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7. Transportation

Overview

Howard County has an extensive interstate and intrastate highway network that provides connectivity to Washington, DC; Baltimore; Thurgood Marshall BWI airport; the Port of Baltimore; Annapolis; and Fort George G. Meade, as well as good access to the Eastern seaboard and the Midwest. Freight and passenger rail service is also available. However, existing peak hour road and highway congestion is projected to increase significantly.

While opportunities for highway improvements are identified, *PlanHoward 2030* also focuses on transit, cycling, and pedestrian alternatives, with particular attention paid to supporting sustainable future growth.

State of Maryland Vision

A well-maintained, multimodal transportation system facilitates the safe, convenient, affordable, and efficient movement of people, goods, and services within and between population and business centers.

County Context

Howard County is well located in terms of access to the State and Federal highway system, rail service, BWI airport, and the Port of Baltimore. High projected employment, housing, and freight volume require significant investment to address the anticipated capacity constraints and congestion. Commuter bus and rail service to both Baltimore and Washington is available at several locations in the County. The County's transit system, Howard Transit, provides fixed route and paratransit service to most of eastern Howard County and limited paratransit service to the Rural West. However, the frequency and reliability of both regional and local transit service ~~is restricted~~ are inadequate. To promote other modes of travel, the County is implementing a Pedestrian Master Plan and developing a Bicycle Master Plan in 2012.



Howard Transit serves the local community connecting riders to their destinations.

Progress under General Plan 2000

Over the last decade, the County achieved the following as called for in *General Plan 2000*:

- Built the MD 32 / Burntwoods Road Interchange
- Expanded MD 216 to four lanes from US 29 to Maple Lawn Boulevard
- Built MD 216 as a new four-lane roadway from US 29 to I-95
- Built a new four-lane roadway from Gorman Road to MD 216 interchange
- Built the MD 216 / Loop Road East Interchange
- Expanded Dorsey Run Road to four lanes from the CSX railroad spur to MD 32
- Built Maple Lawn Boulevard, a new two-lane road from Johns Hopkins Road to MD 216
- Expanded and upgraded transit fleet, passenger amenities, and bus shelters
- Provided more paratransit service to medical centers
- Expanded public outreach and marketing programs including the development of Howard Transit and Commuter Solutions Internet sites
- Implemented Pedestrian Plan and initial sidewalk projects

Existing Transportation System

The overall regional transportation network is challenged by congestion, energy consumption, greenhouse gases, ozone emission restrictions, the limited availability of additional land for rights-of-way, and constricted Federal, State, and local funding.

The County offers a variety of multimodal transportation options. Currently, Howard County residents and visitors choose the automobile for most travel in and out of the County. About 90% of work, school, and shopping trips are primarily by car. Based on regional trends, the share of car trips is expected to rise to 98% by 2030. Based on the BMC travel model, in 2008, the baseline year for the model, over 94% of person trips were by automobile, with the balance of trips completed by transit, walking and cycling; based on current projected future land use and forecasted funding for transportation projects, the mode shares are not currently projected to change significantly by 2035. As new and revised land use, transportation plans, and funding are developed, the impacts will be reflected in the travel model and are expected to reduce automobile trips. Plan Howard 2030 aims to promote a better balance among all of the County's transportation options.

The regional and local economy relies on an efficient transportation system to allow people to get to jobs and shopping, move goods to stores, and transport freight through the region. The County has an extensive road and highway network, linked to one of the nation's largest port facilities, rail terminals, food and retail distribution centers, and major airports. Due to changing distribution and warehousing business practices, freight movement nationally and in the region is expected to grow at an increasing rate. From 2006 to 2035, freight traffic in, out, and through the State by truck, rail, water, and air is projected to increase from 692 to 1,422 million tons a year, a 105% increase.

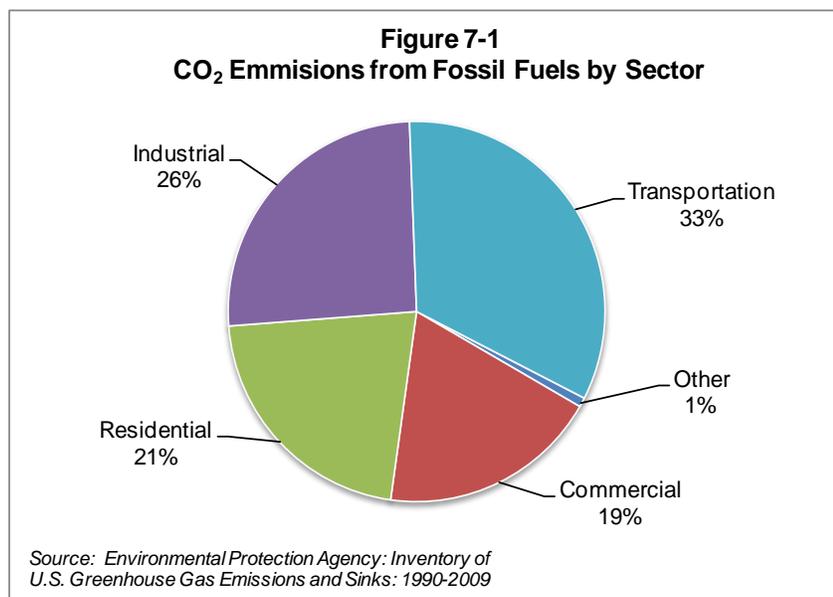
GREEN TIP!

Bike or walk. Save gas, save money, and save the environment.

The continued growth in trips and congestion will result in increased demand for congestion relief. Some congestion relief can be achieved through highway capacity improvements; however, opportunities for relief will be limited due to limited available rights-of-way, funding, and cost-effectiveness. Congestion can also be partially mitigated through alternative transportation programs including expanding and increasing the frequency of public transit services, high occupancy vehicle and high occupancy toll lanes, ride sharing, and car sharing.

Transportation and Emissions

Greenhouse gas emissions are a byproduct of burning fossil fuels to generate energy to move people and goods, as well as powering businesses and homes. Energy use for transportation can be reduced by a variety of methods: reducing vehicle miles traveled (VMT); using a renewable fuel, such as E-85, an ethanol fuel blend; or improving vehicle mileage. Howard County has committed itself to



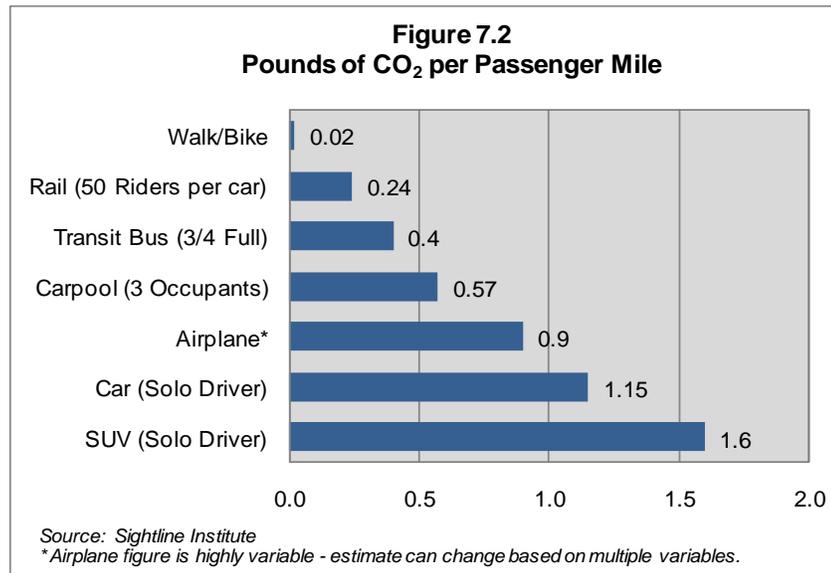
purchasing fuel-efficient fleet vehicles and transit vehicles. In addition, reducing demand for oil could reduce the nation's dependence on oil and gasoline imports.

In 2009, the transportation sector in the United States accounted for 33% of U.S. CO₂ emissions: 65% of that total resulted from gasoline consumption in cars and light trucks. From 1990 to 2009, emissions of CO₂ increased from 1,489 to 1,724 teragrams (or million metric tons) of CO₂ equivalent (Tg CO₂ Eq).

Between 1990 and 2009, EPA data shows that greenhouse gas emissions from passenger vehicles increased by 17%; it was caused mainly by increased sales of light-duty vehicles (SUVs, minivans, etc.) and an increase in the number of miles Americans travel every year. However, there has been a 4% decrease in CO₂ emissions from 2008 to 2009 due to the recession. Meanwhile, the average fuel economy of new vehicles declined because of increasing sales of light-duty trucks.

In Howard County, based on Baltimore Metropolitan Council (BMC) model data, daily CO₂ emissions from cars and trucks traveling in and through the County from 2008 to 2035 will increase from 6,817 tons to 9,636 tons a day. More compact mixed-use development patterns have been identified as a strategy that

could reduce the growth of VMT and how much we drive. Three major studies have examined the impact of compact growth patterns: Moving Cooler, Growing Cooler, and Driving and the Built Environment. These studies reviewed data and past studies to determine the actual effects of compact growth. Generally they found that people who live in areas with compact land use patterns travel less often and travel shorter distances. However, it is an incremental process. A single compact development might not result in less travel, but as adjacent land follows the same pattern, automobile travel starts to decline. In addition, these changes tend to be permanent, as it is the land use pattern that is driving the trend, not an outside intervention that needs to be sustained. Moving Cooler determined that with suburban compact, mixed-use development, defined as areas with more than 4,000 persons per square mile or eight persons per acre, there could be VMT reductions of 5-20%. This decrease is not Howard County specific; additional modeling should be conducted to assess the potential impact



on greenhouse gas emissions and travel behavior in Howard County.

Alternative modes of transportation are also mechanisms to reduce VMT and greenhouse gases. Figure 7-2 summarizes the emissions output per passenger mile for a range of transportation choices. The automobile is the greatest contributor, which is also the predominant transportation option for Howard County residents. The chart shows the emissions benefits of mode shifts on greenhouse gases and the benefits of promoting and investing in land uses that support other travel modes and in the direct promotion of alternative modes.

The Baltimore region is currently a nonattainment area for air quality, which means air pollution levels persistently exceed National Ambient Air Quality Standards. Due to the nonattainment designation, the County participates in the Baltimore Metropolitan Council planning efforts to improve air quality, including mitigating emissions from diesel buses through the Congestion Mitigation and Air Quality Improvement Program.

Policies and Implementing Actions

POLICY 7.1 – Increase public awareness of the relationship between personal vehicle miles traveled and highway congestion, air quality, greenhouse gases, and energy independence, as well as how more

compact growth patterns and alternate modes of travel can help achieve a sustainable and more environmentally and personally healthy balance.

Implementing Actions

- a. **Green Central Station.** ~~Update the County's Green Central Station website to address transportation's role in achieving a healthy community. Include emissions calculators and other tools residents can use to measure greenhouse gas savings, map walking or biking distances, organize ridesharing, and access car sharing.~~ **Green website.** Update the County's website that is devoted to providing information to consumers designed to help make Howard County greener, healthier, and sustainable, to address transportation's role in achieving a healthy community. Include emissions calculators and other tools residents can use to measure greenhouse gas savings, map walking or biking distances, organize ridesharing, and access car sharing.
- b. **Awareness.** Expand resident and business awareness and use of alternative transportation modes, including transit, carpooling, walking, and cycling.
- c. **Safe Routes.** ~~Expand and promote the Safe Routes to School Program.~~ **Safe Routes.** Expand, support and promote programs, such as the Safe Routes to School Program, that will enable communities to make walking and bicycling to school a safe and routine activity.



Regional and Local Transportation Planning

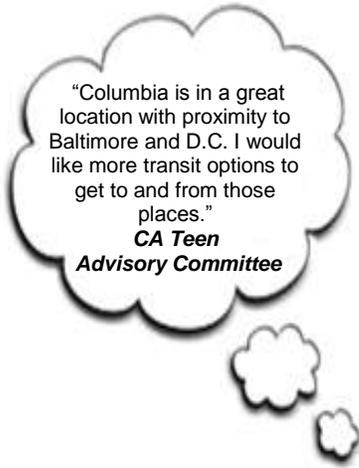
Howard County actively participates in a variety of regional transportation planning initiatives as a member of the Baltimore Regional Transportation Board (BRTB). The County participates every four years in the Baltimore region's long-range transportation plan. BRTB's 2011 long-range transportation plan, Plan-It 2035, was adopted on November 14, 2011.

Traditionally in the United States, transportation planning has focused on vehicle speed, congestion mitigation, and cost as the primary indicators in the evaluation of transportation investments. In recent years, planning practices have evolved to encompass a broader approach that provides for a more balanced set of evaluation criteria, including impact on climate change, negative environmental impacts, and disproportionate negative impacts on low income and minority populations.

Howard County, as a member of the BRTB and a participant in the Plan-It 2035 process, endorsed an updated process to evaluate regionally significant transportation projects. The process assessed the three major types of infrastructure projects: highways, transit, and bicycle/pedestrian from a qualitative policy and technical quantitative perspective. The key evaluation criteria were:

- Improve Transportation System Safety
- Improve Accessibility
- Increase Mobility
- Preserve the Environment
- Improve Transportation System Security
- Promote Prosperity and Economic Opportunity
- Foster Participation and Cooperation among All Stakeholders

Regional cooperation is crucial to coordinate the road network to serve local, regional, as well as interstate traffic and commerce.



The BRTB models used to test projects extend beyond the Baltimore Region and also incorporate data from the Washington Council of Governments. Because the BRTB process is used regionally and represents a consensus view among all the Counties in the region, the criteria provide a suitable foundation to evaluate local transportation options.

Howard County also plans for local transportation improvements to implement the General Plan. Additionally, every five years the County's Transit Development Plan is updated to assess and prioritize transit needs for Howard County's local transit services. The County also has a pedestrian master plan, which will be updated during 2012 to 2013, and the County is initiating a bicycle plan. The planning process results in prioritization of funding for State and local transit, freight, highway, bicycle, and pedestrian projects.

~~The major goal of Plan-It 2035 and Howard County's local planning effort is to develop plans that better balance highway, transit, bicycle, and pedestrian needs and reflect expected funding constraints.~~ The major goal of Plan-It 2035 and Howard County's local planning effort is to develop an integrated approach to all modes of transportation that balances highway, transit, bicycle, and pedestrian needs and reflects expected funding constraints.

Key Transportation Improvements Anticipated by 2025 (Map 7-1) and Key Transportation Improvements Anticipated by 2035 (Map 7-2) are the major transportation improvements that have been identified from these planning initiatives. Figures 7-3 and 7-4, located at the end of this chapter, provide more information on specific transportation improvements.

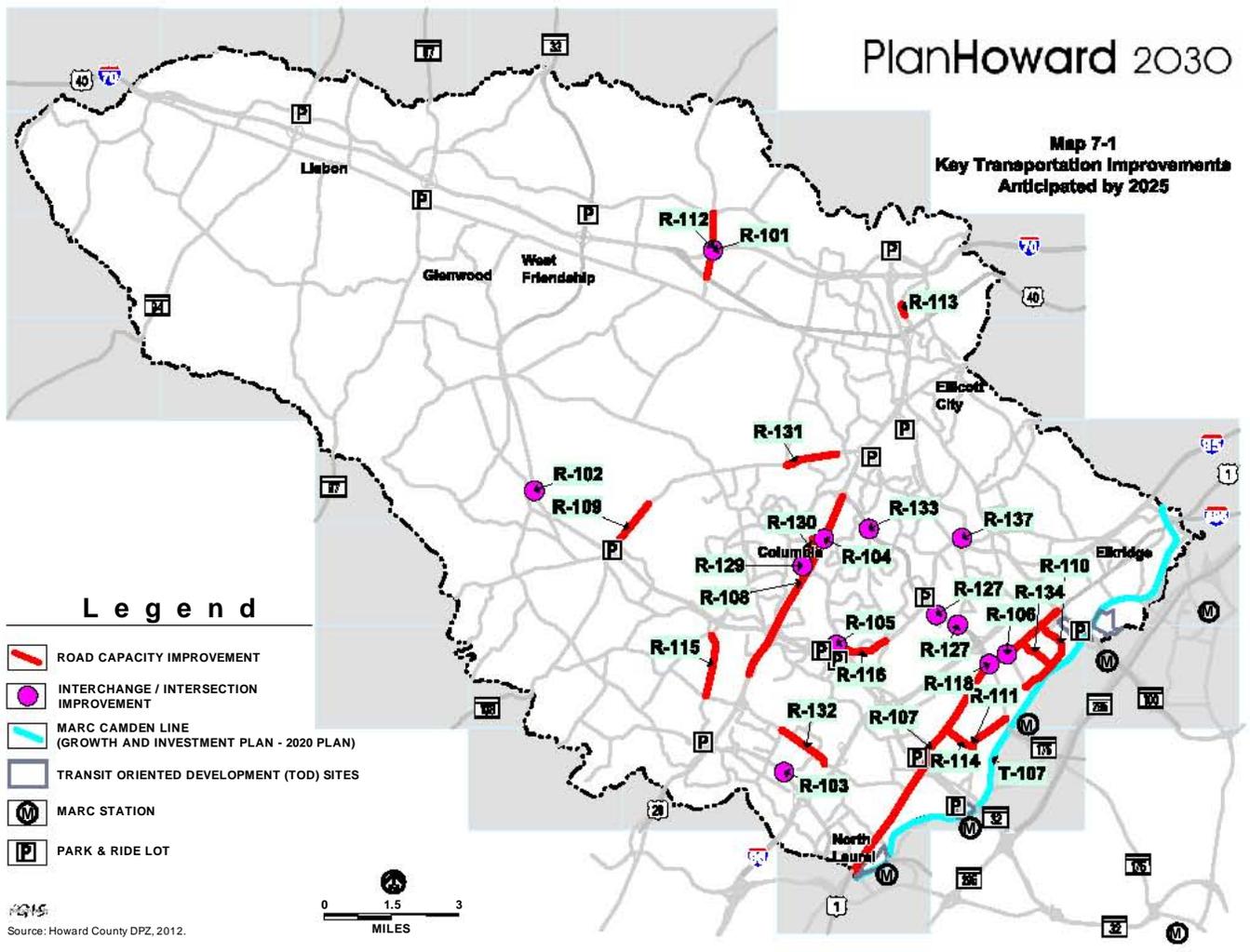
Policies and Implementing Actions

POLICY 7.2 – Coordinate State, regional, and local planning and implementation for critical improvements and new transportation facilities based on evaluation of options using a wide range of performance, health, environmental, and financial criteria.

Implementing Actions

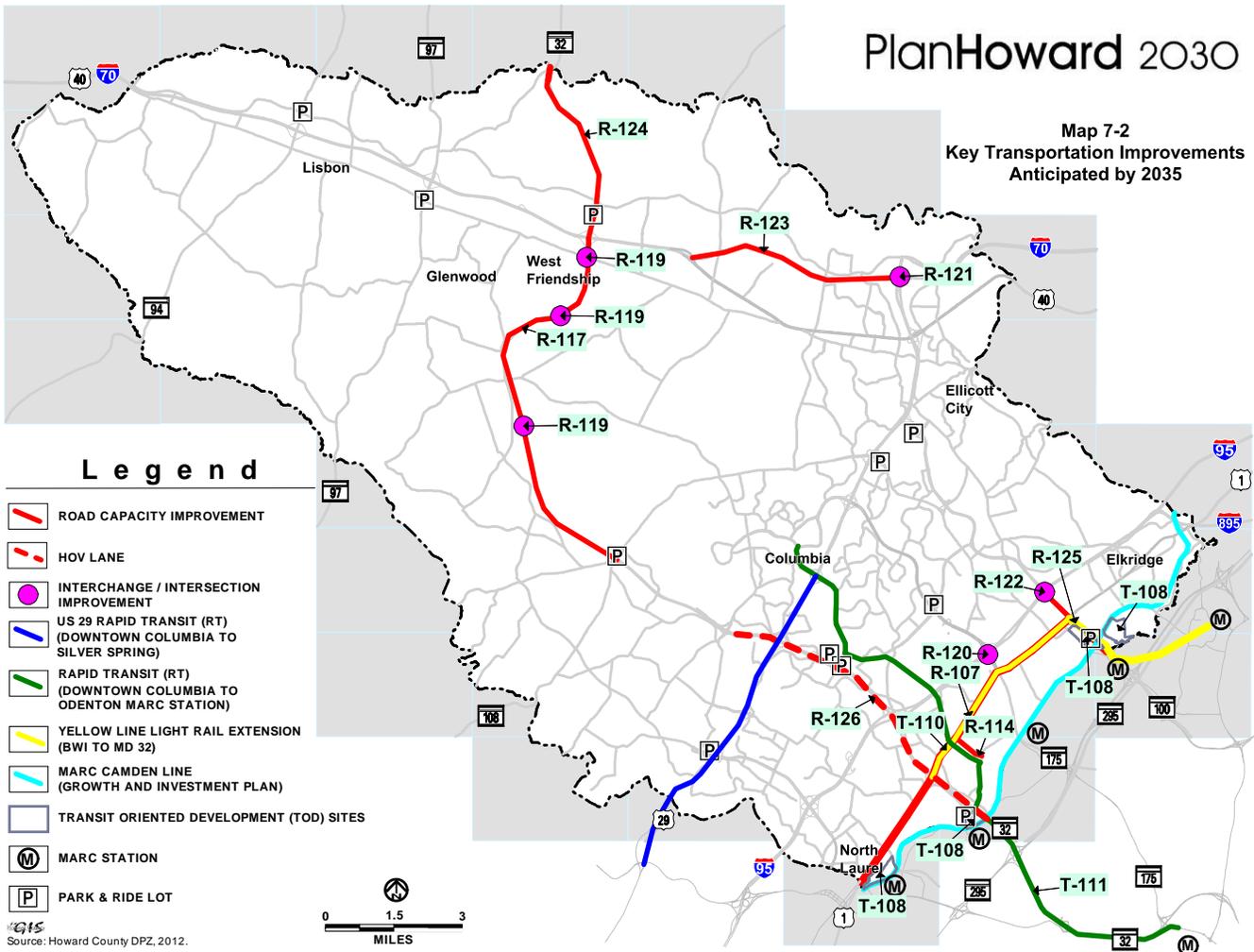
- a. **Key Projects.** Refine transportation plans and fund the County's share of projects as identified in: Key Transportation Improvements Anticipated by 2025 (Map 7-1); Key Transportation Improvements Anticipated by 2035 (Map 7-2); Road, Bicycle and Pedestrian Improvements (Figure 7-3); and Transit Priorities (Figure 7-4).

- b. **Regional Cooperation.** Engage in State and regional discussions to develop solutions to transportation funding shortfalls.



PlanHoward 2030

Map 7-2
Key Transportation Improvements
Anticipated by 2035



Roads and Highways

The road and highway network in Howard County consists of 1,200 miles of local roads, collectors, and arterials. Each roadway type has a defined traffic carrying function and depends on the functioning of other roads in the network. The entire highway network depends upon the regionally significant highways with the greatest traffic carrying capacity operating efficiently and effectively.

Map 7-3 shows the functional classifications for the County's road network. These functional classifications are used to determine the right-of-way and road improvements required for both private developments and County capital projects.

- **Principal Arterial:** Provides for efficient and uninterrupted travel across state and metropolitan areas through elimination of intersections and signals.
- **Intermediate Arterial:** Provides access between principal arterial highways and major streets in highly developed areas through the limitation of the type and number of access points from adjacent land uses.

- **Minor Arterial:** Provides interconnection between principal and intermediate arterials, as well as access to or through high density residential, commercial, retail, or industrial land areas.
- **Major Collector:** Provides primary access to an arterial road for one or more neighborhoods, as well as travel through neighborhoods from external points.
- **Minor Collector:** Connects local roads to one or more major collectors. Provides direct access to abutting properties and internal trips within a neighborhood.
- **Local Road:** Comprises all roads not classified as an arterial or collector. Provides direct access to abutting land uses and higher order roadway classes.

The BMC travel model indicates that congestion and travel time delay in Howard County and the region will continue to increase. Model projections for vehicle travel hours indicate that from 2008 to 2035 vehicle hours of delay will increase by 57%. Vehicle hours of delay are the number of hours drivers will experience due to congestion as compared to free-flowing roads and highways. In addition, significant segments of highways, especially those highways used to transport goods through the region and get people to work, will continue to experience peak period traffic congestion.



Effective on (_____)

Congestion can be mitigated either by increasing the capacity of roads and highways or by reducing demand.

The County's Adequate Public Facilities (APF) legislation was enacted in 1992 to assess the impact of new development proposals on the level of service at nearby intersections and to require improvements to mitigate congestion, if needed. Highway Level of Service (LOS) is a quantitative and qualitative measure of how well traffic flows through an intersection. LOS relates to such factors as number of lanes, percentage of trucks, total traffic volume, turning movements, signal timing, and other factors which affect intersection congestion. LOS can be described as follows:

GREEN TIP!

Check your tire pressure. Increase your gas mileage by keeping your tires properly inflated.

- **Level A** is a condition with low traffic volumes, high speeds, and free-flow conditions.
- **Level B** is a condition with light traffic volumes, minor speed restrictions, and stable flow.
- **Level C** is a condition with moderate traffic volumes, where speed and maneuvering are restricted to a limited degree.
- **Level D** is a condition with heavy traffic operating at reasonable speeds, although temporary slowdowns may occur.
- **Level E** is a condition of very heavy flow, relatively low speeds, and short stoppage may occur.
- **Level F** is a condition of extremely heavy flow, with frequent stoppage, and very slow speeds.

New development is also charged a road excise tax, to help fund high priority road improvements anywhere in the County highway network. The tax rate was set in 1992 but was not indexed to inflation until 2008, which has reduced available funding, despite significant increases in highway construction costs in the interim.

Increasing road capacity reduces congestion; however, the effects are not always long-lasting, as people increase their driving in response. Reducing congestion can be accomplished by promoting mechanisms to shift driving to off-peak hours and alternate travel modes (transit, car pools, bicycle, and walking). The APF regulations for Downtown Columbia were amended to include analysis of alternate travel modes and the option to count bicycle and pedestrian improvements in required mitigation.

Policies and Implementing Actions

POLICY 7.3 – Prioritize and pursue cost-effective, long-term capacity improvements to the road and highway network to support future growth in accordance with place type designations.

Implementing Actions

- a. **Capital Planning.** Use Howard County's Capital Improvement Master Plan to provide predictable funding for the County's highest priority road projects.
- b. **APF Regulations.** Evaluate the merits of amending the APF regulations to evaluate alternative modes of travel, as well as both increasing the APF road excise tax and allowing a portion of the funds to be used for transit, bicycle, or pedestrian improvements. **Adequate public facilities regulations.** Evaluate adequate public facilities (APF) regulations to

determine the merit of adding alternative modes of travel as well as whether the APF road excise tax amount is appropriate and whether a portion of it should be used for safety, transit, bicycle, or pedestrian improvements.

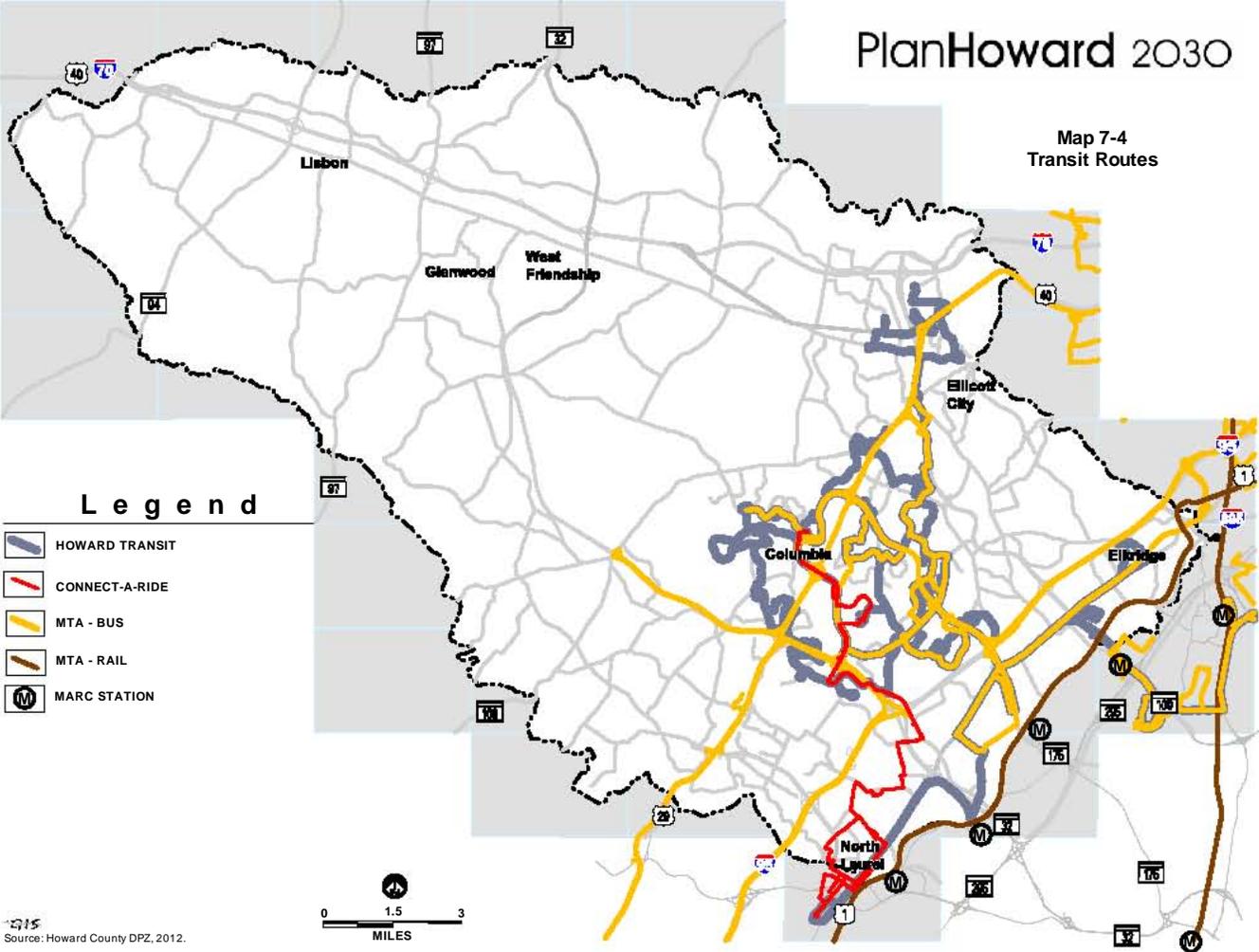
- c. **Targeted, Strategic Investments.** Evaluate new and innovative approaches to maximize the use of highway investments such as High Occupancy Vehicle (HOV) lanes and/or express toll lanes, focus road improvements to support existing communities and future growth areas, and limit rural road improvements to safety, rather than capacity improvements.

Transit Services

As shown on Map 7-4, Howard County's local transit service, Howard Transit, currently operates eight bus routes in the eastern portion of the County, with two routes extended to Laurel Mall and BWI airport. All these routes are operated on one-hour frequencies, with only the Green Route operating on half-hour frequencies during peak hours. Howard Transit's low service frequency makes service less convenient and slower, which discourages many potential riders. This results in a transit system primarily serving riders who do not have access to a car and who are dependent on public transit to travel. Central Maryland Regional Transit, which contracts with Howard County to provide Howard Transit service, also operates Connect-a-Ride with nine routes extending to College Park and Annapolis and two routes extending service into Howard County. Howard Transit provides about one million trips a year. The County is also served by a number of MTA commuter bus routes, with peak hour service to Washington, Baltimore, Fort Meade, Gaithersburg, and Rockville. MARC Commuter Rail provides service on the Camden line to Washington and Baltimore via train stations in Jessup, Savage, and Dorsey on the Howard County border with Anne Arundel County.

PlanHoward 2030

Map 7-4
Transit Routes



Howard Transit also operates HT Ride. HT Ride provides specialized paratransit curb-to-curb transportation for individuals with disabilities and senior citizens. HT Ride is provided for those individuals who cannot use the fixed-route Howard Transit services. This specialized service is categorized in two forms:

- 1) General Services transportation is provided, for those eligible, to and from locations within Howard County with limited service available to medical centers in Baltimore.
- 2) Americans with Disabilities Act (ADA) transportation service is limited to areas that are within three-quarters of a mile from the Howard Transit fixed-route service. HT Ride has initiated a pilot program using taxis to serve paratransit customers more cost-effectively.

Transit services continue to face a number of issues and challenges that need to be addressed, as they affect financial viability, reliability, public perception, and demand for transit services.

Howard Transit's Federal and State funding has remained flat for several years while the cost of providing transit services has increased. In 2012, the County is expected to expend about \$8 million to support transit services, which is about 77% of the total operating cost for the service. In addition, bus replacement costs are projected at \$2 to \$2.5 million per year. Increasing service frequency is a highly desirable goal outlined in Howard County's 2009 Short-Range Transportation Development Plan (see page ES-10 of that document); however, securing additional funding for increased frequency is a challenge.



The increasing number of diesel-hybrid buses in the Howard County transit system contribute to cleaner air.

The Federal Americans with Disabilities Act of 1990 requires the provision of complementary paratransit services when a fixed-route service is offered in a jurisdiction. Service providers must fulfill each ADA trip requested; therefore, ADA service costs are unconstrained. An expansion of fixed-route service areas would result in an increased paratransit obligation.

Howard County's land use and road design policies have resulted in a street network that can be disconnected and indirect in some situations. This has led to circuitous bus routes that are not serving passengers efficiently. This has also resulted in limited pedestrian and bicycle connections between bus stops and surrounding areas and communities. Howard County expects future development and growth to be directed to Downtown Columbia and nodes along Routes 1 and 40. Concentrating development would support easier and more efficient transit service.

Maps 7-1 and 7-2 and Figures 7-3 and 7-4 identify transit improvements. In 2012, the Baltimore Metropolitan Council is initiating a regional transit study to evaluate existing and potential transit corridors to determine how to more efficiently plan, fund, and coordinate transit options to support future growth.

In 2011, an appointed Transportation Commission recommended the County establish a new Office of Transportation to determine how to enhance the efficiency and quality of the County's existing transit system, as well as explore regional service models as a cost-effective option of providing increased service. The new office is also intended to facilitate coordination between transit and other transportation modes to enhance connectivity and effectiveness.

Policies and Implementing Actions

POLICY 7.4 – Enhance the accessibility and quality of existing and future transit services.

Implementing Actions

- a. **Transit Operations Facility.** Develop a transit operations facility to reduce costs by centralizing fleet maintenance and opening competitive bidding to additional transit service operators.
- b. **Efficiency and Route Alignment Howard Transit.** Maximize efficiency of Howard Transit and HT Ride operations via route alignment and paratransit taxi services, paying particular attention to improving access to government facilities and health and human service locations.
- c. **Other Jurisdictions.** ~~Expand and maximize efficiency of mid-corridor regional transit with Anne Arundel County, Baltimore County, Montgomery County, Prince George's County, the City of Laurel, and Fort Meade. Evaluate potential and, if advantageous, establish a new multijurisdictional regional transit agency to provide enhanced mid-corridor bus service that also maximizes investment and connectivity with other Baltimore-Washington regional transportation facilities.~~
Regional Transit. Expand and maximize the efficiency, investment and connectivity of mid-corridor regional transit with Anne Arundel County, Baltimore County, Montgomery County, Prince George's County, the City of Laurel, and Fort Meade, as well as connectivity with Baltimore and Washington regional transit service.
- d. **Service Frequency.** ~~Enhance Howard Transit by implementing half-hour service frequencies, increasing connectivity to other Baltimore-Washington regional transportation facilities (MARC, park-and-ride, pedestrian and bicycle facilities, and Transportation Demand Management initiatives), and instituting other service improvements identified in the Transit Development Plan.~~ **Multijurisdictional agencies.** Evaluate potential and, if advantageous, establish a new multijurisdictional agency for the administration and operation of public transportation services that would improve the efficiency and effectiveness of regional transit services, improving connectivity and coordination among public and private providers and maximizing the use of federal, state and local funding.
- e. **Service Frequency.** Enhance Howard Transit by implementing half-hour service frequencies, increasing connectivity to other Baltimore-Washington regional transportation facilities (MARC, park-and-ride, pedestrian and bicycle facilities, and Transportation Demand Management initiatives), and instituting other service improvements identified in the Transit Development Plan.
- f. **Land Use Decisions.** ~~Establish, enforce, and enhance policies and regulations requiring connectivity; prior to approval of new development plans that integrate land use decisions with options for promoting improved transit access~~ connectivity and transportation accessibility.

POLICY 7.5 – Utilize the BMC's Regional Transit Study regional studies to develop an effective plan for significantly expanded regional transit service.

Implementing Actions

- a. **Corridor Evaluation.** Evaluate existing and potential transit corridors for future ridership, transit mode options, and cost-effectiveness in order to prioritize public investment within transit corridors.

- b. **Rights-of-Way.** Preserve transit rights-of-way within existing and potential transit corridors.
- c. **Transit Nodes.** Identify locations within the Targeted Growth and Revitalization areas for more detailed planning for the development of transit-supportive densities and land uses, as well as pedestrian and bicycle connectivity.
- d. **Compact Development.** Adopt land use policies and regulations to promote compact development patterns that support transit demand through sufficient densities and interconnected street and pedestrian networks.
- e. ~~**Downtown Columbia.** Develop the Downtown Columbia multimodal transit facility and circulator.~~ **Downtown Columbia.** Work with the Downtown Columbia Partnership to develop the Downtown Columbia Transportation Demand Management Plan, multimodal transit facility and circulator.
- f. **Baltimore Metropolitan Council.** Cooperate with the Baltimore Metropolitan Council (BMC) to develop a new regional transit study.

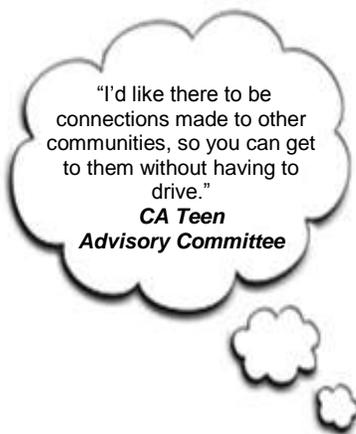
Pedestrian and Bicycle Master Plans

Most of Howard County's growth has occurred since 1950, coinciding with the rise in automobile ownership and resulting in the County's automobile-oriented development patterns. This has resulted in poorly connected bicycle, and pedestrian transportation networks, leaving most residents dependent on the personal automobile to travel to nearly all destinations in and around the County.

~~A major asset of any community is choice -- including choices in how one travels. Being able to make transportation choices means that for any particular trip, a person would have many viable and efficient transportation options from which to choose. Transportation options are an important aspect of community development. Being able to make transportation choices means that for any particular trip, a person would have many viable and attractive transportation options from which to choose: bus, bicycle, car, or on foot. Mode choice provides people with the flexibility to adapt their transportation behaviors depending on the goals of their trip, weather, time, and cost. The concept of "complete streets" is an approach to road design that incorporates pedestrian, bicycle, and transit with motor vehicles so that they are safe and comfortable and allow convenient transfer between modes.~~

For several decades in Howard County sidewalks were not an integral part of the road improvements. Sidewalk requirements have been strengthened and in 2007, a Pedestrian Master Plan was completed to enable the County to develop safe and reliable pedestrian connections. The economic downturn since 2008 has limited implementation funding, although a number of projects identified in the plan have been initiated. However, the rate of pedestrian improvements and projects identified in the plan should be accelerated.

Cycling is also an excellent option for many trips. There are many areas in the County where residents are close enough to bicycle to shops, school, or work. However, they are often faced with physical and safety barriers that hinder access and utilization; only a few are willing to breach these barriers. A Bicycle Master Plan has been funded and will be initiated in early 2012 to identify a network of cycling routes, identify barriers, and prioritize projects for implementation. The County's work on the Bicycle Master Plan will be



coordinated with the Columbia Association which is developing an “Active Transportation Action Agenda” for the Columbia pathway system.

Policies and Implementing Actions

POLICY 7.6 – Reduce highway congestion, energy consumption, and greenhouse gases by increasing the number of residents using alternate modes of transportation.

Implementing Actions

- a. **Bicycle Master Plan.** Develop a Bicycle Master Plan that defines priority projects and identifies those that can be integrated with pedestrian improvements and transit facilities. Establish an implementation schedule and identify funding.
- b. ~~**Complete Streets.** Promote complete streets by amending the Design Manual for road improvements to address bus stops and transit shelters, as well as pedestrian pathways, crossings, and bicycle improvements.~~ **Pedestrian Master Plan.** Assess progress and refine priorities of the existing Pedestrian Master Plan.
- c. ~~**Pedestrian Master Plan.** Assess progress and refine priorities of the existing Pedestrian Master Plan.~~ **Bus Stops.** Expand the study of bus stop infrastructure needs to identify gaps in bicycle and pedestrian connections between bus stops and surrounding destinations.
- d. **Evaluate Alternative Mobility Options.** Evaluate the options to meet the needs of seniors and people with disabilities.
- e. ~~**Capital Projects.** Establish an interdepartmental team including the Howard County Office of Transportation, Department of Planning and Zoning, Department of Public Works, and Department of Recreation and Parks to prioritize and coordinate implementation of the Bicycle and Pedestrian Master Plans through both capital projects and review of private sector development plans.~~ **Complete Streets.** Promote complete streets by amending the Design Manual for road improvements to address bus stops and transit shelters, as well as pedestrian pathways, crossings, and bicycle improvements.
- f. ~~**Bus Stops.** Expand the study of bus stop infrastructure needs to identify gaps in bicycle and pedestrian connections between bus stops and surrounding destinations.~~ **Capital Projects.** Establish an interdepartmental team including the Howard County Office of Transportation, Department of Planning and Zoning, Department of Public Works, and Department of Recreation and Parks to prioritize and coordinate implementation of the Bicycle and Pedestrian Master Plans through both capital projects and review of private sector development plans.
- g. **Public Outreach.** Develop strategies to promote public awareness and use of alternative travel modes for work, errands, and recreation.

TDM Transportation Demand Management

Transportation Demand Management (TDM) involves diverse programs designed to alter travel behavior by mode, frequency, time, route, or trip length. It is also used to maximize the efficiency and sustainable use of transportation facilities.



These programs can be used to address a range of objectives, including reducing congestion, emissions, and energy use.

Some typical TDM programs are Transit, Transportation Management Associations, HOV Lanes, Reversible Lanes, Congestion Pricing, High Occupancy Toll Lanes, Ridesharing Programs, Bike to Work Programs, Telecommuting, and Video Conferencing.

Howard County has run a successful commuter rideshare program that provides assistance with transit services, ride matching, van pools, and shuttle bus development, in addition to other services to get people to jobs in and out of the County.

Technology can be integrated into TDMs to reduce congestion by coordinating signals, integrating freeway and arterial operations, improving traffic flow, reducing incident clearance times, improving bus travel through the use of priority signals for buses and bus arrival information, and enhancing special event traffic management. Howard Commuter Solutions manages a ride matching database that is linked to the greater Baltimore-Washington region.

Howard Transit provides real time bus arrival information to all transit riders via telephone or a smart phone application. Furthermore, more transit agencies have opened up data feeds to independent developers, which have resulted in the development of new applications to provide detailed and customized transit data to individuals.

Policies and Implementing Actions

POLICY 7.7 – Reduce highway congestion, energy consumption, and greenhouse gases through ~~transportation demand management and innovative technologies~~.

Implementing Actions

- a. **Ride Sharing.** Promote car share and bike share systems, HOV programs, and expanded park and ride lots.
- b. **TDM Program.** Study and develop the Downtown Columbia Transportation Demand Management Plan as well as additional TDM programs as mechanisms to mitigate traffic/congestion impacts and expand transit services.
- c. **Data Sharing.** Investigate sharing of bus location data generated by Howard Transit for potential use by independent software developers to promote transit and transit alternatives.
- d. ~~Broadband Connections~~ **Innovative Technologies.** Leverage the County's investment in the intra-County broadband network to develop a Howard County traffic control center to monitor traffic conditions and coordinate with Maryland State Highway Administration traffic control.
- e. **Alternative Modes of Transportation.** Make pedestrian, bicycle, and transit modes of transportation attractive and viable options.

**Figure 7-3
Road, Bike and Pedestrian Priorities**

Project Number	Project Description	2010-2025	Post 2025
R-101	I-70 and Marriottsville Road: Capacity, ramp and bridge improvements over I-70; Expansion of Marriottsville Road to 4 and 6 lanes from MD 99 to US 40	✓	✓
R-102	MD 32 and Linden Church Road: New Interchange	✓	
R-103	MD 216 and Skyark Boulevard Extended: New signalized intersection	✓	
R-104	US 29: Interchange at Corporate Boulevard Extended to access Downtown Columbia	✓	
R-105	Broken Land Parkway and Snowden River Parkway: Roadway capacity improvements	✓	
R-106	US 1 - Montevideo Road and Port Capital Drive: Realignment of roadway and new 4-way intersection	✓	
R-107	US 1 - MD 100 to the Prince George's County line: Expand to closed section with 6 lanes	✓	✓
R-108	US 29 - Middle Patuxent River to MD 175: Expand to 6 lanes	✓	
R-109	MD 108 - Trotter Road to MD 32: Expand to 5 lanes	✓	
R-110	Dorsey Run Road - Montevideo Road to MD 103: Expand to 4 lanes	✓	
R-111	Dorsey Run Road - New 4 lane road: CSX Railroad Bridge spur to Guilford Road	✓	
R-113	North Ridge Road - Terminus to Town & Country Boulevard: Extend existing 2-lane road	✓	
R-114	Patuxent Range Road - US 1 to Dorsey Run Road: Expand to 4 lanes		✓
R-115	Sanner Road - Hopkins Road to Guilford Road: Expand to 2 lane sections, left turn capacity and bike lanes	✓	
R-116	Snowden River Parkway - Oakland Mills Road to Broken Land Parkway: Expand to 6 lanes	✓	
R-117	MD 32 - I-70 to MD 108: Expand to 4 lanes		✓
R-118	US 1: Urban Interchange at MD 175	✓	
R-119	MD 32: New interchanges at Dayton SHA Facility, Rosemary Lane and MD 144		✓
R-120	I-95: Upgrade interchange for capacity and safety at MD 175		✓
R-121	I-70: Reconstruct interchange at US 29 to allow for I-70 to be widened to 6 lanes		✓
R-122	I-95: Upgrade interchange at MD 100 to allow for 6-lane expansion on MD 100 and capacity expansion on I-95		✓
R-123	I-70 - US 29 to US 40: Expand to 6 lanes		✓
R-124	MD 32 - I-70 to the Carroll County border: Expand to 4 lanes		✓
R-125	MD 100 - I-95 to Anne Arundel County border: Expand to 6 / 8 lanes		✓
R-126	MD 32 - Cedar Lane to Anne Arundel Co.: Expand to 8 / 10 lanes with HOV		✓
R-127	MD 175 / MD 108 / Columbia Gateway Drive: New grade separated intersection	✓	
R-128	MD 175: US 1 Interim intersection improvements	✓	
R-129	Broken Land Parkway and North South Collector: Interchange Modification	✓	
R-130	North South Collector: Broken Land Parkway and Little Patuxent Parkway - new 4-lane road	✓	
R-131	MD 108: Woodland Road to Centennial Lane - Expand to 5 lanes	✓	
R-132	Gorman Road - Skylark Road and Leishear Road: Modify alignment	✓	
R-133	Oakland Mills Road and MD 175: Limited access interchange for Blandair Park	✓	
R-134	Kit Kat Road: Extension/connection to Dorsey Run Road	✓	
R-135	MD 32/US 1 Park and Ride Lot: Park and Ride lot located on the northwest quadrant of MD 32 and US 1	✓	
R-136	US 29/MD 99 Park and Ride Lot: Park and Ride lot located north of the intersection of MD 29 and MD 99		✓
R-137	MD 100, MD 108 and Snowden River Parkway: Intersection and interchange upgrades	✓	
B-101	Bicycle Facility Projects: Proposed in pending Bicycle Master Plan and BRTB Plan	✓	✓
P-101	Transit Stops: Improve pedestrian and bicycle access	✓	✓
P-102	Pedestrian Facility Projects: Proposed in Pedestrian Master Plan and BRTB Plan	✓	✓

Source: 2011 Long-Range Transportation Plan, Baltimore Metropolitan Council (updated every four years)

**Figure 7-4
Transit Priorities**

Project Number	Project Description	2010-2025	Post 2025
T-101	Central Maryland Transit Operations Facility: New facility for Howard Transit, western Anne Arundel and Connect-a-Ride	✓	
T-102	Howard Transit: Continue expansion and upgrade of buses	✓	
T-103	Howard Transit: Increase frequency and service hours	✓	
T-104	Downtown Circulator: New circulator using hybrid and/or electric buses	✓	
T-105	Regional Transfers: MTA, WMATA, MARC, Connect-a-Ride	✓	
T-106	Howard Transit: Improve amenities at bus stops and shelters	✓	
T-107	MARC: Camden Line Growth and Investment Plan: Frequency and Service improvements; 2020 Phase Improvements	✓	✓
T-108	Transit-Oriented Developments (TOD): Savage, North Laurel, and Dorsey MARC Stations	✓	
T-109	Bus Rapid Transit: Along US 29 from Downtown Columbia to Burtonsville		✓
T-110	Yellow Line Light Rail: Service from Dorsey MARC Station to MD 32		✓

Source: 2011 Long-Range Transportation Plan, Baltimore Metropolitan Council (updated every four years)