MOVE ANNE ARUNDEL!
COUNTY TRANSPORTATION MASTER PLAN

DRAFT - May 2019

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Acknowledgments

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Introduction & Executive Summary

In 2009, Anne Arundel County adopted its General Development Plan (GDP) which has guided land use, transportation, environmental, and social infrastructure investments for the past decade. The GDP directed that the County establish a Transportation Functional Master Plan (TFMP) to guide the county's future transportation policies, strategies and investments, and to prepare for the next 2019 GDP update (see inset).

While most of the County's transportation capacity is in the form of roadways, the 2009 GDP endorsed a long-term view of a sustainable, balanced, and multimodal transportation approach. This approach is generally consistent with the State and regional transportation system where priorities are expressed through Maximize 2040, the Constrained Long-Range Transportation Plan for the Baltimore region, and the MDOT Consolidated Transportation Program.

Since 2009, the county has prepared the transportation planning studies needed to create the TFMP. These plans consider regional and local road corridors, transit services, and bicycle and pedestrian facilities. Together, the plans and studies provide the core County's transportation approach for the next decade; however, with limited funds available priorities must be set in order to achieve the County's vision.

Through a dynamic and data-driven process, the TFMP has been created as Move Anne Arundel! a comprehensive framework for transportation policies, strategies, and implementation projects, and will serve as the basis for the transportation element of the 2019 General Development Plan. In addition, the Office of Transportation, Department of Public Works, and other County agencies will use Move Anne Arundel! to inform:

- The county's annual Capital Improvement Plan and 5-year Capital Improvement Program.
- The Annual Priority Letter submitted to the Maryland Department of Transportation (MDOT).
- The county's long-range transportation plan priority projects through the Baltimore Regional Transportation Board.
- Discretionary MDOT grant applications for the Maryland Bikeways Program, Transportation Alternatives Program, Job Access and Reverse Commute program, State Transportation Innovation Grants, and others.
- Traffic mitigation plans and multimodal requirements for new development projects.

Transportation Functional Master Plan

The 2009 GDP recommended that the following issues be studied and consolidated into a Transportation Functional Master Plan.

- Relationship to land use in the County
- Relationship to land use and activity centers in the Region
- Revised travel demand forecasts
- Priority Highway Improvement Corridors
- Transit Investment Corridors
- Coordination and Promotion of Improved Transit Services
- Coordination with Emergency Planning
- Changes to Facility Design (sidewalks, on-road biking, multipurpose trails)
- Changes in timing of dedication/reservation
- Context Sensitive Design
- Motorist, Bicyclist, and Pedestrian Safety
- Parking Structures and Park & Ride Facilities
- Input to Capital Improvement Program
- Sources of Funding
- Intergovernmental Coordination

Part 1 establishes the vision, goals and objectives of Move Anne Arundel!

While the 2009 General Development Plan provided some guidance in crafting the vision and goals for the TFMP, it is also important to achieve a reasonable degree of consistency with regional and state agency partners, reflect industry standards and trends and input from community and business organizations. The Office of Transportation held eight public workshops on the TFMP, reviewed public input provided into the Maryland Transportation Plan, and worked closely with Anne Arundel County Transportation Commission and Bicycle/Pedestrian Advisory Committee to fashion the vision, goals, objectives and performance measures for the TFMP.

As the state controls the most significant transportation infrastructure in Anne Arundel County, the objectives and performance measures strike a balance between those areas that can be achieved directly by the County and those areas where the County can be an advocate but does not have direct control to make improvements. Performance measures are intended to be practical, transparent and relate to the quality of life of County residents. All performance measures use data that is published by other transportation agencies using data provided by the County or rely on existing geospatial data available on the County's website so that it is possible to report outcomes in a consistent manner, year-over-year. Baseline data and a performance target for 2040 are established.

Part 2 provides the planning and land use context for Move Anne Arundel!

Anne Arundel County is both defined and constrained by the network of highways, roads, trails, railroads, and transit services that move its residents and goods in, through and out of the community. Looking back over the past 40 years, the County's residential and economic growth patterns have a mixed-record of being coordinated with land use planning which has brought on some of the traffic congestion that exists today. Investments in US 50 and I-97 as part of the Reach the Beach program in the 1980s and 1990s made commutes to Washington, DC more viable from the central part of the County and the Broadneck peninsula. The 1990s and 2000s brought the central light rail and a strengthened MARC Train system to the northern and central parts of the county, but there was little of planned or achieved in the form of transit-oriented development to leverage the major transit investment.

Since 2000, the dominant traffic issues in the county have been east-west travel (MD 100, MD 32, MD 198, and US 50 corridors) owing to tremendous growth at BWI Airport and surrounding areas, Arundel Mills and at Fort George G. Meade. State and county transportation agencies have fought to catch up and keep up with the growth. For example, the widening of MD 175 from MD 295 to MD 32 and BRAC-related intersection improvements along MD 713 and at MD 198, but most of these improvements are coming online well after the land development occurred. Instead, most of the county and state efforts have focused on system preservation (resurfacing, bridge repair, etc.), minor operational improvements and developing plans for even further growth to be articulated through the 2019 GDP process.

Since the 2009 GDP, five primary studies have been conducted to prepare for the next chapter of growth and development in Anne Arundel:

- The **Corridor Growth Management Plan (CGMP)** developed traffic forecasts based on the 2009 GDP land use plan and prepared concept-level transportation solutions with impacts and costs for various alternatives on nine regional and four connector corridors.
- The **Major Intersections and Important Facilities (MIIF)** study was a companion to the CGMP and focused on land use plans and transportation improvements from the County's five major peninsulas to the regional corridors.
- The **2003 Pedestrian and Bicycle Master Plan (PBMP)** identified approximately 215 miles of specific bicycle facilities and 80 pedestrian improvement zones to be advanced by the County or SHA, as appropriate. In 2013, the BPMP was updated to focus the county's work on a specific and tiered network in the urbanized areas of the County where bicycling for commuting and short trips is most feasible.
- The **Complete Streets Guidance** ensures that proposed roadway improvements are fully implemented in a way that provides all users, regardless of age or ability, with a comprehensive and connected multimodal network. A case study in the document builds upon the CGMP, which uses a toolbox approach, to identify ways to increase person throughput by applying strategies that promote transit, walking, biking, and ridesharing.
- The **Central Maryland Transit Development Plan (TDP)** focused on improvements to the locally-operated bus network in Howard, Anne Arundel, and northern Prince George's counties. Major long-term projects for consideration by Maryland Department of Transportation, Mass Transit Administration (MDOT MTA) were also referenced.

Part 3 describes the existing transportation system in Anne Arundel County.

The responsibility for constructing and maintaining roads and bridges, developing and operating transit services, and expanding the bicycle and pedestrian network is the responsibility of more than a dozen local, State, and private agencies. While the state is responsible for the major transportation assets such as I-97, US 50, MD 295, the Chesapeake Bay Bridge, Central Light Rail Line and the MARC Train system, the county is responsible for more than 1,317 centerline miles of neighborhood streets and collector roadways that feed into the larger network. The County also maintains 87 bridges, operates four bus routes and an extensive system of transit services for the elderly and disabled, and maintains 30+ miles of shared use paths.

Part 4 describes future challenges and demands on the transportation system including financial constraints on improving the system.

Looking ahead, strong population and employment growth are forecasted to continue over the next 20+ years; however, the County's overall development holding capacity has narrowed. Revitalization and redevelopment in mature areas will become the primary focus for residential and economic growth in the future. Evolving technologies, an aging population, and the transportation preferences of younger generations will also change the County's mobility landscape.

Based on current projections, there will be an increase of more than 86,950 daily trips taken within, to and from Anne Arundel County by 2040. A total of 554,600 daily trips projected for 2040 is 15% higher than a similar study five years ago. More than 80% of all daily trips in Anne Arundel County are made by personal automobile; when considering commuting trips only, more than 90% of all trips are taken alone.

As the number of trips increases, commuting patterns are changing as well. While travel to and from Baltimore City County once was dominant, travel to Howard, Montgomery, Prince George's counties and the District of Columbia has overtaken trips to and from the north. At a regional level, congestion will significantly worsen on MD 3 through Crofton and Bowie, on US 50 between I-97 and I-495, and on the MARC Train stations at Odenton and BWI. This gradual shift in commuting patterns also is producing a rapidly increasing number of trips to and from Howard County which has implications for east-west travel in the mid-County along MD 100, MD 175, and MD 32.

When looking at trips of all kinds - not only commuting trips, but travel to the grocery store, doctor's office, and other day-to-day activities, nearly 75% trips are made within the county and most are less than 5 miles in length. This is significant because as trips on the primary State roadways become longer and less reliable, drivers will seek alternative routes using local roads not designed to handle significantly increased volume. Trips within community cores will become more difficult and less safe.

Part 5 identifies the recommended policies and priority projects that make up Move Anne Arundel!

Unless a range of transportation solutions is advanced, mobility challenges will continue to mount, resulting in more cumbersome travel within the County and longer and less reliable commutes within the Baltimore and Washington, DC region. Move Anne Arundel! is grouped into modal themes:

- Making Communities More Walkable
- Building a Low-Stress Bicycle Network
- Upgrading County Corridors and Strengthening Community Cores
- Improving Regional Corridors to Make Commutes More Reliable
- Advancing a New Model of Transit Services

A list of priority investments was developed using a technical scoring process tied to the vision, goals and objectives. The scoring process varied by transportation mode using different analytical tools specific to each; however, no technical scoring process can account for all considerations. Following the technical scoring, a policy-level review was performed to ensure that resources would be distributed equitably throughout the County.

Additional policy recommendations are made concerning land use and development review and approval policies, regional coordination, emerging technologies and other topics not specific to any mode of travel.

Summary of Recommendations

Making Communities More Walkable

- 18 elementary schools are recommended for implementation of the Safe Routes to Schools program including new sidewalk connections, highly visible signage, education and enforcement activities.
- New public facilities such as schools, libraries, community centers and recreation centers, etc. should be sited and oriented to maximize pedestrian access.
- Town Centers should be the focal point of investments to close gaps in the sidewalk network using the new Multimodal Improvement Fund.

Creating a Low-Stress Bicycle Network

High priority investment:

- South Shore Tail phases along Bestgate Road in Parole and a shared-use path along Maryland Route 70 (Rowe Boulevard).
- B&A Trail northern extension into North Linthicum and connection to BWI Trail.
- Shared-use paths in the Annapolis Neck such as along Forest Drive, Hilltop Lane, and Spa Road.
- Broadneck Peninsula Trail along College Parkway (Phase 4) which connects directly to the B&A Trail.
- Shared-use path along East West Boulevard/Pasadena Road.
- B&A Trail southern extension into Annapolis via MD Route 450 over the Naval Academy Bridge.

Other recommendations:

- Make on-street “last mile” connections from trails to nearby community activity centers
- Work with MDOT SHA to identify the disconnected segments of on-street bicycle facilities and prioritize filling out the network by extending lanes to logical termini.

A New Model for Transit Services

- Significantly expand commuter bus service with routes from northern and central Anne Arundel County to suburbs along Capital Beltway (College Park, Silver Spring, Bethesda, etc.)
- Restructure most locally-operated routes to be “Deviated Fixed Routes” or “Zone Routes” and add the following services:
  - Riviera Beach – Pasadena – UM Baltimore Washington Medical Center
  - North Glen Burnie Loop – Cromwell Light Rail Station
  - Cromwell Shopping Center – Veterans Highway – Old Mill Road - UM Baltimore Washington Medical Center
- Work with MDOT MAA to expanding the role of the BWI Shuttle to be a higher-frequency “last mile” transit should be explored as a more cost-effective solution than can be provided by MDOT MTA in the BWI area.
- Construct the Annapolis/Parole Transit Center and identify other opportunities for improved customer connections: Glen Burnie/Pasadena near Marley Station Mall, at Fort Meade, in Maryland City/Laurel, and Crofton/Waugh Chapel/Bowie.

Upgrading County Corridors and Community Cores

North County Priority Investments:

- MD 2 from Brooklyn Park to Glen Burnie to address traffic and pedestrian safety.
- MD 177 between MD 10 and Edwin Raynor Boulevard to address traffic congestion, improve bicycle and pedestrian facilities, and upgrade the streetscape in commercial areas.
- Solley Road between MD 173 and MD 177 to address traffic congestion and accommodate planned community and economic growth.
- Linthicum and Ferndale Community Connectors. (Andover Rd, B&A Blvd, Camp Meade and Belle Grove Road)

Central & West County Priority Investments:

- Roadway/transit improvements at Odenton Town Center to support new development and manage congestion.
- MD 170 from Aviation Boulevard to MD 175 to address growing traffic congestion.
- MD 713 between MD 175 and Arundel Mills Blvd. to address increasing traffic congestion and traffic safety issues and provide additional bicycle facilities.
- Improving Waugh Chapel area roads to create a street grid network.

Broadneck and Annapolis Area :

- Access to Annapolis, Parole and Annapolis Neck (MD 2/MD 450/MD 665/Forest Drive) to address congestion and improve traffic and pedestrian safety.
- College Parkway between MD 2 and US 50 to address traffic congestion and incorporate the Broadneck Peninsula Trail extension.
- MD 2 through Severna Park to Arnold to reduce congestion hotspots.

South County:

- Coordinate land use and transportation strategies with Calvert and Prince George's Counties to achieve a safe and consistent transportation network without bottlenecks.
- Implement minor operational improvements to allow for safe left turns.
- Slow traffic through the more populated areas.
- Building the sidewalk and bicycle network where it makes the most sense for very localized trips.

Improving Regional Corridors to Make Commutes More Reliable	
MD 3	» Convert to a limited access freeway in three phases: MD 32 to Waugh Chapel Road (2.4 miles), Waugh Chapel Road to MD 450 (3.7 miles), and MD 450 to US 50 (2.8 miles). » New commuter bus service should be provided from the Waugh Chapel area to Washington, DC and to its suburbs at New Carrollton Metro Station, College Park, and Silver Spring and more park-and-ride lots must be developed along MD 3 to support this service.
MD 32	» Prioritize eastbound improvements between MD 295 and MD 198 and westbound improvements between MD 710 and Fort Meade. » Add commuter bus service from south County and Parole to Fort Meade » Establish a transit center on Fort Meade near NSA to allow for open-door local and commuter bus service on base.
MD 100	» Prioritize the section of MD 100 between I-95 and MD 170 to provide safer and smoother merging and weaving areas as vehicles enter and depart the highway; MD 295 and MD 100 is a major bottleneck that must be addressed.
MD 295	» Prioritize the section between MD 175 and I-195 to get ahead of future problems and address the interchange of MD 295 and MD 100 » Pinpoint operation improvements along MD 295 to limit environmental impacts using strategies such as ramp metering, longer exit lanes, hardening of shoulders for peak hour use
MD 50	» Extend HOV lanes from the George's County line to I-97. » Add commuter bus service from the park and ride lots in Annapolis and Severna Park to College Park, Silver Spring, and Bethesda.
I-97	» Implement TSMO strategies, including ramp metering and the hardening of shoulders for peak hour use between MD 174 and MD 32. » Improve safety and traffic flow on at junction of I-97, MD 3, and MD 32 and the junction of I-97 and US 50, especially during the PM peak period.

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Part 1:
Vision, Goals, Objectives and Performance Measures

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Vision, Goals, Objectives and Performance Measures

Vision

Anne Arundel County will provide a safe, efficient, equitable, sustainable, and multimodal transportation system that provides residents, travelers, and visitors with connectivity and choice.

Goal: A safe transportation system

Transportation–related deaths and severe injuries are preventable and unacceptable. Many communities have adopted the Vision Zero strategy to eliminate all traffic fatalities and severe injuries, while increasing safe, healthy, equitable mobility for all. First implemented in Sweden in the 1990s, Vision Zero has proven successful across Europe, and has now been adopted in more than 50 major American cities. The Vision Zero systems approach to safety is founded on the following principles:

- Transportation–related deaths and severe injuries are preventable and unacceptable.
- Human life takes priority over mobility and other objectives of the road system. The road system should be safe for all users, for all modes of transportation, in all communities, and for people of all ages and abilities.
- Human errors are inevitable; the transportation system should be designed to anticipate errors, so the consequences are not severe injury or death. Advancements in vehicle design and technology, as well as roadway engineering advancements, personal electronic device innovations, etc., are necessary components for avoiding the impact of human errors.
- People are inherently vulnerable, and speed is a fundamental predictor of crash survival. The transportation system should be designed for speeds that protect human life.
- Safe human behaviors, education, and enforcement are essential contributors to a safe system.
- Policies at all levels of government need to align, making safety the highest priority for roadways.

While State and Federal policies focus on driver licensing requirements, vehicle crashworthiness, and social behaviors like texting while driving, or driving while under the influence of alcohol, a local government's Vision Zero plan typically focuses on:

- Engineering improvements such as reducing speeds, warning of hazards, fixing blind spots and dangerous intersections, and improving street lighting.
- Educational activities through the Safe Routes to Schools program.
- Enforcement of traffic laws with an emphasis on combating speeding, aggressive, and impaired driving.
- Integrated transportation-land use planning and development reviews that put pedestrian safety and multimodal access ahead of traffic speed and maximum vehicle access points.

Objective: Reduce injuries and fatalities for all modes.

Performance Measure	Baseline	2040 Target
Number of vehicle occupant fatalities annually	34	0
Number of bicycle fatalities annually	1	0
Number of pedestrian fatalities annually	8	0
Number of vehicle occupant serious injuries annually	728	365
Number of bicycle user serious injuries annually	14	4
Number of pedestrian serious injuries annually	60	15

Goal: A multimodal transportation system that provides practical and reliable transportation choices and connections for all users.

A toolbox known as "Transportation Systems Management and Operations" (TSMO) is a set of strategies that focus on operational improvements that can maintain and even restore the performance of the existing roadway network before extra capacity is needed. The goal here is to get the most performance out of the transportation facilities we already have at a fraction of the cost of traditional roadway widening.

TSMO strategies for freeways include:

- **High Occupancy Vehicle (HOV)** lanes that provide a travel time savings benefit to commuters who carpool, vanpool, or use transit in dedicated lanes during peak travel hours. HOV lanes now operate on US 50 from the Anne Arundel-Prince George's County line to the Capital Beltway.
- **Ramp Metering** is a tactic used to regulate the number of vehicles entering a freeway. Typically, a basic traffic light is installed at freeway on-ramps to manage the rate of motor vehicles entering the freeway, ensuring that flow along the mainline is not overly interrupted and that capacity does not become oversaturated.
- **Hard Shoulder Running (HSR)** /Part-Time Shoulder Use reassigns the shoulder as an extra lane to maximize the capacity of the roadway during peak hours and revert to its normal function during off-peak hours. Shoulders are often used as the HOV lane and carry additional lane markings and signage to indicate when the lane is open to traffic.

Creative Content Pending Final Draft

In congested activity centers (and on arterials), TSMO strategies include:

- Reversible lanes facilitate traffic flow in the peak direction by borrowing capacity from the off-peak direction. Three reversible lanes already exist in Anne Arundel County: on US 50 at the Bay Bridge, on MD 177 from MD 100 to west of South Carolina Avenue, and on Riva Road from MD 665 to the Harry S. Truman Parkway.
- Adaptive traffic Signals that respond to real-time traffic conditions.
- Access management such as eliminating curb cuts and restricting left turns.
- Closing gaps in the roadway network by eliminating cul-de-sacs and dead-ends where connections could be made to form a full street grid and allowing connectivity between adjacent parcels.
- Improving walkability to reduce the need for very short vehicle trips that could be made on foot or bicycle.

Objective: Improve Transportation System Reliability

Performance Measure	Baseline	2040 Target
Travel time reliability on major roadway corridors	See Details to the Right	
Travel time reliability on secondary roadway corridors		
On-time performance of RTA and County-operated transit services	44%	85%

Travel Time Reliability on Selected State Roads

2016 Maryland State Highway Mobility Report
http://www.roads.maryland.gove/OPPEN/2016_mobility_report_appendix.pdf this uses the PTI

Corridor	AM	PM
I-97	1.23	1.27
MD 32	1.15	1.26
US 50	1.10	1.20
MD 100	1.14	1.37
MD 295	1.25	1.73
MD 2 - Ordnance Road (MD 710) to Furnace Branch Road (MD 270)	S/B	N/B
MD 3 - Annapolis Road (MD 175) to St Stephens Church Road	N/B	S/B
MD 175 - MD 295 to Ridge Road	W/B	S/B
MD 198 - MD 197 to Brock Bridge Road	S/B	W/B
MD 450 - Riva Road to MD 2	S/B	W/B
Benfield Boulevard from I-97 to MD 2	Data not currently collected by MDOT SHA or Anne Arundel County. A travel monitoring program should be established and performance goals set.	
MD 170 from MD 175 to MD 2		
MD 713 from MD 176 to MD 175		
College Parkway from MD 2 to MD 179		
MD 665/Forest Drive from US 50 to Bay Ridge Avenue		
MD 214 from MD 424 to Shoreham Beach Road		
MD 256 from Rockhold Beach Road to MD 2		
MD 177 from MD 2 to Lake Shore Drive		

Not every commuting trip is well suited for taking transit, walking, or bicycling to work; however, there are certain corridors and communities where those modes can be a practical transportation choice for some people - whether every day, or just a few days per week. Enough frequency and coverage, hours of operation, and accessibility are critical to making transit a practical commuting option. Safe and well-maintained sidewalks that buffer pedestrians and bicyclists from cars are necessary to make these practical for short distance commuting, shopping, and other trip types. The County's targeted growth management areas provide a unique opportunity to "move the needle" on transportation alternatives, since the mix and density of land uses are sufficient to support transit services and provide safe areas for bicycling and walking to most destinations.

Objectives:

- » Provide practical transportation choices throughout the County.
- » Increase non-single occupant vehicle mode share for commuter trips to and from Town Centers.

Performance Measure	Baseline	2040 Target
Directional miles of striped on-street bicycle lanes	25.9	69.9
Directional miles of protected on-street bicycle lanes	0.9	6
Miles of shared-use path	30	81
Number of daily round trip MARC Trains to Washington DC daily -- Penn Line	27	32
Number of daily trips between Baltimore and Washington DC on the MARC Camden Line	10	20
Number of daily commuter bus trips from Anne Arundel County to Washington, DC (1)	22	44
Number of daily commuter bus trips from Anne Arundel County suburban DC employment centers (2)	18	36
Percentage of State-owned roadway directional miles within urban areas that have sidewalks compliant with the Americans with Disabilities Act	11%	22%
Percentage of County-owned roadway directional miles within urban areas that have sidewalks that are compliant with the Americans with Disabilities Act	Data Not Currently Available. It is recommended that the County update its GIS database to capture this information.	
% of seniors and persons with mobility challenges within one-mile of a bus route.	67%	80%
Countywide non-single occupant vehicle mode share for commute trips	14.80%	16.30%

	Odenton		Glen Burnie		Parole	
	2017	2040	2017	2040	2017	2040
Drove Alone	79%	71%	82%	74%	79%	71%
Walk, Bike, Transit, Carpool, Work from Home	21%	29%	18%	26%	21%	29%

Goal: A transportation system that is resilient and protects the environment

Building resiliency into transportation planning and asset management is an iterative process that requires several steps, including identifying options, risks, and costs, and involving stakeholders and civic groups in the transportation planning process. Success depends on identifying determinate benefits, measuring effectiveness of outcomes, and modifying approaches when less-than-optimal results warrant. It will also require attention to factors beyond the control of Anne Arundel County, such as resiliency planning for state infrastructure and cost and budgeting constraints in implementing new plans and policies.

As a first step in resiliency planning, the County should identify at-risk roads, bridges and other infrastructure that are or will be vulnerable to flooding in the future and ensure that there are plans for appropriate maintenance and post-event recovery. Emergency evacuation plans and other contingency plans should also be developed for natural disasters such as hurricanes and locusts. The County should review its design standards to ensure that adequate measures for bridge and pavement protection are in place as new infrastructure is constructed or existing infrastructure is rehabilitated.

Objectives:

- Improve air quality
- Improve water quality
- Identify assets vulnerable to the effects of climate change

Performance Measure	Baseline	2040 Target
% of unmanaged impervious acres within County Jurisdictional Municipal Separate Storm Sewer System (MS4) area.	79%	60%
Electrical charging stations installed	44	150
Vehicle miles traveled per capita	10,965	10,417
% 0f County-owned transit fleet that is low or no emission	0%	100%

Goal: A transportation system that is in good condition

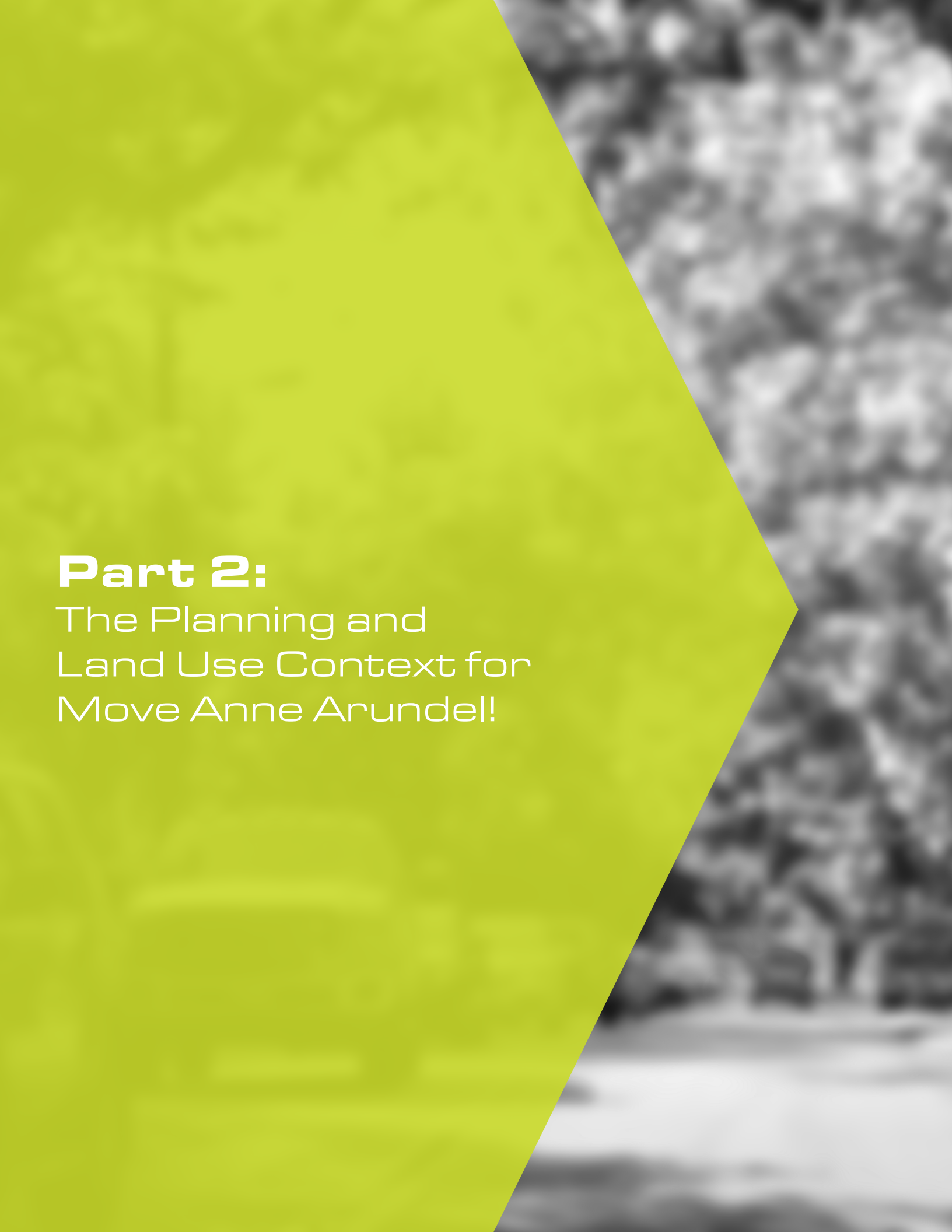
Asset management provides a solid foundation from which to monitor the transportation system and optimize the preservation, upgrading, and timely replacement of highway assets through cost-effective management, programming, and resource allocation decisions. It is a systematic process of maintaining, upgrading, and operating physical assets cost-effectively throughout their life-cycles.

The Department of Public Works Infrastructure Management Division (IMD) maintains a road condition database that contains pavement, curb and gutter, and sidewalk condition assessment information, as well as rehabilitation history and other program data. Condition assessments are updated on a three-year cycle with one-third of the County network being assessed each year. Similarly, all County-owned bridges are given a full inspection every three years as mandated by federal regulation. IMD uses this information to identify and program the right kind of preventative maintenance treatment at the right point in time relative to all other County road maintenance needs.

As a result, Anne Arundel County is at the forefront of local governments in Maryland for its life-cycle asset management approach to maintaining the County's roads and bridges. A regular program of bridge inspection, deck repair, debris removal from waterways, and other proactive measures keep bridges in a state of good repair; and between 150 and 200 lane miles are rehabilitated or receive preventative maintenance every year. Although detailed records are not kept on a county-by-county basis, interviews with other suburban public works agencies indicate that Anne Arundel County's level of road and bridge maintenance is comparable if not greater than most suburban jurisdictions.

Objective: All County-owned transportation assets should be in good condition.

Performance Measure	Baseline	2040 Target
% of roadway lane miles in good condition	92%	95%
% of bridges in good or fair condition (4)	97.5%	97.5%
% of miles of shared use paths in good condition	N/A	95%
Average age of County-owned transit fleet	13	12
Average age of County-owned paratransit fleet	5.3	8



Part 2:
The Planning and Land Use Context for Move Anne Arundel!

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The Planning and Land Use Context for Move Anne Arundel!

Anne Arundel County's transportation network is typical of most suburban areas throughout the country in that they were developed in a fashion that prioritized automobile speed and throughput to serve to serve residential, commercial and industrial land uses separated through zoning practices. Beltways and radial freeways common to most regions of the United States were similarly built in the Baltimore and Washington, DC regions with Annapolis creating the third leg of a triangle connected by high-speed roadways. As these freeways were developed, a full grid of lower tiered roads serving local trips was much slower to develop at the capacity needed to support economic and residential growth in Anne Arundel and few transportation alternatives were fully developed to mitigate against traffic congestion.

As a result, even communities in Anne Arundel that were originally designed or have been retrofitted towards pedestrian-orientation and mixed land uses are today dominated by the automobile. Local bus service and the central light rail line exist in the northern part of the County and are oriented radially towards Baltimore; commuter bus and rail service are present in the central part of Anne Arundel County and are oriented towards downtown Washington, DC. County government has filled in some of the east-west transit needs through the Regional Transit Authority of Central Maryland and with its own buses, but service coverage and frequency is too limited to serve as a viable option to most auto trips. The County's bicycle network is growing but far from complete and gaps in sidewalk networks make walking to destinations less safe than it should be.

Land Use Implications of Major Transportation Investments Since 1980

There are a variety of reasons why each transportation mode has developed as it has, but at its core the transportation network is a function of how land uses are planned and developed. Looking back over the past 40 years, the County's residential and economic growth patterns have a mixed-record of being coordinated with land use planning:

- The period 1980 to 2000 saw major investments in I-97 and US 50 connecting the Baltimore Beltway (I-695 and the Capital Beltway (I-95/495) to Annapolis and on to Maryland's Eastern Shore. Governor William Donald Schaefer's "Reach the Beach" program eliminated several at-grade (signalized) intersections in favor of grade-separated interchanges, created express lanes at the Bay Bridge toll Plazas, frontage roads for local business access and increasing lanes on US 50. Combined with construction of I-97, the program opened much of the Broadneck Peninsula to viable (albeit long distance) commuting trips to Washington, DC.
- In the early 1990s, the Central Light Rail Line opened to transport residents, workers and visitors between Glen Burnie and Baltimore City and its northern suburbs. The line was built quickly and cheaply to coincide with the opening of Oriole Park at Camden Yards in 1992. Much of the line was "single track" meaning that opposing trains had to wait for each other to pass, signal systems were not fully operational which meant lower speeds, and stations were hastily designed without much regard to local land use planning. The full 30-mile double-tracked system with extensions to BWI Thurgood Marshall Airport, Penn Station and Hunt Valley was completed in 2005. Ridership has been less than expected with approximately 4,000 trips per day from seven stations in Anne Arundel County; 25% of those trips originate from BWI Thurgood Marshall Airport. None of the stations have seen focused transit-oriented development activity – which would have been an opportunity to strengthen community connections, create ridership and increase economic value.
- Since 2000, the dominant traffic problems in the County have been east-west travel (MD 100, MD 32, MD 198, and US 50 corridors) owing to major growth at BWI Airport, Arundel Mills and at Fort George G. Meade. The County has made progress on its transportation priorities over the past few years including the widening of MD 175 from MD 295 to MD 32, BRAC-related intersection improvements along MD 713 and at MD 198, MARC Train station improvements at Odenton, and the Central Maryland Transit Operations Facility are among a few notable projects. Although development is now occurring around the Odenton MARC Station, transit service overall remains too infrequent in most corridors to make for transit a practical commuting option.

Integrated Transportation and Land Use Planning

Until 2017, the Office of Planning and Zoning (OPZ) and the Department of Public Works (DPW) had primary responsibility for transportation planning and transportation project development and delivery, respectively. In 2017, the Office of Transportation was created to elevate the role of transportation planning to a core function of county government and bring greater focus to short- and long-term transportation policy and planning activities. The Office began developing the TFMP using the work of OPZ and DPW from five core studies:

Anne Arundel County Corridor Growth Management Plan

The Corridor Growth Management Plan (CGMP), completed in 2012, recognizes that while travel demand in Anne Arundel County continues to grow, the ability to add road capacity is limited. The study analyzed current and projected growth patterns in the County in relation to travel demand and mobility and focused on balancing the need for added roadway capacity with right-of-way and environmental constraints, and the need to provide for additional travel mode choices. The CGMP developed concept-level transportation alternatives, impacts and costs for nine regional and four connector corridors identified in the County (Table 1). Ultimately, the transportation improvements aim to decrease congestion, enhance travel choices, and improve safety for all modes. The CGMP is intended as a base for future project planning and preliminary engineering, by securing funding commitments with appropriate State, Federal and private sector partners.

Summary table to be inserted

Anne Arundel County Pedestrian and Bicycle Master Plan

In June 2013, the County's Office of Planning and Zoning Transportation Division completed an update to the 2003 Anne Arundel County Pedestrian and Bicycle Master Plan (PBMP). Whereas the 2003 plan was a countywide study, the 2013 PBMP emphasized pedestrian and bicycle infrastructure and non-infrastructure improvements that created transportation alternatives for Anne Arundel County residents within urbanized areas to increase the potential for safe trip-making by walking and bicycling while diminishing the need for single occupant vehicle (SOV) trips.

A key element of the 2013 Pedestrian and Bicycle Master Plan (PBMP) update was the identification of specific pedestrian and bicycle related infrastructure projects deemed "credible of consideration for construction." The overriding intent was to identify projects for advancement to construction whenever an opportunity arises, be it through federal, state or county funding or as a condition of development approval.

Major Intersections and Important Facilities Study, 2016

The Major Intersections and Important Facilities (MIIF) Study focused on seven highway corridors in the peninsula areas of the County that serve as the primary route into these areas. Due to existing traffic volumes and limited access alternatives, there is a need for improvements in mobility in these areas. The study analyzed level-of-service and forecasted travel demand in each corridor study area, and recommended feasible roadway, transit, bicycle, and pedestrian improvements as well as other strategies such as access management and operational improvements. The facilities included in the study are listed in Table 2.

Summary table to be inserted

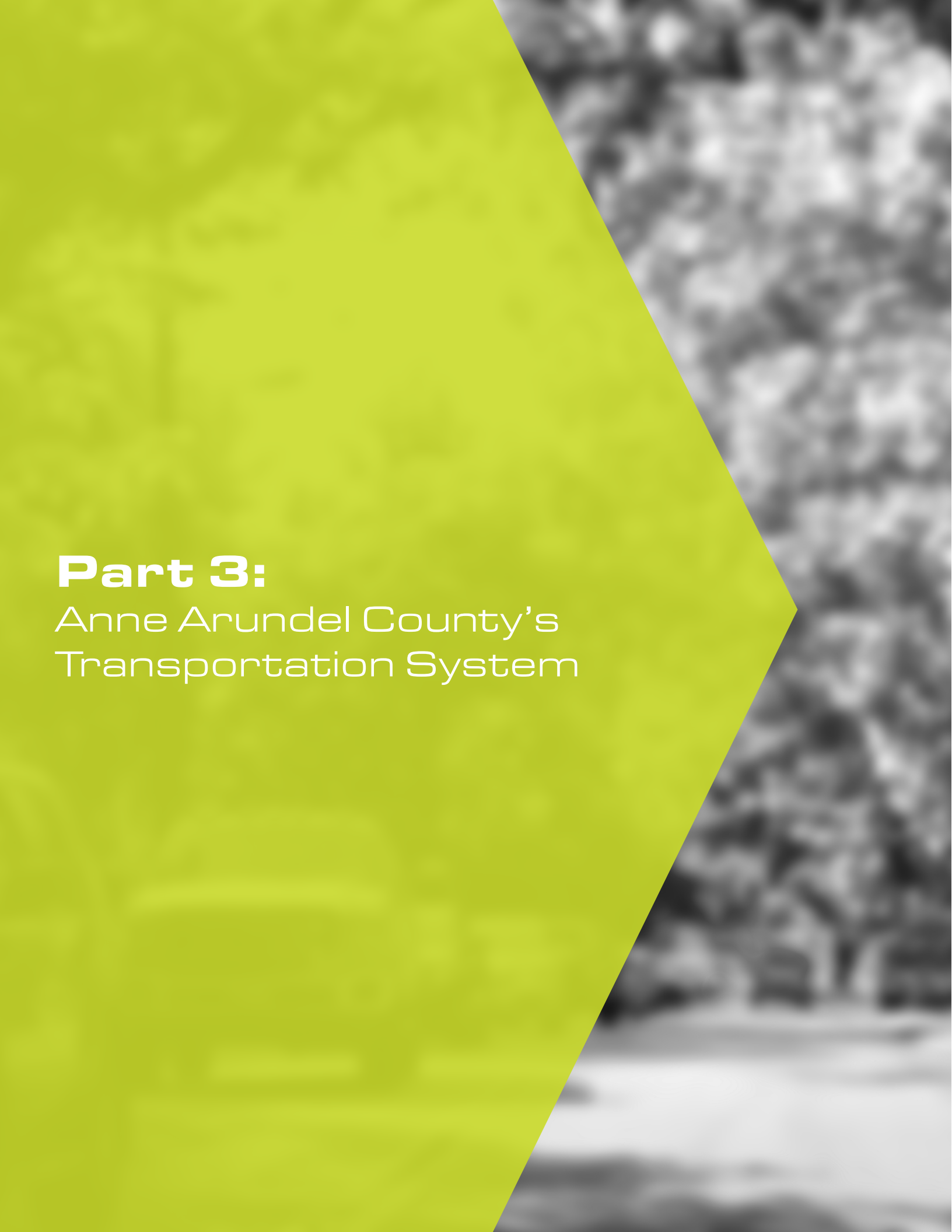
Central Maryland Transit Development Plan (Anne Arundel County Element)

The 2017 The Transit Development Plan (TDP) developed by the Regional Transportation Authority of Central Maryland (RTA) serves as a guide for implementing service and organizational improvements for transit services in the Central Maryland Region, including potential service expansion, during the next five years. The TDP addresses the area's transit goals and objectives, status of transit services, and steps for implemented the State objectives. According to the TDP, some of the challenges faced by the RTA include a fixed route system with an unreliable fleet, circuitous routes, infrequent service, and high costs. The TDP aims to target these issues by expanding routes, reducing travel times, creating more direct routes, introducing new vehicles, assessing key origins and destinations, and creating more frequent service times.

Anne Arundel County Complete Streets Policy

The County's Complete Streets Policy adopted in 2014 aims to improve transportation options and safety throughout Anne Arundel County. The Policy ensures that alterations to transportation systems are implemented in a way that provides all users regardless of age or ability with a comprehensive and connective multi-modal network. Guiding principles of the policy fall under the categories of Program Administration, Regulations, and Design. Guiding principles of the CSSP are to:

- Evaluate resurfacing and reconstruction projects as well as access permit requests to public right of way for Complete Streets inclusion.
- Approach every transportation improvement and project phase as an opportunity to create safer, more accommodating, and more accessible streets for all users.
- Maintain skill and knowledge levels consistent with the state of the practice with the recommended practices of the American Association of State Highway and Transportation Officials (AASHTO), the National Association of City Transportation Officials (NACTO), and the Manual of Uniform Traffic Control Devices (MUTCD).
- Report the success of implementation of the Complete Streets Policy, and its Guiding Principles, through measurable goals including, but not limited to, crash reduction, level of service and comfort, transit ridership, and changes in mode share.
- Accommodate forecasted travel demand and improvements through periodic updates of the County Design Standards.
- Adhere to design standards, federal requirements, and construction specifications, using the best and latest standards available.



Part 3:
Anne Arundel County's Transportation System

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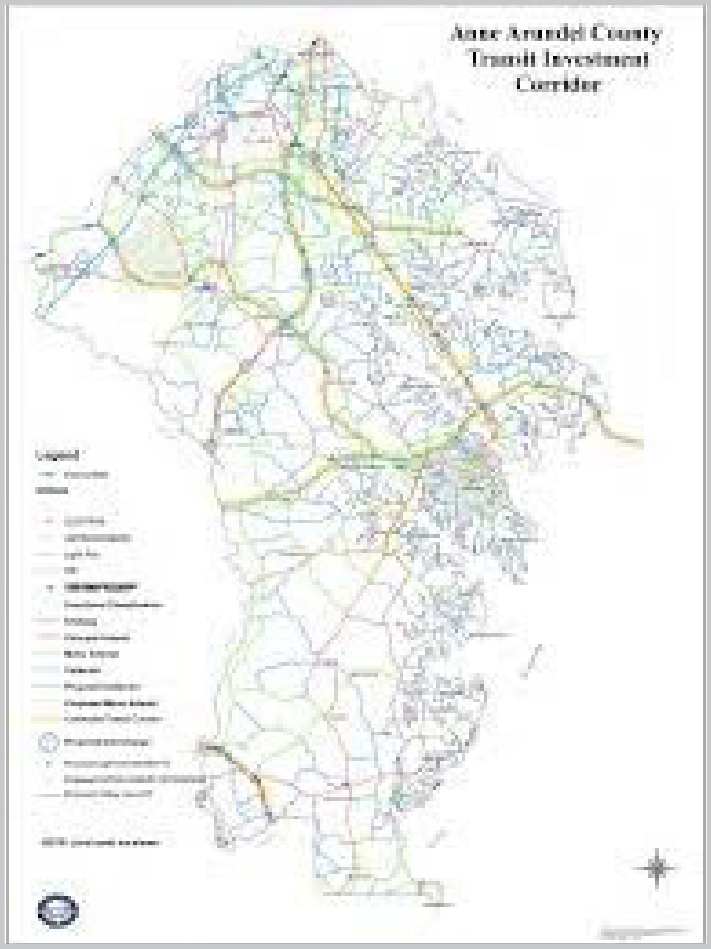
Anne Arundel County's Transportation System

The responsibility for constructing and maintaining roads and bridges, developing and operating transit networks, and expanding the bicycle and pedestrian network is the responsibility of more than a dozen local, State, and private agencies. The travelling public makes little distinction between these agencies. What matters is that the traveler can drive, ride, or walk to their destination in a manner that is safe and reliable.

Roads and Bridges

Roads and bridges in Anne Arundel County are owned and maintained by four agencies:

» The Maryland Department of Transportation, State Highway Administration (MDOT SHA) is responsible for constructing, operating, and maintaining improvements to approximately 1,211 miles of designated roadways in Anne Arundel County, such as MD 648 and I-97. These roads tend to operate at speeds greater than 35 miles per hour and carry approximately 75% of all traffic in the County. MDOT SHA also owns 127 bridges in Anne Arundel County.

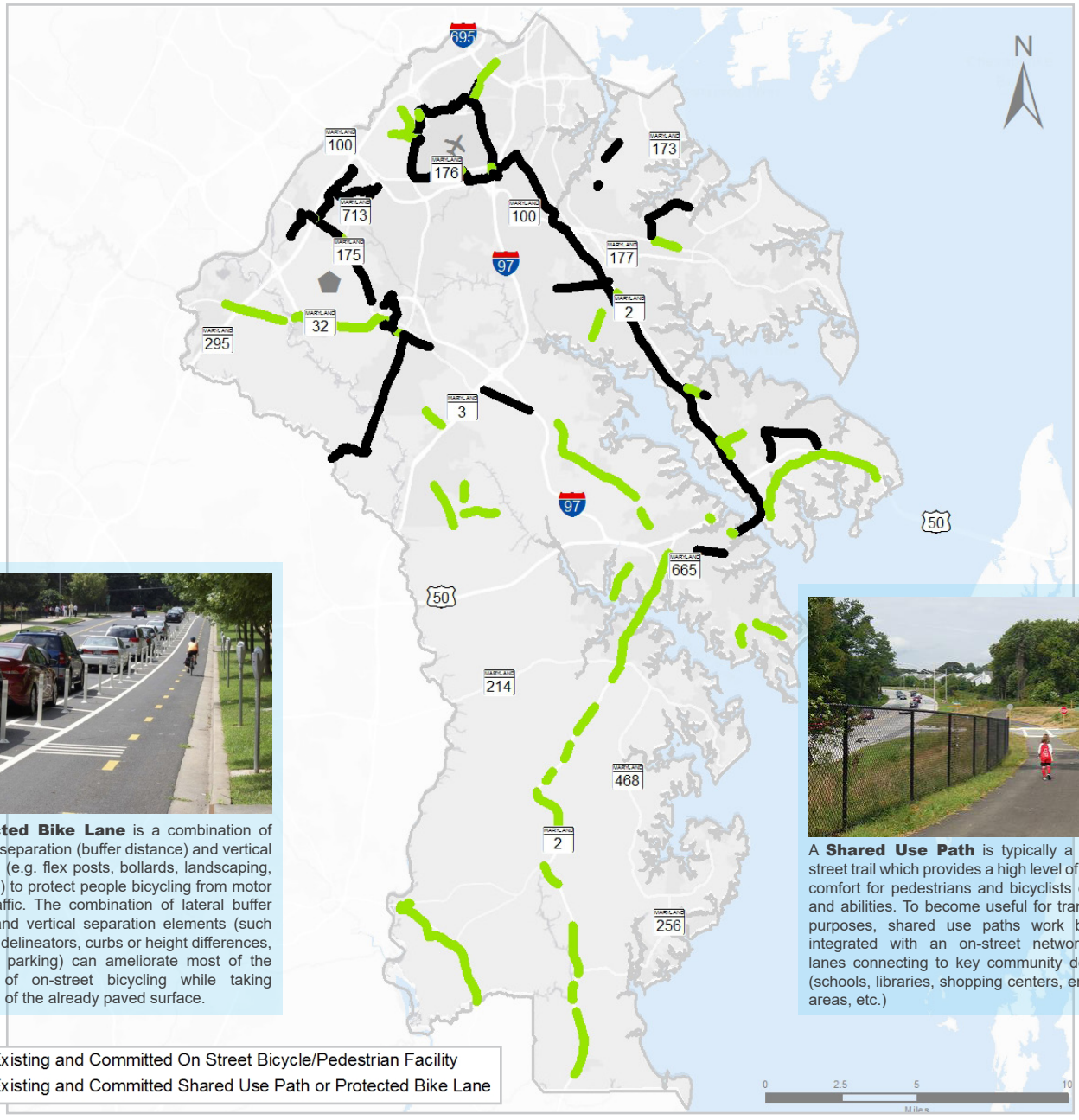


Functional classification map as adopted in the 2009 General Development plan. A new functional classification map will developed as part of the 2020 General Development plan.

Bicycle and Pedestrian Facilities

Having developed in a suburban fashion over the past 60 years, Anne Arundel County generally lacks a robust and connected pedestrian and bicycle network. While communities such as Annapolis are very walkable and interior sidewalk networks are present within some subdivisions, universal sidewalk connectivity between neighborhoods, shopping centers, schools, and other local destinations needs further development.

Several off-street trails and shared-use paths are very popular in Anne Arundel County. The 13-mile B&A Trail extending from Glen Burnie to the Severn River in Annapolis, the 11-mile BWI Trail route around BWI Airport and extending to the Linthicum Light Rail Station, and the 9-mile WB&A Trail from Odenton to the Patuxent River, among others, are managed by the Anne Arundel County Department of Recreation and Parks. While this existing and planned shared-use path system constitutes a quality spine for a transportation-oriented bicycle network, these trails are generally viewed as a recreational amenity rather than as part of the County's transportation network. Approximately 15 linear miles of marked on-street bicycle lanes also exist on State-owned roadway; however, these marked lanes do not necessarily connect to trip generators or to the spine of shared-use paths.



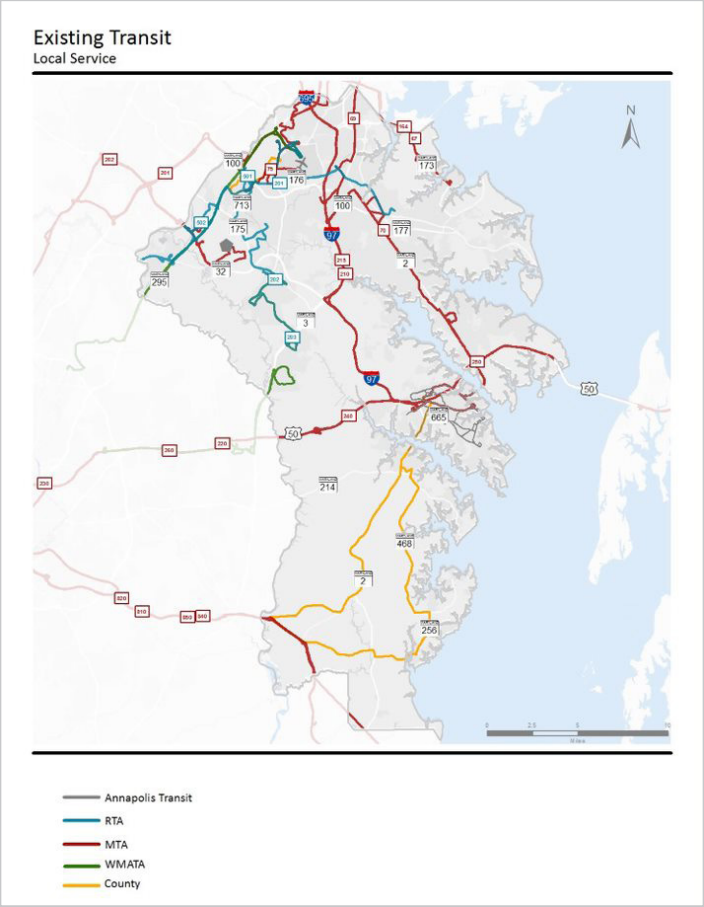
A **Protected Bike Lane** is a combination of horizontal separation (buffer distance) and vertical separation (e.g. flex posts, bollards, landscaping, curbs, etc.) to protect people bicycling from motor vehicle traffic. The combination of lateral buffer distance and vertical separation elements (such as flexible delineators, curbs or height differences, or vehicle parking) can ameliorate most of the stressors of on-street bicycling while taking advantage of the already paved surface.

A **Shared Use Path** is typically a paved off-street trail which provides a high level of safety and comfort for pedestrians and bicyclists of all ages and abilities. To become useful for transportation purposes, shared use paths work best when integrated with an on-street network of bike lanes connecting to key community destinations (schools, libraries, shopping centers, employment areas, etc.)

Public Transit

Anne Arundel County is currently served by five transit operators:

- MDOT MTA which operates the local bus service, light rail, commuter bus service, MARC Train, and provides complementary paratransit services for the above.
- Annapolis Transit which provides local bus service generally within the borders of Maryland's capital city.
- Regional Transportation Agency of Central Maryland which serves the western communities of Anne Arundel County, all of Howard County, and the City of Laurel.
- Anne Arundel County Office of Transportation which manages the South County Circulator (SoCo Go!) and the Arundel Mills Jobs Connector.
- Washington Metropolitan Area Transit Authority (WMATA) which provides express service between the Greenbelt Metrorail Station and BWI Thurgood Marshall Airport.



In addition, many private transit services operate in Anne Arundel County, including Greyhound and Megabus long-distance carriers, an extensive shuttle bus system supporting BWI Airport, as well as shuttles operated by area hotels, medical facilities, and others.

Although only four percent of commuting trips occur by public transit, there are multiple elements of the public transit network in Anne Arundel County that serve specific trip types, corridors, and communities to a greater degree:

- An extensive shuttle bus system transports thousands of BWI travelers daily, to park-and-ride lots, the Amtrak/ MARC Train station, and off-site rental car facilities.
- Services for the elderly and disabled are provided by the County and various human service providers on an "on-demand" basis.
- The MTA Light Rail Link connects residents in the North County to jobs and events in Baltimore and provides access to employment at BWI Airport and the surrounding business district.

Commuting trips to and from Washington, DC via the MARC Penn Line transports roughly 2,220 people daily via the BWI Station and 2,350 people daily via the Odenton Station. Regional commuter buses carry approximately 3,500 people daily from Davidsonville, Severna Park, and Annapolis.

BWI Thurgood Marshall Airport

Anne Arundel County is home to the Baltimore/Washington International Thurgood Marshall Airport (BWI), a significant economic engine and major traffic generator for the region. More than 69,000 passengers travel daily via BWI to 92 domestic and international destinations. Through the late 1980s, most access to BWI was via local roadways such as West Nursery Road, Elkridge Landing Road, and MD 170. A well-planned strategy to improve roadway access over the past 40 years has constructed a road and rail network on which landside access is largely congestion-free until on airport property itself. Today, access to BWI is primarily via I-195, I-97, and MD 170, MDOT MTA light rail, and an airport-operated shuttle system that circulates among a consolidated rental car facility, large satellite parking lots, and the BWI MARC/ Amtrak Station.

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Part 4:
The Challenges We Face

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The Challenges We Face

Anne Arundel County has a strong and diverse economy with high household incomes, low unemployment, and a strong housing market; however, it is not surprising that the County also faces many challenges in meeting the mobility needs of its residents, workers and visitors. From increasing congestion to aging infrastructure and continued growth, Anne Arundel County will have to be creative, flexible, and aggressive to meet the challenges described below.

Creative Content Pending Final Draft

Traffic Congestion and Travel Time Reliability

More than 70% of commute trips made by County residents are to locations within Anne Arundel County; and, the overwhelming percentage of commuting trips are made when travelling alone create significant congestion and reduce travel time reliability within Anne Arundel County. While County residents report an average commute time of approximately 30 minutes, some commutes are less reliable than others due to bottlenecks, frequent crashes, and other conditions.

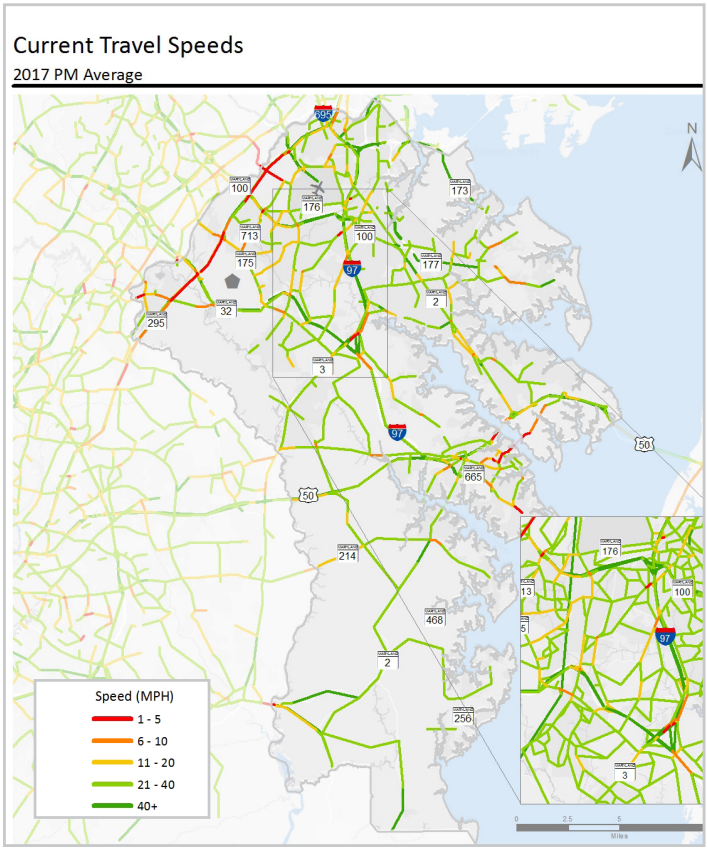
In 2017, MDOT SHA reported four roadway segments in Anne Arundel County among the top 15 most congested freeways in the State:

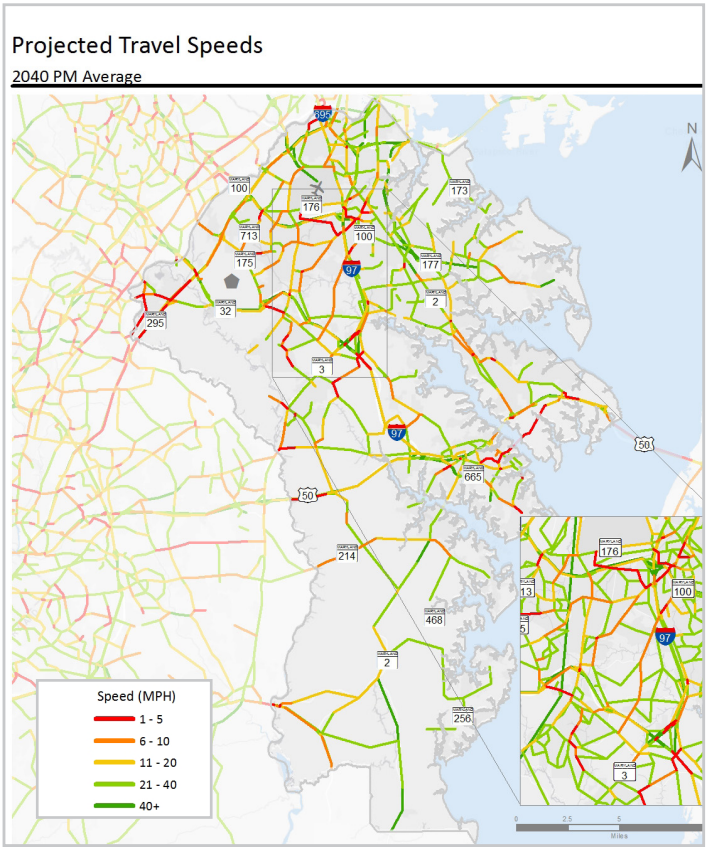
- MD 295 Southbound from MD 32 to Anne Arundel/Prince George's County Line
- I-97 Southbound from MD 3 to MD 178
- MD 100 Westbound from MD 713 to US 1
- I-695 Outer Loop from US 1 to MD 170

Four arterial roadways in Anne Arundel County were also among the 15 most congested arterial segments, Statewide:

- MD 3 Southbound from I-97 to Waugh Chapel Rd
- MD 2 Northbound from US 50 to MD 648/Whites Rd
- MD 3 Northbound from MD 175 to Waugh Chapel Rd
- MD 170 Southbound from MD 176 to MD 174

As shown in Map ___, travel times are increasingly unreliable and average speeds are projected to drop dramatically over the next twenty years. As the freeways become more congested and less reliable, commuters will seek alternate routes which have only one or two lanes in each direction. This problem will be particularly acute in the central part of Anne Arundel County, roughly bounded by MD 32, BWI Airport, I-95, and I-97.





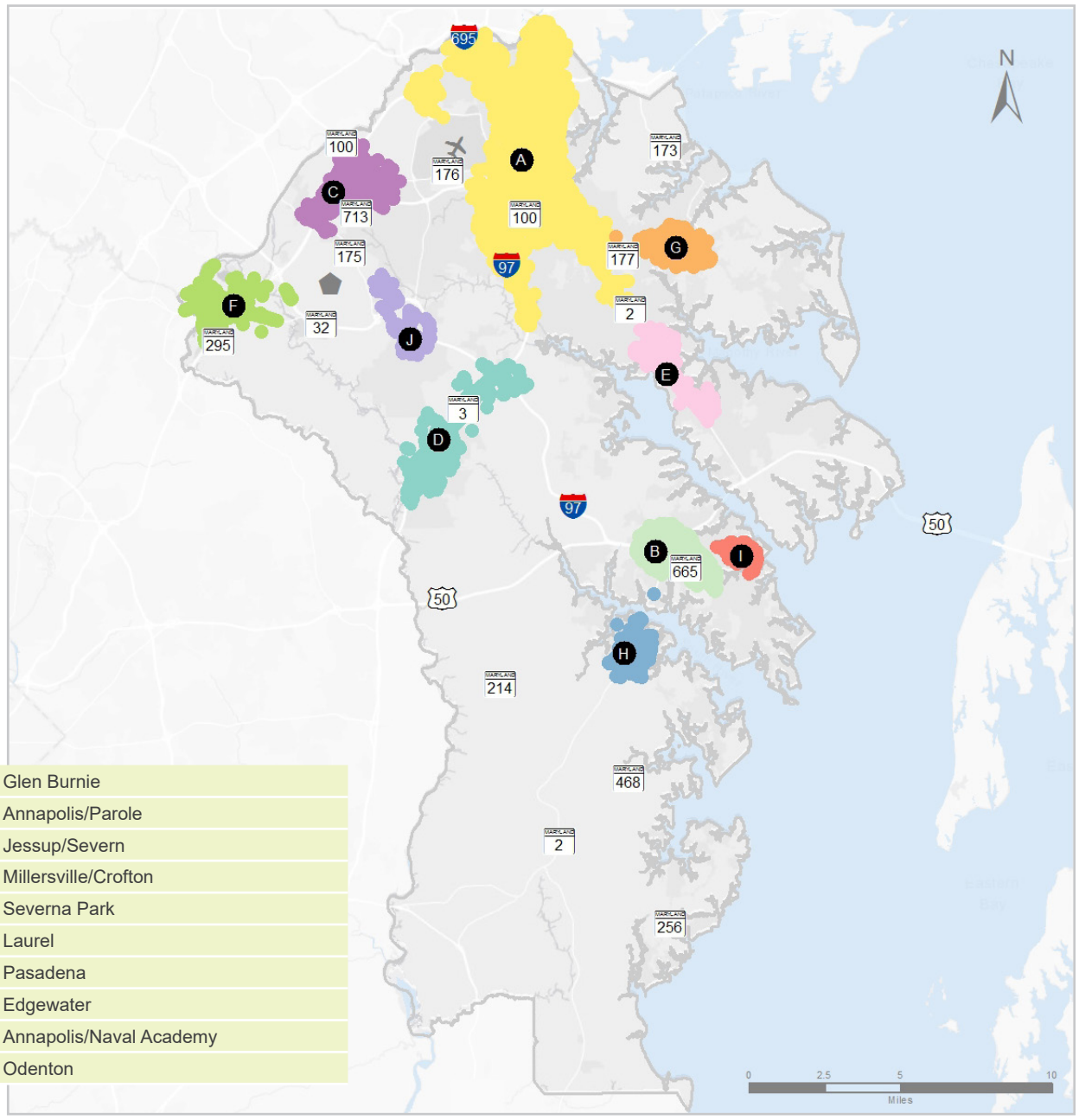
Growing and Changing Travel Patterns

There are currently approximately 468,000 daily trips taken on Anne Arundel County's multimodal transportation network each day – more than 80% of which will be by personal auto. When considering commuting trips only, more than 90% of all trips are taken alone. Based on current projections by the Baltimore Regional Transportation Board, there will be an increase of nearly 87,000 daily trips taken to, within, and from Anne Arundel County by 2040. While alone these are staggering numbers, the 554,600 total daily trips projected for 2040 is 15% higher than was projected just five years ago.

Commuting patterns are changing as well. While travel to and from Baltimore City and County once was dominant, travel to Washington, DC and its suburbs has overtaken trips to and from the north due to significant job growth in these areas. As a result, congestion will significantly worsen on MD 3 through Crofton and Bowie, on US 50 between I-97 and I-495, and on the MARC Train Penn Line and its stations at Odenton and BWI. This gradual shift in commuting patterns is also producing a rapidly increasing number of trips to and from Howard County which has implications for east-west travel in the mid-County along MD 100, MD 175, and MD 32.

Safety

Anne Arundel County ranks fifth among Maryland counties in the State for prevalence of motor vehicle crashes and for crashes involving bicyclists or pedestrians. Each day there are more than approximately 30 reported traffic crashes in Anne Arundel County. While most are relatively minor and involve property damage only, those crashes are still expensive to the people involved and often very disruptive to traffic. More concerning is the high incidence of serious injuries and fatalities in Anne Arundel. Between 2013 and 2017, an average of eight motorists, bicyclists and pedestrians have died on roads in Anne Arundel County. Crashes are highly concentrated in ten areas of the county as shown in Map __.



A	Glen Burnie
B	Annapolis/Parole
C	Jessup/Severn
D	Millersville/Crofton
E	Severna Park
F	Laurel
G	Pasadena
H	Edgewater
I	Annapolis/Naval Academy
J	Odenton

Demographic Changes

Like many suburbs, the County's population is aging, which in turn has significant mobility implications. Even with the anticipated growth of autonomous vehicles in the coming decades, meeting the mobility challenges of an aging population is daunting. As large numbers of baby boomers age into their post-driving years, they are increasingly using paratransit and specialized transit services operated by public agencies. These services have a very high per-trip cost which in the aggregate are eating into funds typically spent on fixed-route transit services. They also require more intensive administrative efforts regarding scheduling, customer service, and compliance. The demand for sidewalks in suburban communities is growing as well as connections from neighborhoods to shopping centers and community facilities.

Aging Infrastructure & Climate Change

While County-owned roads and bridges are in excellent condition, the County must also confront the reality that what lies beneath, such as storm drains, water and sewer pipes, and gas and electric distribution systems are reaching a critical point in their useful life. They are also increasingly prone to failure which results in undermining, erosion, potholes, and the need to dig up and repair or replace the pipes. Frequent utility cuts result in less stable roadways which crack and buckle more easily, while extreme changes in temperature and heavy rains result in further deterioration. Most roadways have a full useful life of 50 – 75 years even when supported with a strong program of routine maintenance. The hundreds of miles of neighborhood streets that were built, and the roads that were widened, in the post-World War II suburbanization are now reaching the end of their useful life and will become more expensive to maintain. Roads and sidewalks in poor condition can also become indicative of disinvestment in older suburban communities.

Financial Constraints

A driving force for Move Anne Arundel! is the need to prioritize potential improvements in the context of the funds likely available to improve the transportation system. In general, County transportation projects compete for capital funding with school construction, libraries, recreation and parks, and other government services. Move Anne Arundel! provides a framework and priorities for decision-making to ensure that the county's transportation spending and advocacy for state funded projects are well aligned.

Local Transportation Spending

Anne Arundel County spends approximately $30 million each year on capital transportation projects such as street resurfacing and safety improvements, bridge reconstruction, new roadways, bus purchases, trails, and sidewalks. Funding for these projects comes from a variety of sources: general funds and general obligation bonds, shared gas tax revenues from the state, grants, federal funds for bridge reconstruction, and development impact fees which can only be used for projects that increase road capacity. Under a new law passed in 2018, developers must also pay a fee for new residential and commercial construction that will support bicycle, pedestrian, and transit improvements across the County.

Historically, 70% of the County's transportation spending has been on projects to maintain roads and bridges in a state of good repair. The County maintains an aggressive resurfacing program of locally-owned roadways resulting in very few roads not meeting industry standards for an acceptable riding surface. As of 2018, only three of the County's 87 locally-owned bridges are rated as in poor condition.

Only 30% of the County's transportation budget is used for transportation system expansion projects such as widening of County roads and intersection improvements, trails, new transit buses, and additional sidewalks. Developer contributions, highway impact fees, and tax increment financing represent approximately 75% of funds used for capacity expansion, nearly all of which have been used for roadway projects. Highway impact fees (HIF) are set on a per unit or square foot basis and often developers can offset the fee by making certain improvements. HIF are not indexed to inflation which has reduced the County's purchasing power in constructing improvements. The remaining 25% has been from State or federal grants and a very limited amount of local general funds.

Through the General Development Plan, the County should address issues relating to Highway Impact Fees and overall fiscal policy related to transportation infrastructure, by considering these questions:

- Should the County continue to allocate 70% of local funds for system preservation projects or is that allocation too high given the current excellent condition of roads and bridges?
- Should offsets for improvements that mainly benefit their specific development project and not the whole transportation network be curtailed?
- Should Highway Impact Fees be indexed to inflation or to the estimated cost of projects to be built?

State Transportation Spending

The County's transportation spending is only a small fraction of the total transportation investment in Anne Arundel. The larger and more expensive projects, such as the widening of MD 175 near Fort Meade and Odenton, adding a new eastbound lane on the US 50 bridge over the Severn River bridge and safety/resurfacing improvements to Reece Road (MD 174), are paid for and managed by MDOT SHA. MDOT's transportation investments are informed by local government priorities through an annual consultative process resulting in a five-year statewide Consolidated Transportation Program (CTP), but there is no guaranteed level of funding or number of projects dedicated to each jurisdiction. The County must clearly identify a limited number of priority projects across the transportation modes; projects are more likely to be included in the CTP when the local government funds the planning or design phases and/or contributes to the construction.

When establishing priorities for MDOT funding, the County's prioritization for State projects should be based on Move Anne Arundel! and:

- Emphasize secondary State roads rather than freeways
- Give prominence to transit, bicycle, and pedestrian investments
- Leverage County and private investment in community and economic development
- Derive from County-funded planning and engineering studies that clearly define project design elements which support the performance measures identified above.

Part 5:
Move Anne Arundel!

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Part 5: Move Anne Arundel

The adoption of Move Anne Arundel! will set the framework to advance the vision and goals but it is the investments made in the transportation system that will drive achievement of performance measures. The priority investments are placed into five categories which reflect the varying mobility needs of the County:

- Making Communities More Walkable
- Building a Connected Bicycle Network
- Advancing New Models of Transit
- Upgrading County Corridors and Strengthening Community Cores
- Improving Regional Corridors and Making Commutes More Reliable

Not every project in these categories will be built in the next twenty years, but we must stretch and prioritize our resources with the aim of doing so. MDOT and the County government must work together, and the private sector will need to be partners in advancing these projects as well by providing more upfront resources so that we can get ahead of a looming congestion crisis. All of us must work together to design and build projects that are practical and affordable so that more work can get done.

Establishing a List of Recommended Investment Priorities

From the five core studies discussed in Part 1 and more than thirty other studies conducted by local, regional and state agencies over the past decade, nearly 300 recommended transportation improvement projects were identified across all forms of transportation ; this does not include small neighborhood-oriented projects like traffic calming, new sidewalks and crosswalks, street resurfacing, etc. As neither the county nor the state has the capacity to construct and operate all these projects, priorities must be set for the plan to be realistic and achievable.

To arrive at a list of priority investments, the County created a technical scoring process tied to Move Anne Arundel's vision, goals and objectives. Projects in each mode were scored separately as most funding sources are mode-specific and multiple projects can be prioritized within each modal category. The total number of recommended investment priorities in each modal category was based on the judgment of county staff relative to historically available local and state funding projected forward over the next twenty years. Each of the modal scoring processes is described below.

Roadway Projects

Consistency with Regional and State Plans and Requirements - 35% of total score

- Does the project meet the requirements of Maryland's Smart Growth Act and Priority Funding Areas? (Required for consideration)
- Has the project been included in the Maryland Highway Needs Inventory or received planning funds in the MDOT Consolidated Transportation Program or the County Capital Improvement Program for initial planning?
- Has the project been prioritized in the Baltimore region's financially constrained long-range transportation plan? (Not considered for county corridors and secondary state roads)

Achieving Priority Outcomes - 65% of total score

The extent to which a project could advance priority outcomes such as:

- Improve transportation safety for all roadway users.
- Improve travel time reliability
- Strengthen communities and leverage economic development opportunities.
- Create a comprehensive bicycle network. (Not considered for regional freeways).
- Minimize environmental impacts and improve resiliency.

Local Transit Services

Demographics and Need for Transit Services - 40% of total score

Using 2040 projections prepared by the Baltimore Metropolitan Council, a score was established for each transportation zone. The highest scoring transit projects serve higher concentrations of

- Unemployed and Low-Income Workers
- Zero-car Households
- The elderly and disabled

Destinations Served - 40% of total score

Using 2040 projections prepared by the Baltimore Metropolitan Council, a score was established for each transportation zone. The highest scoring transit projects serve higher concentrations of

- Unemployed and Low-Income Workers
- Zero-car Households
- The elderly and disabled

Transit Connectivity - 40% of total score

The highest scoring projects made connections to existing transit services, including:

- MTA (Bus, Light Rail MARC, Commuter Bus)
- RTA
- Annapolis Transit

Bicycle Network Projects

*Only shared use path projects were scored due to uncertainty in the feasibility of certain cycle-track corridors.

People Served - 15% of total score

- Population

Access to Opportunity - 20% of total score

- Employment
- K-12
- Higher Education
- Technical Schools

Access to Services - 20% of total score

- Doctors
- Hospitals
- Social Services
- Groceries

Access to Transit - 15% of total score

- Bus
- Light Rail
- MARC
- Park & Ride

Access to Retail - 15% of total score

- Shopping

Access to Recreation - 15% of total score

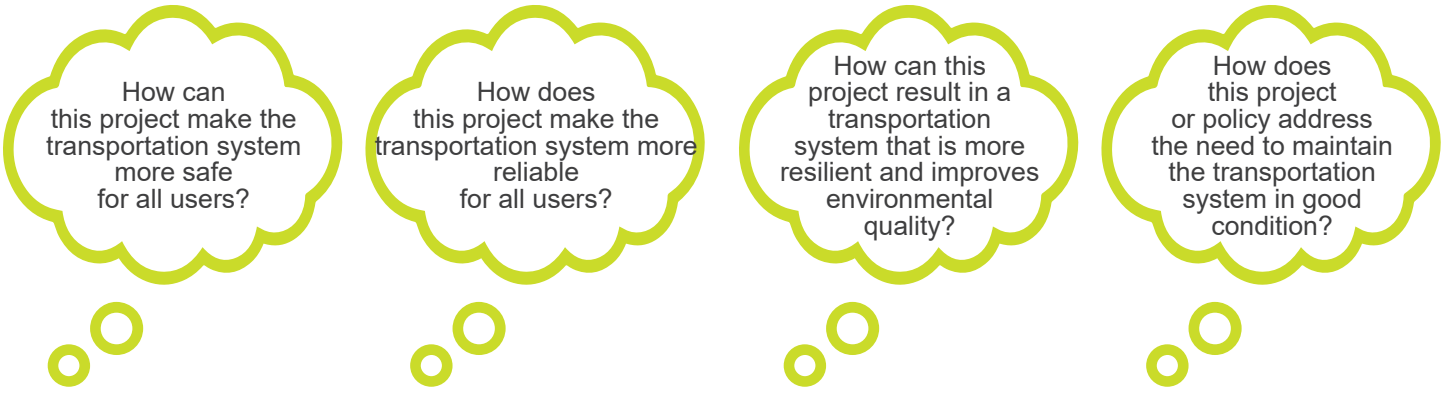
- Parks
- Trails
- Recreational Centers

No technical scoring process can account for all considerations. Following the technical scoring, a policy-level review was performed to ensure that resources would be distributed equitably throughout the County. Projects listed as recommended investment priorities are not ranked in any order but when taken together will achieve the best outcomes for the County.

Projects not listed as recommended priority investments, but which have otherwise been identified during various planning processes should always remain under consideration should circumstances warrant such as additional funding or grants, emergency conditions, or as opportunities that could leverage other community or economic development.

Defining Each Project

There is not a highly-detailed scope of work for each roadway project as each project should have a specific statement of purpose and need related to the goals and objectives of Move Anne Arundel! Specific project limits, design elements and construction phasing will need to be determined as each project moves through the planning and engineering process. As that occurs, the county and affected communities should be focused on these questions:



The Cost to Move Anne Arundel!

While there is no cost estimate for each recommended investment priority project, based on historical averages and projected forward for twenty years, the County Corridors and Community Cores projects could cost more than $250 million while the Regional Corridors and Reliable Commutes projects could total nearly $1billion. The transit, bicycle and pedestrian improvements are a tiny fraction of the recommended road projects.

While the total package of improvements sums to a very daunting number, when spread over 20+ years and considering the amount of time for any project to move through the pipeline, the total may not be out of reach with new funding sources and financing strategies. After all, Anne Arundel County is the state's fifth most populous jurisdiction in 2018 and will likely be the fourth largest by 2040. The case for transportation investments in Anne Arundel is clear. Anne Arundel is home to the State capital and huge economic generators such as BWI Thurgood Marshall Airport and Fort Meade. Our transportation demands relate to two separate regions and bounded by the western coast line of Maryland's most treasured natural resource.

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Investment Priority: Making Communities Walkable

The 2003 Anne Arundel County Pedestrian and Bicycle Master Plan (PBMP), identified a series of Pedestrian Improvement Zones and Bicycle Route Improvements to create a full network of bicycle and pedestrian facilities throughout the County. The 2013 PBMP Update created a focused list of tiered and prioritized projects located in the urbanized areas of the County (defined as the planned water and sewer areas). Move Anne Arundel! considers the 2003 and 2013 PBMP in two ways. First, by including the highest tier projects in the scoring of potential roadway improvements, pedestrian access and safety is given high consideration (see description of recommendations in Community Corridors and Community Cores section of this plan) and second, this section on Making Communities Walkable focuses the Pedestrian Improvement Zone concept using current industry methods of analyzing and prioritizing projects.

A good measure as to the "walkability" of a community is whether a parent will let their child walk to school alone or in a group when the school is less than one mile away. By starting with the benchmark of children and the trip to school, communities can become safe places for everyone to walk and bike. If this standard can be met, then most other important community facilities and commercial areas are also likely to be walkable. Anne Arundel County Public Schools establishes a one-mile maximum for elementary students to walk to school before receiving bus transportation. The policy also takes into consideration whether students would have to cross major roadways, if there is a sidewalk between the neighborhood and the school, whether there is good visibility for motorists to see children walking to school, and other factors. It cannot be determined precisely what percentage of students currently walk to school in Anne Arundel County, however far fewer of the students who could walk to school, actually do so. Long lines of cars in front of elementary schools each day tells the story of parents who would rather drive their children than allow them to walk.

> Nationally, 10%–14% of car trips during morning rush hour are for school travel. A focused effort to increase to improve pedestrian safety near schools can reduce localized congestion and improve the health of our children.

Safe Routes to Schools

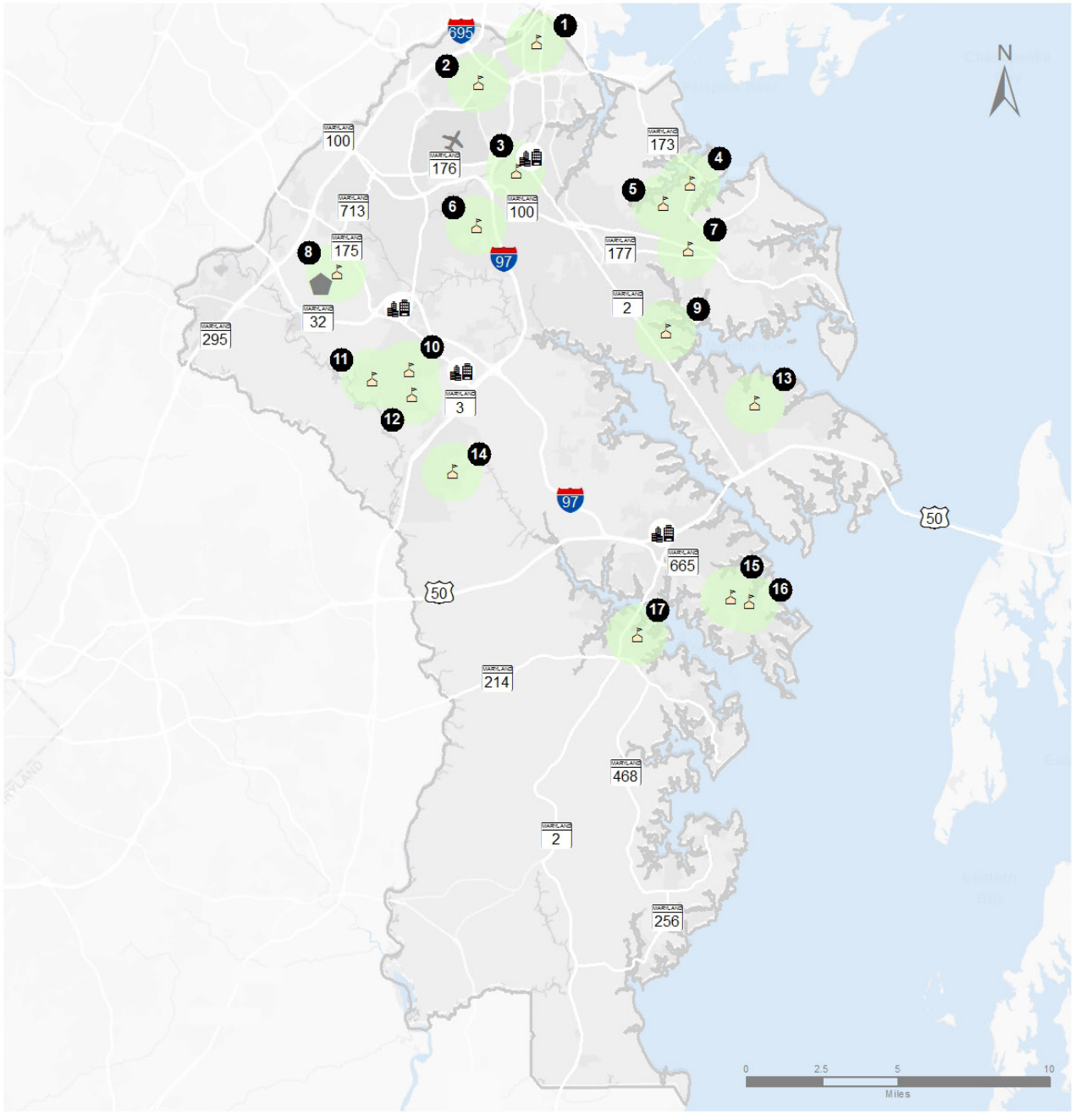
The primary recommendation for improving the walkability of communities is to invest aggressively in a countywide Safe Routes to Schools program. SRTS is an approach that promotes walking and bicycling to school through infrastructure improvements, enforcement, tools, safety education, and incentives to encourage walking and bicycling to school.
By 2040, it is the County's goal to have 50% of all elementary school students walking to school. As a starting point, elementary schools are identified for improvements because they have the greatest number of students within the one-mile radius who are currently served by school bus. It is estimated that 15,000 - 17,000 more elementary school students could be walking to school by upgrading the sidewalk network and improving street crossings.

To achieve this goal, the County and MDOT SHA should:

- Establish a Safe Routes to Schools Coordinator in the Office of Transportation who is charged with bringing together all relevant agencies necessary to deploy Safe Routes to Schools strategies.
- Target annual sidewalk construction budgets (and annual requests to MDOT SHA) to close gaps in the pedestrian network and improve roadway crossings within one mile of elementary schools within the County's planned water and sewer service area.
- Update subdivision development requirements to require that developers provide logical sidewalk connections beyond their own road frontage if public right-of-way is available to do so and dedicate right-of-way so that schools and subdivisions are connected to one another with sidewalks or shared-use paths.
- Continue to update County road codes, standards, and specifications in accordance with the County's Complete Streets policy.

Safe Routes to School

Recommended Priority Investments



Elementary School

Siting Public Facilities

Second, the siting of, access to, and orientation of public facilities – elementary and middle schools, recreation and senior citizen centers, and public libraries, in particular – should be thoughtful with respect to access by pedestrians, not just persons arriving by car. Placing these facilities on high speed, high volume roadways, designing buildings that are surrounded by parking lots, and providing roads and driveways but not extending sidewalk connections into communities discourages walking, and increases traffic congestion and safety concerns. Facility design policies by the Anne Arundel County Public Schools and County agencies should be updated to reflect the prioritization of pedestrian access and safety.

Fulfilling the Vision of Town Centers

Each of the County's town centers is built around the concept of being a walkable community where the need to be reliant on the auto is far less than elsewhere in the County. New developments are required to include bicycle and pedestrian improvements as indicated in the Town Center Master Plan. Adherence to these plans is paramount and County agencies with review and approval authority should pay close attention to ensure that the requirements are met.

As these development projects come online, some gaps will occur in the sidewalk network where the right of way is publicly owned, undeveloped, or not slated for redevelopment. Closing gaps in the sidewalk and bicycle network should be a priority use of monies generated by the Bicycle, Pedestrian and Transit Fee-in-Lieu Fund.

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Investment Priority: A Low-Stress Bicycle Network

The 2013 Anne Arundel County Pedestrian and Bicycle Master Plan includes facilities proposed as shared-use paths, on-street bicycle lanes, shared lanes, and signed routes in the urbanized areas of the County. A total of 146 bike projects are proposed on County and State roads. The Maryland Bicycle and Pedestrian Plan (2019 Update) informs further prioritization of 2013 PMPB recommendations by introducing the concept of "low stress routes."

In an auto-oriented suburban environment, it makes the most sense to prioritize facilities that provide a low traffic stress route among many community destinations. In practical terms, the idea of a "low traffic stress route" is identified as a route that would be used by a typical adult with an interest in riding a bicycle but who is concerned about interactions with vehicular traffic. Low stress routes are best established via shared-use paths or separated bicycle lanes, sometimes referred to as a "cycle track," which are characterized by a physical, vertical barrier between automobile travel lanes and the bicycle lane, as well as roadways with low traffic volumes and speeds.

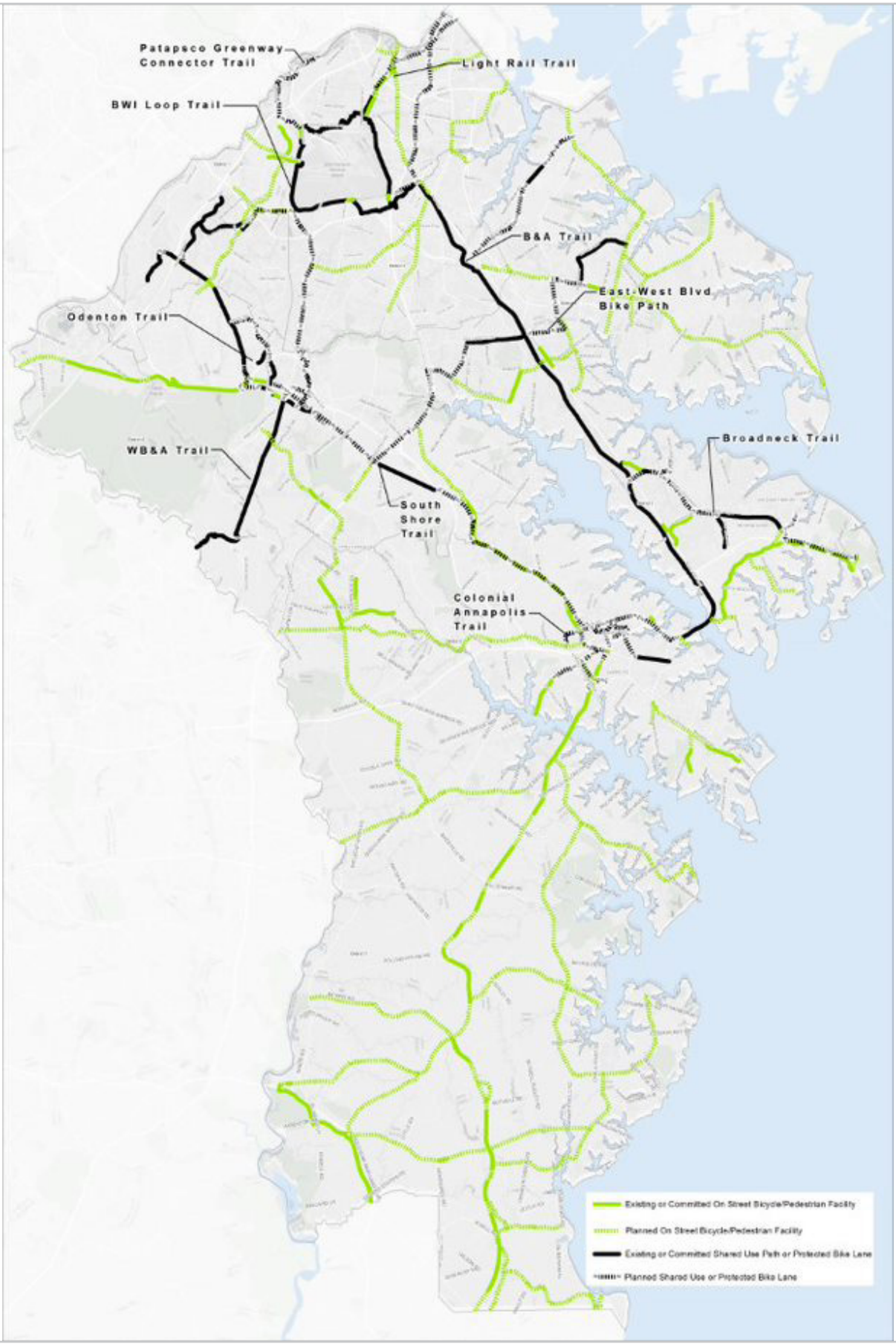
Building out the Shared Use Path & Cycle Track Network

The primary recommendation for building a low-stress bicycle network is to build out the planned network of shared-use paths and cycle tracks as shown in Map ___. There is no priority order given to these projects nor technical scoring; however, Map ____ shows how additional elements of the shared use path and cycle track network improve overall accessibility of important community facilities by bicycle.

As of mid-2019, Anne Arundel County has three phases of shared-use path projects in final design or construction: a portion of the South Shore Trail, north of Parole; the WB&A Trail crossing of the Patuxent River into Prince George's County; and the Broadneck Trail Phase 2 (construction) and Phase 3 (design) along College Parkway.

To further advance the concept of a low traffic stress connected bicycle network, the following projects are priorities for build-out:

- South Shore Tail phases along Bestgate Road in Parole and a shared-use path along Maryland Route 70 (Rowe Boulevard). With its residential density, major employment and commercial areas, the South Shore Trail in Parole will improve the low-traffic stress network of both Parole and Annapolis.
- B&A Trail northern extension into North Linthicum will greatly improve access to transit and avoid an interstate interchange while connecting to the BWI Trail to the south.
- Shared-use paths in the Annapolis Neck such as along Forest Drive, Hilltop Lane, and Spa Road.
- Broadneck Peninsula Trail along College Parkway (Phase 4) which connects directly to the B&A Trail, Anne Arundel Community College, and the low-stress network of neighborhood streets throughout the area.
- The shared-use path along East West Boulevard/Pasadena Road will provide a route that parallels MD 100 and creates a safe crossing of MD 2.
- B&A Trail southern extension into Annapolis via MD Route 450 over the Naval Academy Bridge. While a bicycle lane exists along this route now, having a shared-use path separated from motor vehicle traffic will greatly improve access to neighborhoods, businesses, and other community destinations into Annapolis.


Patapsco Greenway Connector Trail
Light Rail Trail
BWI Loop Trail
B&A Trail
East-West Blvd Bike Path
Odenton Trail
Broadneck Trail
WB&A Trail
South Shore Trail
Colonial Annapolis Trail
Existing or Committed On Street Bicycle/Pedestrian Facility
Planned On Street Bicycle/Pedestrian Facility
Existing or Committed Shared Use Path or Protected Bike Lane
Planned Shared Use or Protected Bike Lane

Make "Last Mile" Connections

As shared-use paths become the spine of the County's bicycle network, defined connections to community destinations will become more necessary. The Baltimore and Annapolis (B&A) Trail, Baltimore Washington International (BWI) Trail, and the Washington-Baltimore-Annapolis Trail (WB&A) Trail the low-stress spine in the north and central parts of the county; however, presence of these trails in areas such as Linthicum, Glen Burnie, Severna Park, and Odenton does include marked "last mile" on-street network connection to key community destinations.

It is recommended that the County identify and mark on-street connections to key community destinations which can be reached via a low stress roadway to the existing shared use paths. As future shared use paths are constructed, part of the project should include similar "last mile" on-street networks.

Strategic Opportunities for On-Street Retrofits

The 2013 PBMP update identified many opportunities to retrofit primarily state roadways to accommodate marked bicycle lanes. In a few cases these lanes have been built usually in conjunction with a MDOT SHA resurfacing project; however, many of these facilities are "bike lanes to nowhere." The County should work with MDOT SHA to identify the disconnected segments of on-street bicycle facilities and prioritize filling out the network by extending lanes to logical termini.

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Investment Priority: Advancing a New Model for Transit

Auto-oriented suburbs are incredibly difficult to serve well with transit. At the local level, the current approach of operating a few routes with service every 45 minutes or more hasn't worked well to shift people out of their cars and hasn't worked well for those who need the service the most. Daily ridership on RTA's Anne Arundel County routes and those operated by the County are well less than one thousand per day. Still, with an aging population and parts of the County where transit dependence is high, there is a need for flexible transit services to meet life's daily needs.

At the regional level, commuting patterns of Anne Arundel County residents continue to shift towards Howard County and the Washington, DC suburbs. More than 4,000 trips daily are taken from Odenton and BWI Airport MARC stations to Washington DC; approximately 2,300 round trips are made on MDOT MTA commuter buses from park-and-ride lots in Severna Park, Davidsonville, Annapolis, and South County. Where quality service is provided, regional commuters will use it.

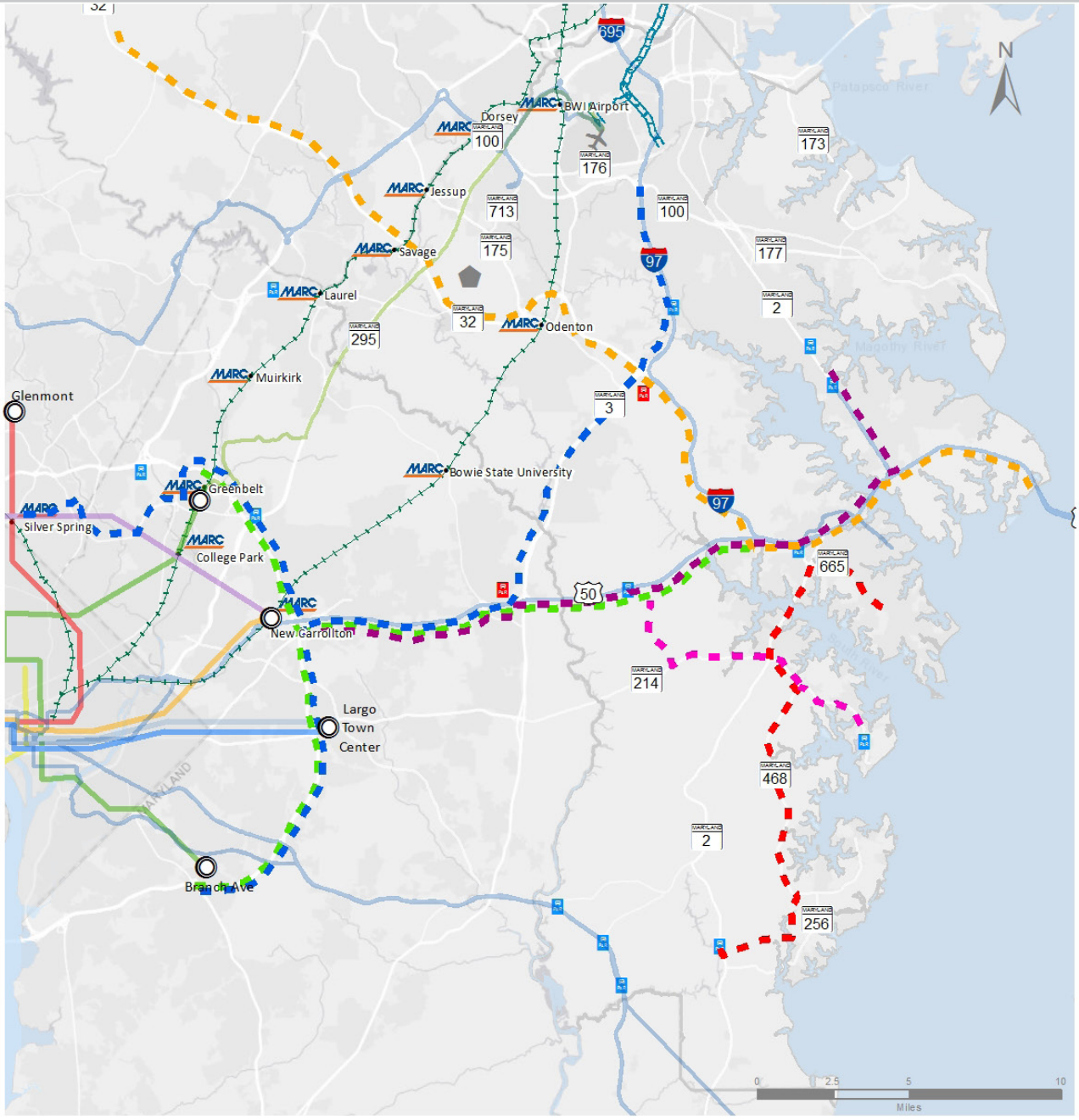
Regional Services

A new model for setting regional transit priorities, policy, and planning is needed for Anne Arundel County.

Continuing to invest in the MARC Train system is also important, but the improvements needed are expensive and complex long-term projects. A continuous third track on the MARC Penn Line between Baltimore and Washington, DC is critical to the system achieving its full potential for Amtrak long-distance and MARC regional service. Likewise, sidings and signal improvements will expand capacity on the MARC Camden Line (owned by CSXT) will give greater flexibility for freight and passenger services to coexist.

Because MARC Train improvements are so complex and expensive and will take a long time to occur, expanding commuter bus service should be the County's immediate priority for regional and state transit investments. The county should insist that commuter bus services be planned as an integral part of HOV lanes along US 50 and/or express toll lanes along the Capital Beltway. Specifically, it is recommended to add commuter bus service:

- From the park and ride lots in Annapolis, South County, and Severna Park to College Park, Silver Spring, and Bethesda.
- Along the MD 3 corridor to New Carrollton and Washington, DC which will also provide redundancy to relieve overcrowding on the MARC Penn Line.
- From the park and ride lot in Annapolis to Fort Meade and then to downtown Columbia via MD 32, possibly paired with service from Carroll and western Howard Counties.
- From Calvert County and southern Anne Arundel County to Annapolis.



Existing Regional Transit Services

Metro Lines

- Blue Line
- Silver Line
- Green Line
- Yellow Line
- Orange Line
- Purple Line
- Red Line (Under Construction)

- MARC Train
- Light Rail
- MTA Commuter Bus
- WMATA
- MARC Stations
- Park & Rides
- Proposed Park & Rides
- Metro Terminal Stations

New Regional Transit Services

Commuter Bus Lines

- Mid-County - Capital Beltway
- Annapolis - Capital Beltway
- Edgewater / Mayo - DC
- Annapolis - Fort Meade - Columbia
- Severna Park - Annapolis - New Carrollton
- South County - Annapolis

Local Services and Connections

At the local level, a new model of transit services should be developed with the following in mind:

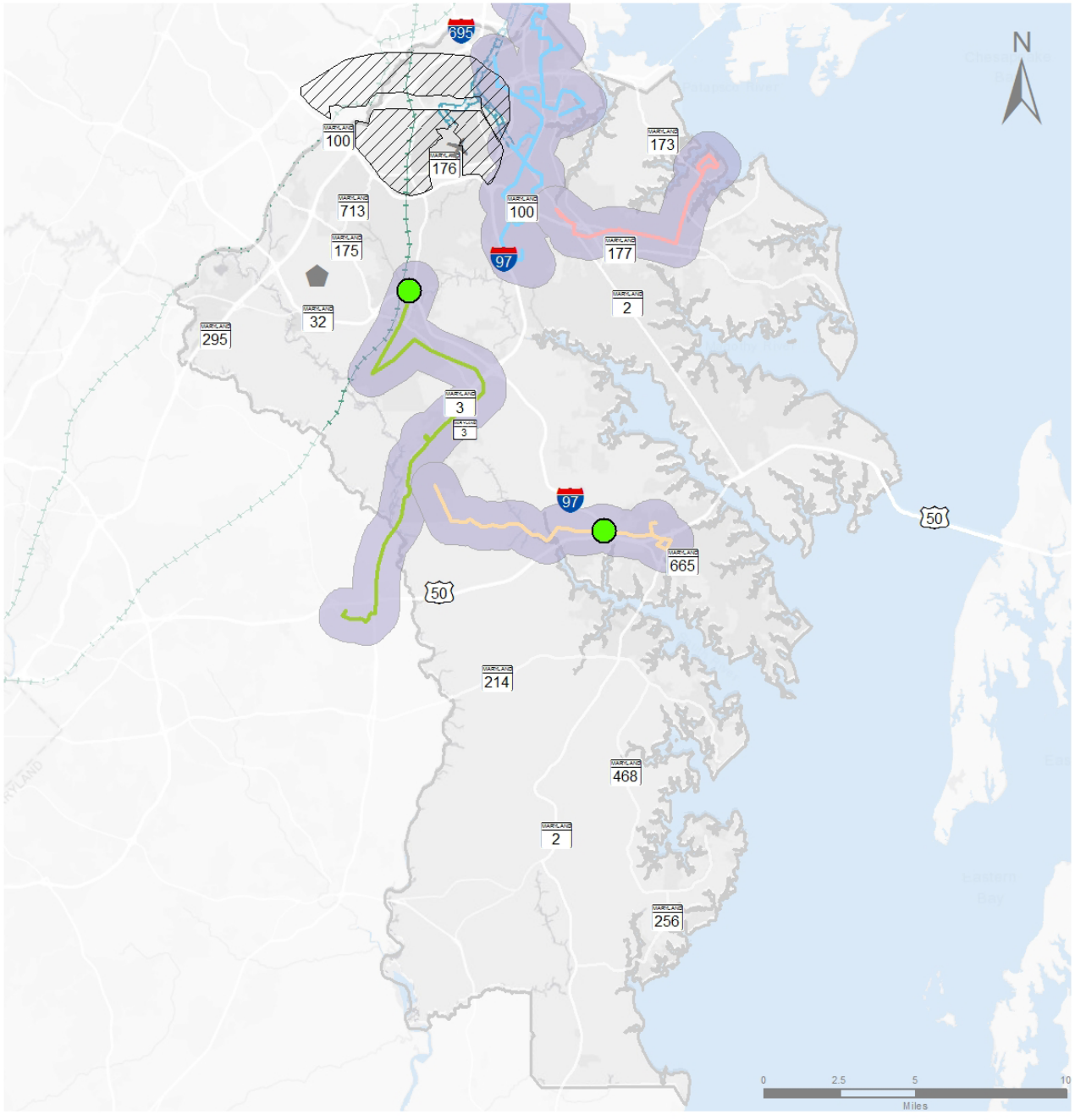
- Services provided by the County and/or RTA should operate in a flexible model known as “Deviated Fixed Routes” or “Zone Routes.” This kind of service tends to have set departure and arrival times at its end points but a broad service area in between. Anyone within the zone may call ahead to schedule a ride, if they are within a mile or so of a designated bus route. These types of routes work well when there is not a defined corridor to travel, but a defined set of origins or destinations within an area. See map ___ for priority routes recommended for establishment:
  - Riviera Beach – Pasadena – UM Baltimore Washington Medical Center
  - North Glen Burnie Loop – Cromwell Light Rail Station
  - Cromwell Shopping Center – Veterans Highway – Old Mill Road - UM Baltimore Washington Medical Center
- BWI Thurgood Marshall Airport’s extensive and frequent transit service to the consolidated rental car facility, and MARC station passes right by employers that have long sought additional service for their transit-dependent workers. Whereas MTA’s best bus service in the area operates every 45 minutes, BWI shuttles operate every 5 to 15 minutes around the clock. Expanding the role of the BWI Shuttle to be a higher-frequency “last mile” transit should be explored as a more cost-effective solution, than can be provided by MDOT MTA in the BWI area.
- Quality transfer points are needed in order to get the most out of transit lines in the County. At locations where multiple routes come together, sheltered curbside connection areas or major park-and-ride/transit hubs are necessary. The long-sought Annapolis/Parole Transit Center is the highest priority. Other opportunities for improvement include Glen Burnie/Pasadena near Marley Station Mall, at Fort Meade where security concerns must be overcome to allow open-door transit service onto the base, in Maryland City/Laurel, and Crofton/Waugh Chapel/Bowie.

Cross County Rapid Transit

The 2009 Anne Arundel County General Development Plan includes a bus rapid transit line between BWI Thurgood Marshall Airport and Dorsey MARC station at the Howard County line. Howard County’s General Development Plan adopted in 2012 calls for a bus rapid transit line from downtown Columbia to the US 1 corridor and Fort Meade. These proposals are understandable in the context of significant east-west congestion along MD 100, 175, and 32 and major employment and retail centers requiring transit access in between. However, for a bus rapid transit line to be warranted, land use plans must require dense, transit-oriented development at key nodes along the corridor. Anne Arundel and Howard Counties should join in a comprehensive land use plan for the corridor, and a right-of-way acquisition strategy between BWI and Columbia, that could one day make bus rapid transit a practical commuting option.

Transit Projects

Recommended Locally Operated Bus Network



- Bowie - Odenton Town Center
- Crofton - Annapolis Town Centre
- Glen Burnie to Patapsco Plaza
- Riviera Beach to UMBW Medical Center
- MARC Train
- Light Rail
- Transit Center
- BWI Shuttle Integration

Investment Priority: Upgrading County Corridors and Strengthening Community Cores

County corridors ("minor arterials" in transportation speak) carry trips across and within the County providing direct access to shopping, employment centers, schools, parks, and other important community destinations. In many respects, these roadways act as "Main Street" or Community Cores at certain points along the route. Most of these County corridors and community cores are State-owned roadways; County government must prioritize and jointly invest with MDOT SHA to help to form or maintain a sense of place that makes each community thrive. The County Council's adoption of a Complete Streets policy in 2014 established the principle that every transportation improvement must consider the mobility needs of all public right of way users and modes in a context sensitive manner, providing facilities for each as appropriate for the specific circumstances. Streetscapes, traffic safety improvements, sidewalks, and bike lanes are common investments in minor arterials. If not properly designed, maintained, and managed, however, these County corridors can turn into "traffic sewers" that clog easily, are unwelcoming to pedestrians, difficult for community-oriented retail to thrive, and don't work well for anyone.

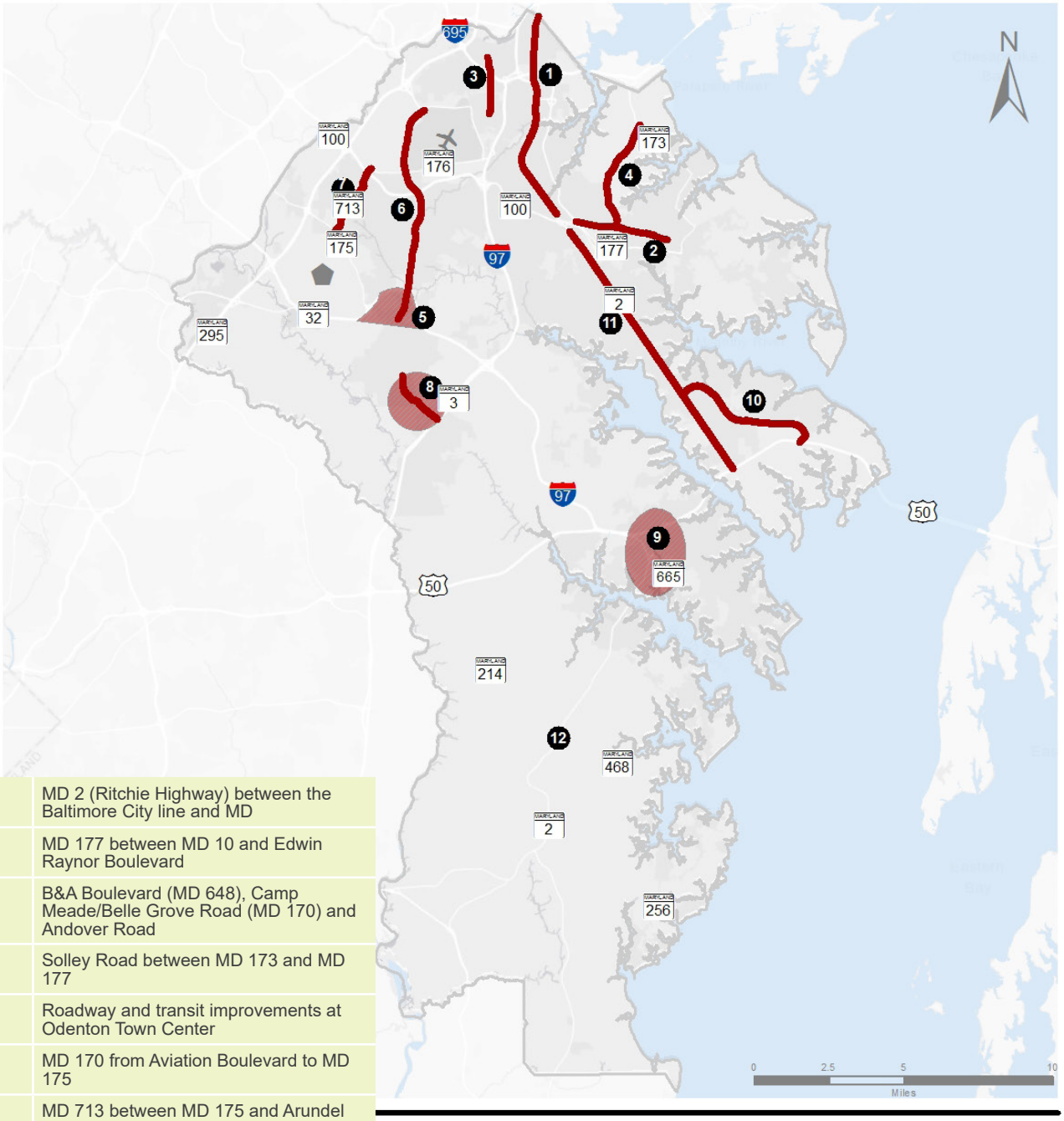
The County should prioritize investments along corridors where there is the greatest opportunity to:

- Leverage designations such as "Commercial Revitalization Districts" or "Sustainable Communities." County and MDOT SHA investments should be part of a strategic economic and community development approach that responds to the specific needs of the area.
- Promote mobility within communities by addressing the need for sidewalks and bicycle facilities as identified in the Bicycle and Pedestrian Master Plan.
- Address areas of high traffic safety concern, especially near elementary and middle schools.
- Design infrastructure that is more resilient to the impacts of climate change, such as flooding along coastal areas and the inundation of low-lying areas.
- Reduce the frustration of minor bottlenecks by adding turn lanes, installing smart traffic signals, and adding dynamic traffic information signs.

Improving mobility within communities can also mean introducing transit service that responds to specific requests for service and circulates within the neighborhoods rather than travelling long distances from city to suburb. More information about transit options in community corridors can be found in the Advancing New Models for Transit section of this plan.

County Corridors and Community Cores

Recommended Investment Priorities



1	MD 2 (Ritchie Highway) between the Baltimore City line and MD
2	MD 177 between MD 10 and Edwin Raynor Boulevard
3	B&A Boulevard (MD 648), Camp Meade/Belle Grove Road (MD 170) and Andover Road
4	Solley Road between MD 173 and MD 177
5	Roadway and transit improvements at Odenton Town Center
6	MD 170 from Aviation Boulevard to MD 175
7	MD 713 between MD 175 and Arundel Mills Blvd
8	Improving Waugh Chapel area roads
10	College Parkway between MD 2 and US 50
11	MD 2 (Ritchie Highway) between the College Parkway and MD 100
12	South County Projects

Numbering is for identification purposes only and not intended to reflect priority of projects

North County Projects

MD 2 from Brooklyn Park to Glen Burnie to address traffic and pedestrian safety.

MD 2 (Ritchie Highway) between the Baltimore City line and MD 100 is one of the most dangerous stretches of roadway in Anne Arundel County, as are parallel and intersecting County roads and neighborhood streets throughout Linthicum, Ferndale, Brooklyn Park, and Glen Burnie. Residential and commercial growth in the area is expected to be modest in the coming decades and new transportation capacity is generally not needed. Instead, the County and MDOT SHA's top priority along MD 2 and surrounding communities should be an aggressive traffic safety effort. Minor operational improvements, additional sidewalks, high visibility crosswalks, and improved lighting should all be part of a comprehensive program. This work can also be performed in conjunction with infrastructure renewal throughout North County communities.

MD 177 between MD 10 and Edwin Raynor Boulevard to address traffic congestion, improve bicycle and pedestrian facilities, and upgrade the streetscape in commercial areas.

Improvements along the Mountain Road (MD 177) corridor are needed to address current operational and capacity deficiencies and in anticipation of moderate residential growth in the area. The corridor currently operates at an unacceptable level of service at multiple locations. Crash rates along the corridor are significantly higher than statewide averages. Unsafe conditions also exist for pedestrians and bicyclists as sidewalks and bicycle lanes are not continuous along Mountain Road. Opportunities to consolidate business driveways and improve on-site circulation are present throughout the corridor. These opportunities would not only provide a more aesthetically inviting corridor but would also limit the number of conflict points for potential collisions associated with entering and exiting the commercial properties. A coordinated infrastructure and community development plan will be of the greatest benefit to the area.

Linthicum and Ferndale Community Connectors.

B&A Boulevard (MD 648), Camp Meade/Belle Grove Road (MD 170) and Andover Road are important community connectors within the northern part of the County. Reinvestment in infrastructure can improve roadway conditions, provide safety improvements, traffic calming, and bicycle and pedestrian facilities to support neighborhood quality of life and strengthen small business districts. While some new sidewalks have been added along MD 648 over the past decade, there are many gaps in the vicinity of schools, commercial areas, and community facilities. A program of improvements should be advanced after further community consultation.

Solley Road between MD 173 and MD 177 to address traffic congestion and accommodate planned community and economic growth.

Solley Road is a two-lane roadway between Mountain Road (MD 173) and Fort Smallwood Road (MD 177) surrounded by medium-density residential and light industrial uses and carrying approximately 6600 cars per day. Several subdivisions are planned along Solley Road and further employment growth is projected. While operating at an acceptable level of service today, the number of traffic crashes is increasing as motorists try to pass left-turning vehicles where traffic lines form, and at intersections that are trending towards excessive delay. By 2040, all intersections along Solley Road are projected to operate at failing levels of service. A 2017 study by the Department of Public Works (DPW) recommended several improvements: creating turn lanes and roundabouts, widening shoulders, adding bicycle lanes and filling sidewalk gaps. As development projects move forward, establishing connections between Solley Road and Marley Neck Road will be important to spread traffic growth more evenly. It is appropriate that new development projects fund many of the proposed improvements.

Central & West County Projects

Roadway and transit improvements at Odenton Town Center to support new development and manage congestion.

The 2010 Odenton Transportation Study forecasted future traffic volumes and traffic patterns, developed standards for roadway design elements, and identified capital improvement project needs in the Odenton Town Center area. Since then, Town Center Boulevard has been constructed and work on grid streets has begun. When completed, the street network will provide users multimodal access and mobility choices to existing and future land uses within the Odenton Town Center, including new sidewalks, bicycle facilities, and improved access to transit options. Ridership growth at the Odenton MARC Station continues to outpace parking capacity; a long-planned parking garage must advance so that further community and economic development can occur. Improvements to the station area such as a wider pedestrian underpass and adding canopies over the platform are necessary as well.

MD 170 from Aviation Boulevard to MD 175 to address growing traffic congestion.

MD 170 from MD 176 to MD 174 is among the fifteen congested arterial roadways in Maryland. Planned residential growth through Severn and connected strength of light industrial and logistics businesses south of BWI Thurgood Marshall Airport will continue to strain the road network to the north and south. As new developments are proposed along MD 170, limiting the number of access points and continuing a full grid network connecting to WB&A Road will be important. Improvements to WB&A Road may be necessary to accommodate increased traffic, and an additional roadway bridge over Amtrak should be considered to connect MD 170 to MD 174.

MD 713 between MD 175 and Arundel Mills Blvd. to address increasing traffic congestion and traffic safety issues and provide additional bicycle and pedestrian facilities.

As MD 295 (Baltimore-Washington Parkway) experiences recurring congestion, it is expected that additional traffic will use MD 713 as an alternate north-south travel route to access points-of-interest in the area. At the same time, the MD 713 corridor is expected to see significant employment growth of its own through 2040 with Fort Meade and the Arundel Mills/ Dorsey Road area capturing much of the new employment. In between, moderate residential growth is forecast with many subdivisions planned for the area.

A recent study by Anne Arundel DPW and MDOT SHA evaluated alternatives to improve traffic operations and safety and improve compatibility for pedestrian and bicycle travel, while minimizing impacts to the existing natural and built environment. Road widening to allow for turn lanes and intersection improvements are necessary. A new continuous sidewalk is proposed on at least one side of MD 713 from MD 175 to Dorsey Road and continuous on-street bike lanes in both directions are recommended. Congestion at MD 713 and MD 175 could rise to the level of needing a grade-separated interchange although at-grade alternatives may exist to handle future traffic volumes.

Improving Waugh Chapel area roads to create a street grid network.

Waugh Chapel Road is one of three routes to access MD 3 from the west, an area in which residential growth has been significant over the past decade and is expected to grow another 30 – 40% by 2040. Left turns into and out of subdivisions are also difficult during peak hours due to long lines of traffic, and crashes frequently result. There are many gaps in the sidewalk network and bicyclists must ride in narrow travel lanes with traffic through much of the corridor. An ongoing study by DPW has identified the need for turning lanes and other improvements at several intersections. Improvements along Waugh Chapel Road must reflect the residential nature of the area and keep traffic at safe speeds; improvements must also reflect the sensitive environmental areas in the corridor. Improvements to Conway and Patuxent Ridge Road between MD 3 and Piney Orchard Parkway and an extension of Evergreen Road to Piney Orchard Parkway should also be considered to create a full street grid in this high growth area of the County.

Broadneck, Annapolis Area and South County Projects.

Access to Annapolis, Parole and the Annapolis Neck (MD 2/MD 450/MD 665/Forest Drive) to address congestion and improve traffic and pedestrian safety.

The confluence of I-97, US 50, and MD 2 in the Annapolis/Parole area, targeted growth at the Parole Town Center, and high-density trip generators such as downtown Annapolis, Anne Arundel Medical Center, and Westfield Annapolis Mall make for very significant traffic congestion. This is especially true as most of the local arterials have dozens of curb cuts in very short distances and movement among the facilities almost always requires a car. A comprehensive traffic systems management and operations plan is needed to improve circulation. It would include reducing the number of left turn conflicts due to curb cuts, adding dedicated turning lanes at certain intersections, allowing traffic to move between parcels without using main roadways, and upgrading traffic signals. Improving non-auto mobility with more frequent transit service, filling in sidewalk gaps, and providing dedicated bicycle facilities are all necessary. The long proposed intermodal transportation center in Annapolis/Parole should be advanced. Improving the street grid by adding a minor arterial between Spa Road and MD 2 or extending the parallel arterial to MD 2 would reduce traffic volumes and help to reduce congestion along MD 665/Forest Drive, Chinquapin Road, and Spa Road. A direct connection between MD 665 and the Truman Parkway park-and-ride lot should also be considered.

College Parkway between MD 2 and US 50 to address traffic congestion and incorporate the Broadneck Peninsula Trail extension.

College Parkway is projected to carry 36,000 vehicles per day in the year 2035 west of Jones Station Road and almost 22,000 vehicles per day east of Jones Station Road, which is over the daily capacity of 20,000 for a two-lane arterial. The roadway currently experiences some congestion at the intersections of MD 2 and MD 179, and the segment from west of Jones Station Road (where the existing four lane highway tapers to two lanes) to MD 179 is projected to deteriorate to a Level of Service (LOS) F in the year 2035. Prior recommendations to be further evaluated include widening of College Parkway from two to four lanes west of Jones Station Road to MD 179; adding a southbound left turn lane on MD 2 at College Parkway intersection; and adding an eastbound left turn lane on College Parkway at MD 179 intersection. In addition to roadway improvements, the County intends to continue the multi-phase extension of the Broadneck Trail to the Baltimore and Annapolis Trail to provide a mobility alternative for residents who live in the area and could reasonably commute to work by bicycle. Several sidewalk gaps on College Parkway need to be filled, as well.

MD 2 through Severna Park to Arnold to reduce congestion hotspots.

Congestion hot spots frustrate reliable commuting times on MD 2 (Ritchie Highway) between the College Parkway and MD 100. As residential and commercial growth in the area is expected to be modest in the coming decades, significant new road capacity should be less of a consideration than operational improvements at key intersections. Safety improvements at unsignalized median crossovers are needed, and sidewalks should be installed along the length of the corridor.

The South County Strategy

Protecting the rural and agricultural character is of paramount concern in South County. This yields a very different transportation strategy than the urbanized areas to the north. Approaches must be tailored to protect the rural character and support small communities like Deale, Mayo and Shady Side. This includes:

- Coordinating land use and transportation strategies with Calvert County and Prince George's County to achieve a safe and consistent transportation network without bottlenecks;
- Avoiding wholesale road widening in favor of small operational improvements to allow for safe left turns;
- Slowing traffic through the more populated areas; and,
- Building the sidewalk and bicycle network where it makes the most sense for very localized trips.

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Investment Priority: Improving Regional Corridors to Make Commutes More Reliable

Regional corridors (known as major arterials, freeways or expressways) carry trips that are longer distances and travel through the County rather than trips that are within the County. While not part of the County transportation network, the County has a definite interest in regional facilities, such as I-97, US 50, MD 295, MD 100, MD 32 performing well. However, capacity improvements to these regional corridors are very expensive and often result in significant right-of-way, utility, and environmental impacts when new general-purpose lanes are constructed. In general, the County's focus will be to work with MDOT SHA on transportation systems management and operations strategies to manage traffic flow and improve travel time reliability. Recent improvements on US 50 at the Severn River Bridge demonstrate how creative thinking, practical design, and/or use of available technologies can improve a bottleneck at a fraction of the cost of a complete road or bridge widening.

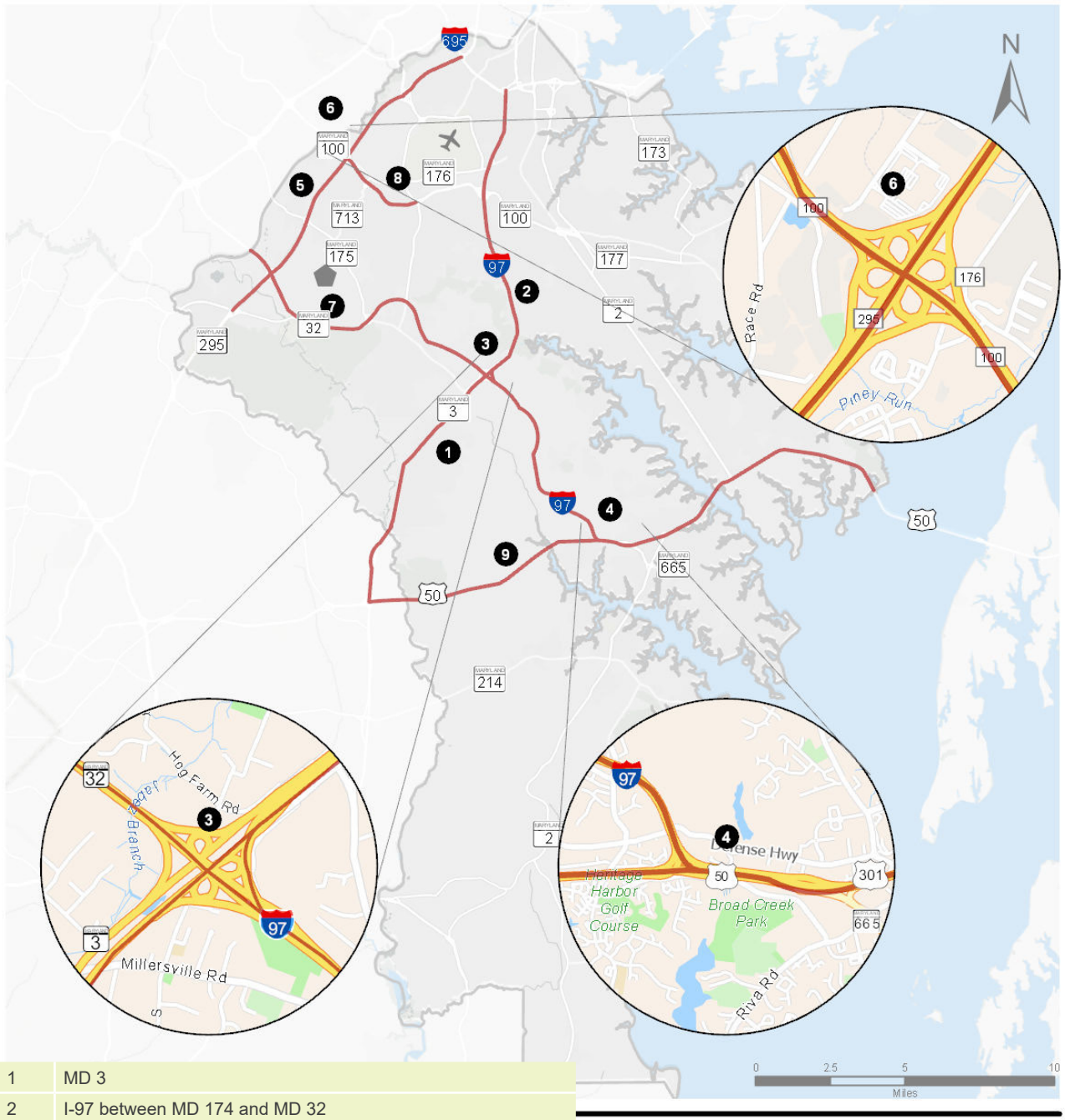
Where new travel lanes are necessary, the County prioritizes investments by MDOT SHA where there is the greatest opportunity to:

- Incorporate high quality transit service with High-Occupancy Vehicle (HOV) lanes or other transit-supportive strategies.
- Address a history of severe traffic crashes.
- Solve bottlenecks and make commutes more reliable.
- Minimize environmental impacts such as tree-clearing and wider stream crossings that degrade the health of the Chesapeake Bay and its tributaries.

Improving commutes along regional corridors includes adding high quality, limited stop commuter bus service during the morning and afternoon rush hours – and better using roadways to give high-occupancy vehicles a faster trip than people who choose to drive alone. Already, five commuter bus routes from Anne Arundel County to Washington, DC carry approximately 2,160 passengers daily; the MARC Penn Line carries nearly 4,000 passengers each between BWI and Odenton Stations to Union Station in Washington, DC. As the shift in commuting patterns continues towards Washington, DC and its suburbs, additional commuter bus service will be necessary. In addition, vanpools can offer a viable alternative at less expense to large employers and business parks, such as the Gateway Commerce Center in Columbia, or along the I-270 corridor. New or expanded Park and ride lots are necessary in many areas of the county.

Regional Corridors and Commutes

Recommended Investment Priorities on Major State-owned Roadways



1	MD 3
2	I-97 between MD 174 and MD 32
3	Junction of I-97 and MD 32
4	Junction of I-97 and US 50
5	MD 295 between MD 175 and I-195
6	Interchange of MD 295 and MD 100
7	MD 32 between MD 295 and MD 198
8	MD 100 between I-95 and MD 170
9	Interchange of MD 295 and MD 100

Numbering is for identification purposes only and not intended to reflect priority of projects

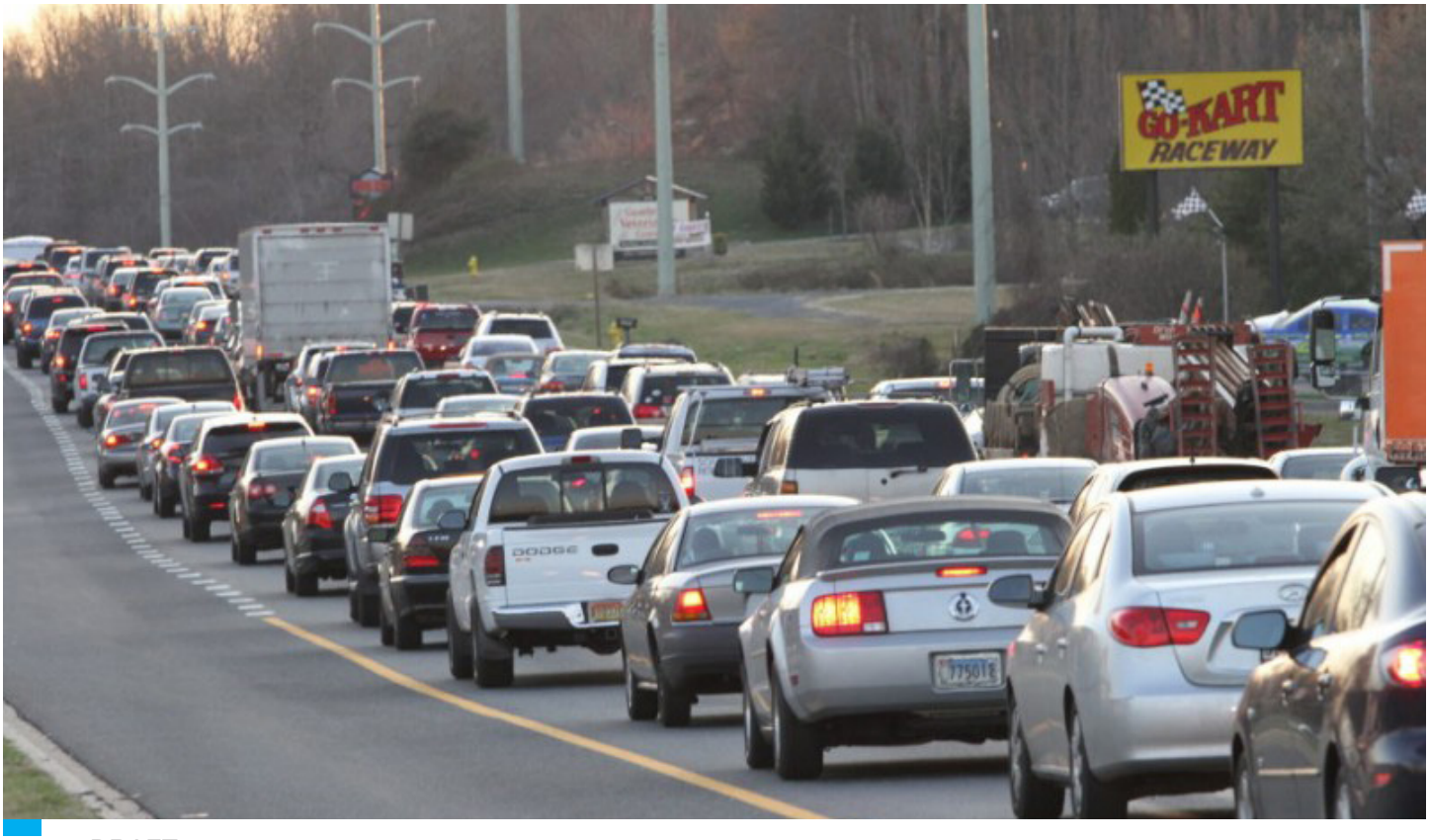
MD 3

Since the 2009 General Development plan, population and housing has more than doubled in the MD 3 corridor which begins at I-97 and continues to US 50 in Prince George's County. Much of the growth in the past decade has been in the Waugh Chapel area; significant residential growth will continue over the next decade as the Waugh Chapel Town Center continues to be developed. Gambrills and Millersville can also expect to see residential growth. Employment growth is not expected to be significant in the MD 3 corridor except to the extent that the retail and service establishments staff up with the new development; these jobs tend not to have a significant impact on peak travel periods. Development to the south of the MD 3 corridor is expected to be moderate as land use patterns are largely settled through Crofton and Davidsonville.

The MD 3 corridor continues to be the County's highest transportation priority due to significant growth planned for the area, especially in the area of the Waugh Chapel Town Center. Over the next decade, MD 3 will experience the greatest increase in traffic congestion and the greatest decline in travel time reliability. In 2011, MDOT SHA received environmental approvals to widen MD 3 from US 50 to MD 32 from 4 to 6 lanes; however, the project has not advanced due to lack of State funds. The approved highway development plans do not call for significant changes in access to residential and commercial developments, since frequent curb cuts and side streets for business and residential access are a significant cause of congestion. The plans also do not call for inclusion of any park-and-ride lots.

Recommendations

MD 3 should be converted to a limited access freeway which will require strengthening land development regulations and coordination between MDOT SHA, the County, and property owners to ensure that local access can be provided to the many shopping centers and residential areas that have developed over the past 20 years. It is recommended that phasing occur in at least three segments north to south: MD 32 to Waugh Chapel Road (2.4 miles), Waugh Chapel Road to MD 450 (3.7 miles), and MD 450 to US 50 (2.8 miles). New commuter bus service should be provided from the Waugh Chapel area to Washington, DC and to its suburbs at New Carrollton Metro Station, College Park, and Silver Spring and more park-and-ride lots must be developed along MD 3 to support this service.



I-97

Since the 2009 General Development Plan, no new road capacity projects have been placed in service and travel time reliability levels have been consistent amidst relatively low population and employment growth along I-97. Moderate population and employment growth can be expected along I-97 by 2040 but the I-97 corridor will also be influenced by population and employment growth along feeder arterials between BWI Airport and Severna Park. In these areas, congestion hot spots have begun to emerge and will continue to worsen, owing to the southern and western shift of travel demand. It should also be noted that these junctions have higher than average crash rates.

Recommendations

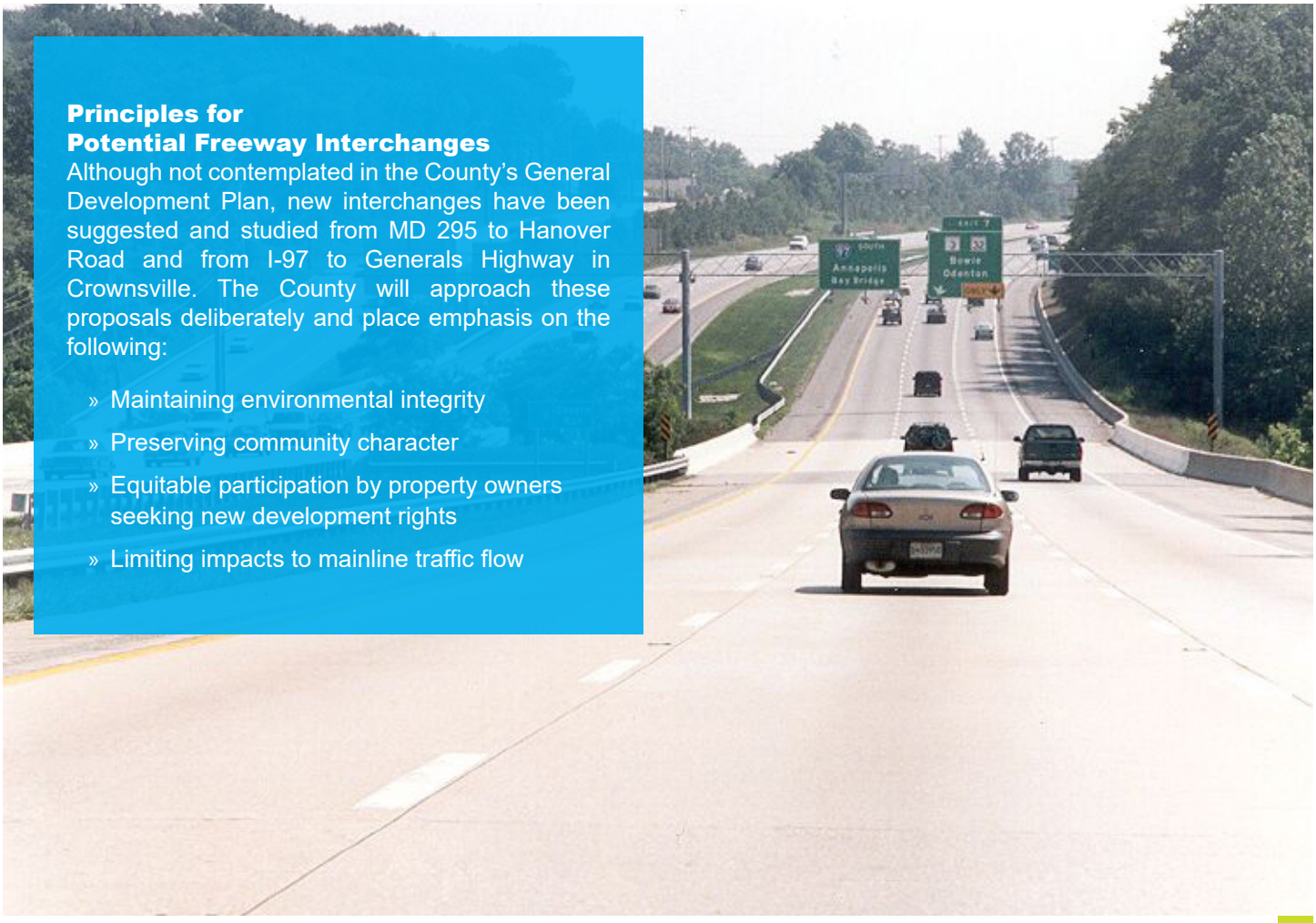
Mainline widening of I-97 is not recommended. However, the corridor is a strong candidate for TSMO strategies, including ramp metering and the hardening of shoulders for peak hour use between MD 174 and MD 32. The junction of I-97 and MD 32 and the junction of I-97 and US 50 require attention, especially during the PM peak period. It should also be noted that these junctions have higher than average crash rates which can be addressed with TSMO strategies.

The redevelopment of Crownsville Hospital Center is an unknown that may require roadway capacity improvements over the next 10 - 15 years. Any new interchange in the area that ultimately connects to Veterans Highway should be carefully considered. Commuter-oriented transit service in the I-97 corridor between Annapolis and Baltimore has been largely underutilized and should be reconsidered. These resources should shift to connecting the area between BWI Airport and Severna Park to Washington, DC and its suburbs.

Principles for Potential Freeway Interchanges

Although not contemplated in the County's General Development Plan, new interchanges have been suggested and studied from MD 295 to Hanover Road and from I-97 to Generals Highway in Crownsville. The County will approach these proposals deliberately and place emphasis on the following:

- Maintaining environmental integrity
- Preserving community character
- Equitable participation by property owners seeking new development rights
- Limiting impacts to mainline traffic flow



MD-295

The Baltimore-Washington Parkway is a “crown jewel” of Maryland’s transportation system, with plans for the parkway connecting Baltimore and Washington dating back to the 1920s, as part of a system initially included in Pierre Charles L’Enfant’s layout of Washington, DC. The parkway is listed on the National Register of Historic Places and provides a scenic entry to the Nation’s capital. Although the National Park Service stewardship of MD 295 ends at the Prince George’s County line, Anne Arundel County residents are very aware of the parkway’s bucolic design and the sensitive environmental features along the parkway. Recent and committed projects along MD 295, in particular the ramp reconfiguration at MD 175, respect the parkway’s environmental context while providing necessary operational improvements to improve traffic flow.

MD 295 has seen a great strain on its capacity over the past decade. MD 295 Southbound from MD 32 to Anne Arundel/ Prince George’s County Line is one of the ten most congested roadways on the MDOT SHA system. Continued employment strength and housing growth in the area near Fort Meade and Arundel Mills, along with increasing demand for access to BWI Thurgood Marshall Airport and the surrounding business districts will push congestion further and further north through 2040. A multimodal approach is necessary to mitigate further congestion.

Recommendations

The County supports traffic management improvements that are pinpointed at hot spots along the MD 295 corridor in such a way that limits environmental impacts while making necessary operational improvements. Systems management strategies such as ramp metering, longer exit, and part-time shoulder use should be considered; the section between MD 175 and I-195 is the County’s priority improvement area, in order to get ahead of future problems. In particular, the interchange of MD 295 and MD 100 is a major bottleneck that must be addressed. A proposed interchange at Hanover Road should be carefully considered.

Transportation choices must be increased and improved in the corridor. The MARC Penn Line runs parallel to MD 295 and is a success story for transit in Maryland. MDOT MTA should invest heavily in MARC capacity improvements that jointly benefit Amtrak; similarly, local, regional, and State partners should implore CSX to make more track access available for MARC service, coupled with State investments envisioned on the Camden Line by the MARC Growth and Investment Plan. The County will continue to encourage growth and development at MARC stations. While demand for MARC Train service will continue to grow, it must be accepted that capacity improvements will likely not keep pace over the next two decades. To relieve some of the pressure on MARC, especially at the Odenton station, MDOT MTA should initiate commuter bus service to Washington, DC, along MD 3 and I-97.

MD-32

Changes to traffic patterns in the MD 32 corridor have stabilized following significant employment growth at Fort Meade in the early part of the decade. However, capacity improvements and the realignment of interchanges have not resolved significant peak hour congestion east and westbound between MD 295 and MD 710. Going forward, steady growth can be anticipated but at a more uniform pace than occurred between 2010 and 2015. Residential growth can be expected to the south of MD 32 in Odenton Town Center and to the north in Gambrills along MD 170. On the eastern edge of the MD 32 corridor, growth in office-light industrial business parks can be expected at Annapolis Junction and along National Business Parkway bringing employment in the MD 32 corridor from approximately 75,000 jobs in 2017 to approximately 105,000 jobs in 2020.

Recommendations

Wholesale widening of MD 32 is not recommended, however eastbound improvements between MD 295 and MD 198 and westbound improvements between MD 710 and Fort Meade may be warranted. Hard running shoulder or part-time shoulder uses should be explored among other TSMO strategies to address recurring congestion in these areas.

Commuter bus service from western Howard and Carroll Counties (and beyond) would provide a transportation alternative to those using MD 32 to access Fort Meade from the west; commuter bus service to Fort Meade should also be established from Annapolis and South County. Like recommendations along I-97, resources used to provide commuter bus service between Annapolis and Baltimore should be reconsidered. These resources should be shifted to serve Fort Meade.

Adding commuter bus service (and improving local bus service) to Fort Meade will require a solution to security concerns at the base, although it is noted that the federal government does run closed-door service to the base from Odenton MARC station. The establishment of a transit center on the main base (like Pentagon Transit Center) should be considered.

MD-100

MD 100 was fully opened as a limited access freeway between I-97 near Pasadena and US 29/I-70 in Ellicott City in 1998. The opening of Arundel Mills Mall followed in 2000 and dense residential communities (by suburban standards) sprung up around it soon thereafter. Coupled with significant warehouse and logistics growth in the corridor, the three-mile section of MD 100 straddling the Howard- Anne Arundel County line has become the most congested and least reliable east-west route in Anne Arundel County. The eastern section of MD 100 between Ritchie Highway and Mountain Road has its own unique set of challenges as one of very few roads out of the Magothy River peninsula, but relatively low growth in these areas is to be expected.

Recommendations

Other than significant economic and residential growth, much of the congestion problem on MD 100 between I-95 and MD 170 has to do with the spacing of seven interchanges in only 5.5 miles which is uncommonly close for a limited access freeway. Improvements to MD 100 should focus on TSMO strategies that provide safer and smoother merging and weaving areas as vehicles enter and depart the highway. In particular, the interchange of MD 295 and MD 100 is a major bottleneck that must be addressed.

US 50

In its 2016 long-range forecasts, the Baltimore Regional Transportation Board predicts a modest 10% growth in population across much of the US 50 corridor through 2040; the exception is the Annapolis/ Parole Town Center where significant population growth is expected. Except for retail and service sector jobs, employment growth is expected to be modest along US 50.

Traffic congestion on US 50, however, is expected to rise at a rate significantly greater than population increases in the communities directly adjacent to the freeway. The pressure of growth along the MD 3 corridor, traffic heading south along the I-97 corridor, and traffic coming from significant residential growth on the Eastern Shore will bring longer traffic queues and very unreliable travel times along US 50 to and from Washington, DC. Recent reconfiguration of the US 50 bridge over the Severn River is a first step to bring congestion relief for travelers to and from the Eastern Shore; however, no strategies are advancing to address congestion between Annapolis and the Capital Beltway along US 50.

Recommendations

With the strong shift of travel demand in Anne Arundel County towards the Capital Beltway, HOV lanes on US 50 between the Prince George's County line and the Capital Beltway should be extended to I-97. The establishment of HOV lanes on US 50 (and/or express toll lanes on the Capital Beltway) should be coupled with a significant expansion of commuter bus service. Specifically, it is recommended to add commuter bus service from the park and ride lots in Annapolis and Severna Park to College Park, Silver Spring, and Bethesda. This would be coupled with a similar need for commuter bus trips along MD 3, then heading west towards Washington DC and its suburbs.

Interchange improvements and/or transportation systems management/operations (TSMO) strategies at the junction of US 50 and I-97 should be advanced in order to eliminate this bottleneck and reduce the high rate of traffic crashes.

The opening of the Purple Line in late 2022 will be a benefit to Anne Arundel County residents commuting the US 50 corridor to work at locations around the capital beltway. The County encourages MDOT MTA to consider skip stop or express service from New Carrollton to the University of Maryland, Silver Spring, and Bethesda. Doing so would reduce average trip time by approximately 20% compared to the same trip by Metrorail from New Carrollton, and achieve competitive, reliable travel times compared to auto trips.

Policy Recommendations, Focus Areas and Regional Coordination

As the County looks ahead to the General Development Plan update, several concepts should be further explored among agency staff, elected officials, and community and business stakeholders. These ideas are a way of thinking about the County's transportation-related issues at a conceptual level for small area planning rather than focusing on specific roads, transit routes, or trails.

Small Area Planning

Following adoption of the County's general development plan update expected to occur in 2020, the County intends to move forward with a small area planning process in 17 distinct areas. As those small area plans are developed, the planning issues identified below should be given further study.

- Land Use/Transportation Transition Areas sit at the edge of established communities including portions of South County, along the South River and in the Millersville-Crownsville area. Over the next twenty years, these areas may see residential and commercial growth that may not be supported by the road network in that area. County planning and transportation staff should jointly review development proposals in the transition areas to ensure that appropriate multimodal transportation capacity is available concurrent with new development.
- Safety Focus Areas have high rates of traffic crashes, including crashes involving bicyclists and pedestrians. These areas should be the highest priority for safety improvements as part of the County's Vision Zero plan. Communities along MD 2 North, MD 665, Forest Drive corridor, West Street, historic downtown Annapolis, Jessup, and Maryland City demand a special focus on traffic, bicycle, and pedestrian safety.
- Circulation and Access Management Areas are high congestion activity centers such as Parole Town Center and high growth areas such as Odenton Town Center north to Severn and Arundel Mills along MD 170 and MD 713, and along MD 3. In these areas, current and future traffic congestion can be mitigated through strong and coordinated development review, minimizing curb cuts, extending roads in new communities through to arterials on both sides of a subdivision, and ensuring that sidewalks and bicycle facilities are part of any roadway project. A similar approach is recommended in the Parole Growth Management Area.
- Intercounty Coordination Areas are in Jessup along MD 175 and in South County along MD 2 and MD 4, where land use and transportation coordination is needed with Howard County and Calvert County, respectively, so that there is a consistent transportation network without bottlenecks.
- Capital Coordination requires that Anne Arundel County and the City of Annapolis work closely together to improve local circulation at activity centers, coordinate development reviews, address pedestrian safety, and develop a congestion management plan for the Forest Drive/Bay Ridge Avenue communities.
- Community Investment Areas should have a coordinated strategy for community, economic, and transportation investment to achieve revitalization goals. These areas are in Glen Burnie, Linthicum-Ferndale, and Pasadena. These areas are also well suited for flexible transit routes that connect people with important community destinations.

Preparing for Automated and Connected Vehicles

Automation and connectivity will continue to have a growing role in the transportation industry. Paramount in this role is the ability for Connected and Automated Vehicles (CAV) technologies to improve the safety of transportation network users and manage congestion and potential increased capacity of existing infrastructure in the future. However, with the technology still evolving and with limited understanding of what the future will look like, it is a challenge to assess the impact of CAV technology at this time. The County should closely follow activities led by MDOT and explore actions that may be necessary and viable at the County level, to aid in the evolution of automated and connected vehicles.

Freight and Goods Movement

Since 2016 BWI Marshall Airport has experienced a 40% year over year increase in air cargo volume. Existing and future air cargo demands will be supported by an increasing ground freight presence on the local roads and interstate system. While no improvements are recommended for landside access to BWI over the next decade, the County and MDOT SHA should continue to monitor roadway congestion at the airport. If BWI's freight growth trajectory continues as it has over the past five years a freight-specific planning framework should be developed. MDOT and County must closely monitor this growing market sector to respond with warranted critical roadway improvements in the future.

With a relatively small manufacturing base, Anne Arundel County tends not to generate significant amounts of freight traffic, but the County experiences significant through movements by trucks to and from the Eastern Shore, in particular. In addition, the expanding reach of the Port of Baltimore and private sector land needs for warehousing and logistics may begin to yield additional truck traffic in the North County. The County's Office of Economic Development, Office of Planning and Zoning, and Office of Transportation should continue to monitor freight-generating land use development and any associated transportation needs.

Roadway Classification, New Local Road Links & Development Coordination

As part of the General Development Plan update, the County should update the official roadway classification map to reflect the priorities of Move Anne Arundel and better define the purpose of local and State roads. Doing so will strengthen the County's hand when considering access management for development projects and preserving right-of-way for new or improved roads. When establishing the functional classification map, the County should designate:

- Designate future connections between arterial roads to provide redundancy in the local street network.
- Designate specific areas or improvements as being "impact fee eligible." Development impact fees could then only be used for projects so designated in the roadway classification map which is adopted by the County Council.
- Designate the countywide network of shared-use paths and protected on-street bicycle lanes which would become the basis for spending multimodal transportation fees collected from development projects.

The Office of Transportation should act as the lead agency for reviewing and negotiating transportation elements of subdivision and other significant development projects for the purpose of directing the use of highway impact multimodal fees, to ensure consistency with Move Anne Arundel! and the roadway classification map.

Regional Planning and Coordination

At the regional level, it will be important for the County to consider how it relates to the Washington DC area. Metropolitan Planning Organizations (MPOs) are responsible for establishing the long-range transportation plan for the region and approving the distribution of federal funds to transportation projects within its boundaries. Anne Arundel County is included in the Baltimore urbanized area for purposes of designation within a metropolitan planning organization. Following the 2020 census, States are required to re-establish the boundaries of metropolitan planning organizations (MPOs); boundaries are established by agreement of the Governor and local elected officials. With the continuing shift of commuting patterns by Anne Arundel County residents towards Washington, DC and its suburbs, Anne Arundel County should also have a seat at the table at the National Capital Region Transportation Planning Board (TPB). There are several ways to accomplish this goal ranging from staff coordination and committee participation to full voting membership. County staff will explore opportunities for enhanced participation at the TPB to ensure that its transportation priorities are given due consideration.

Objective: Reduce injuries and fatalities and injuries for all modes.

Performance Measure	Data Notes
Number of vehicle occupant fatalities annually	**Baseline Year: 2017** This data is published annually on a county-by-county basis by the Maryland Highway Safety Office, part of the MDOT Motor Vehicle Administration.
Number of bicycle fatalities annually	
Number of pedestrian fatalities annually	
Number of vehicle occupant serious injuries annually	
Number of bicycle user serious injuries annually	
Number of pedestrian serious injuries annually	

Objective: Improve transportation system reliability

Performance Measure	Data Notes
Travel time reliability on major roadway corridors	**Baseline Year: 2016** This data is published annually for select corridors (and segments thereof) as part of MDOT SHA's Maryland Mobility Report. "Reliability" refers to the Planning Time Index which is defined as a ratio of the 95th percent peak period travel time to the free flow travel time. A value of 2.50 means that for a 30-minute trip in light traffic, 75 minutes should be planned.
Travel time reliability on secondary roadway corridors	
On-time performance of RTA and County-operated transit services	**Baseline Year: 2016** As reported in the Central Maryland Transit Development Plan, 2018. Calculated using weekday on-time performance for 200-series routes only.

Objective:
Reduce injuries and fatalities and injuries for all modes.

Performance Measure	Data Notes
Directional miles of striped on-street bicycle lanes	**Baseline Year: 2019** Data analyzed from Maryland iMap, Maryland's Open Data Portal
Directional miles of protected on-street bicycle lanes	
Miles of shared-use path	
Number of daily round trip MARC Trains to Washington DC daily -- Penn Line	**Baseline Year 2019** Data is from MDOT MTA published schedules.
Number of daily trips between Baltimore and Washington DC on the MARC Camden Line	
Number of daily commuter bus trips from Anne Arundel County to Washington, DC (1)	
Number of daily commuter bus trips from Anne Arundel County suburban DC employment centers (2)	
Percentage of State-owned roadway directional miles within urban areas that have sidewalks compliant with the Americans with Disabilities Act	Summary statewide data can be found in the MDOT Excellerator; county level data provided by MDOT SHA Data Services Division
Percentage of County-owned roadway directional miles within urban areas that have sidewalks that are compliant with the Americans with Disabilities Act	Data Not Currently Available. It is recommended that the County update its GIS database to capture this information.
% of seniors and persons with mobility challenges within one-mile of a bus route.	**Baseline Year: 2017** Data calculated using the percentage of elderly and disabled persons in each transportation analysis zone (TAZ) adjacent to a bus route divided by the total number of elderly and disabled persons in the county. TAZ's are provided by the Baltimore Metropolitan Council as part of the travel demand forecasting process. The number of elderly and disabled persons is calculated using the American Community Survey 1-year population estimates by Census Block Group.
Countywide non-single occupant vehicle mode share for commute trips	**Baseline Year 2017** US Census Bureau, American Fact Finder Means of Transportation to Work, 2013-2017 American Community Survey 5-Year Estimates. Same source for town centers using Census Designated Place for Odenton, Glen Burnie and Parole.

Objective: Improve water quality

Performance Measure	Data Notes
% of unmanaged impervious acres within County Jurisdictional Municipal Separate Storm Sewer System (MS4) area.	**Baseline Year: 2017** This data is reported in the NPDES FY 2017 Annual Report for Anne Arundel County, Table 17. Cumulative Managed Impervious Acreage Anticipated by End of Permit Term

Objective: Improve air quality

Performance Measure	Data Notes
Electrical charging stations installed	**Baseline Year: 2018** Data provided by Maryland Electric Vehicle Infrastructure Council
Vehicle miles traveled per capita	**Baseline Year: 2016** This data is published annually by county as part of MDOT SHA's Maryland Mobility Report. VMT then divided by # of county residents for same calendar year.
% of County-owned transit fleet that is low or no emission	**Baseline: 2019** Data provided by Anne Arundel County Office of Transportation

Objective: A transportation system that is in good condition

Performance Measure	Data Notes
% of roadway lane miles in good condition	**Baseline Year: 2018** Data provided by Anne Arundel County Department of Public Works, Infrastructure Management Division
% of bridges in good or fair condition (4)	**Baseline Year: 2016** National Bridge Inventory Database. www.nationalbridges.com. Filter for Anne Arundel County, select "structurally deficient," then screen-out any bridges on state roadways
% of miles of shared use paths in good condition	Data is not currently available
Average age of County-owned transit fleet	National Transit Database, 2016 Agency Profile. Anne Arundel County NTD# is 30129. www.ntd.gov. FTA defines useful life benchmark for transit buses at 14 years; ULB for demand response vehicles varies by vehicle class size.
Average age of County-owned paratransit fleet	

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MOVE ANNE ARUNDEL!
COUNTY TRANSPORTATION MASTER PLAN