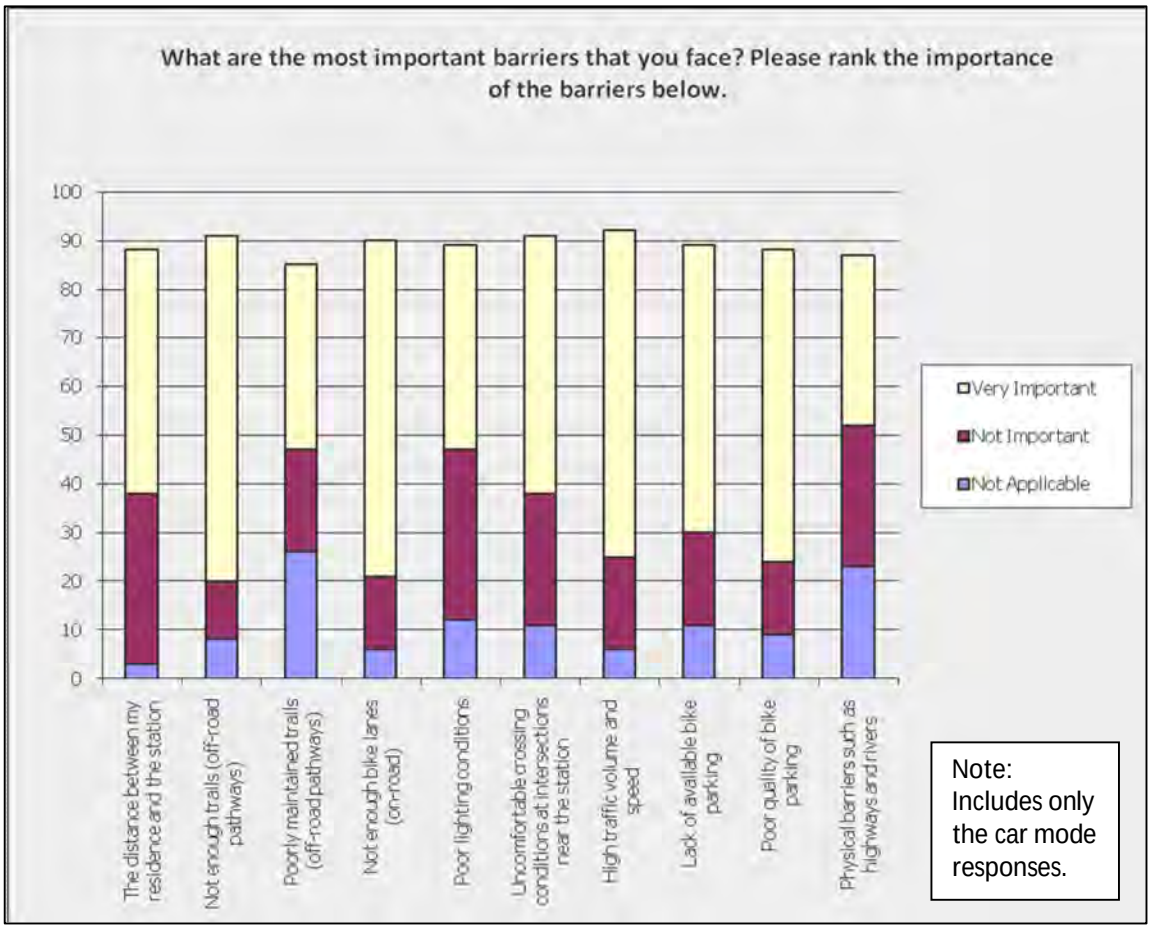
Note: Includes only the car mode responses.

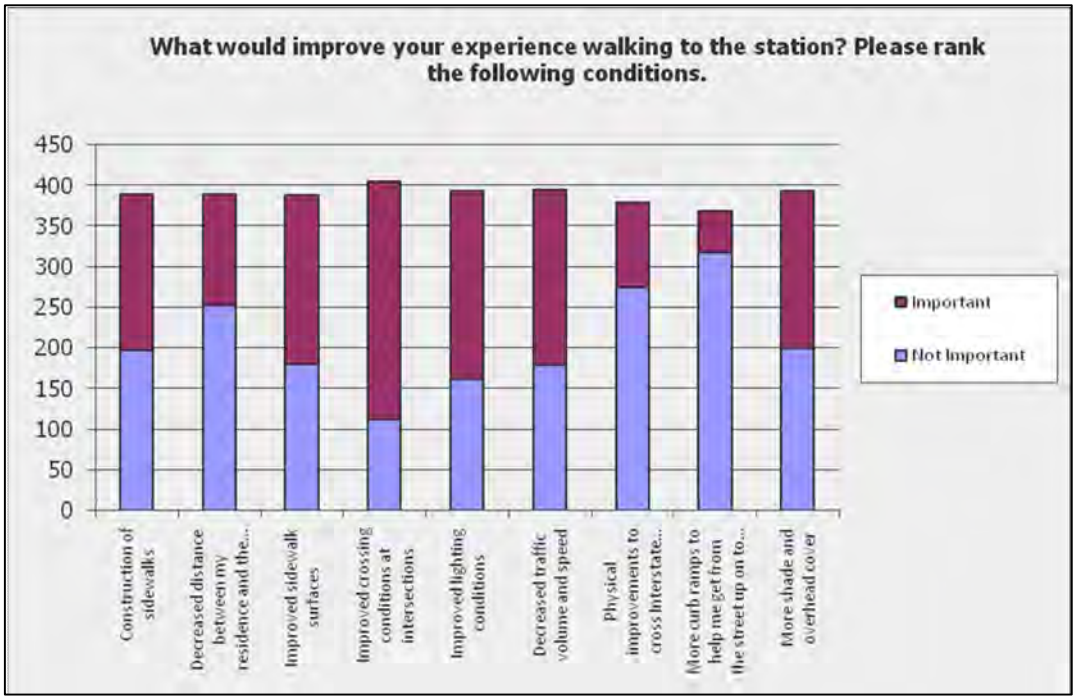




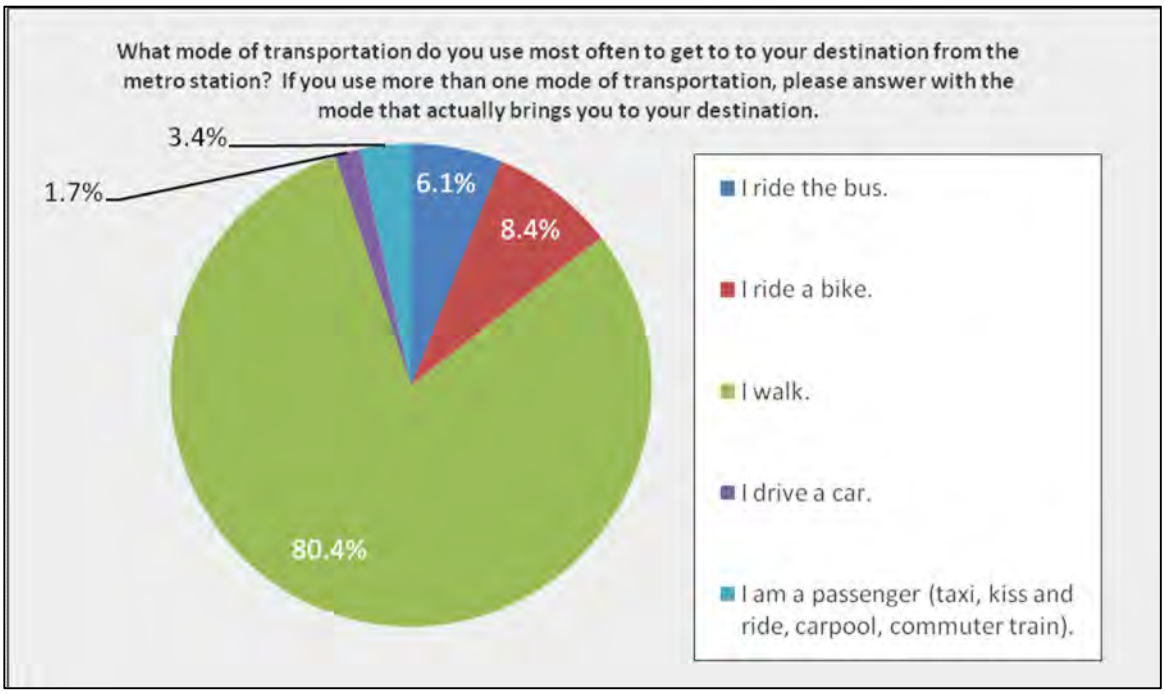
Note: Includes only the car mode responses.

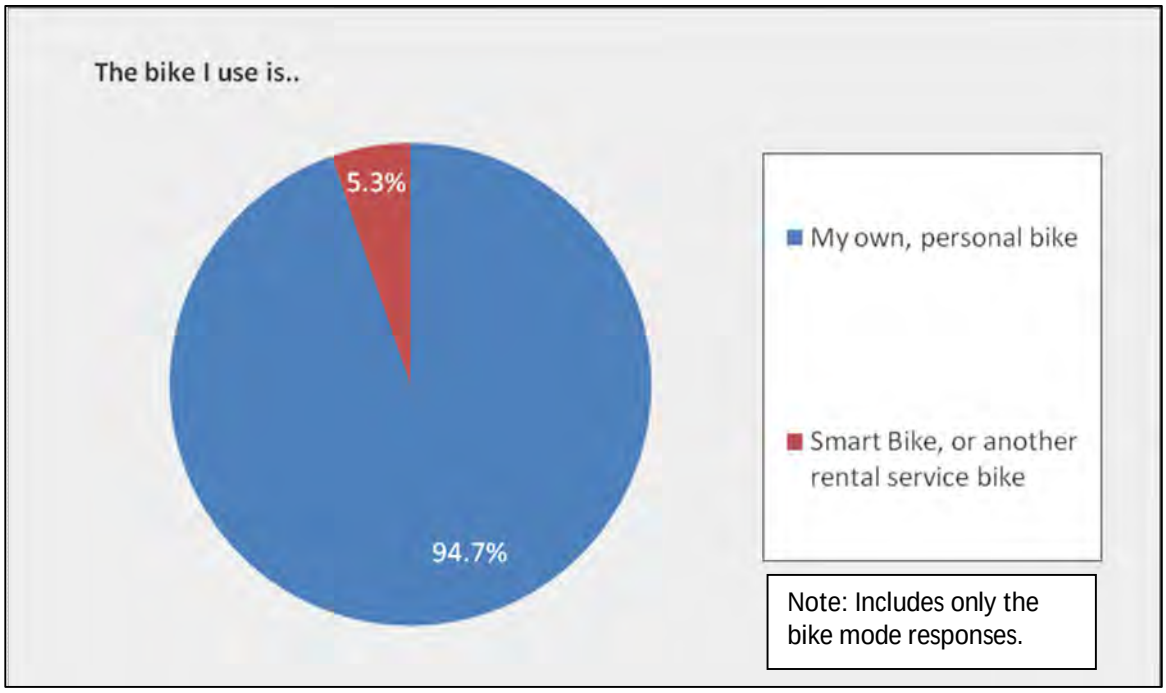

Would you consider biking to Metro instead of driving if certain changes were made?
33.1%
66.9%
Yes
No
Note: Includes only the car mode responses.

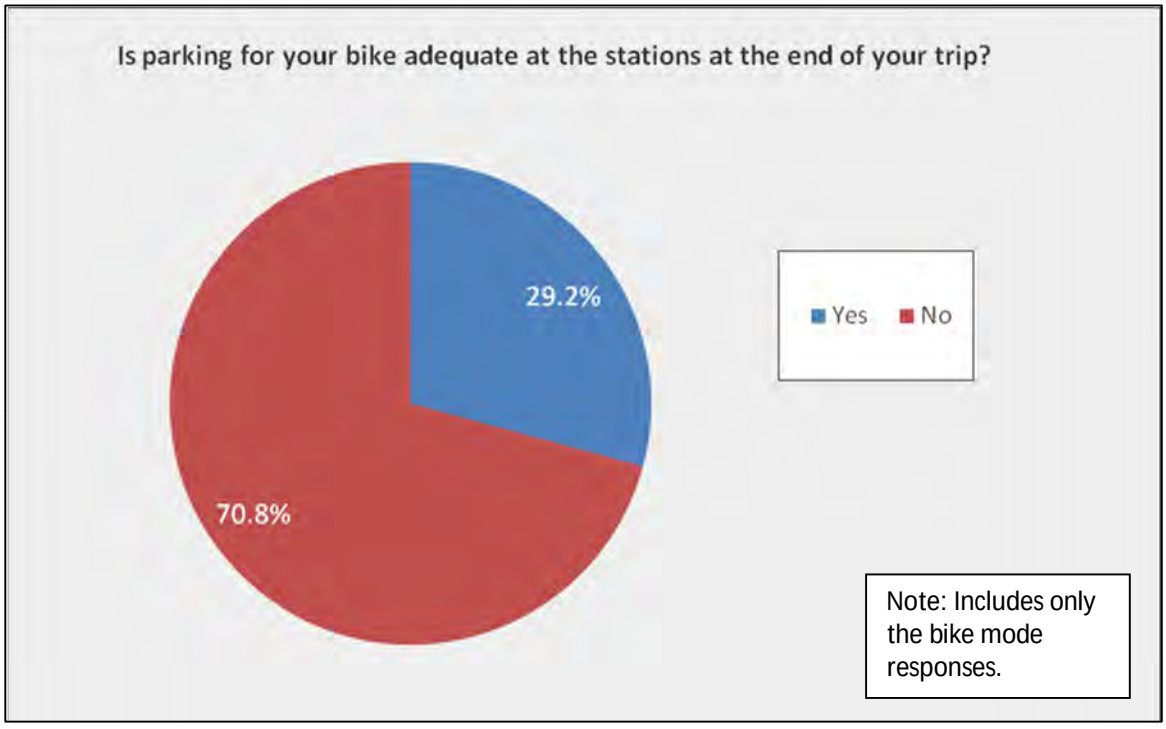

What are the most important barriers that you face? Please rank the importance of the barriers below.
100
90
80
70
60
50
40
30
20
10
0
The distance between my residence and the station
Not enough trails (off-road pathways)
Poorly maintained trails (off-road pathways)
Not enough bike lanes (on-road)
Poor lighting conditions
Uncomfortable crossing conditions at intersections near the station
High traffic volume and speed
Lack of available bike parking
Poor quality of bike parking
Physical barriers such as highways and rivers
Very Important
Not Important
Not Applicable
Note: Includes only the car mode responses.

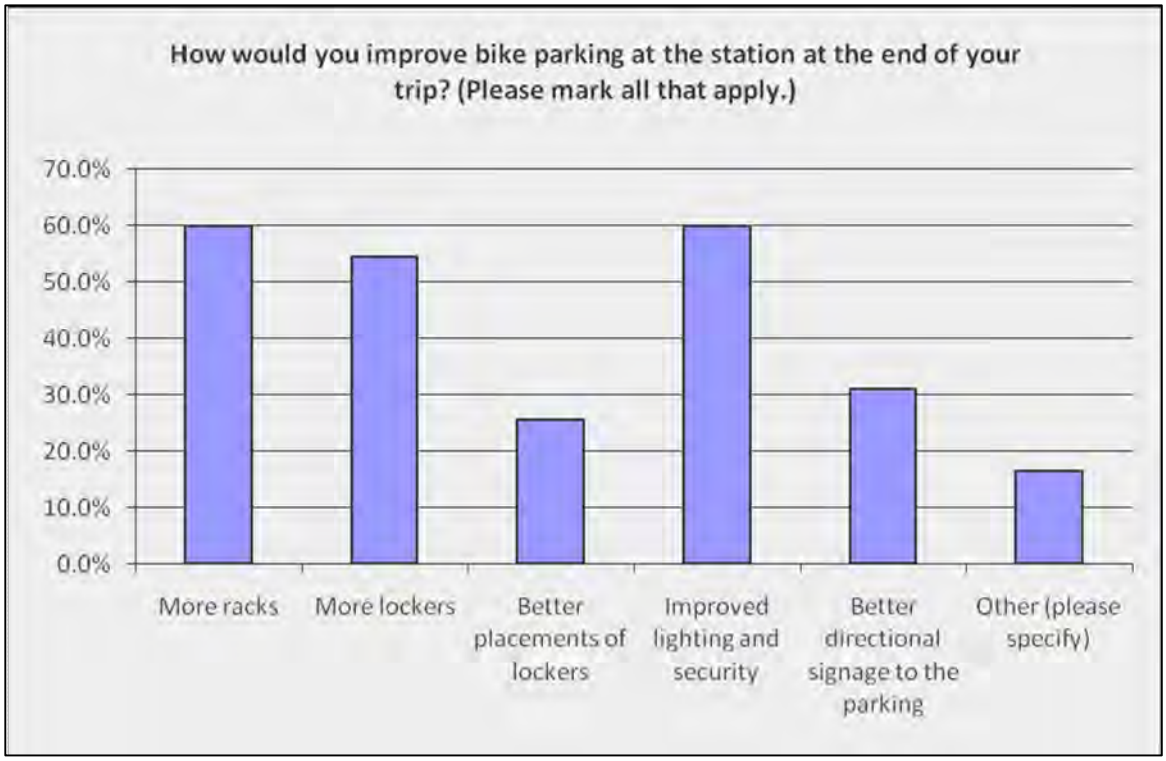


Note: Includes only the walk mode responses.

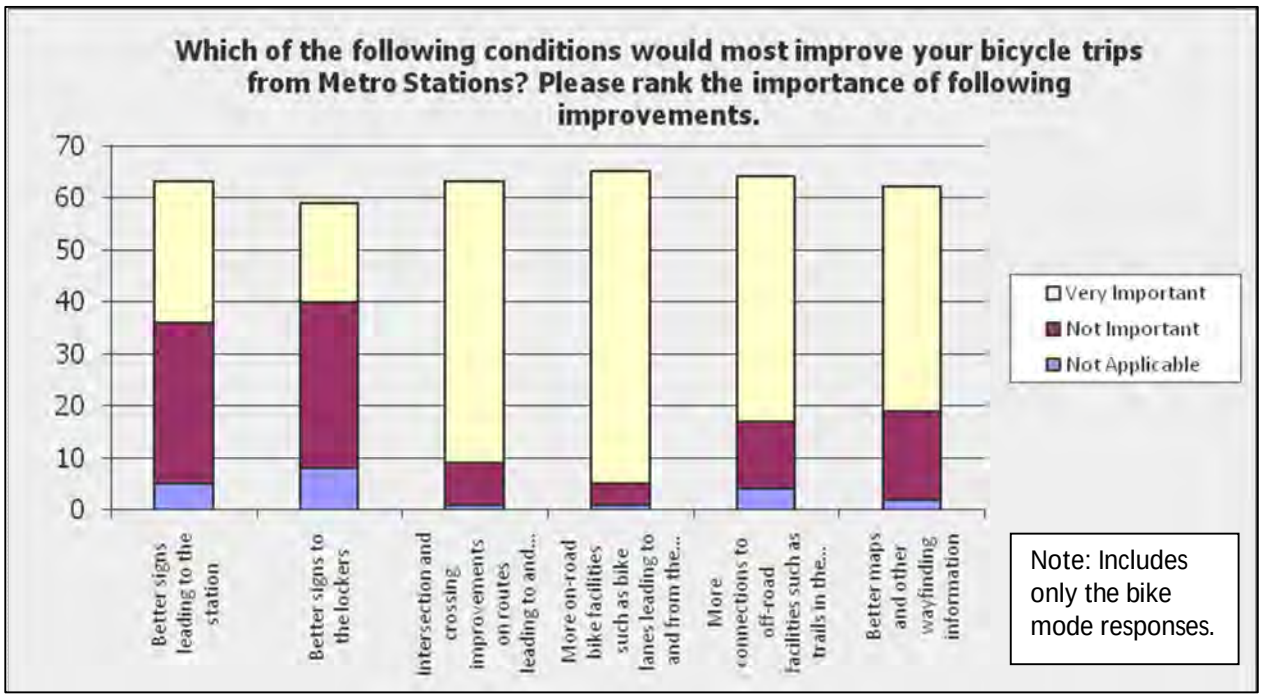



The bike I use is..
5.3%
94.7%
My own, personal bike
Smart Bike, or another rental service bike
Note: Includes only the bike mode responses.

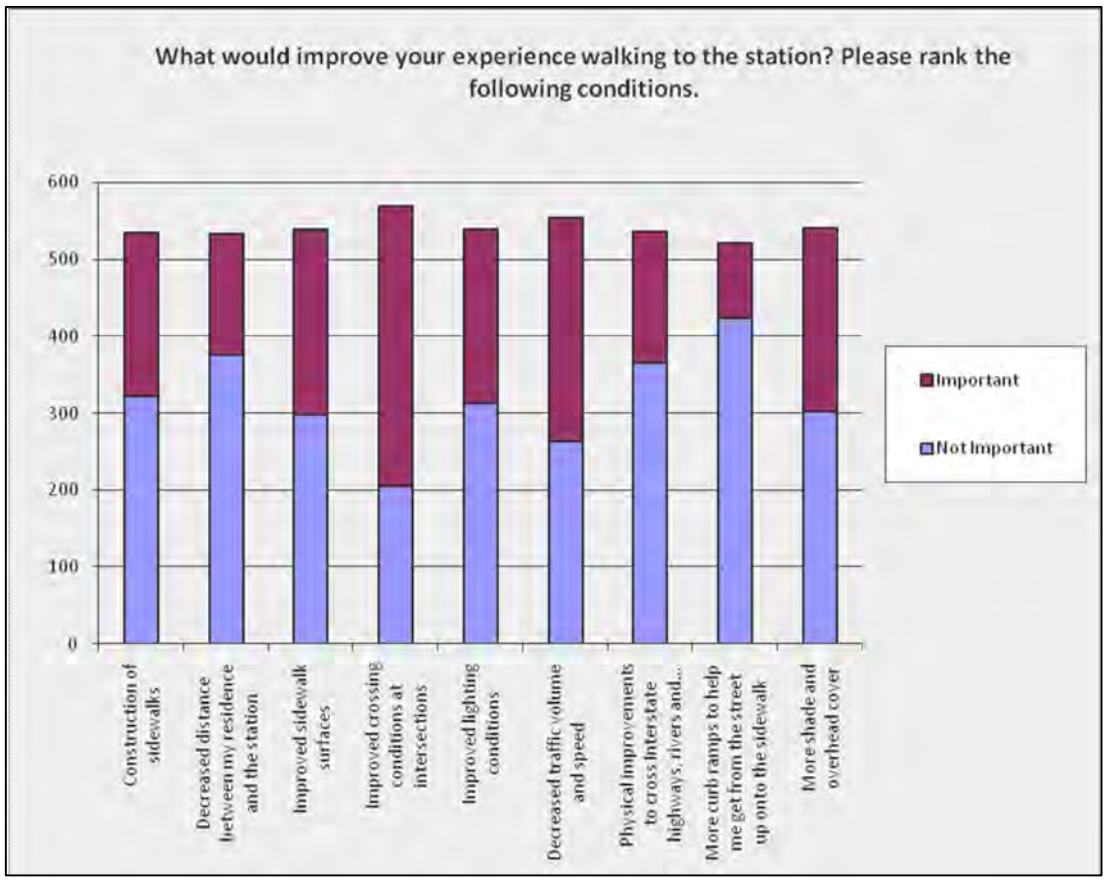

Is parking for your bike adequate at the stations at the end of your trip?
29.2%
70.8%
Yes
No
Note: Includes only the bike mode responses.



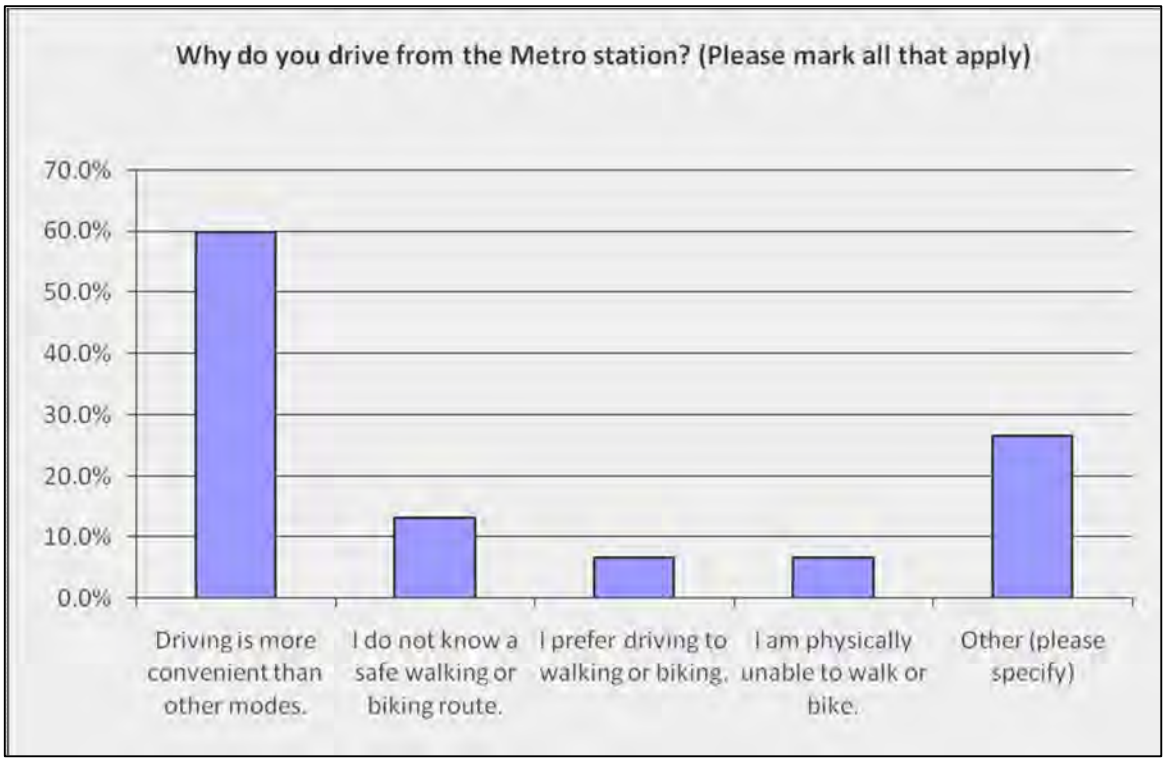
Note: Includes only the bike mode responses.



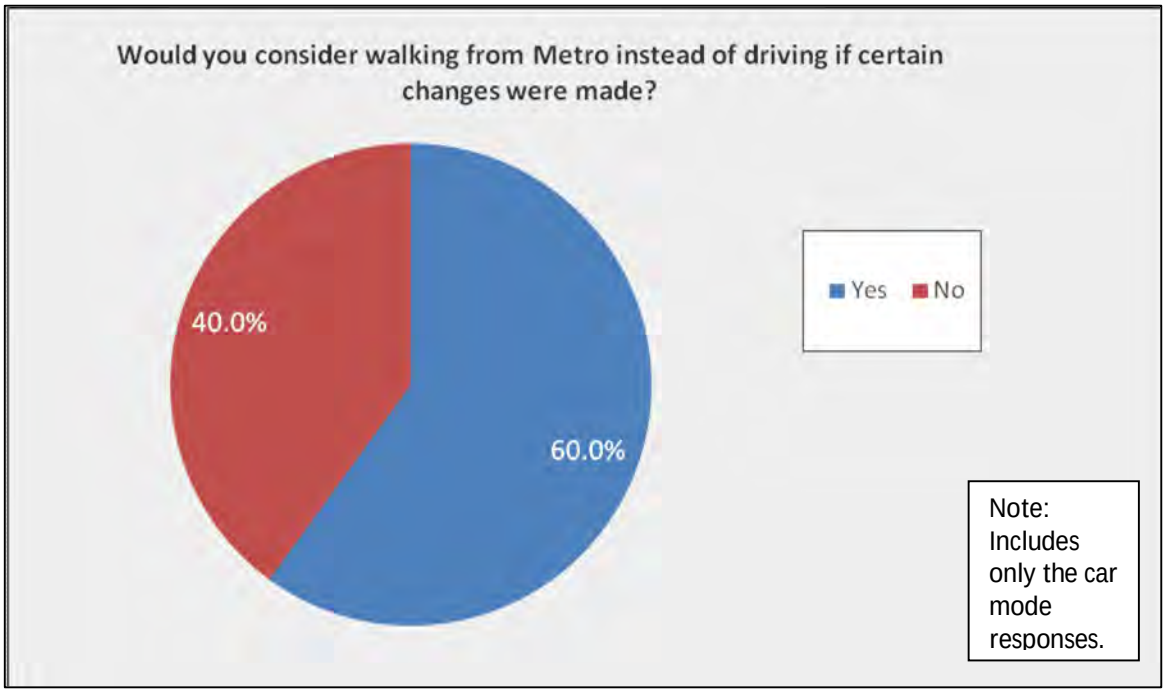
Note: Includes only the bike mode responses.

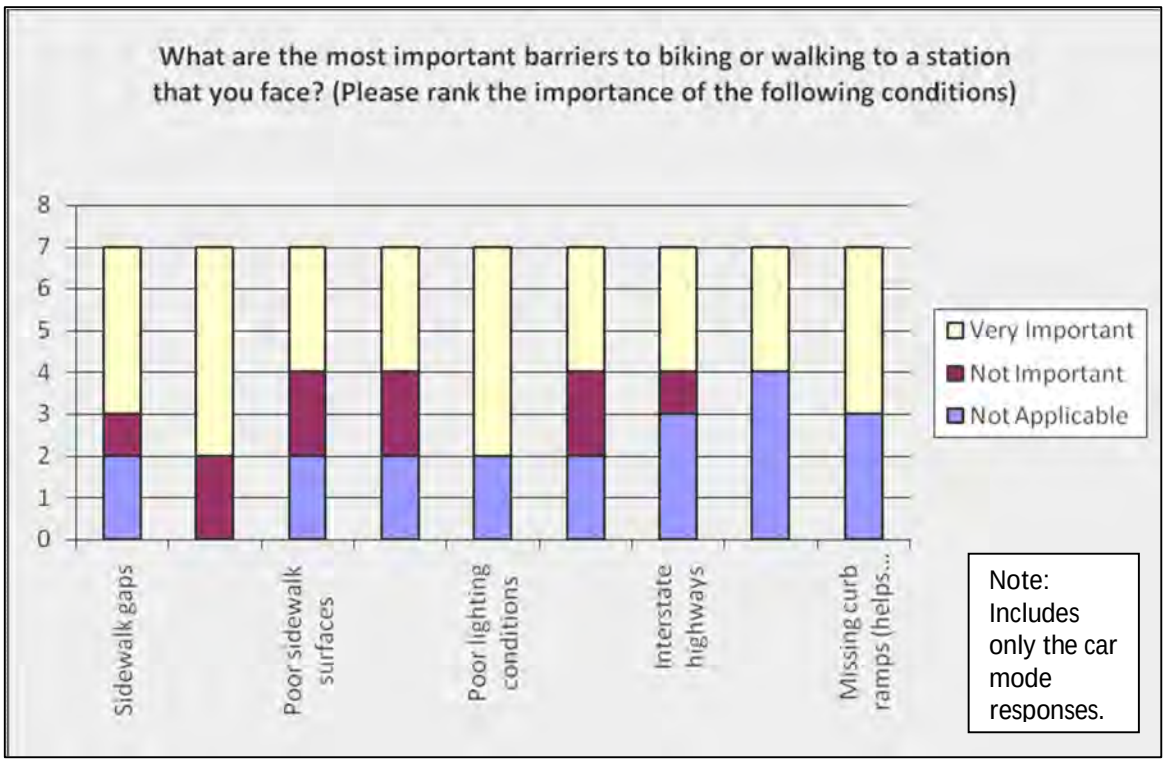


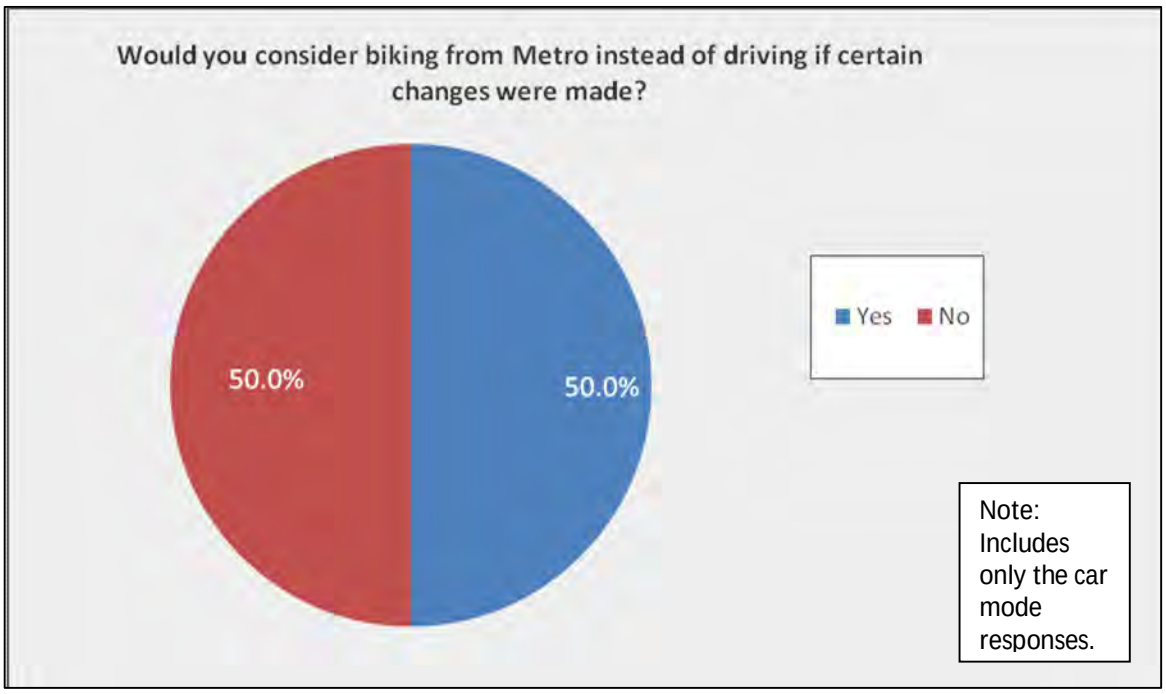
Note: Includes only the walk mode responses.

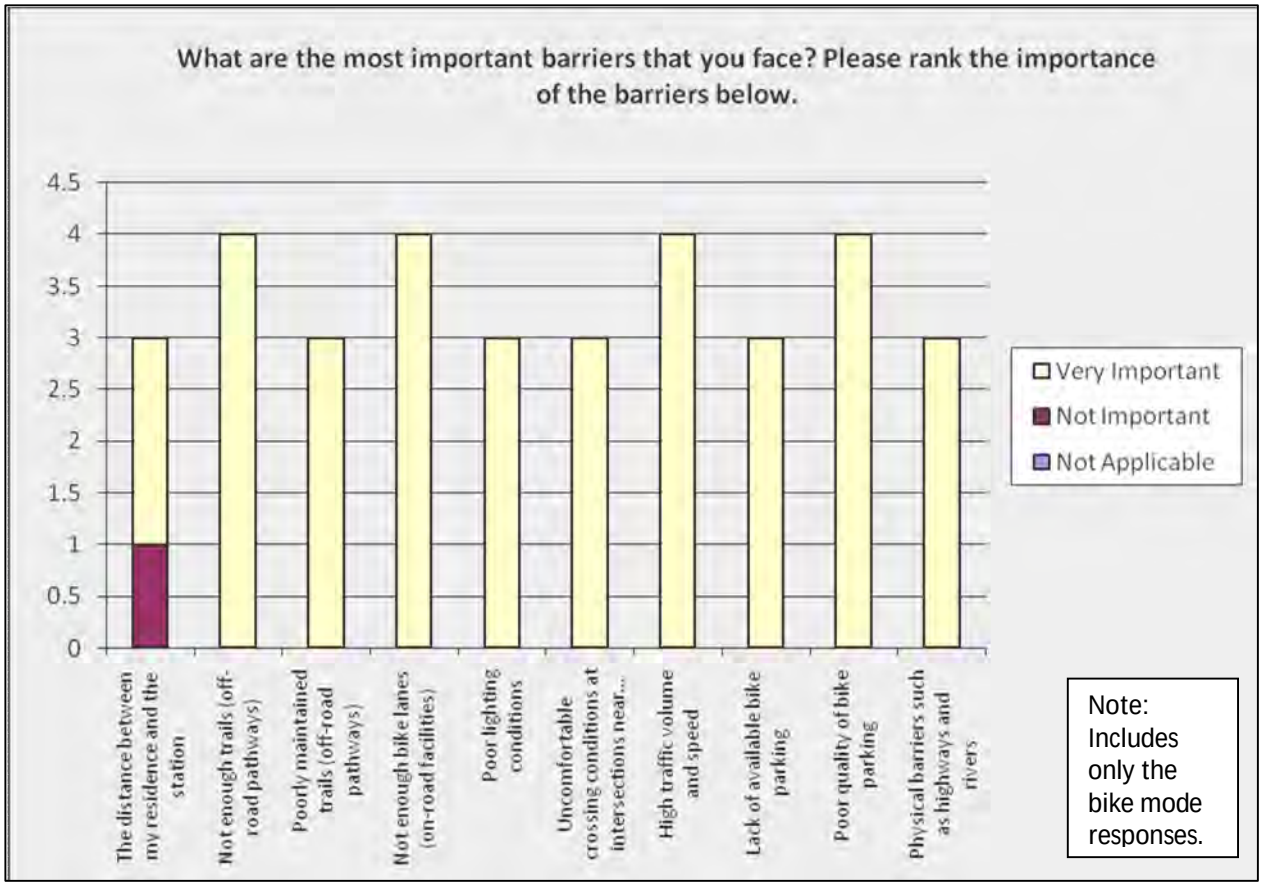


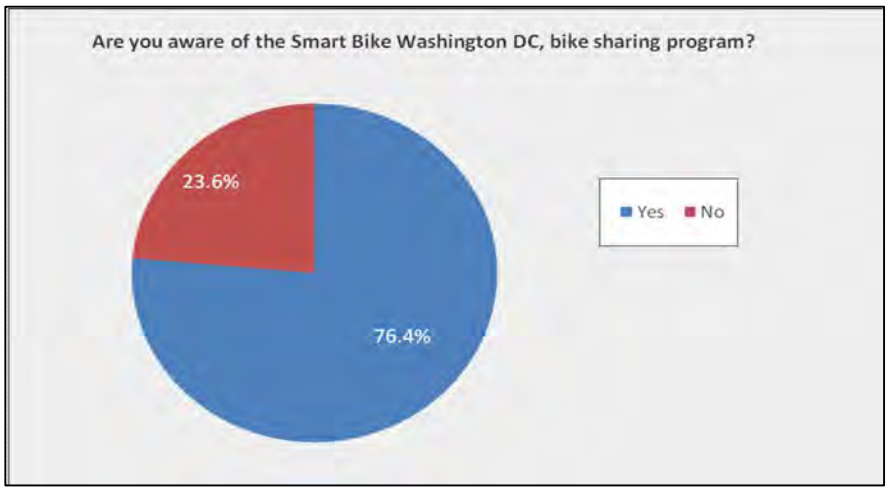
Note: Includes only the car mode responses.

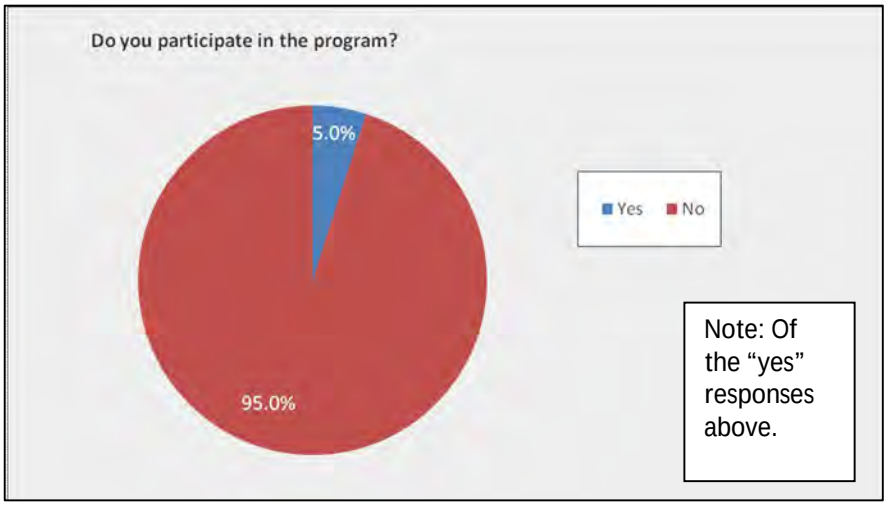

Would you consider walking from Metro instead of driving if certain changes were made?
40.0%
60.0%
Yes
No
Note: Includes only the car mode responses.

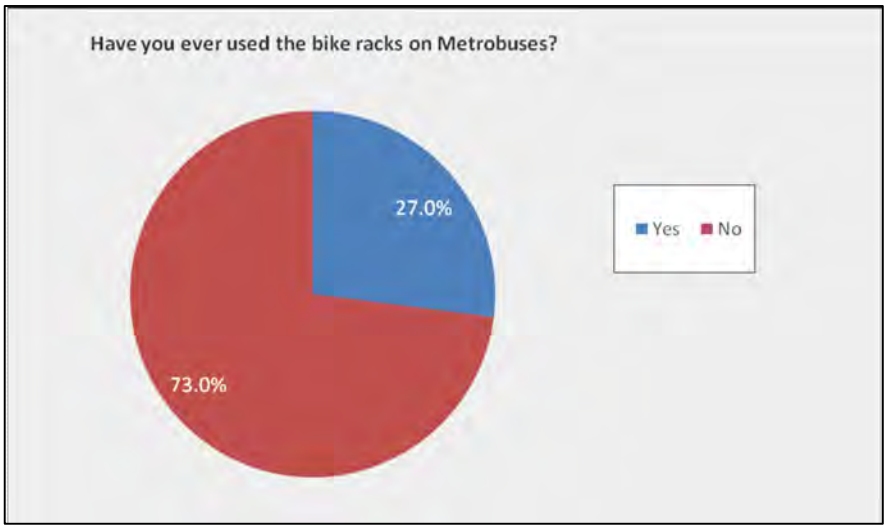

What are the most important barriers to biking or walking to a station that you face? (Please rank the importance of the following conditions)
8
7
6
5
4
3
2
1
0
Sidewalk gaps
Poor sidewalk surfaces
Poor lighting conditions
Interstate highways
Missing curb ramps (helps...
Very Important
Not Important
Not Applicable
Note: Includes only the car mode responses.

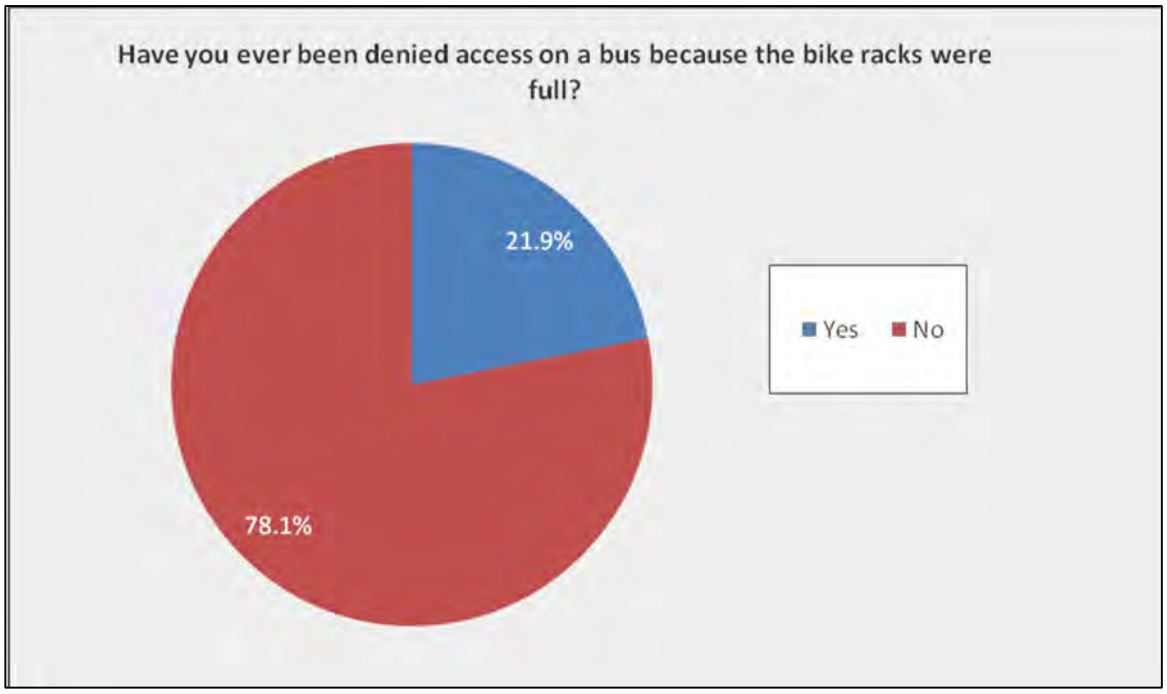

Would you consider biking from Metro instead of driving if certain changes were made?
50.0%
50.0%
Yes
No
Note: Includes only the car mode responses.

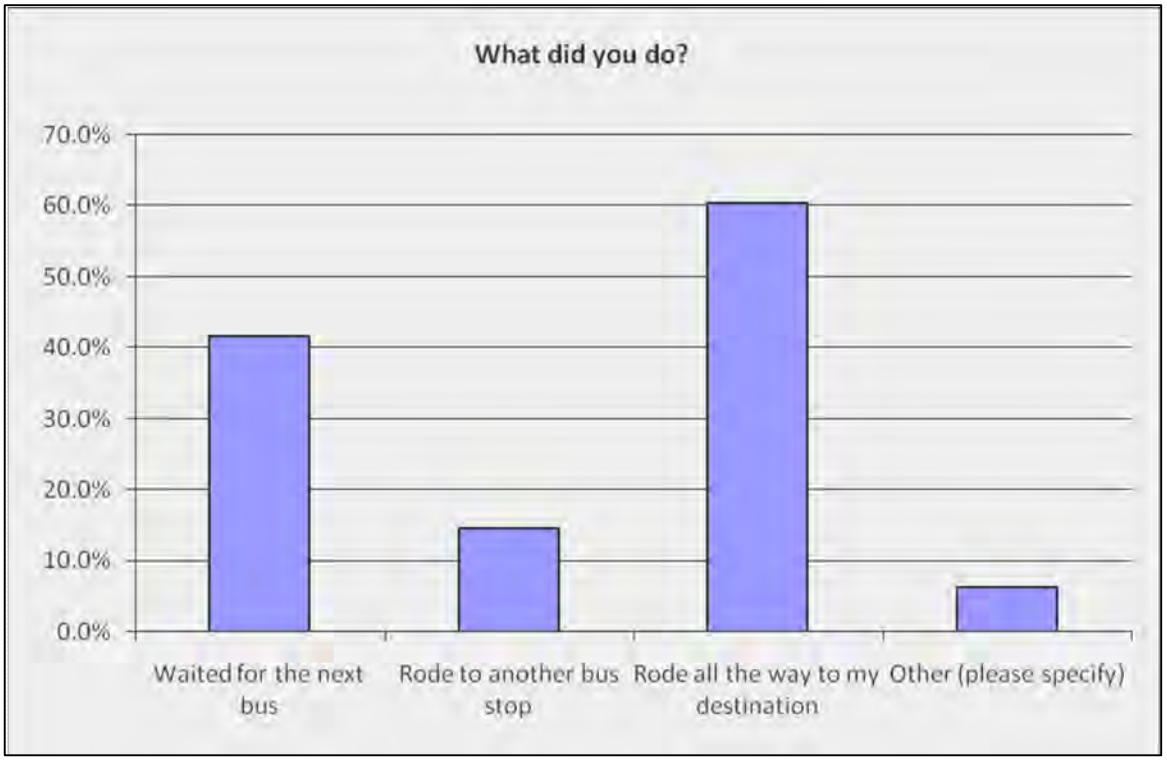

What are the most important barriers that you face? Please rank the importance of the barriers below.
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
The distance between my residence and the station
Not enough trails (off-road pathways)
Poorly maintained trails (off-road pathways)
Not enough bike lanes (on-road facilities)
Poor lighting conditions
Uncomfortable crossing conditions at intersections near...
High traffic volume and speed
Lack of available bike parking
Poor quality of bike parking
Physical barriers such as highways and rivers
Very Important
Not Important
Not Applicable
Note: Includes only the bike mode responses.


Are you aware of the Smart Bike Washington DC, bike sharing program?
23.6%
76.4%
Yes
No

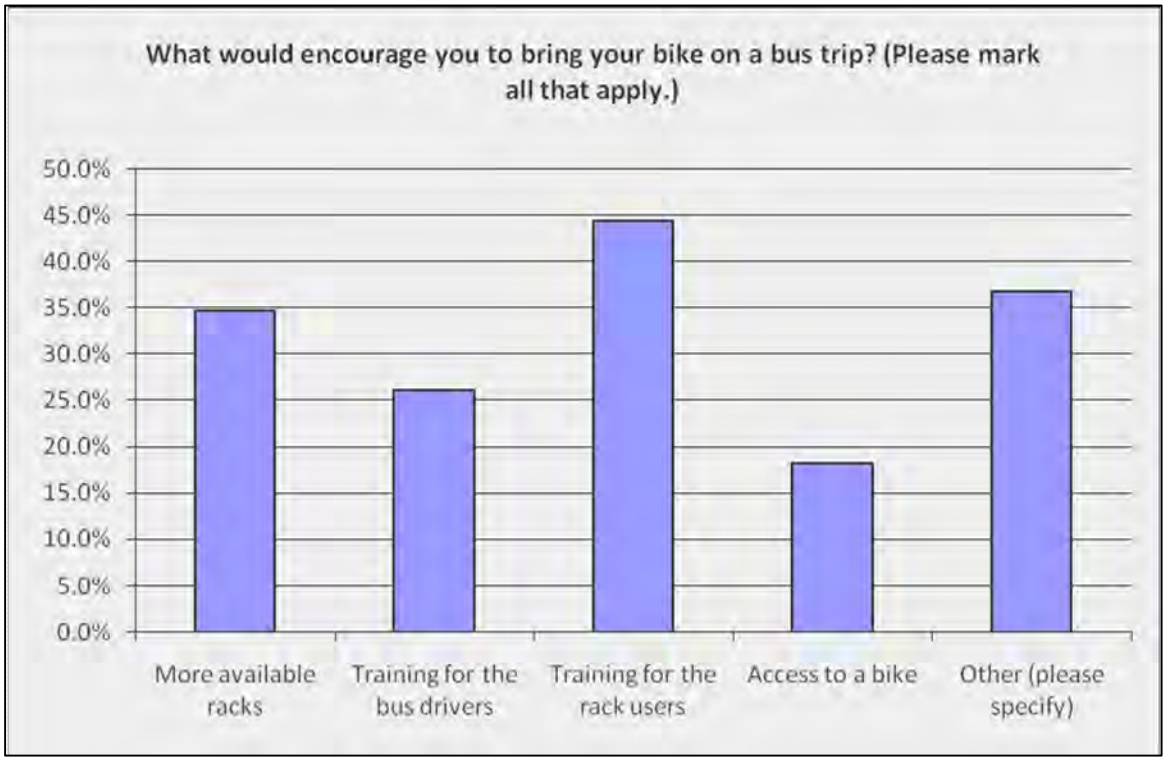

Do you participate in the program?
5.0%
95.0%
Yes
No
Note: Of the "yes" responses above.

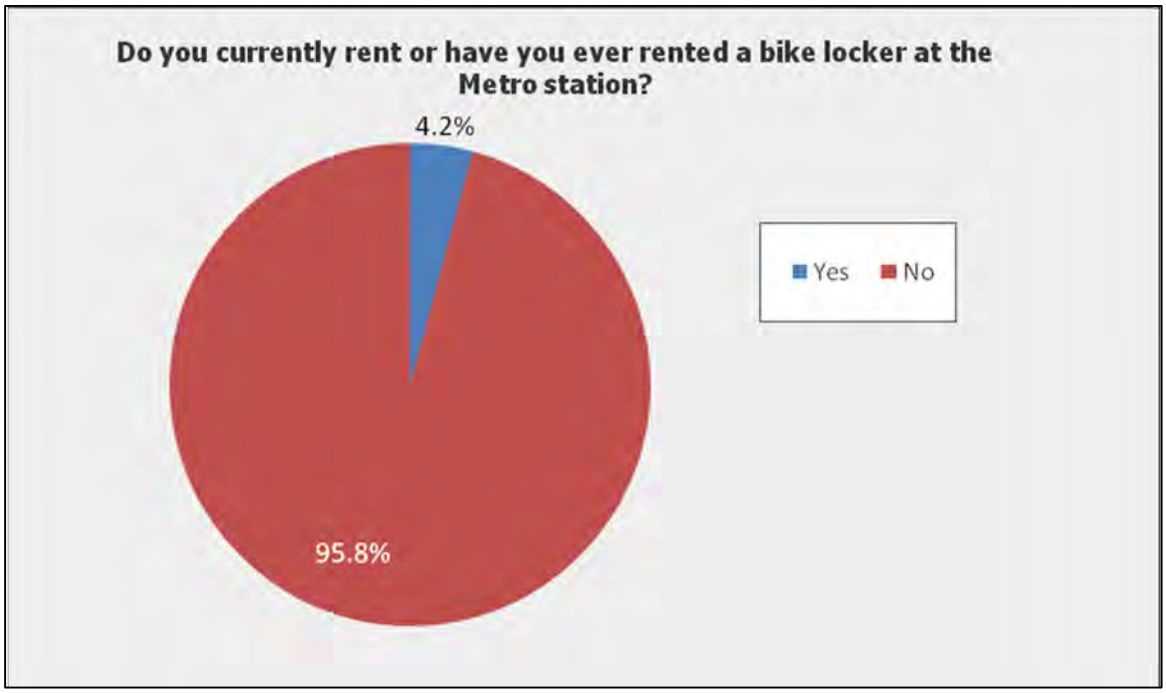

Have you ever used the bike racks on Metrobuses?
27.0%
73.0%
Yes
No

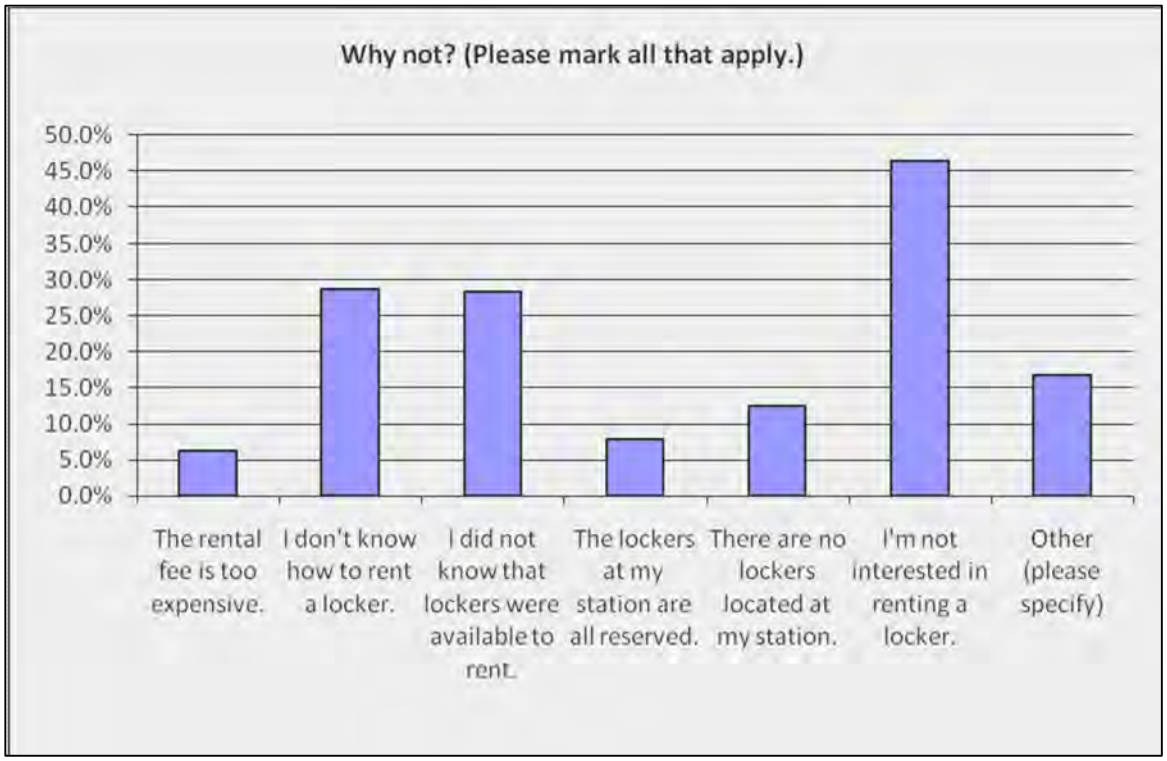




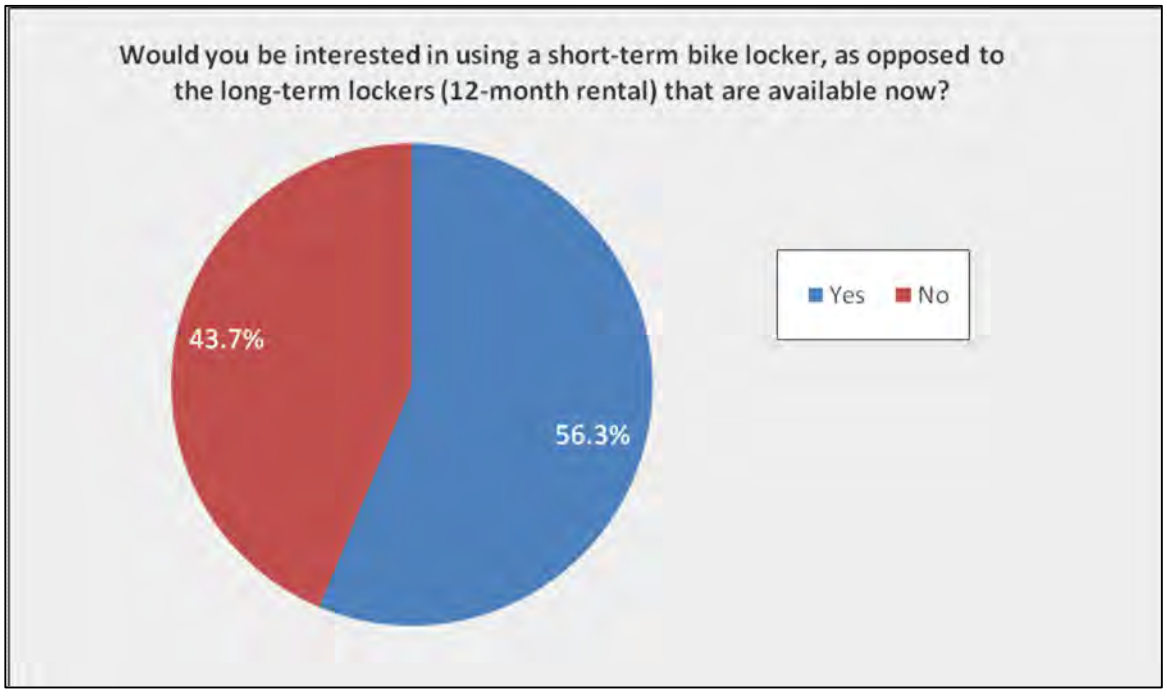
Note: Of the "yes" responses above.

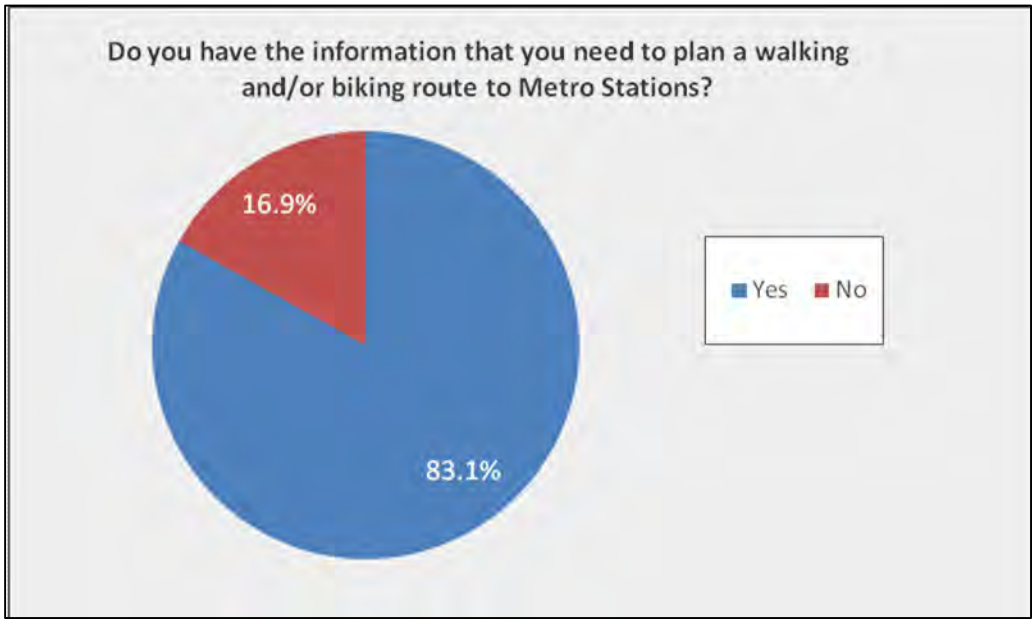

What would encourage you to bring your bike on a bus trip? (Please mark all that apply.)
50.0%
45.0%
40.0%
35.0%
30.0%
25.0%
20.0%
15.0%
10.0%
5.0%
0.0%
More available racks
Training for the bus drivers
Training for the rack users
Access to a bike
Other (please specify)

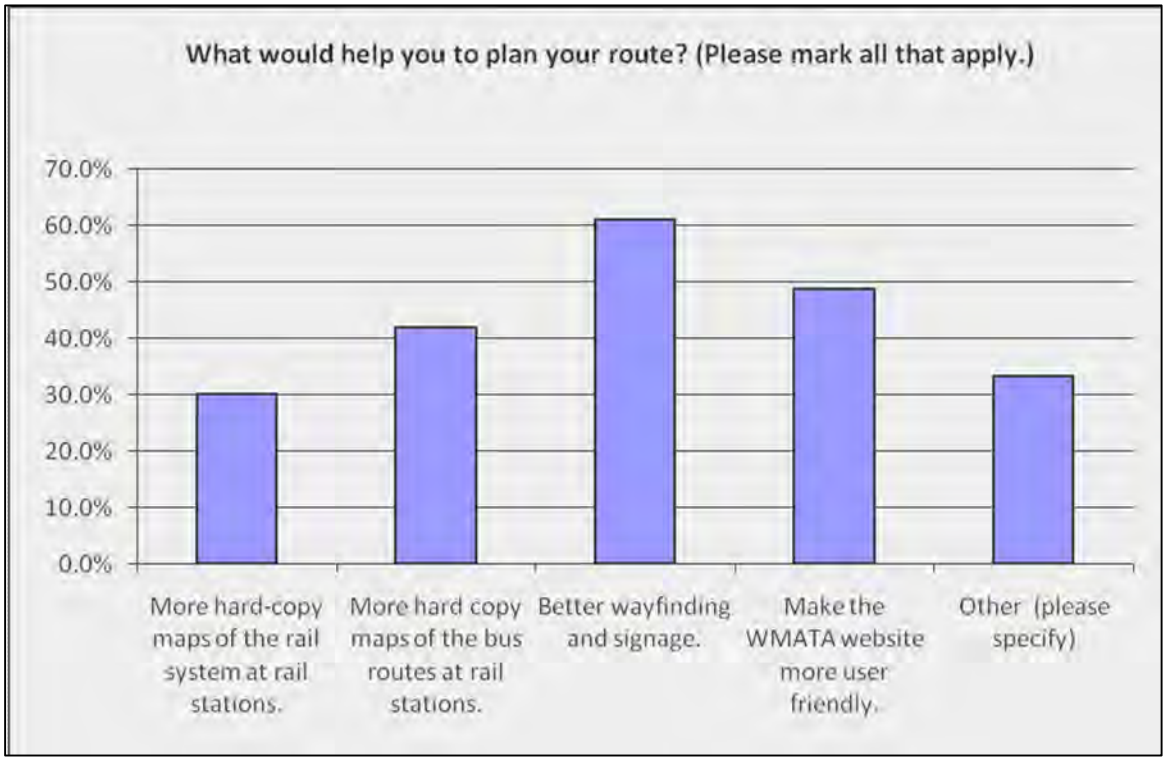

Do you currently rent or have you ever rented a bike locker at the Metro station?
4.2%
95.8%
Yes
No



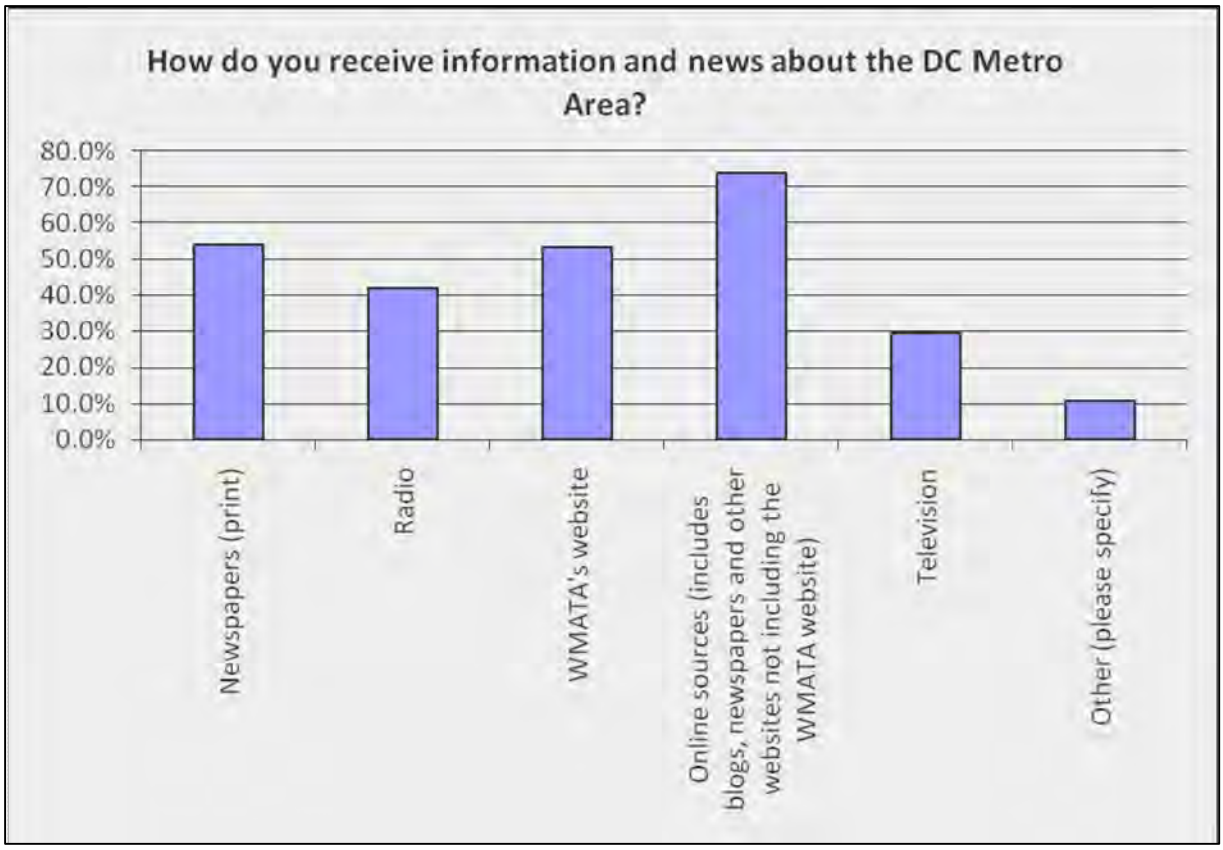
Note: Of the "no" responses above.

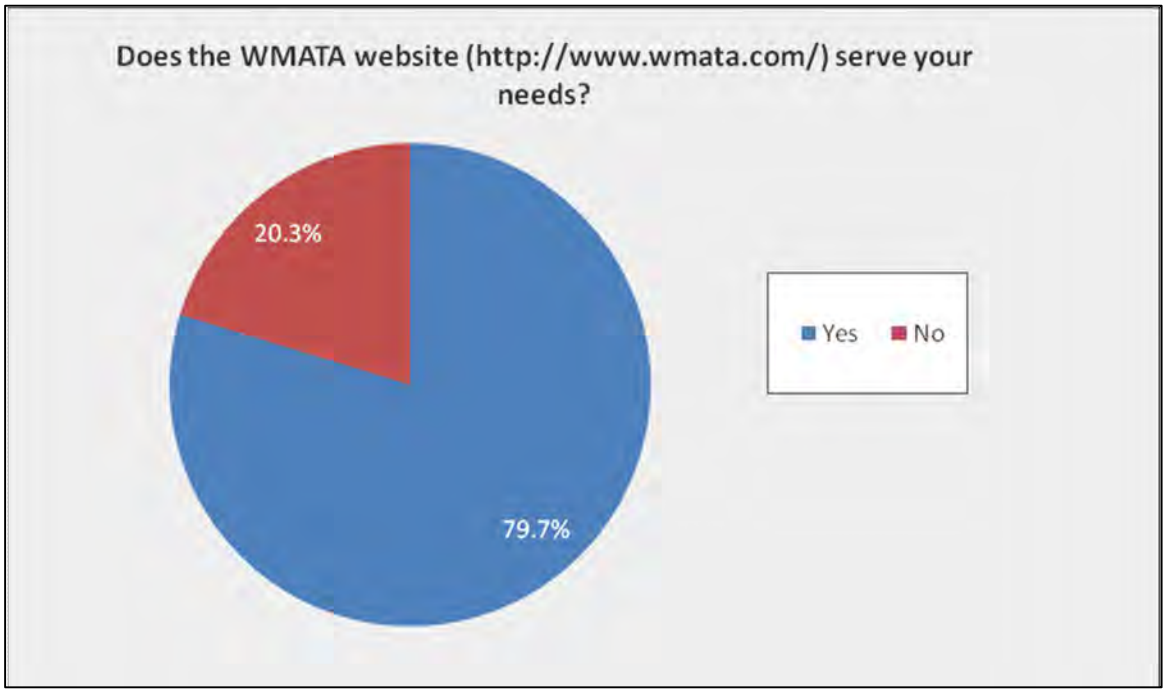






Note: Of the "no" responses above.


How do you receive information and news about the DC Metro Area?
80.0%
70.0%
60.0%
50.0%
40.0%
30.0%
20.0%
10.0%
0.0%
Newspapers (print)
Radio
WMATA's website
Online sources (includes blogs, newspapers and other websites not including the WMATA website)
Television
Other (please specify)


Does the WMATA website (http://www.wmata.com/) serve your needs?
20.3%
79.7%
Yes
No

Appendix D: Station Typology Memorandum

TooleDesignGroup

6525 Belcrest Road, Suite 400
Hyattsville, MD 20782
301.927.1900
301.927.2800 fax
www.tooledesign.com

Date: August 7, 2009

To: Kristin Haldeman, WMATA

From: Dan Goodman, TDG

RE: Metrorail Station Area Bicycle and Pedestrian Improvements Study
Draft WMATA Station Typologies

Overview of Station Typologies

The WMATA Metrorail Station Area Bicycle and Pedestrian Improvements Study will identify physical and programmatic improvements to encourage more people to walk and ride their bicycles to and from Metrorail Stations. As part of the study process, the project team is organizing stations into categories based on characteristics that impact walking and bicycling conditions. Characteristics that are being considered include current and projected land use and population density, the character of the road network in the vicinity of the station, and the physical characteristics of the station itself.

The project team will be selecting one case study station for each category. Detailed recommendations will be developed for each case study. Each case study will cover a range of issues and strategies, but will focus on a specific issue area. The lessons learned from the case studies will be transferable to other stations, and will draw heavily on best practices from other transit systems.

Draft Station Typologies

1. High Density Urban Mixed-Use in a Grid Network

Land Use Characteristics: Higher density, mixed-use development; limited projected change (e.g. largely built out); intensification of surrounding land uses is underway

Station Characteristics: Space constraints; potential bike, vehicle and pedestrian conflicts; higher volume of traffic at entrances and exits; higher pedestrian and bicycle utilization; limited space for bike parking

Stations: Bethesda (Red), Waterfront SEU (Green), Friendship Heights (Red), U Street (Green, Yellow), Silver Spring (Red), King Street (Blue and Yellow), New York Avenue (Red), DuPont (Red), Foggy Bottom (Blue, Orange), Columbia Heights (Green, Yellow), Pentagon City (Blue, Yellow), Navy Yard (Green), Mt. Vernon Square (Green, Yellow), Crystal City (Blue, Yellow), Ballston (Orange), Woodley Park (Red), Rosslyn (Blue, Orange), Clarendon (Orange), Court House (Orange), Virginia Square/GMU (Orange), Tenleytown (Red)

Potential Case Study Stations: Silver Spring (Red), Ballston (Orange)

Focus Issue: Bicycle parking

Supplementary Issues and Strategies: Shared use lockers, wayfinding signage, connections to bicycle lanes in the vicinity, bike stations, traffic signal improvements, improvements to bus/bike interactions, bike actuated traffic signals, partnerships with local gyms, improved bicycle parking in structured garages, bike turn lanes, etc.

2. Urban Residential Center

Land Use Characteristics: Higher density; higher residential proportion of land uses but some mixing of uses; some commercial uses and moderate densities in the vicinity

Station Characteristics: Urban residential without parking; medium pedestrian and bike utilization

Stations: Takoma (Red), Stadium-Armory (Blue, Orange), Van Ness (Red), Eastern Market (Blue, Orange), Cleveland Park (Red), Shaw Howard (Green, Yellow), Capitol South (Blue, Orange), Georgia Avenue/Petworth (Green, Yellow), Potomac Avenue (Blue, Orange), Brookland (Red), Benning Road (Blue), Braddock Road (Blue, Yellow)

Potential Case Study Stations: Braddock Road (Blue, Yellow), Takoma (Red), Brookland (Red)

Focus Issue: Station assessment process

Supplementary Issues and Strategies: Wayfinding strategies, targeted education and outreach, targeted promotional efforts, targeted incentives, on-site bike paths, parking lot improvements, traffic signal improvements, AM peak parking opportunities, bike actuated signals, signs to bike parking, lighting improvements, drainage grate improvements, "to Metro" signs on trails/roads in the vicinity, bike hotline, bike turn lanes, maps and directions, etc.

3. Urban Residential Area with a Bus/Automobile Orientation

Land Use Characteristics: Urban street grid; single-use development patterns; lower to moderate densities in the vicinity; urban area but parking is often still provided; little commercial use in the vicinity

Station Characteristics: Parking oriented; medium pedestrian and bike utilization; station oriented to vehicle access

Stations: Minnesota (Orange), Rhode Island/Brentwood (Red), Fort Totten (Green, Yellow, Red), Anacostia (Green), Addison Road Seat Pleasant (Blue)

Potential Case Study Stations: Fort Totten (Green, Yellow, Red), Rhode Island/Brentwood (Red)

Focus Issue: On-site bicycle barriers, off-site pedestrian barriers, and/or off-site bicycle barriers

Supplementary Issues and Strategies: Wayfinding strategies, targeted education and outreach, targeted promotion efforts, targeted incentives, on-site bike paths, parking lot improvements, signal improvements, AM peak parking opportunities, bike actuated signals, signs to bike parking, lighting

improvements, drainage grate improvements, “to Metro” signs on trails/roads in the vicinity, bike hotline, bike turn lanes, maps and directions, etc.

4. Campus and Institutional

Land Use Characteristics: Little commercial development; significant residential population in the vicinity; important community/campus dynamic; travel patterns are dominated by station to campus connections

Station Characteristics: Major issue is the connection between the Metro station and the campus; campus may also block the station from nearby neighborhoods

Stations: Medical Center (Red), College Park (Green), Ronald Reagan Airport (Blue, Yellow)

Potential Case Study Stations: College Park (Green), Medical Center (Red)

Focus Issue: Education, encouragement, and enforcement programs

Supplementary Issues and Strategies: Improved and enhanced bike parking, coordinated encouragement and education efforts between Metro and the partner institution, improved wayfinding and signage, improved bike on bus facilities, etc.

5. Mixed-Use in a “Pod” Layout

Land Use Characteristics: Pods of commercial activity separated by barriers such as surface parking lots, arterial roadways, and walls/fences; high traffic volumes; little mixing of land uses; surface streets in the vicinity

Station Characteristics: Difficult crossing issues; parking garage issues; stations separated from rider origins/destinations

Stations: Twinbrook (Red), Largo Town Center (Blue), Rockville (Red), Vienna Fairfax (Orange), Suitland (Green), White Flint (Red), Eisenhower (Yellow), Wheaton (Red), Prince George’s Plaza (Green), Greenbelt (Green), Dunn Loring (Orange), Naylor Road (Green), Van Dorn Street (Blue)

Potential Case Study Stations: Vienna Fairfax (Orange), Dunn Loring (Orange), Eisenhower (Yellow)

Focus Issue: Off-site bicycle barriers

Supplementary Issues and Strategies: Parking lot wayfinding and bike route improvements, filling gaps in the pedestrian and bike network, intersection improvements, parking garage improvements, etc.

6. Long-Term Potential for High Density Transit Oriented Development (TOD) or Planned Unit Development (PUD)

Land Use Characteristics: Stations are surrounded by lower density residential uses; significant amount of underutilized property such as surface parking in the vicinity

Station Characteristics: Large amount of property around the station; parking might be reconfigured or reduced in tandem with development; potentially significant latent demand in the surrounding areas; medium pedestrian and bike utilization

Stations: West Hyattsville (Green), Capitol Heights (Blue), Cheverly (Orange), Morgan Boulevard (Blue)

Potential Case Study Stations: West Hyattsville (Green), Morgan Boulevard (Blue)

Focus Issue: Design considerations with future development

Supplementary Issues and Strategies: Public/private partnerships, construction zone regulations, general bike facility design guidelines, proffer guidelines, bike actuated traffic signals, bike turn lanes, connections to trails, promotion in surrounding communities, etc.

7. Suburban Residential Area

Land Use Characteristics: Homogeneous land uses in the vicinity, primarily residential; lower densities and little commercial use; some activity around the station and then it tapers off; minimal local/community bike and pedestrian connectivity to stations

Station Characteristics: Significant parking; difficult ingress and egress issues; gaps in connectivity; limited signage and wayfinding

Stations: Grosvenor Strathmore (Red), Forest Glen (Red), Southern Avenue (Green), Glenmont (Red), Huntington (Yellow), East Falls Church (Orange), West Falls Church (Orange), Deanwood (Orange), Congress Heights (Green)

Potential Case Study Stations: West Falls Church (Orange), Grosvenor Strathmore (Red)

Focus Issue: Off-site pedestrian barriers and/or access to trails

Supplementary Issues and Strategies: Enhanced bike parking, improved signage and wayfinding, filling gaps in the network, collaboration with local jurisdictions and organizations, etc.

8. Auto Collector/Suburban Freeway

Land Use Characteristics: Interstate highways and collectors serve as major barriers, nearly impossible to cross and generally limited access; potential riders are further away; suburban land-use patterns; single-family residential and lower density development in the vicinity

Station Characteristics: Large amount of surface parking and/or parking garages; ample space; lower bike and pedestrian utilization; major barriers

Stations: Franconia-Springfield (Blue), Branch Avenue (Green), Shady Grove (Red), New Carrollton (Orange), Landover (Orange)

Potential Case Study Stations: Landover (Orange), Shady Grove (Red)

Focus Issue: Design considerations with future development

Supplementary Issues and Strategies: Bike lockers and cages/rooms, wayfinding signage, connections to nearby bike lanes and trails, intersection/crossing improvements, incentives, on-site bike paths, parking lot improvements (e.g. signs, pavement markings), signal improvements, bike actuated signals, maps and signage for getting to and leaving the station, bike turn lanes, bike friendly gates and security measures, bike pavilions and gardens, stair channels, signs to bike parking, lighting improvements, drainage grate improvements, "to Metro" signs on trails/roads in the vicinity, etc.

9. Employment Center/ Downtown/Urban Core

Land Use Characteristics: Higher density; higher current pedestrian and bike utilization; predominantly office/commercial; heavily urban

Station Characteristics: Space constraints; positive existing mode splits; pedestrian issues are generally off site; location of bike stations and sharing; space constraints; more limited bike opportunities

Stations: Judiciary Square (Red), Farragut North (Red), Federal Triangle (Blue, Orange), McPherson Square (Blue, Orange), Metro Center (Blue, Orange, Red), Federal Center (Blue, Orange), Smithsonian (Blue, Orange), Archives/Navy Memorial (Green, Yellow), Union Station (Red), L'Enfant Plaza (Blue, Orange, Green, Yellow), Gallery Place/Chinatown (Green, Yellow, Red), Farragut West (Blue, Orange)

Potential Case Study Stations: Archives/Navy Memorial (Green, Yellow), Gallery Place/Chinatown (Green, Yellow, Red), Metro Center (Blue, Orange, Red)

Focus Issue: Partnerships

Supplementary Issues and Strategies: Biggest opportunities for public private partnerships, main potential is bike egress, shower facilities, public/private partnerships, private sector outreach, incentives, employer/employee benefit programs, traffic signal improvements, PM peak and overnight parking, equipment lockers, targeted promotion, bike actuated signals, signs to bike parking, partnerships with local gyms, maps and directions, etc.

Appendix E: Detailed Implementation Table

Metro Led Elements		**Essential (0-18 months)**	**Important (0-3 years)**	**Desirable (3+ years)**	**Notes**
Element 1	**Multimodal Policy**				
1.1	Policy Statements				
	1.1a: Mode Shift Goal				
	1.1b: Safety				
	1.1c: Multimodal Access				
	1.1d: Direct Connections				
1.2	Revise and Clarify Design Guidelines				
	1.2a: Official guidelines for bicycle parking				
	1.2b: Evaluation of existing Metro design guidelines				
	1.2c: Kiss and Ride facility design				
	1.2d: Bus stop design				
1.3	Coordination and Partnerships				
	1.3a: Internal trainings of Metro staff				
	1.3b: Mode share goals for new developments				
Element 2	**Station Analysis Tools**				
2.1	Data Collection				
	2.1a: Bicycle rack and locker usage tracking program				
	2.1b: Bicycle and pedestrian security tracking program				
	2.1c: Work with Metro information technology (IT) and customer services staff to identify and capture more detailed information about pedestrian and bicycle needs, which can be used to assess future				

Metro Led Elements		**Essential**	**Important**	**Desirable**	**Notes**
	needs and customer satisfaction.				
	2.1d: Establish a GIS inventory				
	2.1e: Station focus groups				
2.2	Adopt and Apply Evaluation and Analysis Tools				
	2.2a: Assess the utility of evaluation tools				
	2.2b: Formalized station-specific pedestrian and bicycle access and mobility assessment process				
	2.2c: Multimodal circulation and access studies				
	2.2d: Dialogue with current and potential bicyclists and pedestrians				
	2.2e: Mechanism for receiving and addressing pedestrian and bicycle access related comments and concerns				
2.3	Performance Measures and Benchmarks				
	2.3a: Establish benchmarks for bicycle and pedestrian access				
2.4	Coordination and Partnerships				
	2.4a: Coordinate with local police				
	2.4b: Periodically assess bicycle and pedestrian networks connecting to Metrorail stations				
Element 3	**Customer Information & Encouragement**				
3.1	Customer Information				
	3.1a: Use the metroopensdoors.com website to continue to enhance customer relations and social marketing for Metro's				

Metro Led Elements		**Essential**	**Important**	**Desirable**	**Notes**
	customers that walk and bicycle to stations				
	3.1b: Incorporate Metro bus and rail routes into programs such as Google maps				
	3.1c: Provide consistent maps and wayfinding signage for station areas				
	3.1d: Improve coordination of mapping resources				
3.2	Outreach				
	3.2a: Provide bike/rail guidance outside of stations				
	3.2b: Use changeable electronic signs.				
	3.2c: Improve pedestrian and bicycle educational opportunities				
3.3	Coordination and Partnerships				
	3.3a: Improve pedestrian and bicycle educational opportunities				
	3.3b: Create and rotate bike kiosks.				
3.4	3.4a: Marketing, communications, and public affairs				
	3.4b: Disseminating information				
Element 4	**Operations and Maintenance**				
4.1	Operations				
	4.1a: Clarify and/or revise policies regarding private shuttle access to Metro stations				
	4.2b: TDM				
	4.2c: Bus stops				
4.2	Maintenance				
	4.2a: Improve maintenance procedures				
	4.2b: Update snow and ice removal				

Metro Led Elements		**Essential**	**Important**	**Desirable**	**Notes**
	procedures				
	4.2c: Incorporate maintenance costs throughout planning and budgeting processes				
4.3	Coordination and Partnerships				
	4.3a: Develop a protocol for maintaining clear and passable pedestrian and bicycle routes to the station from off-site locations				
	4.3b: Consider partnering with bicycle advocacy groups and others to ensure ongoing maintenance				
Element 5	**Institutional Capacity**				
5.1	Training and Education				
	5.1a: pedestrian and bicycle-related planning and design training				
	5.1b: Clarify Metro policy and practice with regard to pedestrian and bicycle accommodation in and around stations				
	5.1c: Identify which Metro staff have responsibility for specific pedestrian and bicycle access issues				
5.2	Staffing Resources				
	5.2a: In appropriate job descriptions and in job applicant interviews, include specific bicycle/pedestrian planning				
	5.2b: Create a Bike Program Manager position that will be responsible for coordinating all bicycle related initiatives throughout the Metro organization.				

Metro Led Elements		**Essential**	**Important**	**Desirable**	**Notes**
5.3	Coordination and Partnerships				
	5.3a: Build institutional partnerships within Metro				
Element 6	**Bicycle Parking**				
6.1	Security				
	6.1a: Increase the actual and perceived security of bicycle parking				
	6.1b: Provide high security parking opportunities				
	6.1c: Increase the bicycling community's awareness of Metro's bicycle registration program				
	6.1d: Evaluate stations to determine when it may be possible to locate bicycle parking inside the station				
6.2	Capacity				
	6.2a: Routinely evaluate bicycle parking at stations to ensure that capacity is sufficient				
	6.2b: Provide on demand, high capacity, shared bicycle parking facilities				
6.3	Quality				
	6.3a: Add shelters over existing bicycle racks or move bicycle parking to covered areas				
	6.3b: Develop an official policy and strategic direction for the provision of bike parking at Metrorail Stations.				
6.4	Management				
	6.4a: Provide online locker rental applications				

Metro Led Elements		**Essential**	**Important**	**Desirable**	**Notes**
	6.4b: Explore options for providing up-to-date information about bicycle parking				
	6.4c:				
6.5	Coordination and Partnerships				
	6.5a: Partner with local bike advocacy organizations				
	6.5b: Provide a model bike parking ordinance				
Element 7	**Transit Oriented Development**				
7.1	Requirements				
	7.1a: Require on and off-site pedestrian and bicycle circulation and access studies				
	7.1b: Require pedestrian and bicycle facilities on Metro properties as part of any development				
	7.1c: Ensure that safe and convenient bicycle and pedestrian access is maintained during construction				
	7.1d: Promote more extensive use of connectivity agreements				
7.2	Processes				
	7.2a: Improve the process for designing and implementing pedestrian and bicycle facilities as part of the TOD process				
	7.2b: Develop partnerships, similar to a stakeholder implementation committee				
	7.2c: Share impact fees collected by local governments to mitigate impacts to Metro				

Metro Led Elements		**Essential**	**Important**	**Desirable**	**Notes**
	bicycle and pedestrian facilities				
7.3	Joint Development Design Considerations and Guidelines				
	7.3a: Incorporate Metro's mode of access hierarchy as a guiding principle in the Joint Development Guidelines and Policies				
	7.3b: Update the Station Access Planning Manual				
	7.3c: Improve short and long-term coordination on projects through the use of memoranda of understanding, development of mutual goals, etc.				
	7.3d: Improve coordination with jurisdictions regarding the allocation of and requirements for motor vehicle parking around stations				
Element 8	**Off-Site Connections & Programs**				
8.1	Infrastructure				
	8.1a: Review pedestrian and bicycle improvements between Metro's 10-year Capital Improvement Program (CIP) and local jurisdictions' CIP to coordinate offsite improvements and capitalize on overlapping and abutting project schedules				
	8.1b: Ensure that funding for maintenance needs is included in capital project cost development and incorporates life cycle costs				

Metro Led Elements		**Essential**	**Important**	**Desirable**	**Notes**
	8.1c: Address intersections and difficult crossings of arterials near stations				
	8.1d: Evaluate traffic signals in the vicinity of Metrorail Stations to ensure that opportunities to improve crossing conditions for pedestrians are captured.				
	8.1e: Provide and highlight connections to trails, bike lanes on adjacent roads, and major regional destinations with consistent and recognizable on- and off-site wayfinding				
8.2	Travel Demand Management (TDM) Programs				
	8.2a: Metro should be involved in local TDM discussions to the extent possible				
8.3	Ongoing/Upcoming Projects				
	8.3a: Coordinate with upcoming transit projects				
	8.3b: Coordinate with entities involved in military Base Realignment and Closure (BRAC) planning				
8.4	Coordination & Partnerships				
	8.4a: Metro should have representatives on relevant pedestrian and bicycle committees				
	8.4b: Improve interface with local Business Improvement Districts (BIDs).				
	8.4c: Develop a methodology for identifying and creating a list of pedestrian and bicycle				

Metro Led Elements		**Essential**	**Important**	**Desirable**	**Notes**
	projects in the regional TIP				
	8.4d: Partner with others in providing safety and access education for all users, local planning officials, and staff.				
	8.4e: Partner with other with shared goals				
Element 9	**Wayfinding**				
9.1	Consistency				
	9.1a: Ensure predictability by providing consistent naming conventions				
	9.1b: Provide consistent safety-related pedestrian signage and striping				
9.2	Targeted Audiences				
	9.2a: Improve wayfinding resources such as take away maps for non-routine trips				
	9.2b: Establish gateways to stations				
9.3	Products and Technologies				
	9.3a: Provide maps at satellite locations				
9.4	Coordination and Partnerships				
	9.4a: Improve coordination of mapping resources				
Element 10	**Adjacent Development**				
10.1	10.1: Adjacent Development				
	10.1a: Improve coordination with local jurisdictions				
	10.1b: Clarify the process for providing				

Metro Led Elements		**Essential**	**Important**	**Desirable**	**Notes**
	property access agreements				
	10.1c: Encourage jurisdictions to require inter parcel access				
	10.1d: Develop a methodology for determining the incremental value gained by being located near Metro stations				
10.2	Joint Development Partnerships				
	10.2a: Develop a methodology for programming funds remaining after the completion of a development project				

Appendix F: Sample Bicycle and Pedestrian Station Assessment Checklist

PEDESTRIAN & BICYCLE ACCOMODATION CHECKLIST

The following checklist has been developed to help ensure appropriate accommodations are made for pedestrians and bicycles at Metrorail Stations. Metro may also wish to pull in additional information from checklists provided by the Pedestrian and Bicycle Information Center (PBIC) at http://www.bicyclinginfo.org/problems/concerns.cfm.

Have following pedestrian & bicycle friendly strategies been employed?	Y/N	Comments
Minimize travel lane widths?		
Minimize design speed?		
Minimize intersection curb radii?		

Have the following bicycle accommodations been provided?	Y/N	Comments
Bike lanes?		
Paved shoulders?		
Multi-use path?		
Bicycle-compatible drainage grates?		
Bicycle-compatible rumble strips?		
Bicycle-compatible expansion joints?		
Appropriate signage?		

Have the following pedestrian accommodations been provided	Y/N	Comments
Sidewalks?		
Appropriate width buffer?		
Pedestrian countdown signals heads?		
Marked crosswalks?		
Transit stop access?		
Crossing islands?		
High-visibility crosswalks?		
Lighting?		
ADA compliant ramps?		
Sufficient Crossing Time?		

Have guidance from the appropriate sections of the following been followed:	Y/N
Guide for the Development of Bicycle Facilities, AASHTO?	
Guide for the Planning, Design and Operation of Pedestrian Facilities, AASHTO	
Manual on Uniform Traffic Control Devices, FHWA?	

Has the following been provided?	
Maintenance of traffic plans that accommodate bicycles and pedestrians?	
Maintenance plan?	

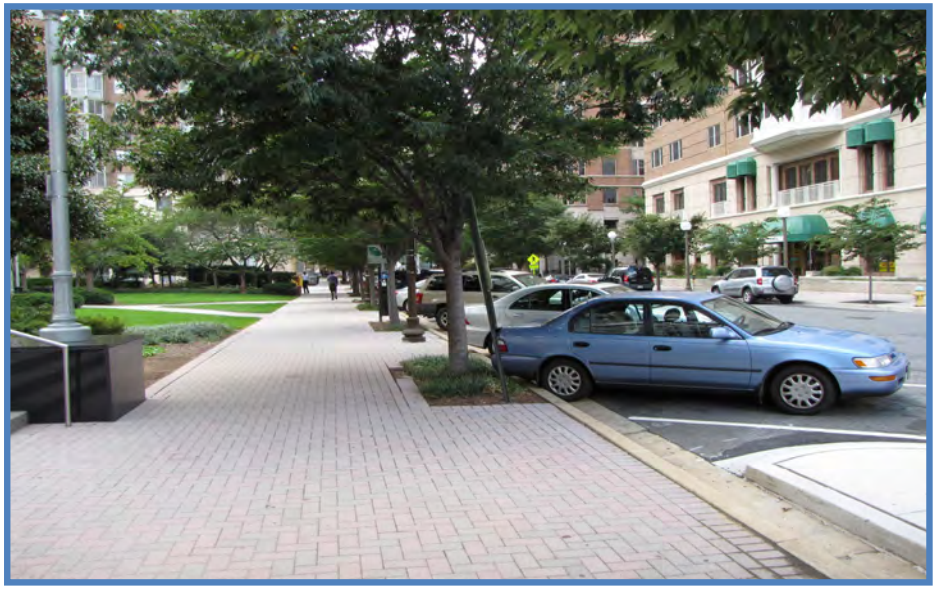
Appendix G: Best Practices and Key Challenges

Best Practice Examples from the Washington DC Region

Ballston-MU: The wide crosswalk gives pedestrians ample space to cross

Ballston-MU: The streets around the station are bikable

Ballston-MU: Pedestrian crossing signage



Ballston-MU: Reverse diagonal parking makes bicyclists more visible to drivers. Buffered, wide sidewalks create ideal pathways for pedestrians

Braddock Road: Inverted U-shaped racks are best for bicycle parking

Braddock Road: Pedestrian signal button is accessible and clearly signed

Braddock Road: The streets around the station are bikable

College Park- UMD: Crosswalk with lights makes pedestrians more visible

College Park- UMD: Sign highlights safest, and most direct way to campus

College Park: Wayfinding signs help pedestrians find popular destinations

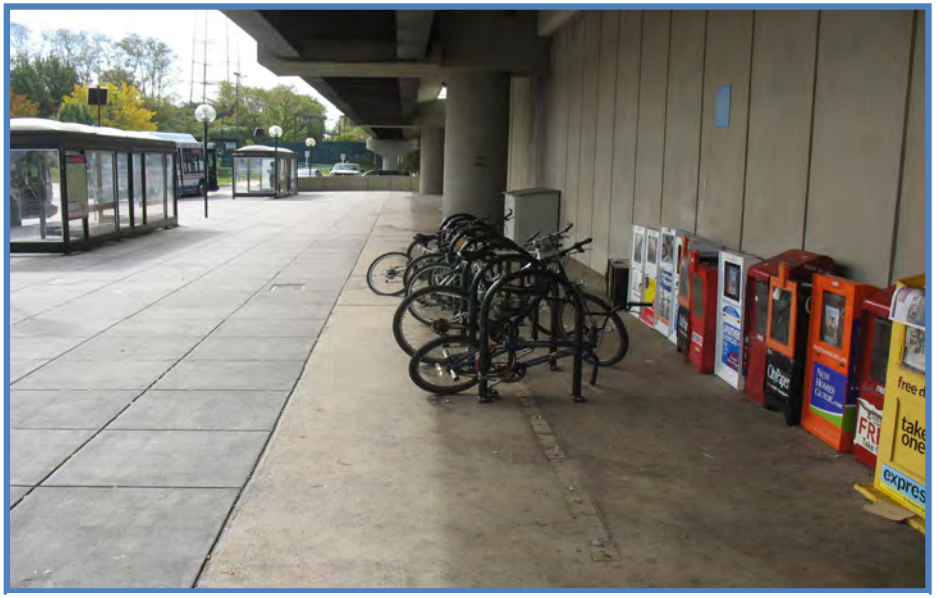
College Park UMD: Signage shows partnership with the university

College Park - UMD: Trails are easily accessible from the station

Gallery Place- Chinatown: Wide crosswalks and sidewalks

Gallery Place - Chinatown: Sidewalks are ADA compliant with bike rack integrated into the buffer

Gallery Place - Chinatown: Station is in close proximity to bike sharing



Rhode Island Ave-Brentwood: Covered bike racks make bicycling more appealing.

Rhode Island Ave-Brentwood: Sidewalks are ADA compliant

Rhode Island Ave-Brentwood: Pedestrian bridge makes crossings easier for pedestrians

Shady Grove: Several parking choices are available for bikes

Shady Grove: Snow removal creates clear and unobstructed pathways for pedestrians

Shady Grove: Sign helps riders orient themselves within the station

Shady Grove: Bicycling is a popular choice for riders due to good parking design

Vienna/Fairfax-GMU: Sidewalk connects pedestrians to the station

Vienna/Fairfax-GMU: High visibility crosswalks make pedestrians more visible to drivers

Vienna/Fairfax-GMU: Trails connect to sidewalks to make a network for pedestrians

West Hyattsville: High visibility crosswalks make crossings easier for pedestrians

West Hyattsville: Lighted shared use path makes stations accessible to bicyclists and pedestrians

Challenging Examples from the Washington DC Metro Region
(Note that the images reflect both on and off-site challenges)

Ballston-MU: Type III bike racks are difficult to use and are often broken

Ballston-MU: Curb ramp is not ADA compliant (lip)

Ballston-MU: Pedestrians are often in conflict with bus pathways

Braddock Road: Sidewalk design is not ADA compliant (physical obstruction)

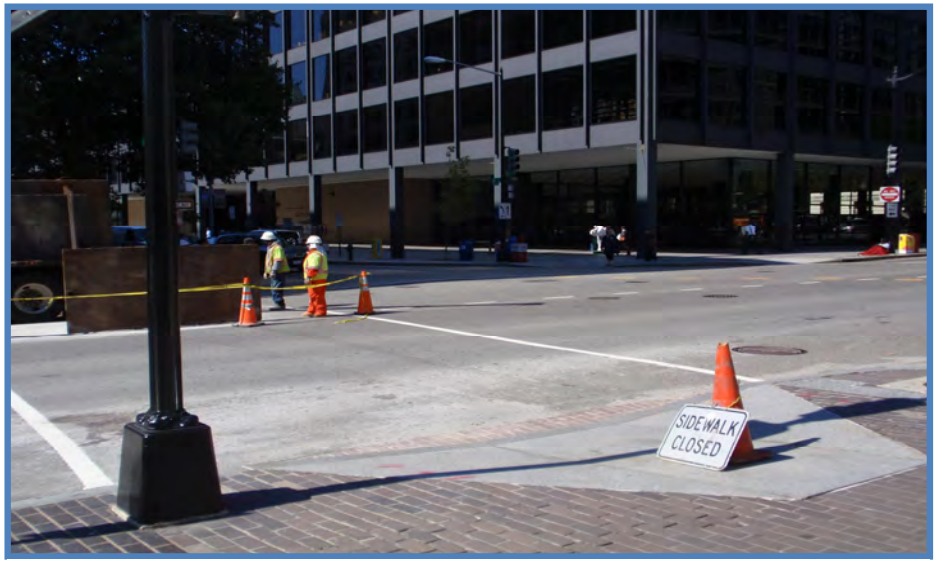
Braddock Road: Narrow and constrained sidewalk

Braddock Road: Curb ramps are not ADA compliant

College Park- UMD: Due to bus stop alignment, pedestrians prefer to cross outside the crosswalk

College Park- UMD: Difficult for bicyclists to access the station area

College Park- UMD: Pedestrians make pathway to the crosswalk



Gallery Place-Chinatown: Construction efforts obstruct pedestrian facilities without detour signage

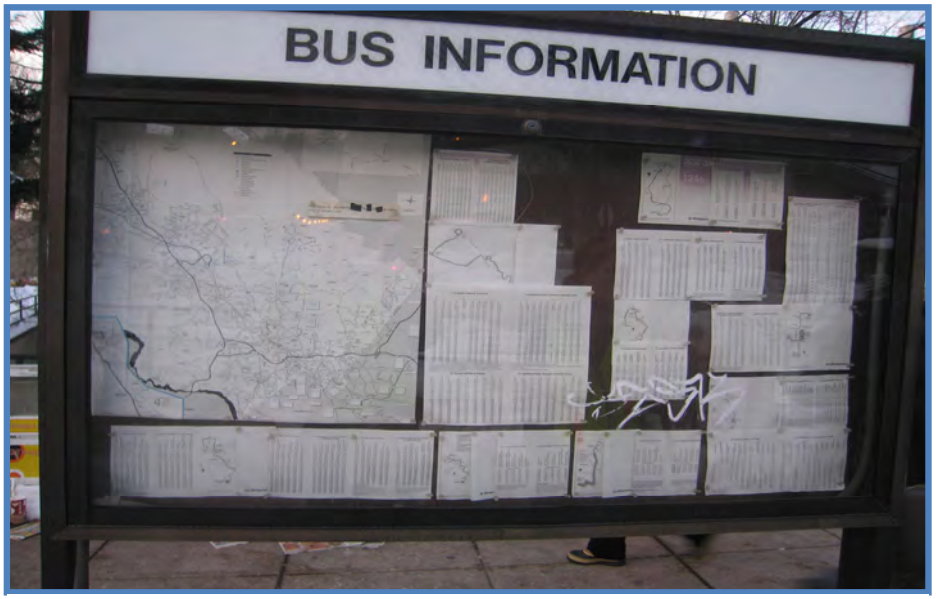
Rhode Island Ave-Brentwood: Pedestrian make pathway to the sidewalk

Rhode Island Ave-Brentwood: Sidewalk design is not ADA compliant

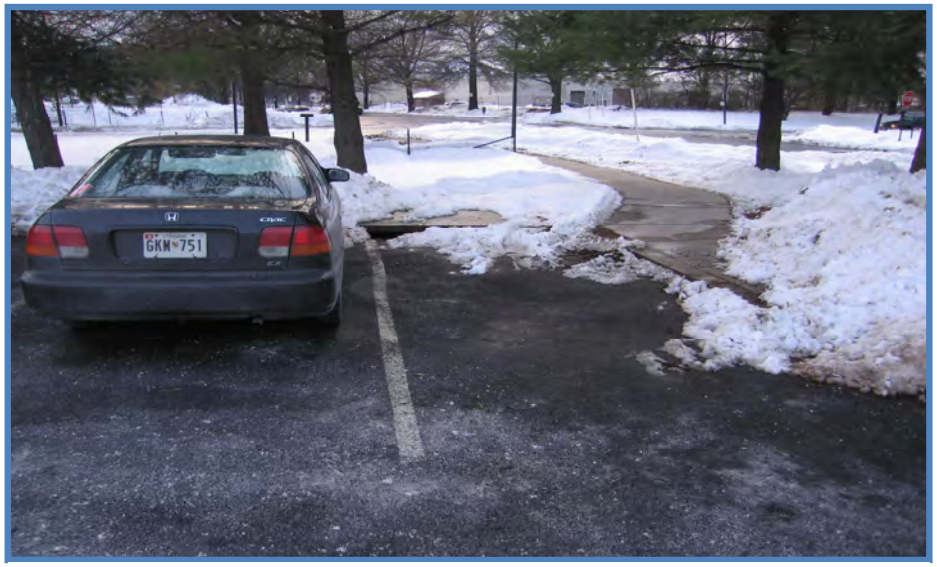
Rhode Island Ave-Brentwood: Construction efforts obstruct pedestrian facilities

Shady Grove: Snow and parked vehicles constricts pedestrian pathways

Shady Grove: Pedestrians required walking through snow to access destination



Shady Grove: Bus information kiosk contains outdated content and appears confusing



Shady Grove: Pedestrian pathway leads into parking space

Vienna/Fairfax-GMU: Bike and pedestrian bridge is out of service without further information posted regarding timing or detour

Vienna/Fairfax-GMU: Crosswalk is not ADA compliant

Vienna/Fairfax-GMU: Pedestrian make pathway to destination

Vienna/Fairfax-GMU: Inappropriate parking for bikes and scooters

Vienna/Fairfax-GMU: Bike locker broken and unsecure

Vienna/Fairfax-GMU: Pedestrian crossing button is obstructed by vegetation

Vienna/Fairfax-GMU: Sidewalk ends at inappropriate place

West Hyattsville: Sidewalk location is far from pedestrian desire lines

West Hyattsville: Map sign is confusing

West Hyattsville: Pedestrian make pathway to destination

West Hyattsville: Crosswalk is faded and poorly oriented

West Hyattsville: Type III bike racks are difficult to use and are often broken

Appendix H: Bike Parking Management Spreadsheet

Master Bicycle Parking Inventory and Capacity Table (TDG July 2010)

	Using usage data in this table: Estimated Arrive By Bike Calculated for Stations Missing Data from Customer Survey (TDG-June 2010)	June 2010	From Office of Long Range Planning Rack Replacement Program Tracking Sheet (Updated w/ TDG, May 2010)				From Office of Long Range Planning (May 2010)	Totals Per Station: March 2010 Locker Occupancy Report (WMATA)				March 2010 Locker Occupancy Report (WMATA) Locker Count By Location at Station									Appendix A-E Existing Station Characteristics Inventory (Station Access & Capacity Study, 2007) (PB)						
Station Name		Total WMATA Bike Parking Capacity	Rack-3	Inverted U	Total Rack Capacity	Supplementary Parking Capacity Estimate	2008 Rack Usage Supplemental Count (WMATA)	Total	Rented	Available	Reserved	Station Name & Locker Location	Total or Subtotal	Rented	Available	Reserved	Station Name & Locker Location2	Subtotal	Rented2	Available2	Reserved2	NO. OF BIKE LOCKERS	NO. OF BIKES IN LOCKERS[3]	LOCKER UTILIZATION RATE	NO. OF BIKE RACKS	NO. OF BIKES ON RACK[3]	NO. OF BIKES ON OTHER[3]	BIKE RACK UTILITY RATE
Addison Road	1	16		8	16																	0	0	-	16	0	1	0.06
Anacostia		23		8	16			7	6	1	0	Anacostia	7	6	1	0						8	4	0.50	13	0	0	-
Archives-Navy Memorial		0		0	0	5																0	0	-	0	0	0	-
Arlington Cemetery		0		0	0																	0	0	-	0	0	0	-
Ballston		22	22	0	22	25																0	0	-	54	39	15	1.00
Benning Road		8		4	8																	0	0	-	4	1	1	0.50
Bethesda	80	124		40	80			44	37	7	0	Bethesda	44	37	7	0						44	43	0.98	48	36	5	0.85
Braddock Road		108		48	96	10		12	12	0	0	Braddock Road	12	12	0	0						12	11	0.92	46	39	12	1.11
Branch Avenue	16	44		10	20			24	12	12	0	Branch Avenue	24	12	12	0						24	5	0.21	10	4	0	0.40
Brookland	14	48		16	32			16	13	3	0	Brookland	16	13	3	0						16	9	0.56	10	0	1	0.10
Capitol Heights		12		6	12																	0	0	-	5	0	0	0.00
Capitol South		0		0	0																	0	0	-	0	0	0	-
Cheverly		72		34	68			4	0	4	0	Cheverly	4	0	4	0						0	0	-	34	11	0	0.32
Clarendon		30		12	24			6	5	1	0	Clarendon	6	5	1	0						6	5	0.83	12	10	3	1.08
Cleveland Park		30	2	8	18		19	12	8	4	0	Cleveland Park	12	8	4	0						12	12	1.00	16	6	4	0.63
College Park-U of MD		132		46	92			40	35	5	0	College Park (East)	10	9	1	0	College Park (West)	30	26	4	0	40	18	0.45	81	36	23	0.73
Columbia Heights		20		10	20	5																12	4	0.33	4	1	0	0.25
Congress Heights		22	10	0	10			12	8	4	0	Congress Heights	12	8	4	0						12	2	0.17	10	1	0	0.10
Court House		8		0	0	10		8	8	0	0	Courthouse	8	8	0	0						0	0	-	25	11	0	0.44
Crystal City		0		0	0	5																0	0	-	10	6	0	0.60
Deanwood		12		6	12																	0	0	-	6	2	1	0.50
Dunn Loring		114		40	80			34	28	6	0	Dunn Loring	34	28	6	0						34	22	0.65	40	28	1	0.73
Dupont Circle	17	40		14	28			12	12	0	0	Dupont Circle	12	12	0	0						12	7	0.58	16	9	6	0.94
East Falls Church		212		88	176			36	26	10	0	East Falls Church (North)	24	15	9	0	East Falls Church (South)	12	11	1	0	36	23	0.64	86	67	9	0.88
Eastern Market		60		20	40			20	19	1	0											20	17	0.85	0	0	0	-
Eisenhower Avenue		16	10	0	10			6	5	1	0	Eastern Market	20	19	1	0						6	4	0.67	10	4	0	0.40
Farragut North		0		0	0	5						Eisenhower	6	5	1	0						0	0	-	8	4	1	0.63
Farragut West		0		0	0	5																0	0	-	4	7	2	2.25
Federal Center SW		0		0	0	5																0	0	-	2	3	0	1.50
Federal Triangle		8		4	8	5																0	0	-	20	14	0	0.70
Foggy Bottom		40		10	20			20	19	1	0	Foggy Bottom	20	19	1	0						20	11	0.55	10	9	1	1.00
Forest Glen		100		42	84			16	16	0	0	Forest Glen	16	16	0	0						16	13	0.81	42	21	2	0.55
Fort Totten	20	26		10	20			6	5	1	0	Fort Totten	6	5	1	0						6	1	0.17	10	10	5	1.50
Franconia-Springfield		68		24	48			20	15	5	0	Franconia-Springfield	20	15	5	0						20	16	0.80	36	29	4	0.92
Friendship Heights		86		32	64			22	21	1	0	Friendship Heights	22	21	1	0						22	21	0.95	50	27	0	0.54
Gallery Place-Chinatown		0		0	0																	0	0	-	0	0	0	-
Georgia Avenue-Petworth		22		5	10			12	0	12	0	Georgia Ave-Petworth	12	0	12	0						12	1	0.08	0	0	0	-
Glenmont		100	20	16	52		13	48	14	34	0	Glenmont (East)	20	9	11	0	Glenmont (West)	28	5	23	0	48	17	0.35	36	23	1	0.67
Greenbelt		112	60	0	60			52	42	10	0	Greenbelt (East)	38	33	5	0	Greenbelt (West)	14	9	5	0	52	38	0.73	60	22	5	0.45
Grosvenor		70	40	0	40			30	26	4	0	Grosvenor	30	26	4	0						30	22	0.73	40	26	1	0.68
Huntington		56		22	44			12	9	3	0	Huntington (North)	6	5	1	0						12	7	0.58	34	25		0.74
Judiciary Square		0		0	0	5						Huntington (South)	6	4	2	0						0	0	-	18	11	0	0.61
King Street		76	20	18	56			20	17	3	0	King Street	20	17	3	0						20	11	0.55	34	27	8	1.03
Landover	12	34	26	0	26			8	4	4	0	Landover	8	4	4	0						8	1	0.13	26	8	0	0.31
Largo Town Center		57	9	0	9			48	10	38	0	Largo (South)	30	7	23	0	Largo Town Center (North)	18	3	15	0	48	4	0.08	9	1	0	0.11
L'Enfant Plaza		12		6	12																	0	0	-	0	0	0	-
McPherson Square		0		0	0	5																0	0	-	1	0	5	5.00

Station Name	Using usage data in this table: Estimated Arrive By Bike Calculated for Stations Missing Data from Customer Survey (TDG-June 2010)	June 2010 Total WMATA Bike Parking Capacity	From Office of Long Range Planning Rack Replacement Program Tracking Sheet (Updated w/ TDG, May 2010)				From Office of Long Range Planning (May 2010)	Totals Per Station: March 2010 Locker Occupancy Report (WMATA)				March 2010 Locker Occupancy Report (WMATA) Locker Count By Location at Station									Appendix A-E Existing Station Characteristics Inventory (Station Access & Capacity Study, 2007) (PB)						
			Rack-3	Inverted U	Total Rack Capacity	Supplementary Parking Capacity Estimate	2008 Rack Usage Supplemental Count (WMATA)	Total	Rented	Available	Reserved	Station Name & Locker Location	Total or Subtotal	Rented	Available	Reserved	Station Name & Locker Location2	Subtotal	Rented2	Available2	Reserved2	NO. OF BIKE LOCKERS	NO. OF BIKES IN LOCKERS[3]	LOCKER UTILIZATION RATE	NO. OF BIKE RACKS	NO. OF BIKES ON RACK[3]	NO. OF BIKES ON OTHER[3]	BIKE RACK UTILITY RATE
Medical Center		126	88	0	88			38	33	5	0	Medical Center	38	33	5	0						38	34	0.89	88	31	0	0.35
Metro Center		0		0	0																	0	0	-	8	0	1	0.13
Minnesota Avenue	6	20		8	16			4	2	2	0	Minnesota Ave	4	2	2	0						4	0	0.00	8	2	0	0.25
Morgan Blvd.	10	48		4	8	Ribbon (Wave) Racks		40	6	34	0	Morgan Blvd (North)	4	0	4	0	Morgan Blvd (South)	36	6	30	0	40	0	0.00	9	4	0	0.44
Mt. Vernon Square-UDC		0		0	0	5																0	0	-	6	4	0	0.67
Navy Yard		0		0	0																	0	0	-	12	1	0	0.08
Naylor Road	6	24		10	20			4	3	1	0	Naylor Road	4	3	1	0						4	0	0.00	10	3	0	0.30
New Carrollton		34	18	0	18			16	9	7	0	New Carrolton	16	9	7	0						16	9	0.56	18	5	5	0.56
New York Ave		48		10	20			28	15	13	0	New York Ave	28	15	13	0						28	3	0.11	10	4	0	0.40
Pentagon		12		6	12																	0	0	-	6	3	0	0.50
Pentagon City		44		11	22	10		22	19	3	0	Pentagon City	22	19	3	0						22	13	0.59	8	8	0	1.00
Potomac Avenue		8		4	8																	0	0	-	4	3	0	0.75
Prince George's Plaza		64		20	40	10		24	4	20	0	P.G. Plaza	24	4	20	0						24	4	0.17	40	17	10	0.68
Reagan Washington National Airport		16	16	0	16																	0	0	-	18	2	0	0.11
Rhode Island Avenue		16		8	16																	0	0	-	12	1	0	0.08
Rockville	60	208		84	168		22 (w entrance)	40	33	7	0	Rockville (East)	20	19	1	0	Rockville (West)	20	14	6	0	40	30	0.75	69	21	3	0.35
Rosslyn		20	20	0	20																	0	0	-	20	13	1	0.70
Shady Grove		125		32	64			61	43	18	0	Shady Grove (East)	24	20	4	0	Shady Grove (West)	37	23	14	0	60	33	0.55	32	17	0	0.53
Shaw-Howard University		0		0	0																	0	0	-	0	0	0	-
Silver Spring	14	98		34	68			30	28	2	0	Silver Spring (South)	30	28	2	0						30	26	0.87	26	26	10	1.38
Smithsonian		2	2	0	2						0					0						0	0	-	2	0	0	0.00
Southern Avenue	15	54	14	0	14			40	11	29		Southern Avenue	40	11	29							40	0	0.00	14	2	0	0.14
Stadium-Armory		0		0	0	5																0	0	-	0	0	0	-
Suitland	14	40		10	20			20	10	10	0	Suitland	20	10	10	0						20	0	0.00	10	4	0	0.40
Takoma		144		42	84			60	43	17	0	Takoma	60	43	17	0						60	48	0.80	38	22	22	1.16
Tenleytown-AU		60		20	40			20	15	5	0	Tenleytown	20	15	5	0						20	10	0.50	20	11	0	0.55
Twinbrook		116		45	90			26	13	13	0	Twinbrook (East)	16	11	5	0	Twinbrook (West)	10	2	8	0	26	5	0.19	68	36	7	0.63
U Street-Cardozo		0		0	0	5																0	0	-	0	0	0	-
Union Station		0		0	0	150																0	0	-	23	37	3	1.74
Van Dorn Street		86		40	80			6	3	3	0	Van Dorn	6	3	3	0						6	0	0.00	20	22	0	1.10
Van Ness-UDC		18		5	10			8	1	7	0	Van Ness	8	1	7	0						8	3	0.38	9	0	2	0.22
Vienna		162		53	106			56	40	16	3	Vienna (North)	44	40	4	0	Vienna (South)	12	0	12	3	56	46	0.82	54	59	14	1.35
Virginia Square-GMU		44		6	12			32	26	6	0											32	25	0.78	12	7	0	0.58
Waterfront		0		0	0							Virginia Square	32	26	6	0						0	0	-	0	0	0	-
West Falls Church		142		60	120			22	20	2	0	West Falls Church	22	20	2	0						22	16	0.73	40	27	0	0.68
West Hyattsville		86	50		50	No Inverted U Racks installed		36	31	5	0	West Hyattsville	36	31	5	0						36	21	0.58	50	30	17	0.94
Wheaton		72		26	52		20	20	10	10	0	Wheaton (East)	12	7	5	0	Wheaton (West)	8	3	5	0	20	13	0.65	36	10	2	0.33
White Flint		84		32	64		18	20	9	11	0											20	11	0.55	32	8	0	0.25
Woodley Park-Zoo		52		26	52	5	29					White Flint	20	9	11	0						0	0	-	8	8	8	2.00
		4113	**427**	**1203**	**2833**		**Totals:**	**1280**	**859**	**421**	**3**	Subtotals:	1055	757	298	0	Subtotals:	225	102	123	3	1280	**699**	**54.6%**	**1836**	**1026**	**222**	**21.6%**