

Central Maryland Transit Development Plan

Draft Final Report,
November 21, 2017

Key Sections Document Focused on Howard County

This “key sections” document is a compilation of selected pages from the Draft Final Central Maryland Transit Development Plan (TDP). It focuses on the Howard County portion of the Regional Transportation Agency (RTA) service area.

The intent is to provide an abbreviated, overview version of the full plan which itself totals approximately 580 pages.

Half of this 111 page key sections document comprises route maps and descriptions. Because the pages are extracted from the full plan there may be some hanging sections or sentences at the bottom of pages.

For details on proposed route changes readers should refer to the full TDP <http://www.kfhgroup.com/centralmd/transitplan.html>. It devotes two or three pages to each route.

It is important to note that the TDP sets out a broad framework for changes. After the TDP is adopted the key TDP recommendations cannot be implemented without public hearings such as on specific route proposals. At these hearings, which Howard County plans to hold in spring/summer 2018, additional detail will be provided such as proposed timetable changes.

Chapter 1

Introduction

INTRODUCTION

This report documents the results and recommendations of the short-range (five-year) Transit Development Plan (TDP) for the Central Maryland area including Anne Arundel County (except the City of Annapolis¹), Howard County, and Northern Prince George's County including the City of Laurel. The Maryland Transit Administration (MTA) requires the Locally Operated Transit Systems (LOTS) in Maryland to conduct a TDP update every five years. The LOTS use their TDPs as a basis for preparing their Annual Transportation Plans (ATPs) that serve as their Annual Grant Application (AGP) for transit funding. The TDP planning process builds on or formulates the county's or region's goals and objectives for transit, reviews and assesses current transit services, identifies unmet transit needs, and develops an appropriate course of action to address the objectives in the short-range future, typically a five-year horizon. A completed TDP serves as a guide for the local transit system, providing a roadmap for implementing service and/or organizational changes, improvements, and/or potential expansion during the five-year period.

This particular TDP is a significant development in the planning process for transit in this region. Previously TDPs were developed separately for Howard County, Anne Arundel County, and for Connect-a-Ride (now RTA) services in Prince George's County. In addition, the staff of the RTA (and predecessor organizations) and the counties performed a great deal of short-range operational planning as the organizational changes in the region progressed. The previous TDPs for Howard and Anne Arundel Counties were separate plans, but they were done at the same time with the thought that they could be joined at the match lines to result in a regional plan. To an extent, the *Fort Meade BRAC Transit and Ridesharing Planning Study* of 2010 was the first regional transit plan to combine the local service plans. However this current *Central Maryland Transit Development Plan* will be the first fully regional transit plan to encompass this unique multi-jurisdictional region.

The fully regional nature of this TDP is reflected in the scoping process that led to the final Scope of Work. A scoping committee including representatives of the MTA, Howard County, Anne Arundel County Planning and Zoning, the Baltimore Metropolitan Planning Organization, the RTA, and the consultant met three times and provided comments on draft scope and budget documents. While there is a standard set of tasks included in a TDP and the MTA has a framework that must be followed, there is significant latitude within these guidelines. This scoping committee provided direction that was reflected in the final scope of services and eventually in this Central Maryland Transit Development Plan document.

¹ A separate TDP is being conducted for the transit services operated by the City of Annapolis, but this study does include recommendations for the routes operated by Annapolis Transit with support from Anne Arundel County.

Chapter 2

Review of Demographics and Land Use

INTRODUCTION

Chapter 2 presents and analyzes demographic data and land use to assess the need for transit in the Central Maryland region, including the area served by the Regional Transit Agency (RTA) of Central Maryland. It includes an analysis of population and demographic data, and analysis of land use and travel patterns that provide a context for evaluating the existing transit network. It includes a general population profile, identification and evaluation of underserved population subgroups, and a review of the demographic characteristics pertinent to a Title VI analysis. Data sources include the U.S. Census Bureau and American Community Survey (ACS) estimates. This chapter also presents a land use profile based on the major trip generators and commuting patterns in Anne Arundel County, Howard County, and the portions of Northern Prince George's County served by the RTA. This information will inform the evaluation of the current transit network and guide the development of service alternatives and subsequent plan recommendations.

This chapter is divided into the following two sections.

- Population Profile
- Community and Land Use

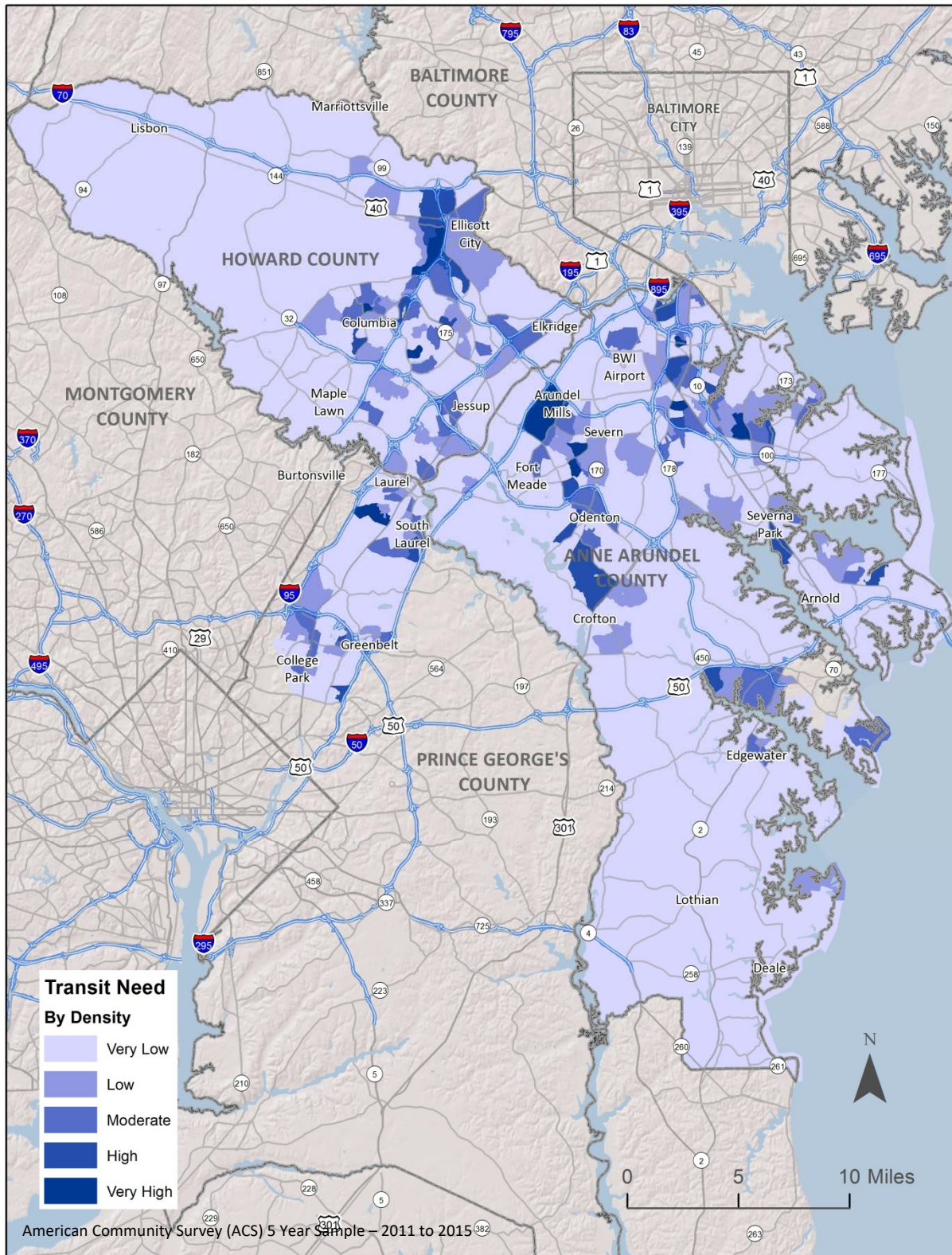
POPULATION PROFILE

This section provides an analysis of current and future population trends for the Central Maryland region, as well as an analysis of the demographics of population groups that often depend on transportation options beyond an automobile.

Population Trends, 1990-2015

Table 2-1 presents information on population trends for the state of Maryland and the Central Maryland region for the period from 1990 to 2015. During the 25-year period, the state, region, and county all experienced population growth. The region as a whole experienced a population growth of over 40 percent for this period, led by a 62 percent growth in Howard County's population. The City of Laurel and Anne Arundel County (less the City of Annapolis) also exceeded statewide growth rates with population increases over 30 percent, compared to the statewide figure of 24 percent. Of note is that this combined regional population (846,403) exceeds that of the City of Baltimore (621,849 in 2015) and is close to the overall

Figure 2-6: Transit Need Index-Based on Density of High Needs Populations



Summary of Needs

When combining the demographic, land-use, and commuter trends contained within this section the following needs and themes emerge:

- This is a very large region, with a population that exceeds that of the City of Baltimore (621,849 in 2015) and is close to the overall population of Prince George's County (909,535 in 2015—some of which is included in the Central Maryland estimate).
- The region's population has grown substantially, and is continuing to grow.
- The region's population of seniors is projected to increase substantially in real numbers and as a percentage of the population.
- The density of population varies considerably across the region, with concentrations of residential density in all three counties served by the RTA. Much of the residential development is lower-density single family, though recent development patterns include a balance of multi-family and single-family residential construction.
- There is a significant population of persons with a high potential need for transit services based on income, auto ownership, age, and disability status. Transit connections are needed to link the residential areas housing this population to employment and services.
- There is a substantial amount of employment across the region, and substantial commuting of residents to employment in Baltimore and Washington, D.C. In addition, many commuters staying within the region cross county lines to reach their jobs, particularly from Howard County to Western Anne Arundel and vice versa.
- The existence of these regional travel demand patterns means that there is a need for both local transit within the counties and regional connections to ensure that workers can reach employment within the region and in the two metro areas (Baltimore and Washington, D.C.).

Chapter 3

Public and Stakeholder Input

INTRODUCTION

A significant outreach effort was conducted to obtain input from riders, the general public, and stakeholders. The information and opinions gathered from these efforts are presented in this chapter. The following outreach was conducted:

- Fixed-route rider survey
- Mobility/paratransit rider survey
- Community survey
- Interactive online map
- Public meetings
- Stakeholder interviews
- Public website

Rider surveys were conducted on all RTA operated services and were available in the three languages that are predominant in the service area – English, Spanish, and Korean. The community survey was conducted through the assistance of local government and non-profit agencies. All three surveys were also available online.

Five public meetings (three in Howard County, one in Anne Arundel County, and one in the City of Laurel) were held at different locations throughout the service area. These locations included:

- George Howard Building
- North Laurel Community Center
- Charles I. Ecker Business Training Center
- Arundel Mills Mall
- Laurel Municipal Center

Stakeholder interviews were conducted with local agencies and advocacy groups. A list of agencies interviewed is provided in Appendix A. During the project period a Central Maryland website with information about the project and public input opportunities was available. The website can be reached at this address:

<http://www.kfhgroup.com/centralmd/transitplan.html>.

In addition to background information about the plan, there was a project schedule, public input section with links to the surveys and an interactive Wikimap that allowed people to draw and comment on a map. The website also had information about all of the

RTA Rider Survey Results

This page extracted from Technical Memorandum 1



RIDER CHARACTERISTICS

Fixed-Route Rider



Paratransit Rider



5x/week



No Vehicle



1x/week



Work



25 – 49



< \$20,000/year



65 +

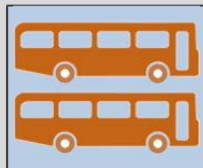


Medical

5 top things passengers want



Reliable buses



More frequent buses



More punctual buses

SUNDAY SERVICE

Sunday service

INCREASED SATURDAY SERVICE

More Saturday service

IMPROVEMENTS

SERVICE NEEDS



70% Meets need

Areas/destinations needing connections:

Howard County

- Clarksville
- Elkridge to Ellicott City
- Fulton/Maple Lawn/APL
- Turf Valley/Chapelgate

Anne Arundel County

- Annapolis
- Glen Burnie
- Crofton
- Maryland Live/BWI
- Pasadena

Northern Prince George's Co./City of Laurel

- Bowie (from Anne Arundel County)
- Greenbelt
- New Carrollton

AND more connections to Baltimore

Chapter 4

Existing Services

OVERVIEW OF EXISTING TRANSIT SERVICES

This TDP is intended to address future transit services over a five-year period in Howard County and Anne Arundel County, and this chapter provides an overview of existing transit services in the region. Howard and Anne Arundel Counties are jointly served by the Regional Transit Agency of Central Maryland (RTA), which provides fixed-route service in both counties, ADA complementary paratransit, and demand-response service for seniors and persons with disabilities in Howard County. The RTA also provides fixed-route service in Prince George's County, which is addressed in this plan as it is an integral part of RTA service offerings.

The study region is also served by other transit providers. Central Maryland is located between the Washington, D.C. and Baltimore metropolitan areas, and there are transit routes from each urban area linking them with the RTA, including Maryland Transit Administration (MTA) services from Howard and Anne Arundel Counties to Baltimore; and Washington Metropolitan Area Transit Authority (WMATA) services providing connections from Anne Arundel County (Thurgood Marshall Baltimore-Washington International Airport (BWI) and Crofton) to the Washington Metro rail system; and in the City of Laurel and Prince George's County. In addition, there are regional services provided by the MTA through its MARC commuter rail services and commuter bus program. There are also intercity connections in the region, including Amtrak.

Specialized transportation services, including demand-response service for seniors and persons with disabilities are provided by the Anne Arundel County Office of Transportation (OOT), and similar services are provided by the RTA for Howard County. Other specialized transportation providers focus on the needs of particular populations. Finally, there are numerous private taxi firms, and ridesourcing or transportation network companies (TNCs) such as Uber and Lyft.

This section begins by examining the transit services provided by the RTA in Anne Arundel, Howard and Prince George's Counties, an overview of transit services in the region, and a review of transportation services, such as human service and specialized transportation.

Table 4-2: System Wide Performance Statistics and Performance

Route	Unlinked Passenger Trips ⁽¹⁾	Vehicle Service Hours ⁽²⁾	Financial			Farebox Recovery Ratio	Local Recovery Ratio ⁽⁶⁾	Passengers per Service Hour ⁽⁷⁾	Cost per Trip ⁽⁸⁾
			Operating Cost ⁽³⁾	Farebox Revenue ⁽⁴⁾	Fare Revenue per Passenger ⁽⁵⁾				
201/J	77,556	8,092	\$610,380	\$105,017	\$1.35	17%	68.2%	9.58	\$7.87
202/K	93,254	9,109	\$687,092	\$126,273	\$1.35	18%	68.2%	10.24	\$7.37
203/M	8,938	3,514	\$265,061	\$12,103	\$1.35	5%	68.1%	2.54	\$29.66
301/A	34,149	4,497	\$339,209	\$46,240	\$1.35	14%	19.5%	7.59	\$9.93
302/G	114,453	9,752	\$735,593	\$154,978	\$1.35	21%	19.6%	11.74	\$6.43
401/Green	179,063	8,922	\$672,986	\$140,393	\$0.78	21%	70.2%	20.07	\$3.76
404/Orange	84,258	9,388	\$708,137	\$66,062	\$0.78	9%	70.4%	8.98	\$8.40
405/Yellow	81,230	9,558	\$720,960	\$63,688	\$0.78	9%	70.1%	8.50	\$8.88
406/Red	171,876	19,905	\$1,501,434	\$134,758	\$0.78	9%	63.7%	8.63	\$8.74
407/Brown	128,783	11,399	\$859,827	\$100,971	\$0.78	12%	70.2%	11.30	\$6.68
408/Gold	42,682	7,830	\$590,617	\$33,464	\$0.78	6%	70.4%	5.45	\$13.84
409/Purple	61,080	7,933	\$598,386	\$47,889	\$0.78	8%	53.9%	7.70	\$9.80
501/Silver	194,107	16,357	\$1,233,809	\$152,188	\$0.78	12%	70.2%	11.87	\$6.36
502/B	77,673	10,188	\$768,481	\$105,175	\$1.35	14%	19.5%	7.62	\$9.89
503/E	92,850	14,169	\$1,068,768	\$125,726	\$1.35	12%	19.5%	6.55	\$11.51
TOTAL	1,441,952	150,613	\$11,360,739	\$1,414,926	\$0.98	12%	54.8%	9.22	\$7.88

■	Successful
■	Acceptable
■	Needs Review

Notes:

- (1) From FY 2016 MTA Form 2A.
- (2) Vehicle Service Hours by Route from RTA FY 18 Cost Allocation.
- (3) Operating cost estimated by taking total fixed-route operating cost from FY 2018 Cost Allocation, dividing by total service hours (from the same document) to get fixed-route operating cost per service hour. Includes Management Fee.
- (4) Average revenue calculated from Form 2A data by summing revenue and ridership in two categories: the former CTC routes, and the former Howard Transit routes.
- (5) Fare revenue per passenger calculated by dividing estimated revenue per route by Form 2A ridership by route.
- (6) Local operating ratio taken from Form 2A verbatim.
- (7) Passengers per revenue hour developed by dividing ridership by route from the Form 2A by estimated revenue hours.
- (8) Cost per trip calculated by dividing estimated cost per route by Form 2A ridership.

Summary Observations—RTA Services

Based on the review of existing services, one can make some general observations about the existing RTA services:

Ridership

Significant Ridership Decreases

Overall ridership has declined considerably since its FY 2015 high, with the loss of another 175,000 fixed-route trips in FY 2017 (a 22% decline from the peak year). Although low gas prices and the growth of transportation network alternatives are likely factors, given the continuing growth of population and employment in the service area, a significant factor in the decline in ridership has to be poor service quality, particularly late running buses and unreliable service. These problems combine with circuitous routing to make for long and unpredictable travel times. Many passengers must transfer (sometimes more than once) to reach destinations, and these issues affect the ability to make timely transfers. It is likely that many passengers seek alternatives if they can.

Existing Ridership Patterns

Ridership data at the stop level identified three patterns. First, the majority of the ridership occurs at five locations: Arundel Mills Mall, Towne Centre Laurel, Columbia Mall, Cromwell Light Rail Station, Odenton MARC Station. These locations are likely to be one end of the trip for a majority of riders. Second, there are routes with steady ridership along the alignment. Those routes include: 201/J, 401/Green, 405/Yellow, 406/Red, 407/Brown, 408/Gold, 409/Purple, 501/Silver, and 503/E. Third, there are routes with high clusters of ridership along the alignment, and other segments with no ridership. Those routes include: 202/K, 203/M, 301/A, 302/G, 404/Orange, and 502/B. Also of note, Saturday ridership levels on the 302/G and 501/Silver are comparable to weekday ridership levels.

The highest ridership routes are those that link the most activity centers. For example, the 501/Silver transports the most passengers. This route serves six major activity centers, and two transfer locations, one of which connects passengers to Washington, D.C. and two to Baltimore. Similarly, the 401/Green route links four major activity centers in Howard County. It has 30 minute headways (as do the 203/M and 406/Red), but it also achieves the highest productivity in terms of boardings per service hour—reflecting the demand between activity centers.

Passenger Boardings per Service Hour

System wide, there are 9.22 passenger boardings per hour. While twelve routes perform within a -/+4 difference of the average, one route has thirteen boardings above the average, and one route performs well below the average. The 401/Green is the top performing route with 23 boardings per hour. Factors contributing to the route's high performance are (1) long

span of service, (2) 30-minute peak hour frequencies, (3) connection to multiple routes, and (4) serves three activity centers. The 203/M, the lowest ranking route, only served one activity center and one transit center—during the course of the study it was discontinued and replaced by a new route, the 504.

Transfer Locations

Understanding transfer patterns is critical from a service evaluation standpoint. While this review did not conduct a transfer analysis, based on boarding and alighting data, evidence identifies locations where passengers transfer to other buses and other transit services. Based on this review of existing conditions, the following locations are identified as primary transit facilities: Arundel Mills Mall, Towne Centre Laurel, Columbia Mall, and the MD Food Center. The RTA also serves Cromwell Light Rail Station, Odenton MARC Station, South Laurel (Route 197) Park and Ride, Greenbelt Metro Station, Dorsey MARC Station, College Park Metro Station, Snowden River Park and Ride, and BWI MARC/Amtrak Station. The other connecting services increase the RTA rider's access to Washington, D.C. and Baltimore employment centers.

Span of Service and Frequency

Saturday: Lack of Early Morning Service

A common theme from the rider survey was the limited span of service on weekends. For the routes that operate on Saturday, there was a desire for routes to start early in the morning to service employment shifts that start before RTA's current service times.

Long Headways

When headways are more than 60 minutes, ridership decreases dramatically.

Table 4-34 identifies the routes that operate off-peak headways that are more than 60 minutes. During the course of the study, the weekday headway on Route 501 was increased to 90 minutes peak and off-peak on weekdays

Table 4-34: RTA Routes with Headways of 90 Minutes or more

Weekday Off-Peak		Saturday		Sunday	
Route	Headway (Minutes)	Route	Headway (Minutes)	Route	Headway (Minutes)
201/J	90	201/J	120	202/K	120
202/K	120	202/K	120	404/Orange	120
408/Gold	120	405/Yellow	120	405/Yellow	120
		408/Gold	120	406/Red	120
		409/Purple	120	407/Brown	120
		501/Silver	90	501/Silver	120
				502/B	150

Operational Issues

On-Time Performance

The observed on-time performance is poor, with a system average of 48% of weekday arrivals on-time (less than a minute early and no more than 5 minutes late). For the majority of the routes, there is less than 10 minutes of scheduled layover time at the end of the route. For some routes, there is zero schedule layover time. If a bus is running behind schedule, this decreases the opportunity to make up time at the end of the route, and contributes to lower on-time performance. Additionally, reduced vehicle fleet availability is reducing on-time performance because of missed trips.

Pulsing

Based on a review of the schedule and responses from riders, passengers miss connections at transit facilities. This is attributed to a combination of the buses running behind schedule, and not enough layover time built into the scheduled to recover at the end of the routes.

Scheduling: Some Route Schedules Are Difficult to Interpret

On the 201/J, 406/Red, and 407/Brown certain stops are served only on half the trips. This causes confusion for passengers when determining if the bus will serve both the origin and destination stop, and on what schedule. Clearer information is needed to assist riders when the service patterns vary by route/trip.

Circuitous Routing

Numerous routes make one-way loops and route deviations into residential communities. Specifically, the 302/G, 401/Green, 404/Orange, 405/Yellow, 406/Red, 407/Brown, 408/Gold, 409/Purple, and 503/E. This impacts on-time performance and travel times, making service less attractive—the question is whether the ridership loss that would result from more direct routing (and longer walk distances for those living on the deviations) would be greater than the gain in ridership from faster travel times and more reliable service.

PARATRANSIT SERVICE

In addition to fixed-route services in the region, demand-response services in central Maryland are available to older adults and persons with disabilities. Demand-response services are provided by the RTA and the Anne Arundel County Department of Aging and Disabilities (DOAD).

RTA's demand-response service is called RTA Mobility. This service provides the ADA complementary paratransit and general paratransit (GPT) service throughout Howard County, and ADA complementary paratransit in the RTA service areas of Anne Arundel and Prince George's County. Anne Arundel County's DOAD offers a taxi voucher program and county-wide paratransit for adults ages 55 and older and individuals with disabilities. This section will provide a review of these services.

RTA Mobility

RTA Mobility is a curb-to-curb paratransit service that is available to older adults ages 60 of or older and individuals with a disability. Two types of RTA Mobility paratransit service are provided – the Americans with Disabilities Act (ADA) Complementary Paratransit service and General Paratransit (GPT) service.

Public transit agencies that operate fixed-route service are required to provide ADA complementary paratransit service within $\frac{3}{4}$ -mile of the fixed-route and be made available to persons with a disability regardless of age. Individuals needing RTA ADA complementary paratransit service are required to go through a certification process that includes completing a two-part application followed by a face-to-face interview.

Trips on ADA complementary paratransit service can be scheduled from one to seven days in advance. The ADA fare for a one-way trip is \$2.50 in Howard County, \$4.00 in Anne Arundel County and either \$2.00 or \$4.00 in Prince George's County (\$2.00 along the 203/M Route, \$4.00 on the other routes).

ADA complementary paratransit service is provided with a combination of sedans and cutaways (small buses). In FY2016, approximately 43 percent of all RTA Mobility trips were

Summary of Existing Fleet

The RTA possesses an overly large fleet with many inactive vehicles on the roster which should be eliminated through appropriate disposal procedures. In addition, much of the active fleet is beyond its expected life and should be retired or replaced. Beyond that, if one views the fleet as having three separate components, there is a need for a fleet management plan that provides for an adequate regional fleet and reflects that there are three separate grant applicants. If one examines the Howard County fleet and that county's investment in new vehicles, it is possible that the overage fleet could be substantially reduced within a relatively short time. It is less clear whether or how Anne Arundel and Prince George's Counties will invest in the fleet to support their services, which is a need. All of the vehicles operated on behalf of these jurisdictions are eligible for replacement or will be by 2018.

ORGANIZATION-REGIONAL TRANSPORTATION AGENCY

The organization of the RTA has evolved over a period of twenty years as different organizational structures evolved in response to the need for a mechanism to support both local and regional services in the region. As the operation of these services shifted from a private non-profit organization while a regional facility operations facility was planned and built, the goal of a regional transit authority has not been achieved, but elements of a regional entity have been developed.

Currently each of the three participating counties remains the grant subrecipient for state and federal transit funding, and so the legal responsibility for transit rests with the counties, as there is no regional transit authority that is a legal entity. The current organization is defined by a Memorandum of Understanding of the Central Maryland Transportation and Mobility Consortium" (MOU), which has been signed by Anne Arundel County, Howard County, Prince George's County and the City of Laurel. The MOU defines each entity as an equal partner in a cooperative effort to maintain an efficient and effective coordinated bus system in central Maryland.

As described in the MOU, Howard County, on behalf of the four jurisdictions, has contracted with a third-party private for-profit firm to manage and operate transit services in the region. Howard County is the contract manager. A somewhat unusual aspect of the arrangement is that the contractor has incorporated a for-profit corporation, Transit Management of Central Maryland (TMCM), which is a wholly-owned subsidiary of First Transit. The intention was that this organization would take on most of the administration and management of the transit services, with the county staff role reduced to oversight of the funding, contract oversight and compliance.

The MOU creates a commission with representatives of the four jurisdictions to provide policy direction concerning the transit services. Each jurisdiction appoints two commissioners, none of which may be employed by the contractor. There is a Rider's Advisory

Council whose chair is a non-voting member of the commission. There are commission by-laws that set forth the mission of the commission as determining the mission and purpose of the RTA, reviewing and overseeing the performance of the RTA and the contractor, “ensuring effective organizational planning and adequate financial resources for the RTA, managing those financial resources effectively” while representing the interests of the parties. The commission is charged with annually approving a proposed budget for the RTA, which is then presented to the jurisdictions for their consideration. The MOU also calls for the commission to evaluate options for legislation to create a public transportation authority or similar organization.

For FY 2018 the MOU requires maintenance of effort in transit funding to the level provided in FY 2017, and calls for maintaining at least that level in future years. It does allow each party to independently evaluate purchasing options for “assets for Transit Services” provided under the MOU. The participants can (and do) lease individually-owned transit assets to TMCM, and there are provisions for return of assets upon withdrawal or dissolution. The MOU contains a funding schedule setting amounts required from each party to maintain services through FY 2018, but the agreement holds those levels only through the first quarter of FY 2018, with revisions possible for the remainder of the year based on individual operating budgets. The MOU does not set forth the method of allocating costs though revenue is allocated based on hours times the average hourly fare revenue for the individual route.

TMCM staff includes a General Manager, two Assistant General Managers, one for Operations and one for Maintenance and a Paratransit Manager. TMCM staff provides grants management, planning, and finance functions. Operations staff include dispatch, operations supervision and the operators. Maintenance functions include purchasing and parts and supplies. Marketing and customer service staff also support the RTA.

Each of the jurisdictions has transportation program staff that coordinates with the RTA. On a day-to-day basis, contacts between the transit program staff of the parties is another aspect of the administration of the RTA beyond the more formal and less frequent contact provided through the commission.

The key aspects of the organizational structure that must be understood is that there are in reality four jurisdictions that are working together to share a common brand, a single service contractor, and a single maintenance facility. However, there is no legally constituted regional transit authority—each party remains a separate recipient of federal and state funding, each is responsible for compliance, and each has a separate policy board.

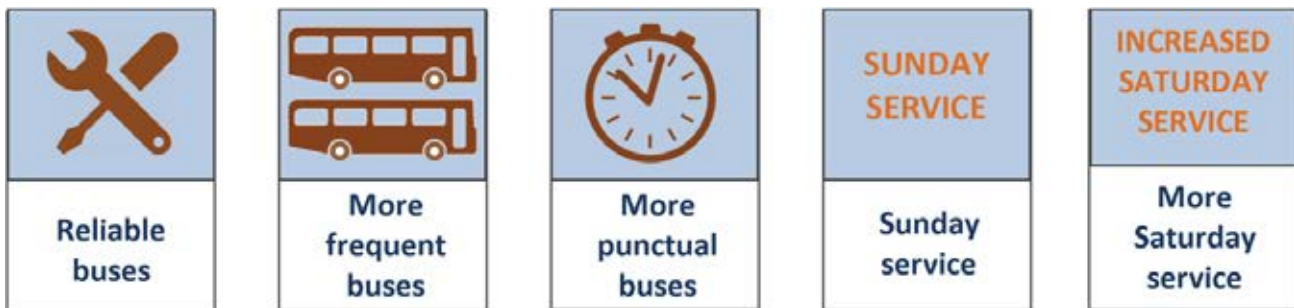
Chapter 5

Alternatives

DEVELOPMENT OF ALTERNATIVES

The TDP alternatives presented in this chapter were based on input collected through rider surveys, community surveys, online surveys, public meetings, Anne Arundel, Howard, Prince George's Counties, and the City of Laurel staff, and stakeholders representing local agencies and advocacy groups.

As documented in Chapter 4, the overwhelming demand was for the following:



Service alternatives were developed for each of the existing fifteen RTA fixed-routes as well as policy proposals to address the growing demand for RTA's General Paratransit Service (GPT). In addition, expansion route alternatives were developed to improve connections to employment and services in the region and to other regional operators such as MTA. The service alternatives attempt to address the following:

- Realign routes to meet current needs and changing land uses.
- Streamline or shorten routes to reduce the time for riders.
- Increase the frequency on many routes.
- Improve connections to jobs and vital services.
- Increase the level of service that is operated on the weekends.

ANNE ARUNDEL COUNTY

This section describes thirteen proposed service alternatives in Anne Arundel County. Three of the thirteen proposed service alternatives are either changes in the current routing and/or service characteristics such as span and frequency of service. The other ten service alternatives propose to expand service throughout the county.

GENERAL PARATRANSIT OPTIONS

RTA currently operates General Paratransit (GPT) in Howard County. GPT is available to seniors and persons with a disability who live outside of an existing transit route. As documented in Chapter 4, the demand for GPT is increasing and the cost of the mobility service (ADA and GPT) is high with an average per trip delivery cost of \$51 in FY 2016, versus \$7.88 for fixed route trips. For FY 2018, Howard County assigns approximately 39% of its share of the RTA budget to mobility service (\$4.7 million of \$11.5 million) where mobility provides only approximately 5% of all overall trips. Of the 39% budget share, 15% is for ADA and 24% is for GPT.

In order to ensure the viability of service and that it continues to be available for riders that need and depend on it most, a number of options are provided:

1. **Incentivize paratransit riders to use fixed route service:**
 - Free fixed route fares for seniors/disabled persons.
 - Better fixed routes
 - Better bus stop facilities
 - Flexible first-mile/last-mile local services
2. **Increase fares in Howard County, implement a fare in Anne Arundel County.**
3. **Raise senior age (from 60 to 65 in Howard County, and from 55 in Anne Arundel County).**
4. **Rider education — provide travel training in how to use the fixed-route system.**
5. **Service adjustments:**
 - Number of Trips – e.g., limit number of individual trips per month (currently one round-trip per day)
 - Redirect some trip types if fixed route is available
 - Origins and destinations, e.g., limit service in western Howard County, southern Anne Arundel
 - Hours: change hours of service (for example, in Howard County reduce GPT service hours from the current 8 a.m. to 5 p.m. to 9 a.m. to 4 p.m.—potentially affecting employment trips)
6. **Use taxi vouchers/subsidies in lieu of providing RTA trips.** Use on-demand /taxis for ridesharing.
7. **Improve service productivity (RTA operation).**

Chapter 6

Transit Plan

INTRODUCTION TO THE TRANSIT PLAN

This chapter presents the overall plan for locally-provided transit in the central Maryland region, including the area served by the RTA. It is divided into sections addressing the Operations Plan, Capital Plan (including the vehicle fleet and other capital needs), and Organizational Plan.

Operations Plan

Following the development of the service alternatives described in the previous chapter, a series of public meetings were held in the region to solicit public input on the proposals. The proposed routes were posted on the project website, accessible through the RTA website and from the individual county websites. Based on feedback at the meetings, through web response, and through county staff, the following changes were recommended in the proposed alternatives.

Howard County

- Route 401 - No change from proposed alternative
- Route 402 - No change from proposed alternative
- Route 403 - No change from proposed alternative
- Route 404 - No change from proposed alternative
- Route 405 - No change from proposed alternative
- Route 406 - No change from proposed alternative
- Route 407 - No change from proposed alternative
- Route 408 - No change from proposed alternative
- Route 409 A & B - No change from proposed alternative
- Route 410 - No change from proposed alternative
- Route 411 - Recommended change in wording to reflect ongoing development rather than completion of development
- Route 412 - No change from proposed alternative
- Route 413 - Revise route name to include "Turf Valley-Waverly Woods"
- Route 414 - Revise route name to include "via Applied Physics Laboratory (APL)-Maple Lawn". Consider revising alternative to include two buses to serve an extension of the route to Laurel MARC station and Towne Centre. Eliminate service on Cedar Lane.

- Route 501 - Revise title of route to “Columbia to Arundel Mills” to reflect future role in which 505 provides a more express trip from Columbia to BWI Airport. Change text to include relationship in the plan between the 501 and 505.
- Route 503 - No change from proposed alternative
- 505 - No change from proposed alternative
- Add concept map for potential service on U.S.40 to connection with MTA at Catonsville (potential recommendation for MTA service)

Mobility Services

This TDP does not make specific recommendations regarding mobility services. As documented in Chapters 4 and 5 the cost of paratransit services is unsustainable in the long term especially as demand is projected to increase. Chapter 5 includes several options designed to ensure that ADA and GPT services continue to be available for riders that need it most.

While these options were presented at the public meeting held on the TDP, there was insufficient time for the detailed engagement with the public that is necessary to fully assess the pros and cons of each of the options, and make more specific recommendations. A prerequisite for incentivizing paratransit riders to use fixed route service is having better fixed route service. Therefore, Howard County proposes to begin to implement improvements to the fixed route service while it engages with stakeholders on the paratransit service options.

Anne Arundel

Input from the meeting held at Arundel Mills and input from county staff included the following suggested revisions in the alternatives:

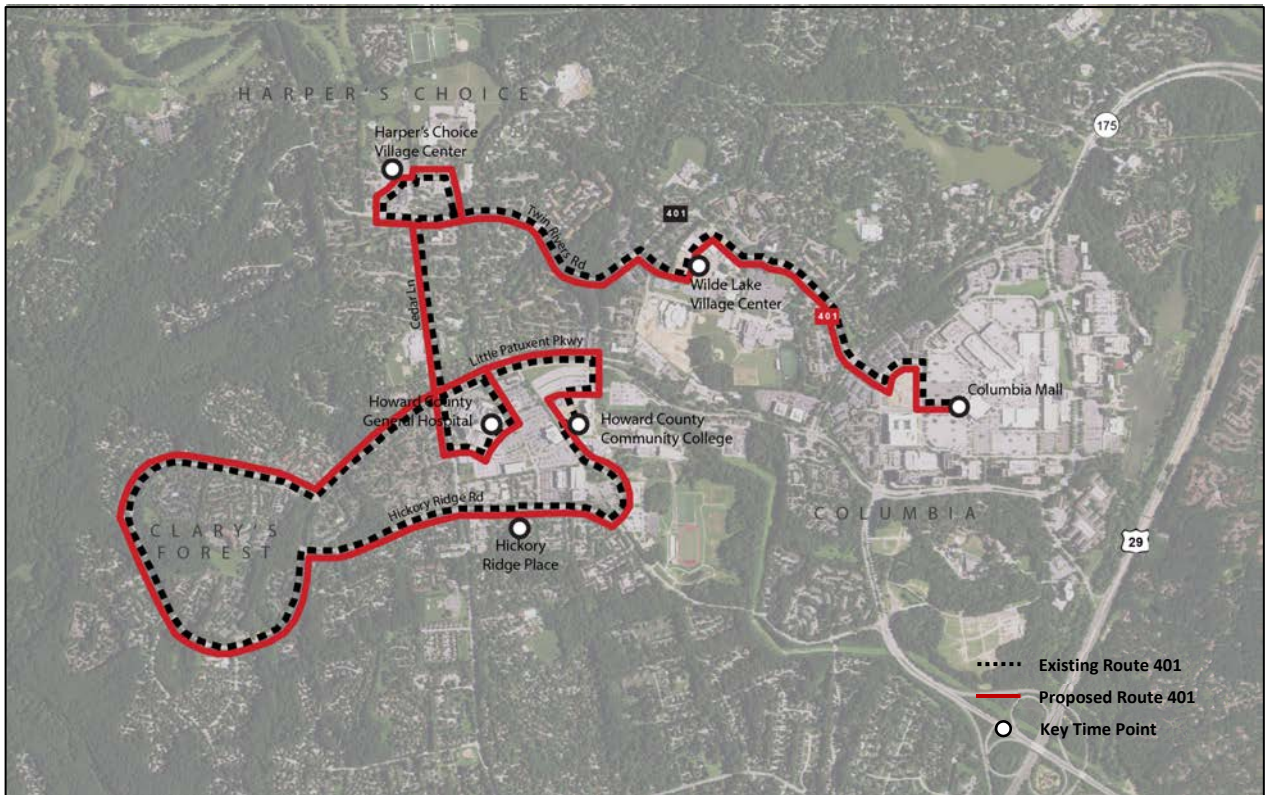
- Route 201 - Add later evening service to match last trips on the MTA light rail service (12:30 a.m.)
- Route 202 - Consider revising route to go from Meade Village east on MD 174, left on New Disney, right on Carriage, left on Severn, and then right on Ridge Road resuming the current routing. Check on potential for eliminating any overlap in coverage with the recently implemented 504 to avoid duplication.
- Anne Arundel Community College to Fort Meade - Consider adding extension to National Business Park, revising to reduce mileage driving around perimeter of Fort Meade.

HOWARD COUNTY

Route 401 – Columbia Mall to Clary’s Forest

Service Description

- Frequency increases to every 30 minutes during the day on weekdays.
- Ride time from Columbia Mall to Howard Community College (HCC) will be approximately 20 minutes.



Service Days



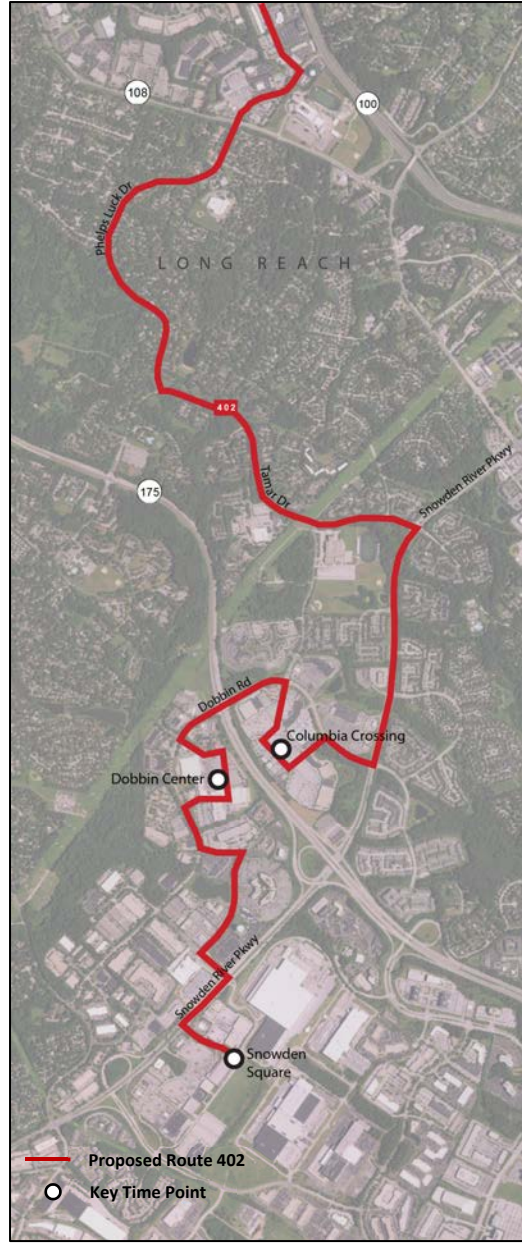
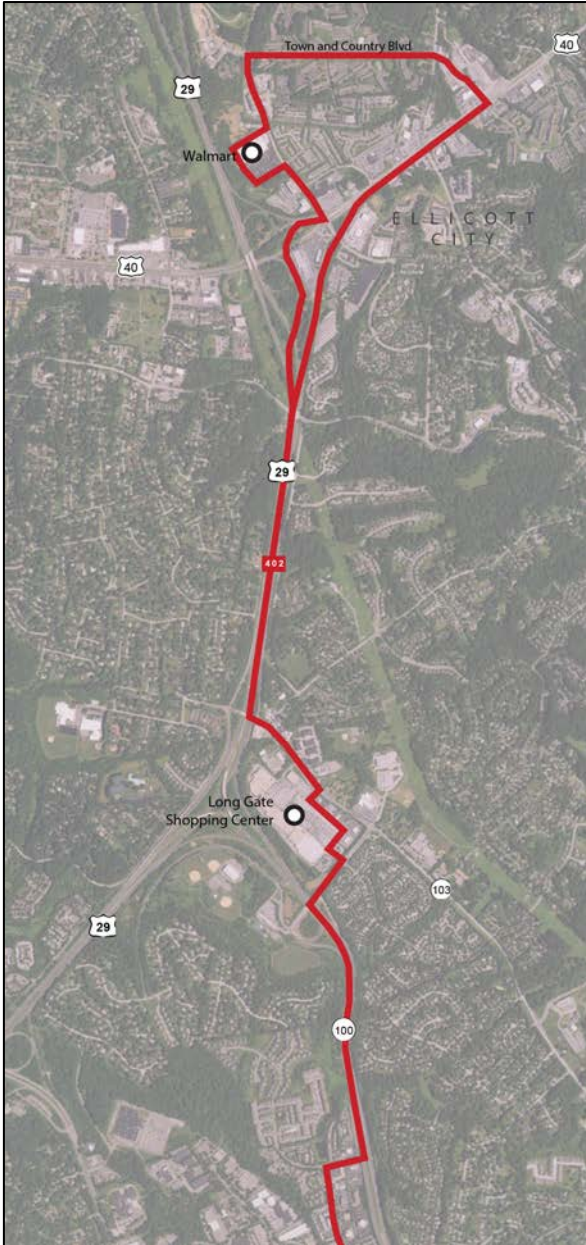
Service Characteristics

Origin/ Destination	Major Intermediate Points	Peak Number of Buses	Proposed Start (A)	Proposed End (A)	Number of Proposed Hours (B)	Deadhead (12%)	Daily Hours	Days of Operation	Annual Hours
Monday-Friday									
Columbia Mall- Clary's Forest	Wilde Lake, Harper's Choice, Howard County Hospital, Howard Community College	2	5:25	23:10	29.67	3.56	33.23	255	8,473
Saturday									
Columbia Mall- Clary's Forest	Wilde Lake, Harper's Choice, Howard County Hospital, Howard Community College	2	5:25	23:10	27.67	3.32	30.99	52	1,611
Sunday									
Columbia Mall- Clary's Forest	Wilde Lake, Harper's Choice, Howard County Hospital, Howard Community College	1	7:25	20:35	13.17	1.58	14.75	55	811
Phase 1: Route 401 Total									10,895
PHASE 2									
Monday-Friday									
Columbia Mall- Clary's Forest	Harper's Choice, Howard County Hospital, Howard Community College	2	5:25	23:10	30.25	3.63	33.88	255	8,639
Saturday									
Columbia Mall- Clary's Forest	Wilde Lake, Harper's Choice, Howard County Hospital, Howard Community College	2	5:25	23:10	28.25	3.39	31.64	52	1,645
Sunday									
Columbia Mall- Clary's Forest	Wilde Lake, Harper's Choice, Howard County Hospital, Howard Community College	1	7:25	20:35	13.17	1.58	14.75	55	811
Phase 2: Route 401 Total									11,096

Route 402 – Ellicott City to Snowden Square

Route Description

- Provides a connection to Long Gate Shopping Center, Columbia Crossing, and Dobbin Center.
- Ride time from the Walmart in Ellicott City to Snowden Square will be approximately 45 minutes.



Service Characteristics

PHASE 1

Origin/ Destination	Major Intermediate Points	Peak Number of Buses	Proposed Start (A)	Proposed End (A)	Number of Proposed Hours (B)	Deadhead (12%)	Daily Hours	Days of Operation	Annual Hours
Monday-Friday									
Ellicott City- Snowden Aquare	Walmart, Long Gate Shopping Center, Columbia Crossing, Dobbin Center	2	6:20	19:25	25.83	3.1	28.93	255	7,378
Saturday									
Ellicott City- Snowden Aquare	Walmart, Long Gate Shopping Center, Columbia Crossing, Dobbin Center	2	8:20	19:25	21.83	2.62	24.45	52	1,272
Sunday									
Ellicott City- Snowden Aquare	Walmart, Long Gate Shopping Center, Columbia Crossing, Dobbin Center	1	9:20	19:25	10.08	1.21	11.29	55	621
Phase 1: Route 402 TOTAL									9,271

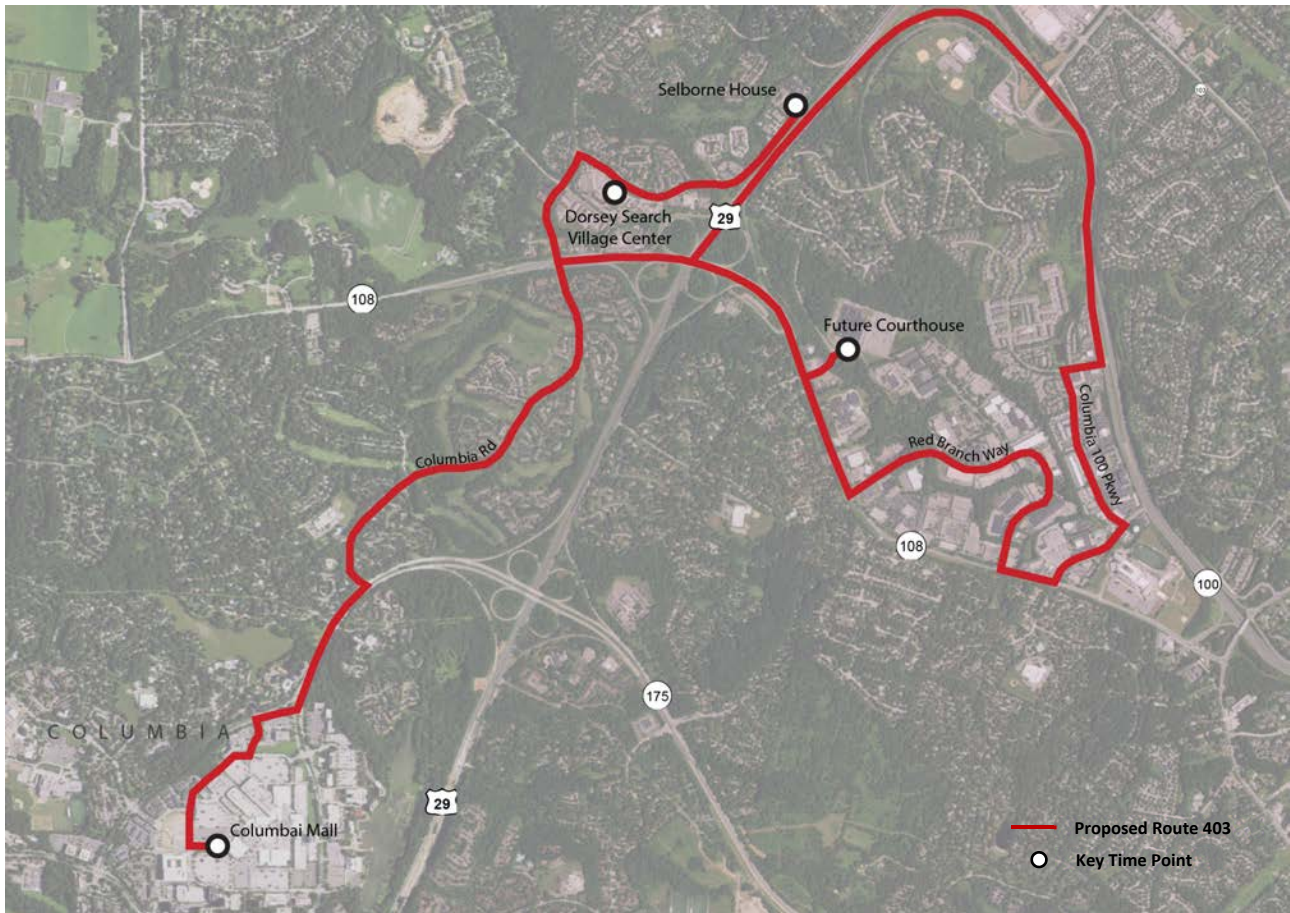
PHASE 2

Monday-Friday									
Ellicott City- Snowden Aquare	Walmart, Long Gate Shopping Center, Columbia Crossing, Dobbin Center	2	6:20	23:20	28.83	3.46	32.29	255	8,235
Saturday									
Ellicott City- Snowden Aquare	Walmart, Long Gate Shopping Center, Columbia Crossing, Dobbin Center	2	8:20	19:25	20.92	2.51	23.43	52	1,218
Sunday									
Ellicott City- Snowden Aquare	Walmart, Long Gate Shopping Center, Columbia Crossing, Dobbin Center	1	9:20	19:25	10.08	1.21	11.29	55	621
Phase 2: Route 402 TOTAL									10,074

Route 403 – Columbia Mall to Dorsey Search Village Center

Service Description

- Route will serve the future courthouse on Bendix Road.
- Will connect Dorsey Search Village Center with Selborne House and Red Branch Way.
- Ride time between Columbia Mall and Red Branch Way will be approximately 30 minutes.



Service Days



Service Characteristics

PHASE 1

Origin/ Destination	Major Intermediate Points	Peak Number of Buses	Proposed Start (A)	Proposed End (A)	Number of Proposed Hours (B)	Deadhead (12%)	Daily Hours	Days of Operation	Annual Hours
Monday-Friday									
Columbia Mall- Dorsey Search Village Center <i>(Evenings interlined with 404)</i>	Selborne House, Red Branch Way	1	5:35	21:10	15.17	1.82	16.99	255	4,332
Saturday									
Columbia Mall- Dorsey Search Village Center <i>(Evenings interlined with 404)</i>	Selborne House, Red Branch Way	1	7:35	21:10	12.17	1.46	13.63	52	709
Sunday									
Columbia Mall- Dorsey Search Village Center <i>(Interlined with 404)</i>	Selbourne House, Red Branch Way	1	7:35	19:10	11:35	1:23	12.97	55	357
Phase 1: Route 304 Total									5,397

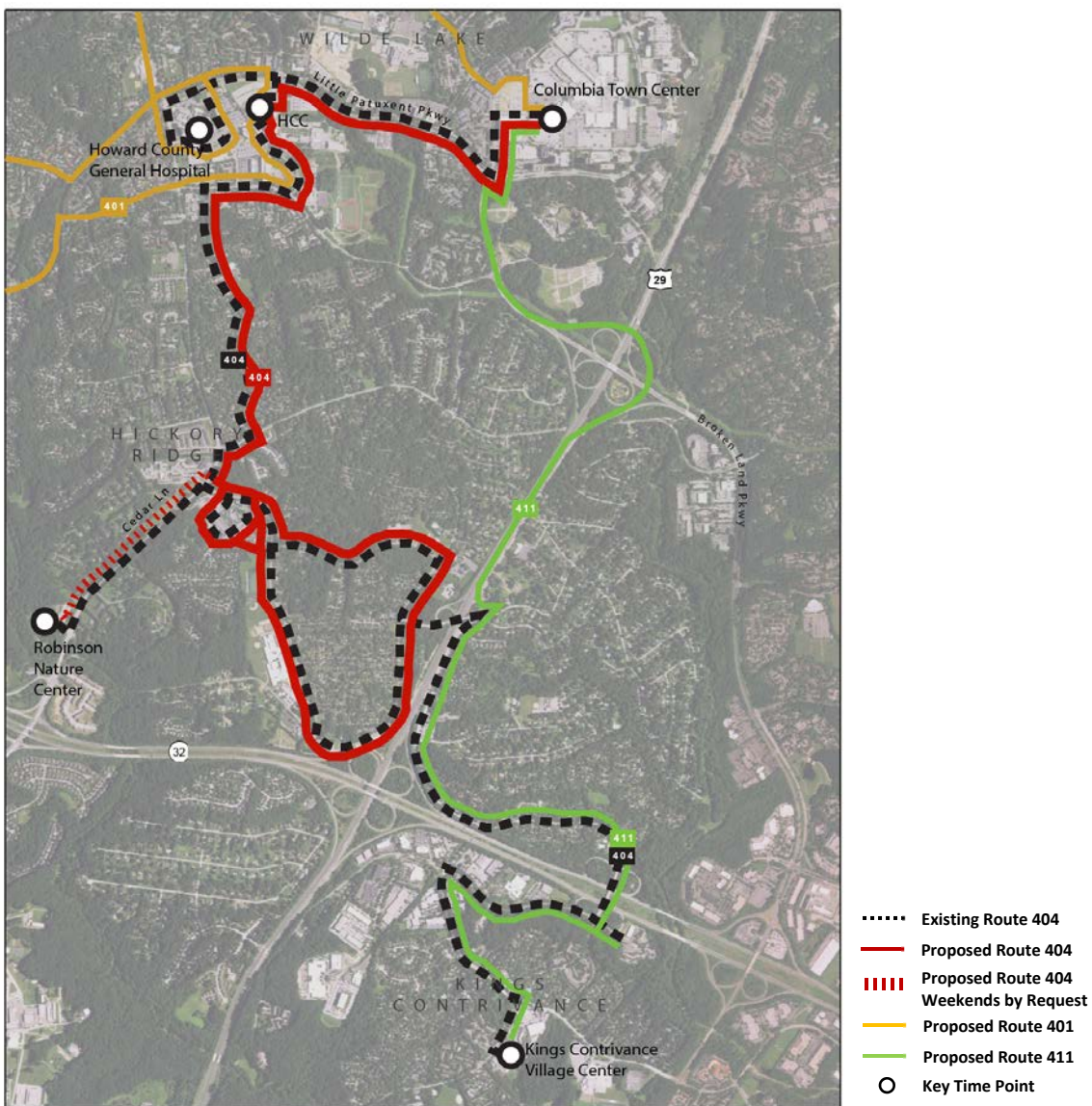
PHASE 2

Monday-Friday									
Columbia Mall- Dorsey Search Village Center	Selborne House, Red Branch Way	1	5:35	23:10	17.58	2.11	19.69	255	5,022
Saturday									
Columbia Mall- Dorsey Search Village Center	Selborne House, Red Branch Way	1	7:35	21:10	13.58	1.63	15.21	52	791
Sunday									
Columbia Mall- Dorsey Search Village Center	Selborne House, Red Branch Way	-	-	-	-	-	-	-	-
Phase 2: Route 403 Total									5,813

Route 404 – Columbia Mall to Hickory Ridge

Service Description

- Route is streamlined to reduce ride time for riders.
- Service to the Robinson Nature Center will be on weekends and by requests.
- Service to Kings Contrivance will be served by Route 411, providing faster and more direct service to Columbia Town Center.
- Howard County Hospital will be served on Route 401.
- Ride time between Columbia Town Center and Hickory Ridge Village Center will be approximately 30 minutes.



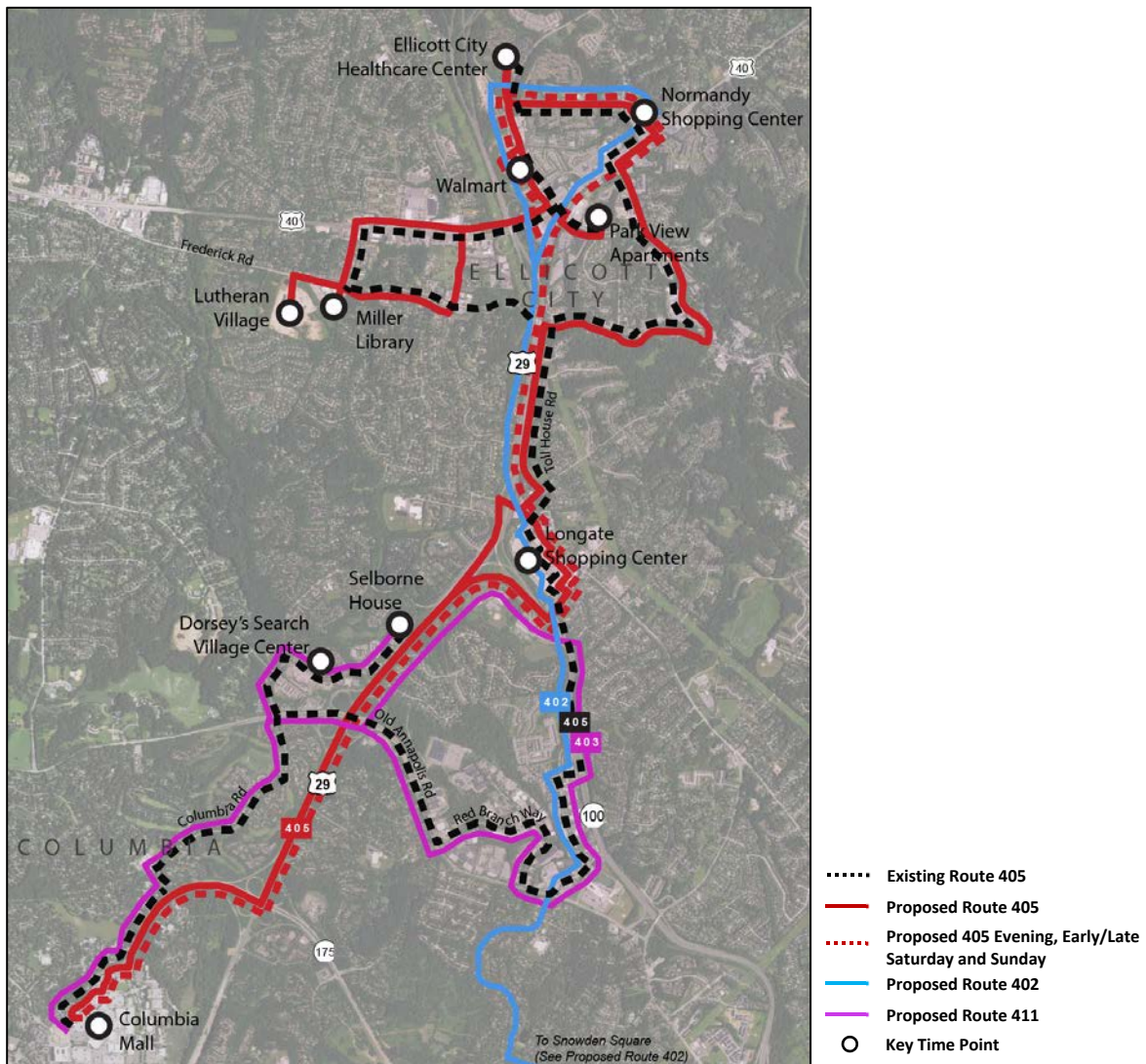
Service Characteristics

PHASE 1									
Origin/ Destination	Major Intermediate Points	Peak Number of Buses	Proposed Start (A)	Proposed End (A)	Number of Proposed Hours (B)	Deadhead (12%)	Daily Hours	Days of Operation	Annual Hours
Monday-Friday									
Columbia Mall- Hickory Ridge <i>(Evenings interlined with 403)</i>	Howard Community College	1	6:00	21:10	14.42	1.73	16.15	255	4,117
Saturday									
Columbia Mall- Hickory Ridge <i>(Evenings interlined with 403)</i>	Howard Community College	1	8:00	21:10	11.42	1.37	12.79	52	665
Sunday									
Columbia Mall- Hickory Ridge <i>(Interlined with 403)</i>	Howard Community College	1	7:35	19:10	11:35	1:23	12.97	55	357
Phase 1: Route 404 Total									5,139
PHASE 2									
Monday-Friday									
Columbia Mall- Hickory Ridge	Howard Community College	2	6:00	22:50	27.67	3.32	30.99	255	7,902
Saturday									
Columbia Mall- Hickory Ridge	Howard Community College	1	6:00	22:50	16.83	2.02	18.85	52	980
Sunday									
Columbia Mall- Hickory Ridge	Howard Community College	1	8:00	19:50	11.83	1.42	13.25	55	729
Phase 2: Route 404 Total									9,611

Route 405 – Columbia Mall to Ellicott City

Service Description

- Route is streamlined to reduce the ride time for riders traveling between Columbia and Ellicott City.
- Serves the Ellicott City Walmart, Long Gate Shopping Center, Normandy Shopping Center, Ellicott City Healthcare Center, Park View Apts., Lutheran Village and Miller Library.
- Dorsey Search Village Center, Selborne House, Executive Park Drive and Red Branch Way will be served by Route 403.
- Evenings, Saturday (early and late), and Sunday will have a shorter routing. The Ellicott City Healthcare Center, Lutheran Village, and Miller Library, will not be served with the shorter routing.
- Ride time from Columbia Mall to the Ellicott City Walmart will be approximately 35 minutes.



Service Characteristics

PHASE 1

Origin/ Destination	Major Intermediate Points	Peak Number of Buses	Proposed Start (A)	Proposed End (A)	Number of Proposed Hours (B)	Deadhead (12%)	Daily Hours	Days of Operation	Annual Hours
Monday-Friday									
Columbia Mall- Ellicott City	Walmart, Long Gate Shopping Center, Dorsey Search, Red Branch Way	2	6:00	22:50	29.17	3.50	32.67	255	8,330
Saturday									
Columbia Mall- Ellicott City	Walmart, Long Gate Shopping Center, Dorsey Search, Red Branch Way	2	6:00	22:50	27.75	3.33	31.08	52	1,616
Sunday									
Columbia Mall- Ellicott City	Walmart, Long Gate Shopping Center, Dorsey Search, Red Branch Way	1	8:00	19:50	11.83	1.42	13.25	55	729
Phase 1: Route 405 Total									10,675

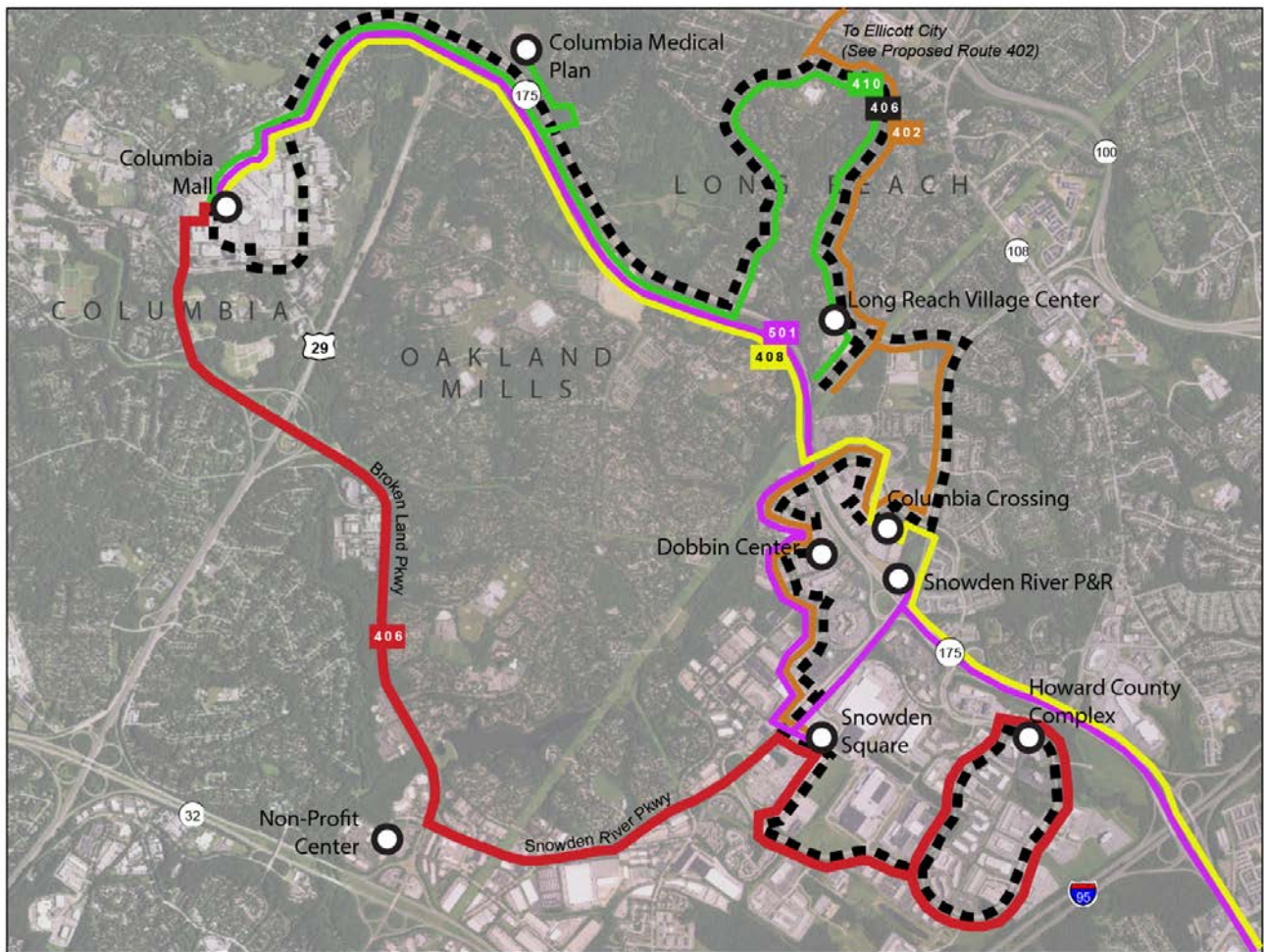
PHASE 2

Monday-Friday									
Columbia Mall- Ellicott City	Walmart, Long Gate Shopping Center, Dorsey Search, Red Branch Way	2	6:00	22:50	29.83	3.58	33.41	255	8,520
Saturday									
Columbia Mall- Ellicott City	Walmart, Long Gate Shopping Center, Dorsey Search, Red Branch Way	2	6:00	20:50	26.42	3.17	29.59	52	1,539
Sunday									
Columbia Mall- Ellicott City	Walmart, Long Gate Shopping Center, Dorsey Search, Red Branch Way	1	8:00	19:50	11.83	1.42	13.25	55	729
Phase 2: Route 405 Total									10,788

Route 406 – Columbia Mall to Columbia Gateway

Route Description

- Provides a more direct connection between Columbia Mall and Gateway.
- Service through Long Reach, Columbia Crossing, Dobbin Center, and Snowden Square will be served by Routes 402, 408, 410, and 501.
- No Sunday service.
- Ride time from Columbia Mall to the Howard County Complex will be approximately 25 minutes.



- Existing Route 406
- Proposed Route 406
- Proposed Route 402
- Proposed Route 408
- Proposed Route 410
- Proposed Route 501
- Key Time Point

Days of Service



Service Characteristics

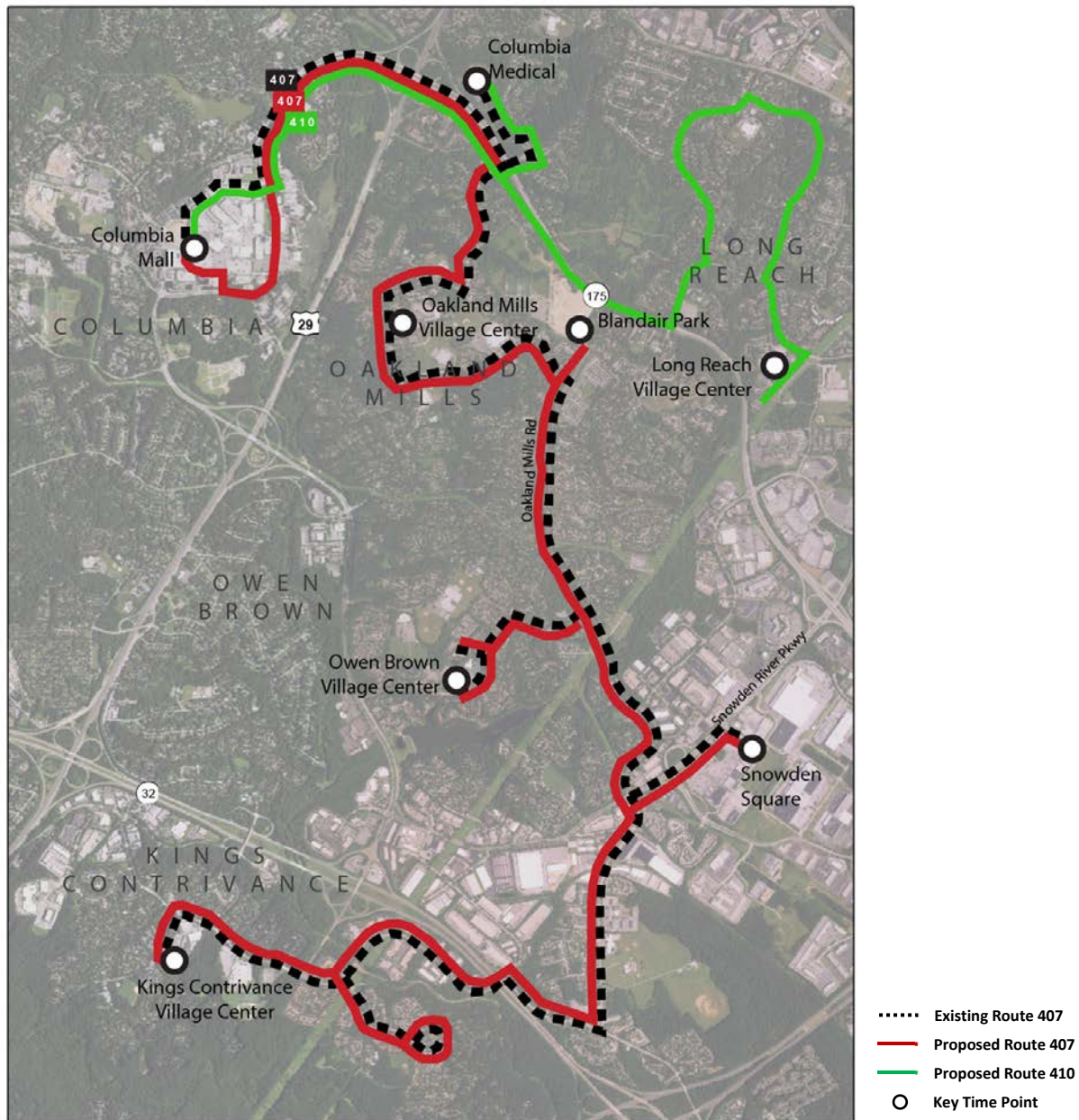
PHASE 1									
Origin/ Destination	Major Intermediate Points	Peak Number of Buses	Proposed Start (A)	Proposed End (A)	Number of Proposed Hours (B)	Deadhead (12%)	Daily Hours	Days of Operation	Annual Hours
Monday-Friday									
Columbia Mall - Columbia Gateway	Snowden Square	1	6:30	18:00	11.50	1.38	12.88	255	3,284
Saturday									
Columbia Mall - Columbia Gateway (Interlined with 411)	Snowden Square	1	8:00	17:50	9.83	1.18	11.01	52	286
Sunday									
Columbia Mall - Columbia Gateway	Snowden Square	-	-	-	-	-	-	-	-
Phase 1: Route 406 Total									3,571

PHASE 2									
Origin/ Destination	Major Intermediate Points	Peak Number of Buses	Proposed Start (A)	Proposed End (A)	Number of Proposed Hours (B)	Deadhead (12%)	Daily Hours	Days of Operation	Annual Hours
Monday-Friday									
Columbia Mall - Columbia Gateway	Snowden Square	1	6:05	18:20	12.25	1.47	13.72	255	3,499
Saturday									
Columbia Mall - Columbia Gateway	Snowden Square	1	8:05	18:20	10.25	1.23	11.48	52	597
Sunday									
Columbia Mall - Columbia Gateway	Snowden Square	-	-	-	-	-	-	-	-
Phase 2: Route 406 Total									4,096

Route 407 – Columbia Mall to Kings Contrivance Village Center

Service Description

- Route will no longer serve Columbia Medical Plan. Columbia Medical Plan will be served by Route 410.
- Not every bus will continue on to Snowden Square and Kings Contrivance. Buses will turn around at the Owen Brown Village Center on every other run.
- Ride time from Columbia Mall to Kings Contrivance Village Center will be approximately 52 minutes.



Service Characteristics

PHASE 1

Origin/ Destination	Major Intermediate Points	Peak Number of Buses	Proposed Start (A)	Proposed End (A)	Number of Proposed Hours (B)	Deadhead (12%)	Daily Hours	Days of Operation	Annual Hours
Monday-Friday									
Columbia Mall- Kings Contrivance Village Center <i>(Interlined with 501)</i>	Columbia Mall- Kings Contrivance Village Center	3	5:30	22:50	43.79	5.26	49.05	255	12,507
Saturday									
Columbia Mall- Kings Contrivance Village Center <i>(Interlined with 501)</i>	Columbia Mall- Kings Contrivance Village Center	3	5:30	22:50	41.79	5.02	46.81	52	2,434
Sunday									
Columbia Mall- Kings Contrivance Village Center <i>(Interlined with 501)</i>	Columbia Mall- Kings Contrivance Village Center	1	7:00	20:50	19.79	2.38	22.17	55	1,219
Phase 1: Route 407 Total									16,160

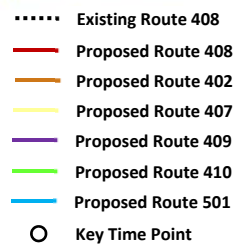
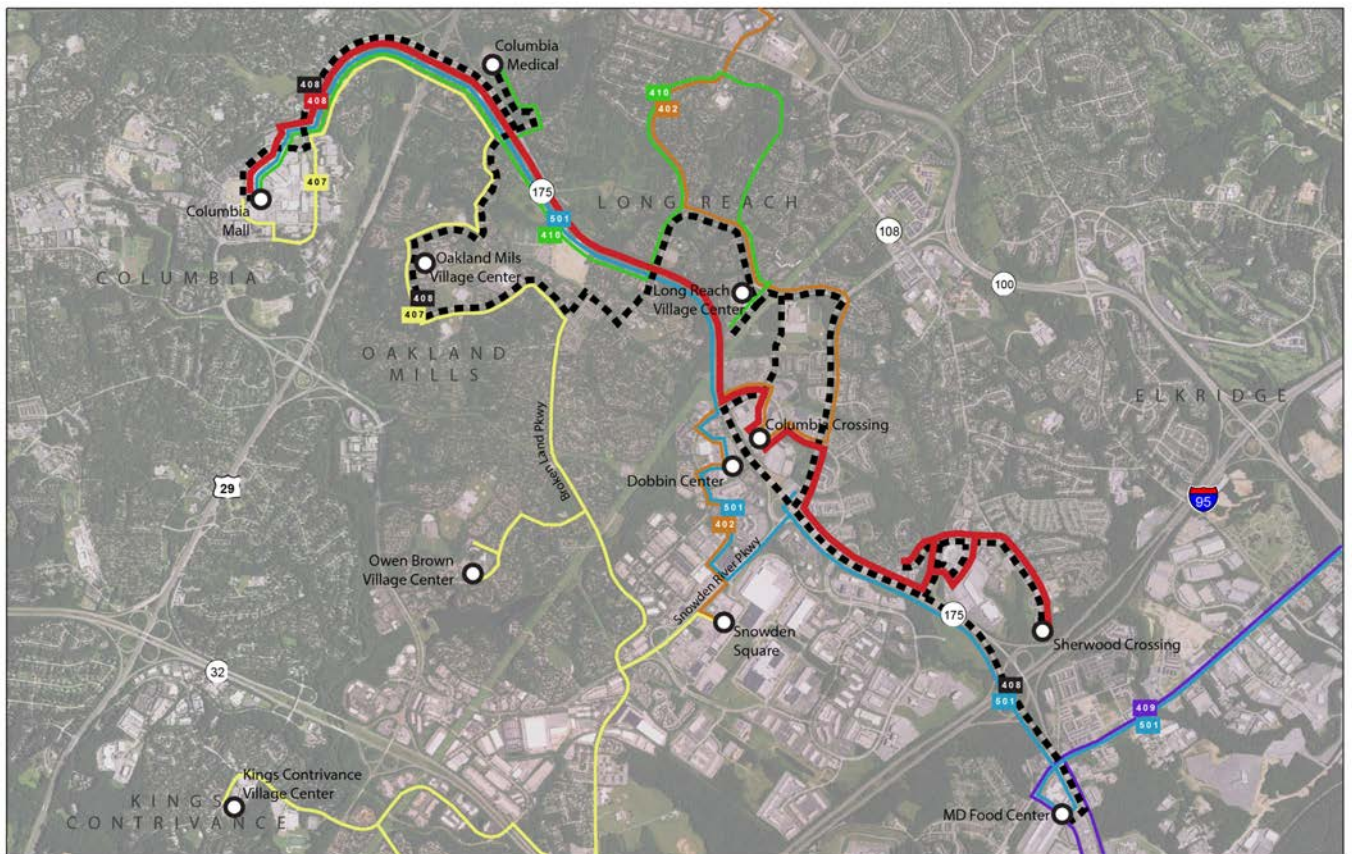
PHASE 2

Monday-Friday									
Columbia Mall- Kings Contrivance Village Center	Oakland Mills, Owen Brown Snowden Square	4	5:30	23:25	58.42	7.01	65.43	255	16,684
Saturday									
Columbia Mall- Kings Contrivance Village Center	Oakland Mills, Owen Brown Snowden Square	4	5:30	23:25	54.42	6.53	60.95	52	3,169
Sunday									
Columbia Mall- Kings Contrivance Village Center	Oakland Mills, Owen Brown Snowden Square	2	7:00	20:50	25.67	3.08	28.75	55	1,581
Phase 2: Route 407 Total									21,434

Route 408 – Columbia Mall to Sherwood Crossing

Service Description

- Service will be expanded to Sunday.
- Columbia Crossing will continue to be served on the route; Snowden Park and Ride will not be served.
- Service through Long Reach will be provided by Routes 402 and 410.
- Service through Oakland Mills will be provided by Route 407.
- Service to the MD Food Center will be provided by Routes 409 and 501.
- Ride time from Columbia Mall to Sherwood Crossing will be approximately 25 minutes.



Service Days



Service Characteristics

PHASE 1

Origin/ Destination	Major Intermediate Points	Peak Number of Buses	Proposed Start (A)	Proposed End (A)	Number of Proposed Hours (B)	Deadhead (12%)	Daily Hours	Days of Operation	Annual Hours
Monday-Friday									
Columbia Mall- Sherwood Crossing	Columbia Crossing	1	6:00	22:50	16.83	2.02	18.85	255	4,808
Saturday									
Columbia Mall- Sherwood Crossing	Columbia Crossing	1	6:00	22:50	16.83	2.02	18.85	52	980
Sunday									
Columbia Mall- Sherwood Crossing	Columbia Crossing	1	8:00	19:50	11.83	1.42	13.25	55	729
Phase 1: Route 408 Total									6,517

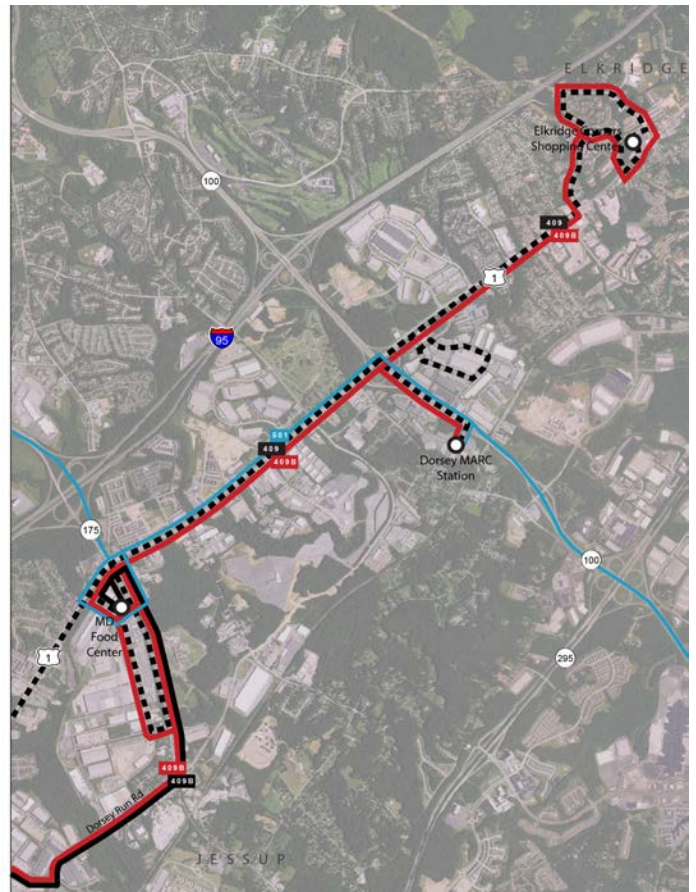
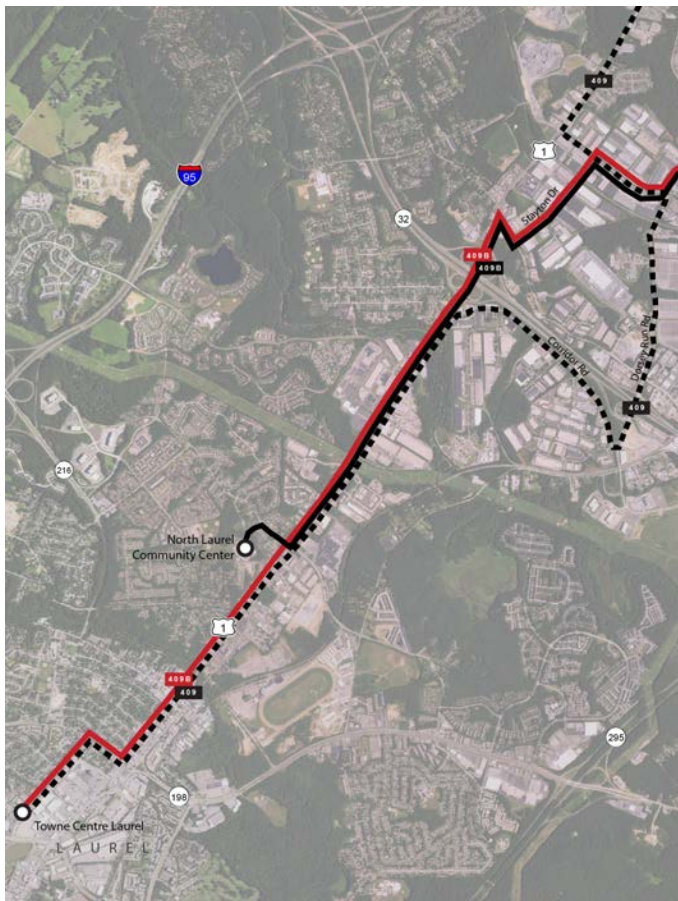
PHASE 2

Monday-Friday									
Columbia Mall- Sherwood Crossing	Columbia Crossing	1	6:00	22:50	16.83	2.02	18.85	255	4,808
Saturday									
Columbia Mall- Sherwood Crossing	Columbia Crossing	1	6:00	22:50	16.83	2.02	18.85	52	980
Sunday									
Columbia Mall- Sherwood Crossing	Columbia Crossing	1	8:00	19:50	11.83	1.42	13.25	55	729
Phase 2: Route 408 Total									6,517

Route 409 (409A and 409B) – Towne Centre Laurel to Elkridge Shopping Center

Service Description

- Route 409 will be split into Routes 409A and 409B.
- Existing 409 will remain the same but will be renamed 409A.
- Route 409B will be extended to the Towne Centre Laurel and Elkridge Shopping Center.
- North Laurel Community Center will be served by Route 503.
- Ride time on Route 409B from the Towne Centre Laurel to Elkridge Shopping Center will be approximately 50 minutes.



- Existing Route 409A (effective 10/1/2017)
- Existing Route 409B (effective 10/1/2017)
- Proposed Route 409B
- Proposed Route 501
- Key Time Point

Service Characteristics

PHASE 1

Origin/ Destination	Major Intermediate Points	Peak Number of Buses	Proposed Start (A)	Proposed End (A)	Number of Proposed Hours (B)	Deadhead (12%)	Daily Hours	Days of Operation	Annual Hours
Monday-Friday									
Towne Centre Laurel-Elkridge Shopping Center	MD Food Center, Dorsey MARC Station	3	6:00	21:55	39.75	4.77	44.52	255	11,353
Saturday									
Towne Centre Laurel-Elkridge Shopping Center	MD Food Center, Dorsey MARC Station	3	8:00	20:50	32.50	3.90	36.40	52	1,893
Sunday									
Towne Centre Laurel-Elkridge Shopping Center	MD Food Center, Dorsey MARC Station	-	-	-	-	-	-	-	-
Phase 1: Route 409 Total									13,245

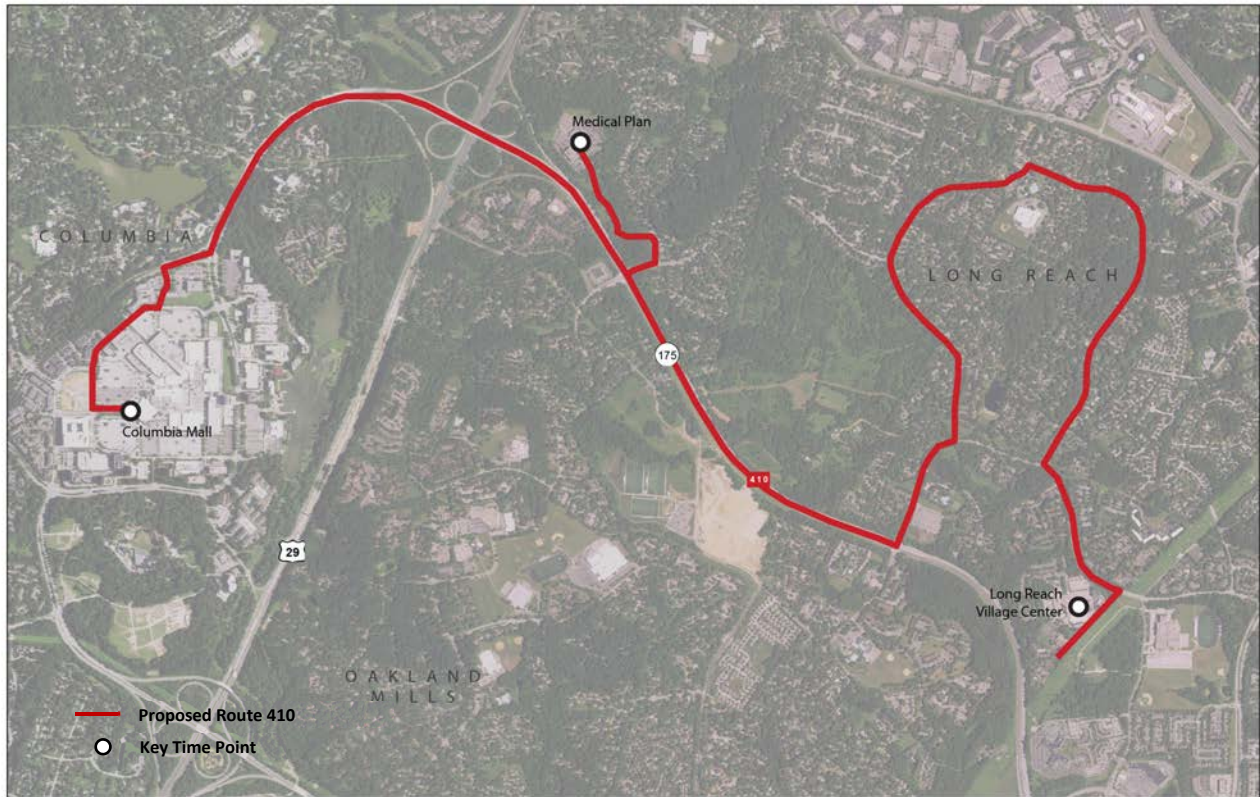
PHASE 2

Monday-Friday									
Towne Centre Laurel-Elkridge Shopping Center	MD Food Center, Dorsey MARC	4	6:00	22:55	57.67	6.92	64.59	255	16,470
Saturday									
Towne Centre Laurel-Elkridge Shopping Center	MD Food Center, Dorsey MARC	4	6:00	22:55	53.67	6.44	60.11	52	3,126
Sunday									
Towne Centre Laurel-Elkridge Shopping Center	MD Food Center, Dorsey MARC Station	-	-	-	-	-	-	-	-
Phase 2: Route 409 Total									19,595

Route 410 – Columbia Mall to Long Reach Village Center

Service Description

- Serves the Columbia Medical Practice Medical Plan (Medical Plan) and Long Reach Village Center.
- Ride time from Columbia Mall to Long Reach Village Center will be approximately 30 minutes.



Service Days



Service Span

AM											PM											AM																	
5:00	5:30	6:00	6:30	7:00	7:30	8:00	8:30	9:00	9:30	10:00	11:30	12:00	1:00	1:30	2:00	2:30	3:00	3:30	4:00	4:30	5:00	5:30	6:00	6:30	7:00	7:30	8:00	8:30	9:00	9:30	10:00	10:30	11:00	11:30	12:00	12:30			

Service Frequency

	Phase 1
Monday - Friday	
AM Peak & PM Peak	every 60 minutes
Midday & Evening	every 60 minutes
Saturday	
Daytime	every 60 minutes
Evening	every 60 minutes
Sunday	
Daytime	-
Evening	-

Number of Peak Vehicles



Service Characteristics

PHASE 1

Origin/ Destination	Major Intermediate Points	Peak Number of Buses	Proposed Start (A)	Proposed End (A)	Number of Proposed Hours (B)	Deadhead (12%)	Daily Hours	Days of Operation	Annual Hours
Monday-Friday									
Columbia Mall- Long Reach Village Center	Columbia Medical Practice Medical Plan	1	6:00	18:00	12.00	1.44	13.44	255	3,427
Saturday									
Columbia Mall- Long Reach Village Center	Columbia Medical Practice Medical Plan	1	8:00	18:00	10.00	1.20	11.20	52	582
Sunday									
Columbia Mall- Long Reach Village Center	Columbia Medical Practice Medical Plan	-	-	-	-	-	-	-	-
Phase 1: Route 410 Total									4,010

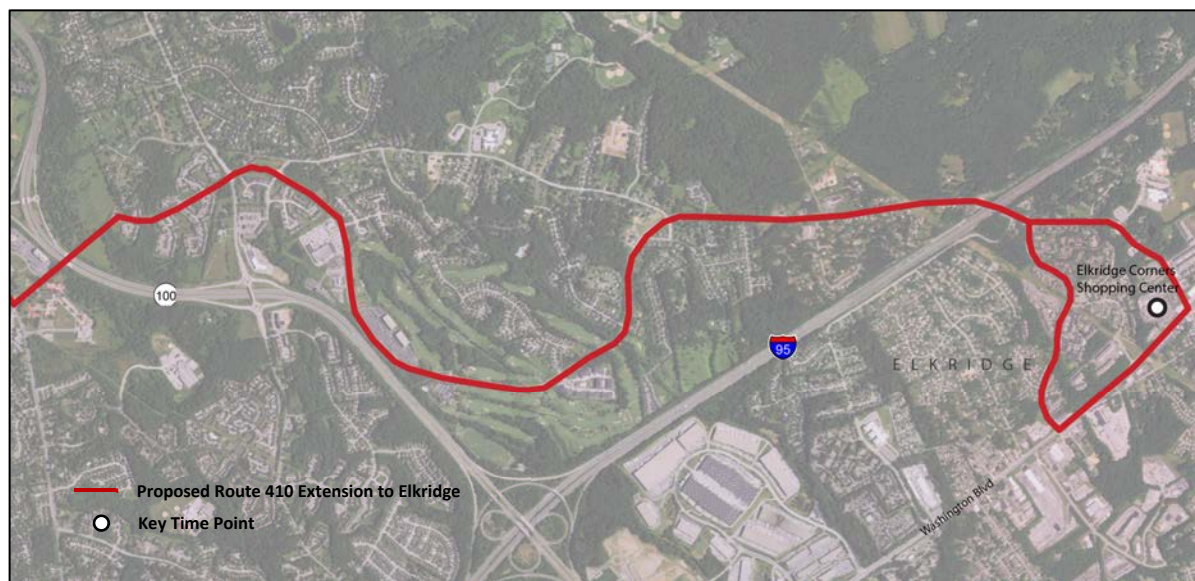
PHASE 2

Monday-Friday									
Columbia Mall- Long Reach Village Center	Columbia Medical Practice Medical Plan	1	6:00	17:55	11.92	1.43	13.35	255	3,403
Saturday									
Columbia Mall- Long Reach Village Center	Columbia Medical Practice Medical Plan	1	8:00	17:55	9.92	1.19	11.11	52	578
Sunday									
Columbia Mall- Long Reach Village Center	Columbia Medical Practice Medical Plan	-	-	-	-	-	-	-	-
Phase 2: Route 410 Total									3,981

Route 410 – Columbia Mall to Elkridge Corners Shopping Center (expansion route)

Service Description

- Provides for a connection to Elkridge from Columbia.
- Will connect with Route 409A and 409B at the Elkridge Corners Shopping Center.
- Ride time from Columbia Mall to Elkridge Corners Shopping Center will be approximately Long Reach Village Center will be approximately 80 minutes.



Service Span

AM												PM												AM																
5:00	5:30	6:00	6:30	7:00	7:30	8:00	8:30	9:00	9:30	10:00	11:30	12:00	1:00	1:30	2:00	2:30	3:00	3:30	4:00	4:30	5:00	5:30	6:00	6:30	7:00	7:30	8:00	8:30	9:00	9:30	10:00	10:30	11:00	11:30	12:00	12:30				

Service Frequency

Monday - Friday	
AM Peak & PM Peak	every 60 minutes
Midday & Evening	every 60 minutes
Saturday	
Daytime	every 60 minutes
Evening	every 60 minutes
Sunday	
Daytime	-
Evening	-

Number of Peak Vehicles



Service Characteristics

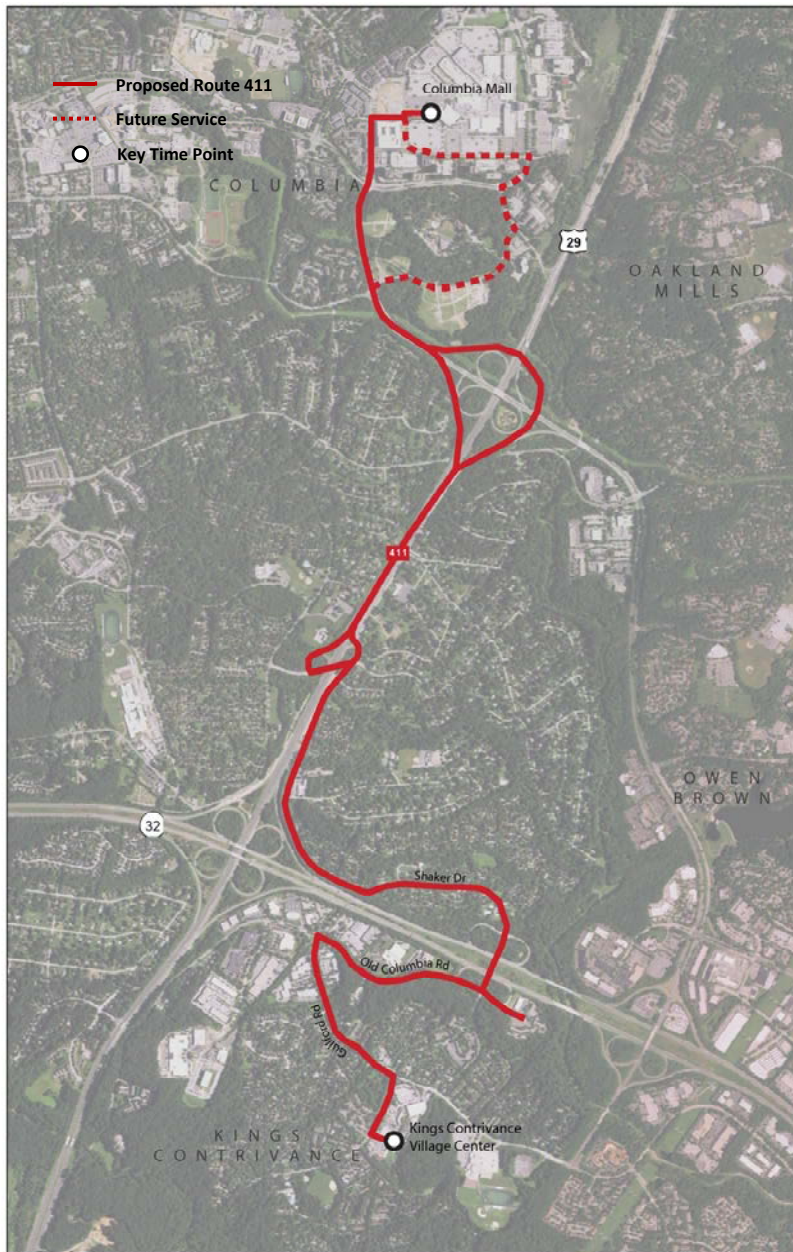
Origin/ Destination	Major Intermediate Points	Peak Number of Buses	Proposed Start (A)	Proposed End (A)	Number of Proposed Hours (B)	Deadhead (12%)	Daily Hours	Days of Operation	Annual Hours *
Monday-Friday									
Columbia Mall - Elkridge	Columbia Medical Practice Medical Plan; Elkridge	2	6:00	18:00	23	2.76	25.76	255	6,569
Saturday									
Columbia Mall - Elkridge		2	8:00	18:00	19	2.28	21.28	52	1,107
Route 410 Expansion Total									7,675

* Represents the total annual hours of the route. The incremental hours for the expansion to Elkridge are 3,665 hours annually.

Route 411 – Columbia Mall to Kings Contrivance Village Center

Service Description

- Route will be adjusted as the Crescent develops.
- Ride time from Columbia Mall to Kings Contrivance Village Center will be approximately 20 minutes.



Service Characteristics

PHASE 1

Origin/ Destination	Major Intermediate Points	Peak Number of Buses	Proposed Start (A)	Proposed End (A)	Number of Proposed Hours (B)	Deadhead (12%)	Daily Hours	Days of Operation	Annual Hours
Monday - Friday									
Columbia Mall- Kings Contrivance Village Center	Crescent	1	6:00	17:50	11.83	1.42	13.25	255	3,380
Saturday									
Columbia Mall- Kings Contrivance Village Center <i>(Interline with 406)</i>	Crescent	1	8:00	17:50	9.83	1.18	11.01	52	286
Phase 1: Route 411 Total									3,666

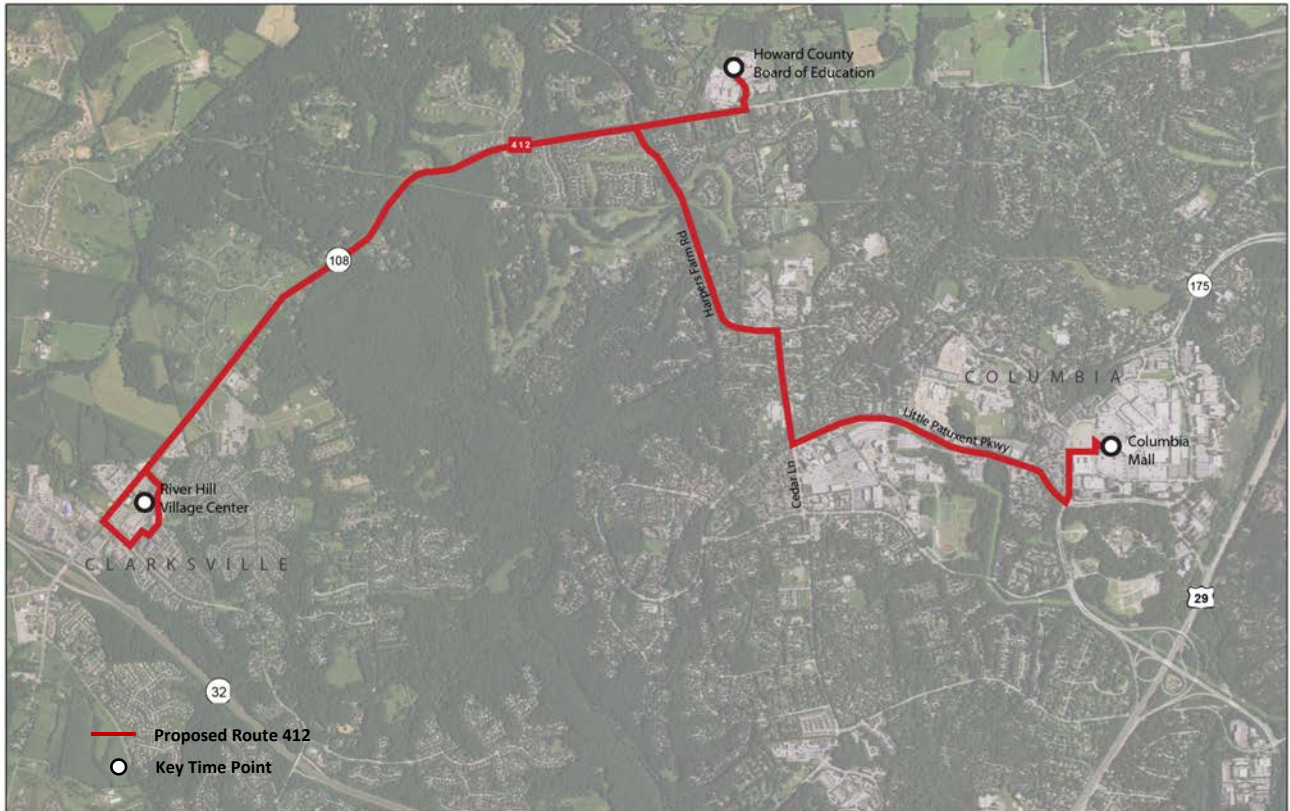
PHASE 2

Monday - Friday									
Columbia Mall- Kings Contrivance Village Center	Crescent	1	6:00	17:50	11.83	1.42	13.25	255	3,380
Saturday									
Columbia Mall- Kings Contrivance Village Center	Crescent	1	8:00	17:50	9.83	1.18	11.01	52	573
Phase 2: Route 411 Total									3,952

Route 412 – Columbia Mall to Clarksville (expansion route)

Service Description

- Will also serve the Howard County Board of Education.
- Ride time from Columbia Mall to River Hill Village Center will be approximately 30 minutes.



Service Days



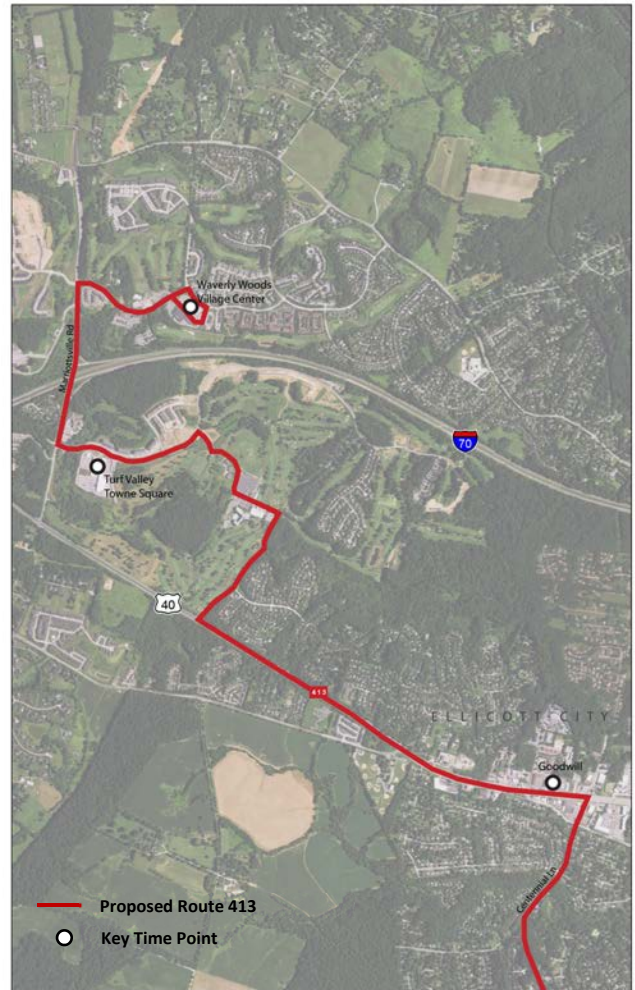
Service Characteristics

Origin/ Destination	Major Intermediate Points	Peak Number of Buses	Proposed Start (A)	Proposed End (A)	Number of Proposed Hours (B)	Deadhead (12%)	Daily Hours	Days of Operation	Annual Hours
Monday-Friday									
Columbia Mall- Clarksville	Howard County Board of Education, River Hill Village Center	1	5:55	17:55	12	1.44	13.44	255	3,427
Saturday									
Columbia Mall- Clarksville	Howard County Board of Education, River Hill Village Center	1	8:00	17:55	10	1.20	11.20	52	582
Route 412 Total									4,010

Route 413 – Columbia Mall to Turf Valley/Waverly Woods (expansion route)

Service Description

- Waverly Woods Village Center, Turf Valley Towne Square, Goodwill, and Centennial High School will be served along the route.
- Ride time between Columbia Mall and Waverly Woods Village Center will be approximately 35 minutes.



Service Days



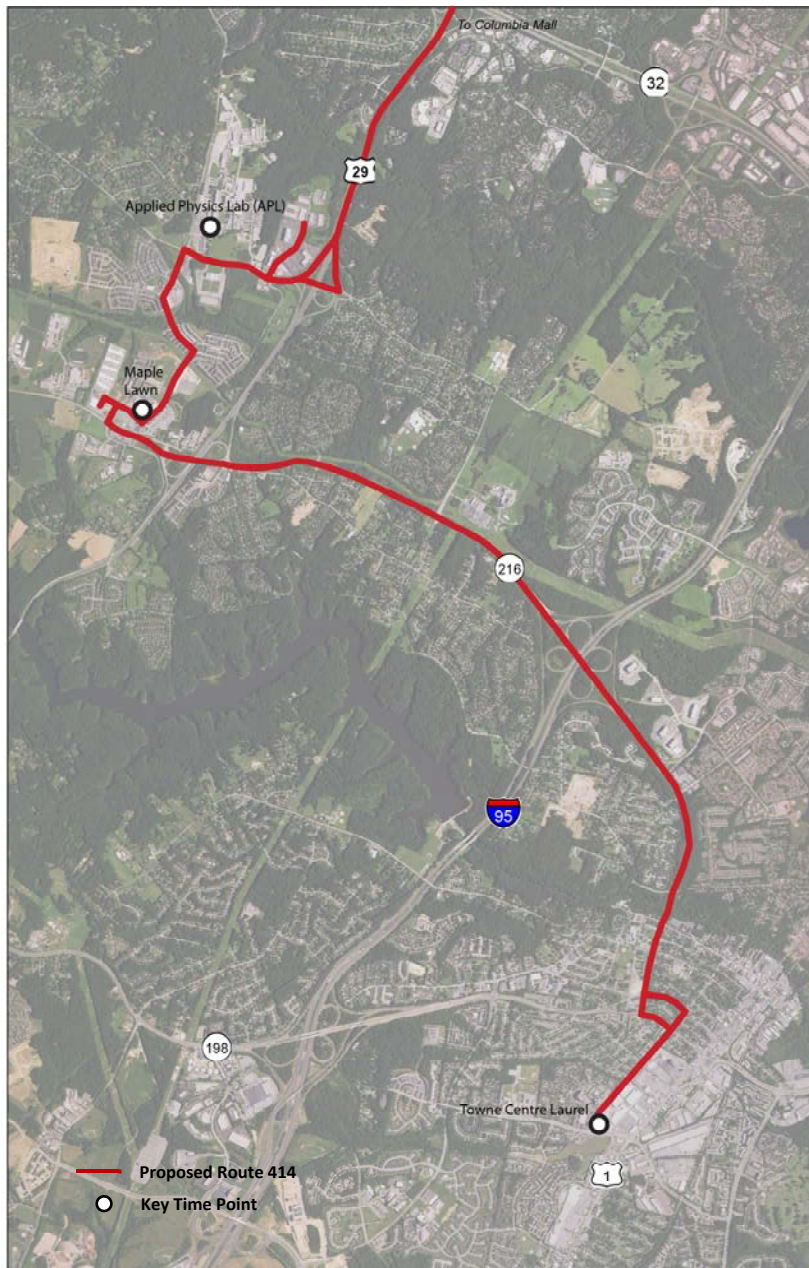
Service Characteristics

Origin/ Destination	Major Intermediate Points	Peak Number of Buses	Proposed Start (A)	Proposed End (A)	Number of Proposed Hours (B)	Deadhead (12%)	Daily Hours	Days of Operation	Annual Hours
Monday-Friday									
Columbia Mall-Turf Valley/Waverly Woods Village Center	Goodwill, Centennial High School	1	6:00	19:20	13.33	1.60	14.93	255	3,808
Extension - Saturday									
Columbia Mall-Turf Valley/Waverly Woods Village Center	Goodwill, Centennial High School	1	7:30	19:20	11.83	1.42	13.25	52	689
Route 413 Total									4,497

Route 414 – Columbia Mall to Towne Centre Laurel via Maple Lawn (expansion route)

Route Description

- Serves APL and employment along Montpelier Rd. and Maple Lawn.
- Ride time from Columbia Mall to Towne Centre Laurel through Maple Lawn will be approximately 50 minutes.



Service Days



Service Span

AM											PM											AM														
5:00	5:30	6:00	6:30	7:00	7:30	8:00	8:30	9:00	9:30	10:00	11:30	12:00	1:00	1:30	2:00	2:30	3:00	3:30	4:00	4:30	5:00	5:30	6:00	6:30	7:00	7:30	8:00	8:30	9:00	9:30	10:00	10:30	11:00	11:30	12:00	12:30
											Monday - Friday																									
											Saturday																									
											Sunday																									

Service Frequency

Monday - Friday	
AM Peak & PM Peak	every 60 minutes
Midday & Evening	every 60 minutes
Saturday	
Daytime	every 60 minutes
Evening	every 60 minutes
Sunday	
Daytime	-
Evening	-

Number of Peak Vehicles



Service Characteristics

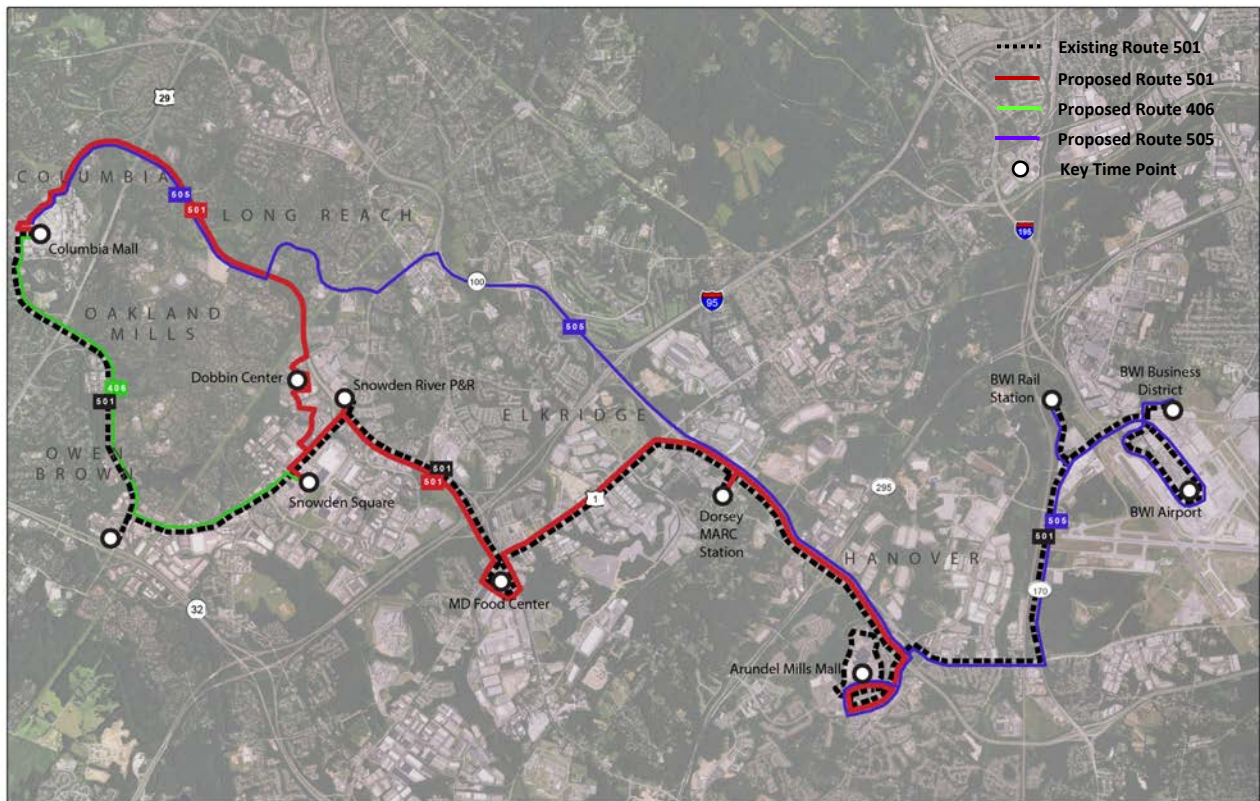
Origin/ Destination	Major Intermediate Points	Peak Number of Buses	Proposed Start (A)	Proposed End (A)	Number of Proposed Hours (B)	Deadhead (12%)	Daily Hours	Days of Operation	Annual Hours
Monday-Friday									
Columbia Mall - Towne Centre Laurel	MCIH, APL	2	6:05	20:00	28.00	3.36	31.36	255	7,997
Saturday									
Columbia Mall - Towne Centre Laurel	MCIH, APL	2	8:05	17:55	19.66	2.36	22.02	52	1,145
Route 414 Total									9,142

REGIONAL SERVICE

Route 501 – Columbia Mall to Arundel Mills Mall

Service Description

- Route 501 will no longer serve BWI airport.
- Not every bus will continue on to Arundel Mills Mall. Buses will turn around at the Snowden Square on every other run.
- Service to BWI airport from Columbia Mall will be served by Route 505.
- Ride time from Columbia Mall to Arundel Mills Mall will be approximately 50 minutes.



Service Days



Service Characteristics

PHASE 1

Origin/ Destination	Major Intermediate Points	Peak Number of Buses	Proposed Start (A)	Proposed End (A)	Number of Proposed Hours (B)	Deadhead (12%)	Daily Hours	Days of Operation	Annual Hours
Monday-Friday									
Columbia Mall- Arundel Mills Mall (Interlined with 407)	Dobbin Center, Snowden Square, MD Food Center, Dorsey MARC Station	3	5:55	22:55	42.54	5.11	47.65	255	12,150
Saturday									
Columbia Mall- Arundel Mills Mall (Interlined with 407)	Dobbin Center, Snowden Square, MD Food Center, Dorsey MARC Station	3	5:55	22:55	40.54	4.87	45.41	52	2,361
Sunday									
Columbia Mall- Arundel Mills Mall (Interlined with 407)	Dobbin Center, Snowden Square, MD Food Center, Dorsey MARC Station	1	8:00	19:55	17.88	2.15	20.02	55	1,101
Phase 1: Route 501 Total									15,612

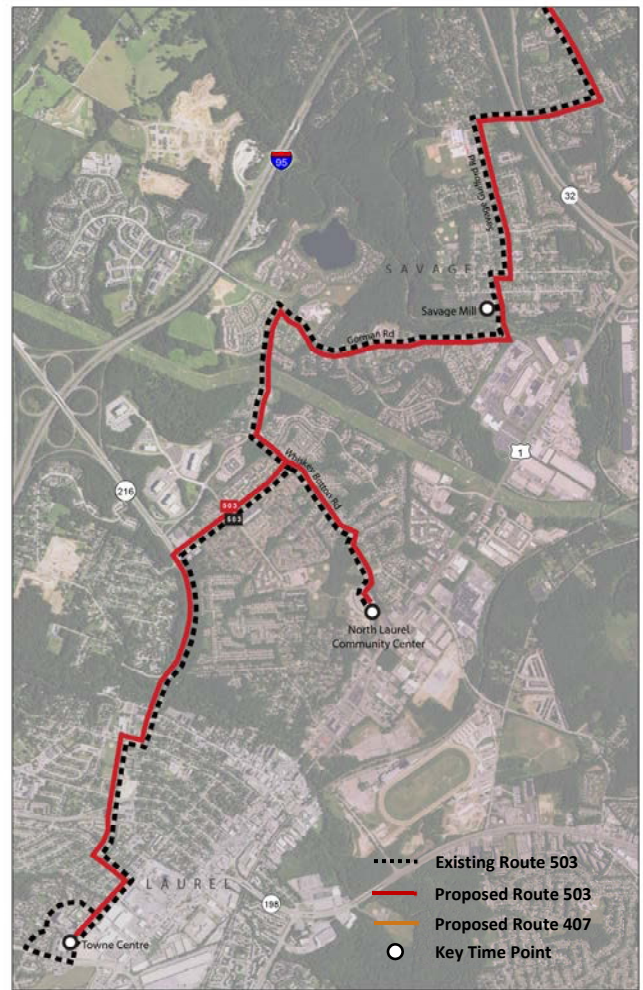
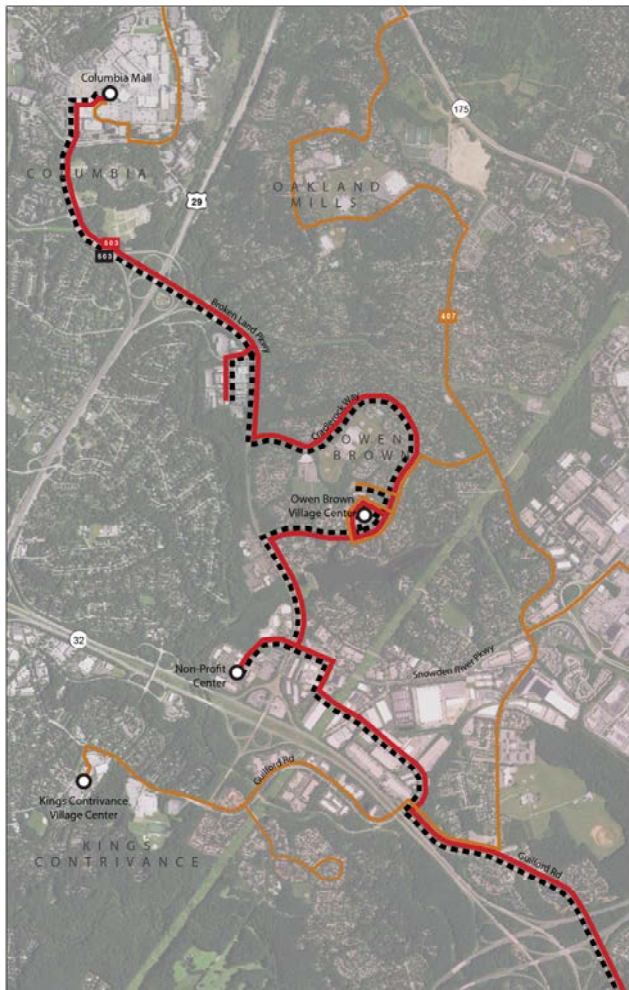
PHASE 2

Monday-Friday									
Columbia Mall- Arundel Mills Mall	Dobbin Center, Snowden Square, MD Food Center, Dorsey MARC Station	4	5:55	22:55	57.67	6.92	64.59	255	16,470
Saturday									
Columbia Mall- Arundel Mills Mall	Dobbin Center, Snowden Square, MD Food Center, Dorsey MARC Station	4	5:55	22:55	53.67	6.44	60.11	52	3,126
Sunday									
Columbia Mall- Arundel Mills Mall	Dobbin Center, Snowden Square, MD Food Center, Dorsey MARC Station	2	7:55	19:55	23.83	2.86	26.69	55	1,468
Phase 2: Route 501 Total									21,063

Route 503 – Columbia Mall to Towne Centre Laurel via Savage

Service Description

- Park View at Owen Brown will no longer be served by Route 503. It will be served by Route 407.
- Ride time from Columbia Mall to Towne Centre Laurel via Savage will be approximately 1:15 minutes.



Service Days



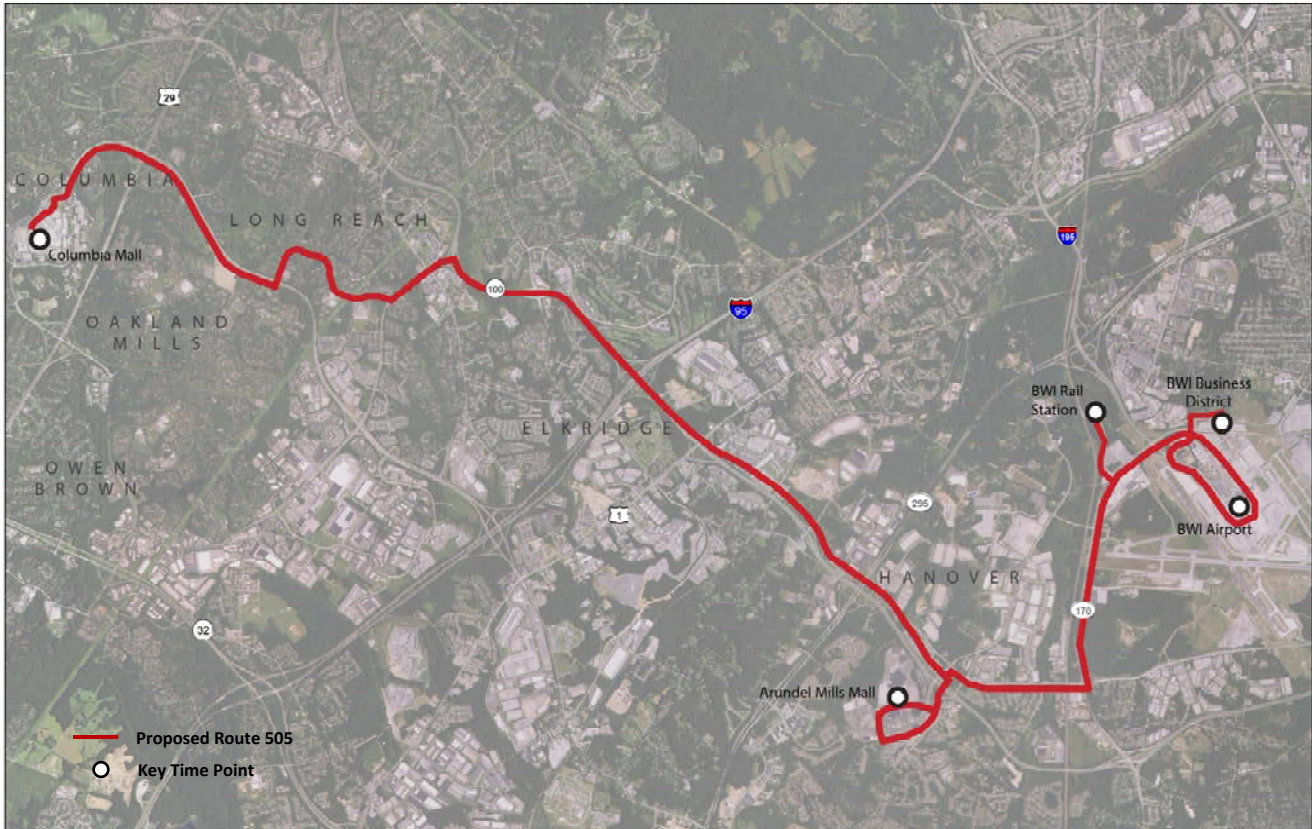
Service Characteristics

PHASE 1									
Origin/ Destination	Major Intermediate Points	Peak Number of Buses	Proposed Start (A)	Proposed End (A)	Number of Proposed Hours (B)	Deadhead (12%)	Daily Hours	Days of Operation	Annual Hours
Monday-Friday									
Columbia Mall-Towne Center Laurel	Owen Brown, Savage Mill	3	5:30	21:15	44.25	5.31	49.56	255	12,638
Saturday									
Columbia Mall-Towne Center Laurel	Owen Brown, Savage Mill	3	7:30	21:15	38.25	4.59	42.84	52	2,228
Sunday									
Columbia Mall-Towne Center Laurel	Owen Brown, Savage Mill	-	-	-	-	-	-	-	-
Phase 1: Route 503 Total									14,865
PHASE 2									
Monday-Friday									
Columbia Mall-Towne Center Laurel	Owen Brown, Savage Mill	5	5:30	23:15	62.25	7.47	69.72	255	17,779
Saturday									
Columbia Mall-Towne Center Laurel	Owen Brown, Savage Mill	5	7:30	21:15	58.25	6.99	65.24	52	3,392
Sunday									
Columbia Mall-Towne Center Laurel	Owen Brown, Savage Mill	2	8:00	20:00	24	2.88	26.88	55	1,478
Phase 2: Route 503 Total									22,649

Route 505 – Columbia Mall to BWI Airport

Service Description

- Provides a more direct connection to BWI airport.
- Ride time from Columbia Mall to BWI airport will be approximately 50 minutes.



Service Days



Service Characteristics

PHASE 1

Origin/ Destination	Major Intermediate Points	Peak Number of Buses	Proposed Start (A)	Proposed End (A)	Number of Proposed Hours (B)	Deadhead (12%)	Daily Hours	Days of Operation	Annual Hours
Monday-Friday									
Columbia Mall- BWI Airport	Long Reach Village Center, Arundel Mills Mall, BWI Rail Station	2	5:40	23:15	34.42	4.13	38.55	255	9,829
Saturday									
Columbia Mall- BWI Airport	Long Reach Village Center, Arundel Mills Mall, BWI Rail Station	2	5:40	23:15	34.42	4.13	38.55	52	2,004
Sunday									
Columbia Mall- BWI Airport	Long Reach Village Center, Arundel Mills Mall, BWI Rail Station	2	7:05	19:55	25.67	3.08	28.75	55	1,581
Phase 1: Route 505 Total									13,415

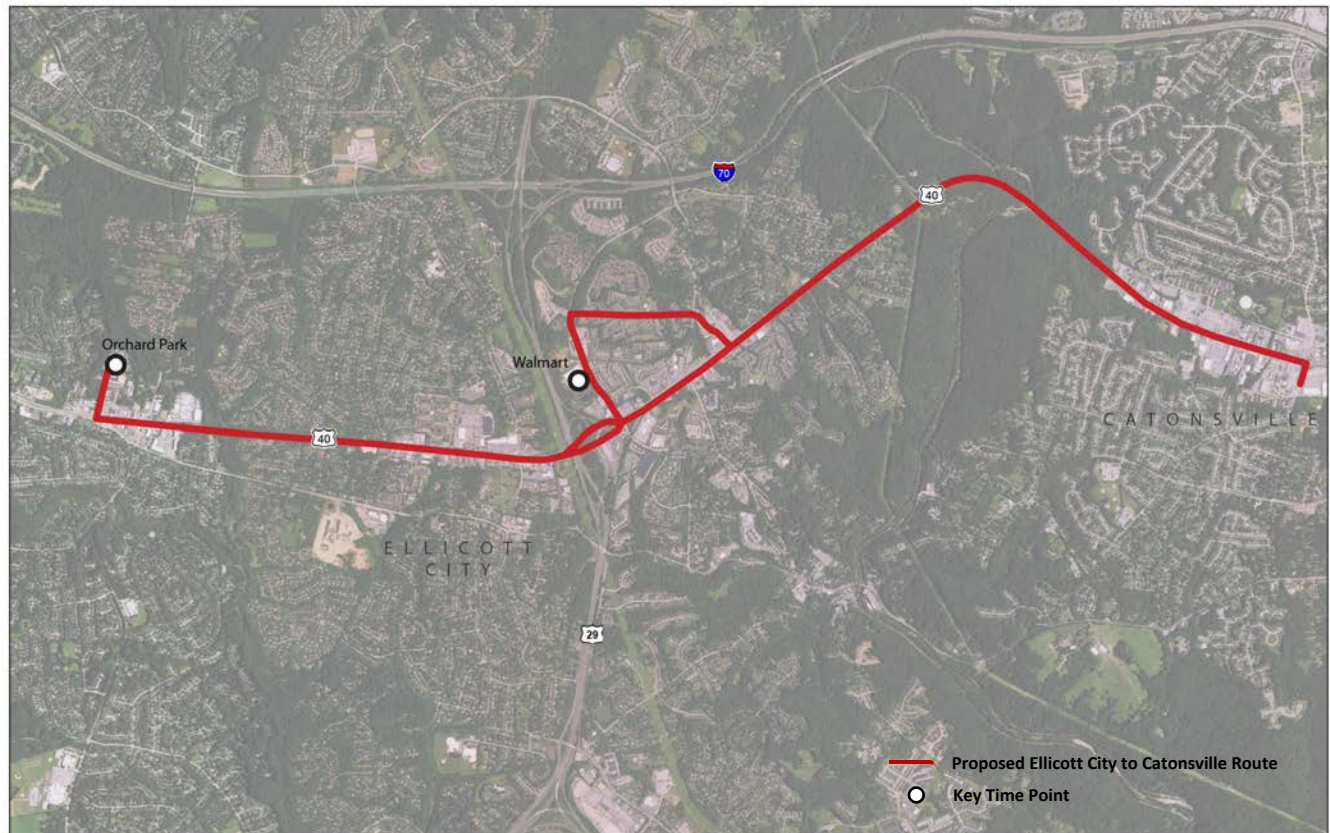
PHASE 2

Monday-Friday									
Columbia Mall- BWI Airport	Long Reach Village Center, Arundel Mills Mall, BWI Rail Station	4	5:40	23:55	57.50	6.9	64.40	255	16,422
Saturday									
Columbia Mall- BWI Airport	Long Reach Village Center, Arundel Mills Mall, BWI Rail Station	4	5:40	23:55	53.50	6.42	59.92	52	3,116
Sunday									
Columbia Mall- BWI Airport	Long Reach Village Center, Arundel Mills Mall, BWI Rail Station	2	7:05	20:55	25.67	3.08	28.75	55	1,581
Phase 2: Route 505 Total									21,119

Route 506 – Ellicott City to Catonsville*

Service Description

- Serves the Walmart in Ellicott City, Orchard Park, Normandy Shopping Center, and Town and Country.
- Connects with MTA bus service in Catonsville.
- Ride time from Orchard Park in Ellicott City to Catonsville is approximately 30 minutes.



* Potential MTA route. Because the service goes beyond the RTA jurisdictions' boundaries, service would need support from MTA and Baltimore County.

Service Days



PHASED IMPLEMENTATION

The individual route proposals constitute the basic building blocks of the TDP, but there is a need to combine them into a phased implementation plan that reflects the interdependencies among the routes and services, and is potentially implementable in terms of funding. Under the current organizational structure, each of the jurisdictions is a separate grant recipient, responsible for grants management and compliance. Each jurisdiction has a different history of providing funding for transit in the central Maryland region, and each will have its own budget for transit in the coming years. For that reason, the phased implementation is presented here as separate phased implementation plans for each jurisdiction. A combined regional table is also presented, although it should be noted that inclusion in the regional table does not necessarily mean that the service would be operated by the RTA.

Howard County

The fixed-route plan for Howard County is presented as two phases, and in addition there are four potential expansion routes. Phase I is a comprehensive restructuring of the routes currently providing coverage in the County, with a goal of shortening routes and increasing frequencies, largely by having multiple routes serve many of the same stops on schedules that are offset to provide higher frequencies (interlining). Because of the use of the interlining and increased transfer opportunities that allow coverage with fewer long meandering routes, it would be most efficient and understandable to the public to implement this phase at one point in time. It will require an increase in operating funds, and the fixed-route fleet will need to be expanded by three vehicles. The capital costs of fleet replacement and expansion are addressed later in this chapter. Phase II builds upon the first phase, adding service. The four expansion routes are essentially independent projects, and the timing of implementation is dependent on local needs and funding availability.

Phase 1: Restructuring: Buses and Hours

Table 6-1 summarizes the number of buses and the estimated service hours required to implement the Phase 1 fixed-route changes that need to be implemented concurrently. The number of buses is the total required for each route. The revenue hours needed to operate each route are taken from the individual route plans presented earlier in this chapter.

Table 6-1: Howard County Phase 1 Buses Required and Service Hours by Route

Route	Origin-Destination	Total Buses Required	Total Annual Hours
401	Columbia Mall - Clary's Forest	2	10,895
402	Ellicott City - Snowden Square	2	9,271
403	Columbia Mall – Dorsey Search Village Center	1	5,397
404	Columbia Mall - Hickory Ridge	1	5,139
405	Columbia Mall - Ellicott City	2	10,675
406	Columbia Mall - Columbia Gateway	1	3,571
407	Columbia Mall - Kings Contrivance Village Center	3	16,160
408	Columbia Mall – Sherwood Crossing	1	6,517
409	Towne Centre Laurel to Elkrige Shopping Center	3	13,245
410	Columbia Mall - Long Reach Village Center	1	4,010
411	Columbia Mall - Kings Contrivance Village Center	1	3,666
501	Columbia Mall - Arundel Mills Mall	3	15,612
503	Columbia Mall – Towne Centre Laurel via Savage	3	14,865
505	Columbia Mall - BWI Airport	2	13,415
Total			132,438

Phase 2: Frequency and Span Improvements: Buses and Hours

The Phase 2 improvements as a package represent the build-out of the current plan for the existing Howard County service area. As can be seen in Table 6-2, the service hours by route vary considerably from the Phase 1 level, with major increases in the service hours for Routes 404, 407, 409, 501, 503 and 505, representing frequency improvements. The increase to 171,788 service hours represents a 30% increase in service levels over Phase 1.

Some of these expansions could be implemented as incremental improvements, once the Phase 1 restructuring has been completed. However, this would depend on budget availability in subsequent years.

Table 6-2: Howard County Phase 2 Buses Required and Hours by Route

Route	Origin-Destination	Total Number of Buses	Total Annual Hours
401	Columbia Mall-Clary's Forest	2	11,096
402	Ellicott City-Snowden Square	2	10,074
403	Columbia Mall – Dorsey Search Village Center	1	5,813
404	Columbia Mall - Hickory Ridge	2	9,611
405	Columbia Mall - Ellicott City	2	10,788
406	Columbia Mall – Columbia Gateway	1	4,096
407	Columbia Mall - Kings Contrivance Village Center	4	21,434
408	Columbia Mall – Sherwood Crossing	1	6,517
409	Towne Centre Laurel – Elkridge Village Center	4	19,595
410	Columbia Mall - Long Reach Village Center	1	3,981
411	Columbia Mall - Kings Contrivance Village Center	1	3,952
501	Columbia Mall - Arundel Mills Mall	4	21,063
503	Columbia Mall – Towne Centre Laurel via Savage	5	22,649
505	Columbia Mall - BWI Airport	4	21,119
Total			171,788

Howard County Expansion Routes: Buses and Hours

Four routes have been proposed for new coverage in Howard County:

- 410 Columbia Mall to Elkridge (expansion of 410 Columbia Mall to Long Reach)
- 412 Columbia Mall to Clarksville
- 413 Columbia Mall to Turf Valley/Waverly Woods
- 414 Columbia Mall to Laurel MARC/Towne Centre via APL and Maple Lawn

Prioritization and phasing will need to be determined based on funding availability. The more direct connection between Columbia and Elkridge is supported by the relatively high level of regional commuting evident in the BMC demand model results; the Clarksville route is the return of a linkage that previously existed and responds to interest in transit from the Village of River Hill and Howard County Public Schools; the Turf Valley route serves a residential and employment growth area. The 414 would provide the first transit link to the County's largest employer, the Johns Hopkins Applied Physics Laboratory (APL), and to the Maple Lawn mixed-use community, which is close to buildout and includes a substantial residential

population, much of it at higher densities. APL participated in several TDP meetings and is very interested in transit alternatives to service its campus. The extension of this route to connect with the MARC Camden Line in Laurel would provide enhanced commuting opportunities in both directions.

Table 6-3 presents the number of buses required and the service hours for each of the expansion routes. It includes a line that is a place-holder for the associated ADA paratransit service requirements. Unlike the Phase 1 and Phase 2 expansions which essentially serve areas that already have ADA complementary paratransit, the expansion areas are new coverage, and there is a need to need to serve the ADA eligible population within $\frac{3}{4}$ of a mile of these new fixed-routes with complementary paratransit. Estimating paratransit demand for small areas, at an undefined point in the future is difficult, so to err on the side of caution an additional 15% in service hours is included and used in the subsequent estimate of costs.

Table 6-3: Howard County Expansion Routes Number of Buses and Service Hours

Route	Origin-Destination	Number of Buses	Annual Fixed-Route Hours	15% ADA Hours
410	Columbia Mall –Long Reach: Extension to Elkridge	2	3,665 (Incremental)	550
412	Columbia Mall - Clarksville	1	4,010	602
413	Columbia Mall – Turf Valley/Waverly Woods	1	4,497	675
414	Columbia Mall – Towne Centre Laurel /MARC via Maple Lawn	2	9,142	1,371
Total Hours			21,314	3,198

Estimated Costs—Howard County

Table 6-4 presents the estimated operating costs in 2017 dollars. For the base service, the costs are presented using projected FY 2018 RTA fully-allocated average cost rates of \$75.43 per service hour for fixed route service. The hours shown include the 12% allowance for deadhead and pre/post trip inspections as shown in the individual route tables above. These base rates include the management fee spread over the number of FY 2018 service hours.

However, because the management structure is already in place, and has the capacity to administer the additional fixed-route service, the appropriate cost for the new services beyond the base is the incremental average hourly rate for fixed-route service of \$58.06. In Table 6-4 the incremental hours of the planned services (above and beyond existing service) are separated and costed at the \$58.06 per hour rate to present an estimate of the incremental

costs of the TDP proposed expansions. The initial Phase 1 restructuring has an incremental annual operating cost of \$1,331,313 for a total annual fixed-route operating budget of \$9,591,334. Full implementation of Phase 2 adds \$2,284,661, resulting in a total fixed-route operating budget of \$11,875,974. The expansion routes are each presented separately, along with additional ADA service hours are included for the expansion routes at the current average cost per hour of \$91.15. Three additional paratransit vehicles are included in the capital plan to address this potential need. All of these operating costs are the full cost, and do not include any potential federal/state grant funding.

It should be noted that under the RTA MOU, the 409, the 501, the 503 and the 505 routes cross-jurisdictional lines, and the operating costs would be shared based on the revenue hours in each jurisdiction, so the actual incremental costs would not be quite as high.

Table 6-4: Howard County Fixed-Route Operating Costs

Existing Base Service Costs	109,497	n/a	75.43	n/a			\$8,259,359
Phase 1 Incremental Costs (over Base Service)	132,438	22,941	58.06	\$1,331,954			\$9,591,313
Phase 2 Incremental Costs (over Phase 1)	171,788	39,350	58.06	\$2,284,661			\$11,875,974
Expansion Route Costs							
Columbia Mall-Elkridge		3,665	58.06	\$212,790	\$38,605	\$251,395	
Columbia Mall-Clarksville		3,427	58.06	\$198,972	\$42,254	\$241,226	
Columbia Mall-Turf Valley/Waverly Woods		4,497	58.06	\$261,096	\$47,378	\$308,474	
Columbia Mall-Town Centre Laurel via APL/Maple Lawn		7,902	58.06	\$458,790	\$96,230	\$555,020	
Sub-Total: Expansion Routes		19,491	58.06	\$1,131,647	\$224,467	\$1,356,114	
Total Potential Cost: Phase 1, Phase 2 and Expansion Routes							\$13,232,089

(1) Calculated based on 15% additional hours times estimated incremental cost of RTA ADA paratransit of \$70.19 per service hour.

CAPITAL PLAN

The Fleet

Previous chapters have documented that the large number of overage vehicles in the fleet has contributed to unreliable service, and that users want better buses and reliable service. Howard County has funded seven new heavy duty buses which are scheduled for delivery in December 2017. However, the lack of a complete Fleet Management Plan has hampered the ability of the RTA and the counties to be in compliance with state and federal requirements, or to obtain the funding needed to address this problem. While grant funding has helped the paratransit fleet the last grant funding received for the fixed route fleet was in FY 2012.

In Chapter 4, an inventory of the RTA fleet was used as the basis for a description of the fleet in terms of ownership of the vehicles. Under the RTA's current organizational structure the four partners each have assets used by the system. Each is a separate grant recipient, and MTA compliance monitoring treats each as a separate jurisdiction. Under the MOU signed by all the partners, each jurisdiction can lease its assets to the RTA, replace them through mechanisms outside the RTA, or withdraw them. Consequently, in this TDP the fleet inventory and the fleet replacement and expansion plans are developed separately by jurisdiction, based on ownership, and assessed in terms of the number of peak vehicles needed to provide the services in or on behalf of that jurisdiction.

Despite the separate presentation, the partners could potentially meet the identified needs for the services they obtain from the RTA by sharing in the costs of a unified fleet that would be procured by a single entity, most likely Howard County. Cost shares can be based on the percentage of system service hours operated in each jurisdiction, as proposed by Howard County. However, there are some potential issues. It is not clear how Anne Arundel County, for example, could apply for grant funding for a share of a fleet titled to Howard County—as the RTA is not a legal entity it could not hold title or apply for the grants itself. Also, if an entity decided to leave the RTA, or withdraw its assets, it could be difficult to determine which assets had been funded by that entity—would it take some vehicles? Or would the other partners need to buy them out and retain the vehicles?

Fleet Plans—Replacement of Existing Vehicles and Expansion Vehicles

In the following sections, there are two tables for each jurisdiction. Each table uses data from the RTA Master Fleet inventory regarding the current fleet, ownership, service type, and projected year of eligibility for replacement. The replacement years are based on the MTA minimum life cycle for that type of vehicle:

- Heavy Duty Bus: 12 years or 500,000 miles,
- Medium Duty Bus: 8 years or 250,000 miles,

- Cutaway: 6 years or 200,000 miles, and
- Sedans: 5 years or 100,000 miles.

The format of the tables is based on the vehicle plan format developed for use in MTA procured fleet management plans. The shaded area covers vehicles that are eligible for replacement based on MTA guidelines, those not shaded are not yet eligible. There are two tables for each jurisdiction—one that deals with the replacement of the existing fleet, and the other shows the fleet plan that could potentially be used to replace existing vehicles and implement proposed expansions. These are illustrative—none of the partners has made a commitment to a particular level or order of expansion. This second table shows the level of resources that would be needed for full implementation—i.e. the investment required to replace all overage vehicles and initiate all the service proposals.

Howard County Fleet Plan

Table 6-9 presents the fleet replacement plan for the existing Howard County owned fleet, including both fixed-route and paratransit vehicles. The table is based on a 2017 draft Fleet Management Plan (FMP), but adjusted to reflect:

- The need for 23 vehicles for the peak, including the three needed for the 503. The 503 connects Columbia Mall and Towne Centre Laurel, and is 90% in Howard County.
- County acquisition (using county funds for a lease/purchase plan) of 7 heavy-duty buses (due for delivery at the end of CY 2017), and 8 cutaways for paratransit—these were not included in the draft FMP.
- Howard County proposed purchase of 6 heavy duty buses in FY 2019 under a lease/purchase plan using county funds.
- A desire to achieve the required maximum 20% spare ratio in the near term.
- The active paratransit fleet of 21 vehicles.

As can be seen, the proposed plan calls for a significant elimination of overage vehicles as the county-funded FY 2018 and FY 2019 vehicles are added to the fleet. This allows a significant reduction in the percentage of vehicles eligible for retirement, from 33% in FY 2017 to 0% in FY 2021, after an increase in FY 2018 as some additional vehicles age.

Table 6-9: Recommended Vehicle Replacement/Expansion Plan for the Howard County Fleet-Base Service

Fixed-Route										
Model Year	OEM	Length	Type	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023
2002	Gillig	40	Heavy Duty	2	0	0	0	0	0	0
2004	Eldorado	30	Medium Duty	1	0	0	0	0	0	0
2006	Eldorado	30	Medium Duty	1	0	0	0	0	0	0
UNK	Thomas	30	Heavy Duty	8	0	0	0	0	0	0
2008	Gillig	35	Heavy Duty	1	1	1	0	0	0	0
UNK		35	Heavy Duty	1	1	1	0	0	0	0
2009	Gillig	35	Heavy Duty	1	1	1	1	0	0	0
UNK	International	30	Medium Duty	1	0	0	0	0	0	0
2010	Eldorado	30	Medium Duty	8	6	0	0	0	0	0
2011	Gillig	40	Heavy Duty	3	3	3	3	3	3	2
2012	Eldorado	30	Medium Duty	2	2	2	0	0	0	0
2013	Eldorado	30	Medium Duty	3	3	3	3	0	0	0
2014	Eldorado	30	Medium Duty	1	1	1	1	1	0	0
2017	BYD	40	Heavy Duty-E (1)	3	3	3	3	3	3	3
2018	TBD	30	Heavy Duty (2)		7	7	7	7	7	7
2019	TBD	35	Heavy Duty (3)			6	6	6	6	6
2020	TBD	30	Medium Duty				5	5	5	5
2021	TBD	35	Heavy Duty					3	3	3
2022	TBD	30	Medium Duty						3	3
2023	TBD	40	Heavy Duty	0						0
Total				36	28	28	29	28	30	29
Peak Vehicle Requirement-Base (includes 503)				23	23	23	23	23	23	23
Spare Ratio				36.11%	17.86%	17.86%	20.69%	17.86%	23.33%	20.69%
Number Eligible for Retirement				12	11	5	3	0	0	2
Percentage Eligible for Retirement				33%	39%	18%	10%	0%	0%	7%

(1) Delivered-In Service

(2) Ordered, on assembly line

(3) Budgeted

Table 6-9: Recommended Vehicle Replacement/Expansion Plan for the Howard County Fleet-Base Service (continued)

Paratransit										
Model Year	OEM	Length	Type	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023
2014	Ford Fusion	16	Sedan	4	4	4	0	0	0	0
2014	International	32	Medium Duty	1	1	1	1	1	1	0
2014	Ford Phoenix	26	Cutaway	5	5	5	5	0	0	0
2015	Ford Fusion	16	Sedan	3	3	3	3	0	0	0
2015	Ford Phoenix	26	Cutaway	8	8	8	8	8	0	0
2016										
2017	Ford Phoenix	26	Cutaway	8	8	8	8	8	8	8
2018										
2019	TBD	16	Sedan				4	4	4	4
2020	TBD	16	Sedan					3	3	3
2020	TBD	26	Cutaway					5	5	5
2021										
2022	TBD	26	Cutaway						8	8
2023	TBD	32	Medium Duty							1
Total				29	29	29	29	29	29	29
Peak Vehicle Requirement-Base				24	24	24	24	24	24	24
Spare Ratio				17.24%	17.24%	17.24%	17.24%	17.24%	17.24%	17.24%
Number Eligible for Retirement				0	0	4	8	8	1	8
Percentage Eligible for Retirement				0.00%	0.00%	13.79%	27.59%	27.59%	3.45%	27.59%



 Vehicles in shaded areas are eligible for replacement.
 Blank cells mean no vehicles need to be purchased in that year.
 UNK: Unknown

Table 6-10 presents a fleet plan that encompasses the proposed expansions, beginning with Phase 1 in FY 2019, incremental additions to support Phase 2 (or for the expansion routes) between FY 2019 and FY 2022, with full implementation of Phase 2 in FY 2022, and then implementation of the expansion routes in FY 2023. The expansion routes could be implemented in the interim period, with Phase 2 at the end, but the end of period fleet size would be the same.


Table 6-10: Recommended Vehicle Replacement/Expansion Plan for Howard County Fleet-Phase 1, Phase 2, and Expansion

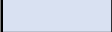
Fixed-Route										
Model Year	OEM	Length	Type	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023
2002	Gillig	40	Heavy Duty	2	0	0	0	0	0	
2004	Eldorado	30	Medium Duty	1	1	0	0	0	0	
2006	Eldorado	30	Medium Duty	1	1	0	0	0	0	
UNK	Thomas	30	Heavy Duty	8	0	0	0	0	0	
2008	Gillig	35	Heavy Duty	1	1	1	0	0	0	
UNK		35	Heavy Duty	1	1	1	0	0	0	
2009	Gillig	35	Heavy Duty	1	1	1	1	0	0	
UNK	International	30	Medium Duty	1	1	0	0	0	0	
2010	Eldorado	30	Medium Duty	8	8	4	0	0	0	
2011	Gillig	40	Heavy Duty	3	3	3	3	3	3	2
2012	Eldorado	30	Medium Duty	2	2	2	2	0	0	
2013	Eldorado	30	Medium Duty	3	3	3	3	0	0	
2014	Eldorado	30	Medium Duty	1	1	1	1	1	0	
2017	BYD	40	Heavy Duty-E	3	3	3	3	3	3	3
2018	TBD	30	Heavy Duty		7	7	7	7	7	7
2019	TBD	35	Heavy Duty			10	10	10	10	10
2020	TBD	30	Medium Duty				7	7	7	10
2021	TBD	35	Heavy Duty					8	8	8
2022	TBD	30	Medium Duty						4	4
2023	TBD	40	Heavy Duty	0						5
Total				36	33	36	37	39	42	49
Peak Vehicle Requirement (1)				23	26	28	30	32	34	39
Spare Ratio				36.11%	21.21%	22.22%	18.92%	17.95%	19.05%	20.41%
Number Eligible for Retirement				12	16	10	5	0	1	2
Percentage Eligible for Retirement				33%	48%	28%	14%	0%	2%	4%

(1) FY 2017 is base existing service level, FY 2018 is Phase 1, 2019-2022 ramp up to full Phase 2, and FY 2023 is four expansion routes.

Table 6-10: Recommended Vehicle Replacement/Expansion Plan for Howard County-Paratransit Fleet-Phase 1, Phase 2, and Expansion (continued)

Paratransit										
Model Year	OEM	Length	Type	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023
2014	Ford Fusion	16	Sedan	4	4	4	0	0	0	0
2014	International	32	Medium Duty	1	1	1	1	1	1	0
2014	Ford Phoenix	26	Cutaway	5	5	5	5	0	0	0
2015	Ford Fusion	16	Sedan	3	3	3	3	0	0	0
2015	Ford Phoenix	26	Cutaway	8	8	8	8	8	0	0
2016										
2017	Ford Phoenix	26	Cutaway	8	8	8	8	8	8	8
2018										
2019	TBD	16	Sedan				4	4	4	4
2020	TBD	16	Sedan					3	3	3
2020	TBD	26	Cutaway					5	5	5
2021										
2022	TBD	26	Cutaway						8	8
2023	TBD	32	Medium Duty							1
2023	TBD	26	Cutaway							6
Total				29	29	29	29	29	29	35
Peak Vehicle Requirement-Base				24	24	24	24	24	24	29
Spare Ratio				17.24%	17.24%	17.24%	17.24%	17.24%	17.24%	17.14%
Number Eligible for Retirement				0	0	4	8	8	1	8
Percentage Eligible for Retirement				0.00%	0.00%	13.79%	27.59%	27.59%	3.45%	22.86%

 Vehicles in shaded areas are eligible for replacement.

 Blank cells mean no vehicles need to be purchased in that year.

UNK: Unknown

Table 6-15: Summary of Fleet Plans - Howard County and Anne Arundel County

County	Base Unit Cost	2018		2019		2020		2021		2022		2023		Total for Years 2018-2023
		Number	Price	Number	Price	Number	Price	Number	Price	Number	Price	Number	Price	
Howard County														
Base Replacement														
Heavy Duty	\$375,764	7	\$390,795	6	\$406,426	6	\$422,683	3	\$439,591	3	\$457,174	1	\$475,461	\$0
Medium Duty	\$218,972		\$227,731	0	\$236,840	5	\$246,314	5	\$256,166	3	\$266,413	3	\$277,069	\$277,069
Cutaway + Farebox	\$75,139		\$78,145	0	\$81,270	5	\$84,521	5	\$87,902	8	\$91,418	8	\$95,075	\$0
Cutaway	\$60,139		\$62,545	0	\$65,046	5	\$67,648	5	\$70,354	8	\$73,168	8	\$76,095	\$0
Sedan	\$25,000		\$26,000	0	\$27,040	3	\$28,122	3	\$29,246	8	\$30,416	8	\$31,633	\$0
Total Base Replacement			\$2,735,562		\$2,546,718		\$2,076,780		\$1,318,772		\$2,115,990		\$2,770,669	\$1,070,831
With Expansions														
Heavy Duty	\$375,764	7	\$390,795	10	\$406,426	10	\$422,683	8	\$439,591	8	\$457,174	5	\$475,461	\$2,377,307
Medium Duty	\$218,972		\$227,731	0	\$236,840	7	\$246,314	7	\$256,166	4	\$266,413	4	\$277,069	\$277,069
Cutaway + Farebox	\$75,139		\$78,145	0	\$81,270	5	\$84,521	5	\$87,902	8	\$91,418	8	\$95,075	\$0
Cutaway	\$60,139		\$62,545	0	\$65,046	5	\$67,648	5	\$70,354	8	\$73,168	8	\$76,095	\$456,570
Sedan	\$25,000		\$26,000	0	\$27,040	3	\$28,122	3	\$29,246	8	\$30,416	8	\$31,633	\$0
Total with Expansions			\$2,735,562		\$4,172,423		\$2,146,802		\$3,516,726		\$1,650,998		\$3,110,946	\$17,333,457
Anne Arundel County														
Base Replacement														
Heavy Duty	\$375,764		\$390,795	0	\$406,426	3	\$422,683	0	\$439,591	0	\$457,174	0	\$475,461	\$0
Medium Duty	\$218,972	4	\$227,731	\$910,924	\$236,840	0	\$246,314	0	\$256,166	0	\$266,413	0	\$277,069	\$0
Cutaway + Farebox	\$75,139		\$78,145	0	\$81,270	0	\$84,521	0	\$87,902	0	\$91,418	0	\$95,075	\$0
Cutaway	\$60,139		\$62,545	0	\$65,046	0	\$67,648	0	\$70,354	0	\$73,168	0	\$76,095	\$0
Sedan	\$25,000		\$26,000	0	\$27,040	0	\$28,122	0	\$29,246	0	\$30,416	0	\$31,633	\$0
Total Base Replacement			\$910,924		\$1,219,279		\$0		\$0		\$0		\$0	\$2,130,203
With Expansions														
Heavy Duty	\$375,764		\$390,795	0	\$406,426	8	\$422,683	0	\$439,591	3	\$457,174	0	\$475,461	\$1,901,845
Medium Duty	\$218,972	4	\$227,731	\$910,924	\$236,840	0	\$246,314	0	\$256,166	0	\$266,413	3	\$277,069	\$0
Cutaway + Farebox	\$75,139		\$78,145	0	\$81,270	0	\$84,521	3	\$87,902	3	\$91,418	0	\$95,075	\$190,150
Cutaway	\$60,139		\$62,545	0	\$65,046	0	\$67,648	0	\$70,354	2	\$73,168	2	\$76,095	\$0
Sedan	\$25,000		\$26,000	0	\$27,040	0	\$28,122	0	\$29,246	0	\$30,416	0	\$31,633	\$0
Total with Expansions			\$910,924		\$3,251,411		\$845,212		\$1,723,186		\$945,575		\$2,091,995	\$9,768,303

Fare Collection

As a result of its history, the RTA has issues with fares that could be addressed in part if it had a modern electronic registering farebox system instead of using simple drop boxes.

The RTA has two distinct fare policies, as described in Chapter 4. This alone causes additional work for the operators, different revenue levels in different jurisdictions, and confusion for riders. Therefore, the RTA would like to settle on one fare structure. Modern fareboxes could potentially allow for new multi-ride options, including smart-phone payment or stored-value cards—potentially increasing customer convenience and ridership.

A significant related issue is that many RTA customers transfer to or from MTA services or WMATA services, and RTA does not have transfer arrangements with either system because they do not consider that drop boxes provide adequate accounting for any kind of shared revenue that would result from a transfer agreement. RTA policies vary for each system. There is no transfer agreement with WMATA, so users simply pay a second fare; there is a limited number of MTA/RTA shared stops where the RTA will accept display of an MTA Charm Card as a transfer, and accept a reduced fare. However, there is no sharing of revenue, and RTA riders transferring to MTA buses must pay a full second fare. A modern farebox system would allow negotiation of fare policies to facilitate transfers, as the revenue accounting function would be supported by farebox data collection.

Finally, there is a need to have accurate data about ridership and revenue if the RTA is to obtain policy-level buy-in from its partners. Modern electronic registering fareboxes would facilitate revenue accounting, which is difficult to achieve with the drop boxes and manual counters now used. Ridership counts and reconciliation with revenues would be possible, and if a working automatic passenger counting system was integrated with the system it would provide better data with less manual work.

For these reasons a \$15,000 estimated cost of new electronic registering fareboxes is included in the vehicle prices used for heavy duty and medium buses, and is added to cutaways required for the Call N Ride services. Depending on the dispatch technology used, these vehicles may not ultimately require fareboxes if the fares are paid through a smart phone or stored value card—a simple reader may be all that is needed. The \$15,000 unit cost is consistent with the amount used in MTA medium bus procurements.

FACILITIES

Operations Facility

RTA administrative offices are located in an office park located at 8510 Corridor Road, Suite 110 Savage, Maryland 20763, while the operations facility is located a short distance away at 8800 Corridor Road, Annapolis Junction, Maryland 20701. The 22,000 square foot operations facility supports over 200 employees. It was jointly funded by Howard County, Anne Arundel County, MTA and FTA. It is a modern facility completed in March 2015. It includes vehicle storage, employee parking, dispatch, operations offices, five maintenance bays, one wash bay, an additional vehicle bay, parts storage, fueling and a backup generator. The bus parking is arranged in a pull-through layout, and the entire area is fenced with a single gated entrance.

Operations Facility



The facility is designed to support a maximum fleet of 105 buses. The RTA has additional bus storage for the 29 inactive vehicles at off-site locations. The operations facility has adequate capacity for current RTA operations, though full build-out of the TDP recommendations would result in a fleet of 135 vehicles¹, which is beyond the design capacity of the Corridor Road facility. In addition there are 44 paratransit vehicles now operated under the Anne Arundel County Office of Transportation (formerly operated by the Department of Aging and Disabilities) that are maintained by the county at other locations, and previous studies have

¹ 49 Howard fixed-route, 35 Howard paratransit, 37 Anne Arundel fixed-route/Call N Ride, 6 Anne Arundel paratransit, 8 Prince George's County fixed-route.

identified a desire on the part of the county to address the maintenance and storage needs for this fleet in a different way.

While it is not clear whether or when a consolidated fleet of 135 transit vehicles will be operated by the RTA, the possibility suggests that at some point in the life of this TDP there will be a need to evaluate the potential need for an additional facility. If Anne Arundel County implements most of the recommendations in this plan, the 43 vehicles called for in the TDP combined with the county's paratransit fleet (currently 44 vehicles) would justify a second facility, potentially located in the central part of the county to minimize deadhead. The potential Howard County fleet of 84 vehicles would make use of most of the capacity of the Corridor Road facility at that point.

Columbia Transit Center

Currently RTA services in Howard County hub at the existing downtown Columbia Transit Center. It is located adjacent to the Columbia Mall, in the mall parking lot area near Sears at the west end of the mall. The mall property is owned by GGP (formerly named General Growth Properties). The transit center includes linear bus bays serving the eight local RTA routes. The Maryland Transit Administration (MTA) operates six commuter and express routes at a separate location by the mall's southwestern parking areas. The Columbia Transit Center has no commuter parking associated for RTA routes; however, the MTA has existing parking agreements with GGP for commuter customers.

Downtown Columbia Transit Center



Source: Downtown Columbia Transit Center, Location and Site Analysis

The existing transit facility structure consists of steel shelters and linear bus bays. There are no restrooms or additional facilities—patrons must walk to the mall. Transit services are provided on an hourly pulse to enable timely transfer of passengers between routes.

Downtown Columbia Transit Center Shelters



Source: Downtown Columbia Transit Center, Location and Site Analysis

As part of the redevelopment of the Columbia Mall area, the Downtown Columbia Plan requires that Howard Hughes Corporation, the master developer² for Downtown Columbia General Growth Properties provide a location for a new transit center prior to the issuance of a building permit for the 1.3 millionth square foot of development. The *Downtown Columbia Transit Center Location and Site Analysis Study (October 2017)* identifies a preferred site to accommodate RTA services, MTA services and potential future bus rapid transit (BRT). The site for the new facility is on the south side of the mall Ring Road along Little Patuxent Parkway (near Union Jacks pub/restaurant). It is to be developed by the Howard County Housing Commission as a mixed-use project, with the transit center portion of the project funded by the Downtown Columbia property tax increment.

The Transit Center would include fourteen bus bays, including eight for current RTA routes plus two for growth, two for MTA Commuter Bus, and two for future BRT. The services proposed in the TDP can be accommodated by the proposed facility. The timing of the development of the Transit Center is uncertain at this point. The most likely scenario calls for development of this facility in the eight- to ten-year time frame, beyond this TDP planning period. The *Downtown Columbia Transit Center Location and Site Analysis Study* recommends that the Howard County Office of Transportation initiate engineering investigations regarding a potential interim transit center, if a new transit center is needed before the preferred site becomes available for redevelopment.

² Howard Hughes Corporation is the master developer for Downtown Columbia. General Growth Properties is the former master developer.

MARKETING AND BRANDING

As discussed in Chapter 3, the RTA has low name recognition, possibly due to the recent merger of Howard County Transit and Central Maryland Regional Transit under the name RTA. Nearly 70% of residents in the RTA service area either know the system by name only or have never heard of RTA. In addition, even current users may be confused because of the fact that the current fleet includes a diverse collection of buses painted in a variety of color schemes, and it currently has two distinct fare policies inherited from the two precursor systems. This lack of name recognition and the perception that the system is difficult to use mean that the RTA should continue to build on its marketing and branding efforts at the same time as it works to improve its service offerings.

Chapter 7

Future Transit Development

INTRODUCTION

This chapter presents information about future transit developments in the region that will likely take place beyond the time period covered by this TDP. The TDP plans address the current fleet issues, restructure and improve the local services in the region, setting the stage for these next developments.

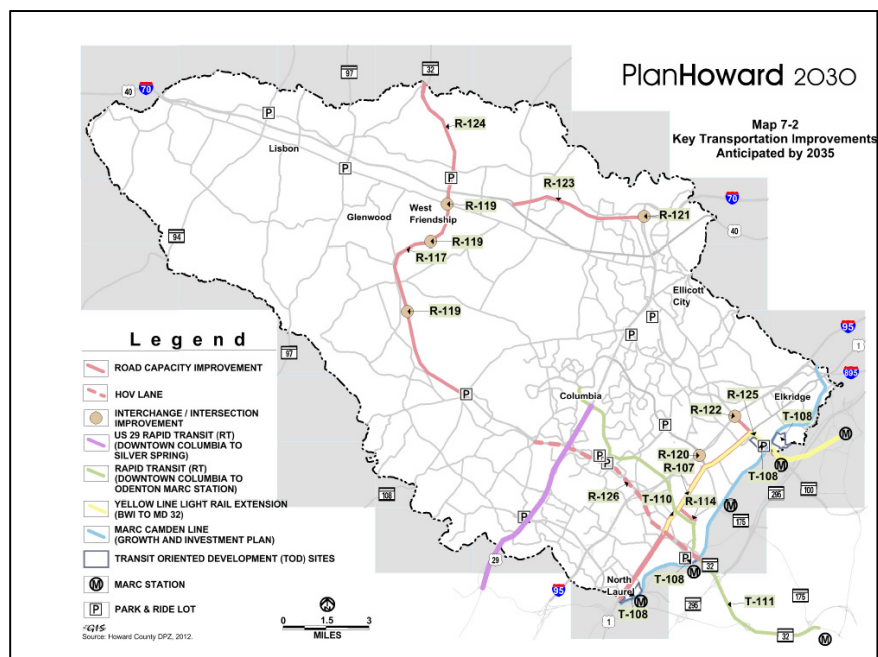
BUS RAPID TRANSIT - BRT

Introduction

In 2012, *Plan Howard 2030*, Howard County's general plan identified three rapid transit corridors for further study, as seen in Exhibit 7-1. These three corridors were identified to address three primary concerns:

- Addressing congestion on the US 29 Corridor
- Providing better regional transit along the county's commercial corridors
- Enhancing transportation connections between the county's major economic activity areas.

Exhibit 7-1: *Plan Howard 2030* Rapid Transit Corridors



The Plan Howard 2030 implementation section called for further study of the US 29, MD 32 and US 1 Corridors to test ridership and technical feasibility and based on this guidance, the Howard County has advanced the development of Bus Rapid Transit. (BRT) via a series of planning and design studies.

What is Bus Rapid Transit?

Bus Rapid Transit is a bus-based transit system that delivers fast, comfortable, and cost-effective transit services along a spectrum of service levels and right-of-way treatments. Traditionally, bus rapid transit is the next step in a bus route's evolution, and is implemented when a route exceeds its carrying capacity and/or is so negatively impacted by traffic congestion, that travel time reliability and headways can no longer be maintained. Some potential elements of BRT are:

- Dedicated right-of-way along and busways on the whole corridor and/or in congested areas.
- Systems to allow buses to hold or advance traffic signals so they are not delayed at intersections.
- Off-board fare collection to minimize the amount of time it takes passengers to enter the bus.
- High frequency service with buses arriving every few minutes, at least during peak hours.
- Bus stations that are level with the bus floor to allow passengers to enter and leave quickly.
- Stops located in high demand locations.
- Larger buses to allow more passengers to board per bus.



Exhibit 7-2: BRT Bus and Station
(Las Vegas, Nevada)

Completed Planning Studies

A concept plan¹ for Bus Rapid Transit was the initial BRT study conducted for Howard County. It presented a very high-level plan and costs for a BRT system along a wide range of roads and corridors, but did not perform ridership analyses, develop a service plan or perform any operational analysis.

¹ Howard County BRT—Concept Plans and Preliminary Cost Estimates for the Envisioned System, for the Howard County Office of Transportation, April 20, 2012.

Following the completion of the concept plan, the county developed a Phase I study². The purpose of the study was to evaluate a BRT network for the county, including linkages to multiple activity centers and transit systems. The study included ridership analysis and the impact on both transit and vehicle travel times on the routes, car trips diverted to transit, for the routes presented in the concept plan. The study was developed based on a best-case scenario, i.e., the system had all the characteristics a BRT system.

The study focused on four corridors:

1. US 29 between Mount Hebron and Silver Spring
2. Broken Land Parkway between Columbia Town Center and Savage MARC Station
3. MD 32 between Clarksville and Odenton Town Center
4. MD 216 between Scaggsville and Odenton Town Center

In a Phase II study³, the county expanded the previous Concept Plan and Phase I efforts with additional detail and rigor. The purpose of the Phase II study was to identify and evaluate the corridors and feasible alternatives to demonstrate the potential for attracting riders and receiving funding, and to develop alternatives to a level that could be carried forward to the next stage of right-of-way design, environmental impact and preliminary engineering. The Phase II effort focused on three corridors US 29, Broken Land Parkway, and US 1, and examined specific route alignment and stations, ancillary feeder transit services, landside services such as park and rides and pedestrian accessibility, preliminary operating costs, and land use plans to support high quality transit service within and between them.

The Phase I and II studies documented a significant travel market and demand for high quality BRT to/from and within Howard County for each of the three corridors should a high-quality BRT system be developed. Study modelling found that in the design year of 2035, a three route BRT system could:

- Generate 9,080 new transit trips from Howard county, and
- Generate new 12,579 new transit trips to Howard County.

Other important findings were:

- Significant demand from the northernmost stations due to their proximity to I-70, and the new travel markets that this opens up.

² Sabra, Wang & Associates, Inc., Howard County Bus Rapid Transit Phase I Study Technical Report, for the Howard County Office of Transportation.

³ Sabra, Wang & Associates, Inc., Howard County Bus Rapid Transit Phase II Study Technical Report, for the Howard County Office of Transportation, April 5, 2016

- The network connections and the “system” connectivity offered by tying the three corridors together to major activity centers and regional fixed-rail transit networks expand connectivity and open up new travel markets.
- Much of the demand is for the drive access/park and ride transit users which generates significant demand for park and ride lots.
- Local feeder routes and integration of MTA commuter routes are an important element supporting potential ridership.

What’s Next

Howard County’s consideration of BRT is now focused on the Route 29 Corridor and the opportunity presented to work with Montgomery County as it develops, plans and implements a BRT service on Route 29 between Burtonsville and Silver Spring.

Montgomery County BRT

Several years of planning for BRT in Montgomery County culminated in the 2015 development of a Preliminary Purpose and Needs Statement for BRT in the US 29 corridor, which was followed by the development of an application for Transportation Investment Generating Economic Recovery (TIGER) grant funding from the U.S. Department of Transportation. In 2016 Montgomery County included \$6.5 million in the capital budget for planning and design—with the goal of getting BRT on the Route 29 Corridor within four years.

The county’s proposal succeeded in obtaining the TIGER grant funding, and the county is now in the engineering and procurement phases of the implementation. The proposed service will run from the Burtonsville Park and Ride lot to Silver Spring, primarily using the existing bus-on-shoulder lanes on the northern portion of the route, operating in mixed-traffic on the southern portion of the route, and on local streets to access stops that are off US 29. Transit signal priority will be installed at up to fifteen intersections, with service from 6:00 a.m. to midnight seven days per week on 7.5 minute headways during the peak periods and 15 minutes off-peak. Stops will be at designated stations with easy access and amenities, and special buses with Wi-Fi and other amenities will be used.

Montgomery County is aiming to implement service operations by early 2020, which is sooner than Howard County had anticipated its development of bus rapid transit.

Howard County BRT

Howard County sees many of the same advantages for BRT as anticipated by Montgomery County in terms of providing improved transit travel times, increased reliability, increased frequency—and addressing the continuing growth of traffic on the US 29 Corridor. BRT would also support the plans for the redevelopment of Downtown Columbia, with its increase in both residents and employment. BRT has been included in the planning for the new Downtown Columbia Transit Center, where two bays have been reserved in the conceptual plan, and access concepts for Downtown Columbia includes lanes linking the BRT with Downtown Columbia. Earlier implementation of BRT could affect the need for development of the Transit Center, or the need for an interim transfer center to link RTA, BRT and MTA commuter services.

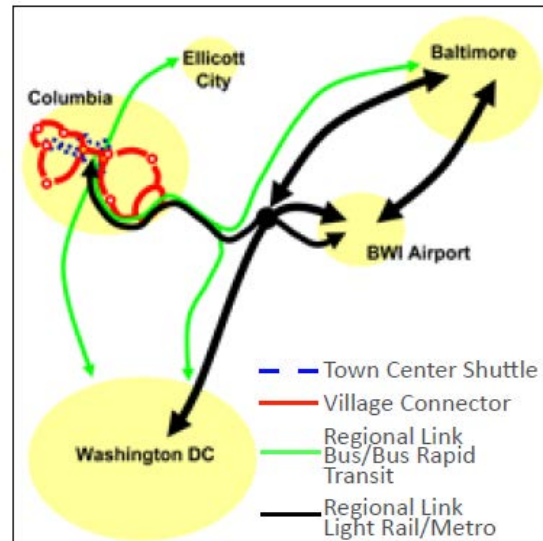
Howard County and Montgomery County are currently coordinating efforts around the development of an extension of the Montgomery BRT (now branded as “Flash”). The two counties are developing an MOU. There are issues in terms of defining the services—the Phase II BRT study for Howard County calls for stops at MD 216, Columbia, Long Gate/Ellicott City and Mt. Hebron. Montgomery County is moving ahead with vehicle procurement, and one scenario could have Howard County purchasing vehicles for its service as options on that procurement, or providing a capital contribution to a combined fleet.

Other issues yet to be addressed include the manner in which the extensive MTA commuter bus service from Howard County would be integrated with the BRT. Currently the MTA pays the cost of these services, and MTA commuter buses utilize existing bus-on-shoulder lanes in Montgomery County. Service planning will need to determine how these services might be integrated into BRT.

The impact of BRT development in Montgomery County is that this vision for high quality, high frequency transit in the US 29 Corridor may be able to come to fruition sooner, rather than later, in tandem with the development of Downtown Columbia. In addition, the development of the BRT corridor in Howard County would be a first step toward the continued development of high-frequency transit within the county on a proposed east-west transitway emerging from the Bridge Columbia initiative, as discussed in the following section.

BRIDGE COLUMBIA EAST-WEST TRANSITWAY CONCEPT

This TDP recommends a complementary transit concept for a high-frequency east-west transit corridor within Howard County, linking the Howard County General Hospital, Howard Community College, Downtown Columbia, and Snowden Square and the Gateway employment area. As proposed, it would connect most of higher density residential and employment locations in Howard County. It would connect with the BRT, local RTA routes, and MTA services at the new Downtown Columbia Transit Center. In terms of the overall regional connectivity concept presented in Exhibit 7-3, this concept corresponds to the Village Connector shown in red, although the actual route would be different.



Future Connectivity Diagram, Region

Exhibit 7-3: Future Regional Connectivity Concept

Background

Although not widely known, the original Final Development Plans for Columbia included a designated right-of-way for a separate “Minibus” transit network separated from the street network. These rights-of-ways are owned by the Columbia Association, and many are currently improved with the paved bicycle/pedestrian pathways. Friends of Bridge Columbia (Friends), a citizen’s group formed to advocate for a signature bridge over US 29 also called for using this transitway for a separate busway network that would connect east- and west-Columbia with a transit bridge over US 29. The proposed transitway was intended to avoid automobile traffic and improve transit speeds and reliability, support Village Centers on its route, support Downtown Columbia and Gateway redevelopment, and provide service that would be usable by the growing senior population.

Analysis of the concept revealed that the proposed corridor location addressed many of the Friends’ goals, particularly considering projected population and employment concentrations⁴. As the Downtown Columbia plan is implemented and Gateway redevelopment occurs, the conceptual transitway would serve the existing areas of residential and employment density, key origins and destinations, and several of the Village Centers. It is the corridor entirely within the county most likely to support high-frequency transit. However, even in projections for 2040 the densities do not reach thresholds⁵ justifying a

⁴ See separate report prepared concurrently with the TDP – [Bridge Columbia Transitway Study](#).

⁵ Planning guidelines call for 15 housing units per acre and/or 75 employees per acre as thresholds for busway feasibility.

separate busway. In addition, the right-of-way that was set-aside for the busway network is 40 to 50 feet wide. Under today's standards, it would be completely occupied by a two-way busway with no buffer to adjoining properties. Because of the likely environmental damage, the proximity to existing housing, the likely high cost, and the current and projected level of transit ridership, the notion of a separate transitway network in its entirety is not justified for the foreseeable future.

Concept

While a separate transitway network is not warranted, the identified corridor is appropriate for the future development of *improved* transit. The transitway analysis showed that surface streets and highways can be used for most of the route. Current and future congestion on Route 175 between Dobbin Center Parkway past Tamar Drive could require transit priority measures such as bus-on-shoulder queue-jumper lanes and signal priority. An alternative routing that could service Oakland Mills could be implemented if the “third interchange” bridge were built across US 29⁶. Studies for this bridge include options that would link east and west Columbia as well as provide access from US 29. Including a transit lane or transit priority on the bridge would support faster and more reliable transit. Figure 7-1 presents two conceptual routes for the Downtown to Gateway corridor utilizing different bridge options.

Continued development of this concept should add the other elements typically found in BRT like services—enhanced shelters, stops, special branding, real-time schedule information at stops—along with other locations where signal priority or other priority treatments would be advantageous. In addition the implementation of fully-electric buses on the 401 which began in 2017 (see Exhibit 7-4) sets a precedent for using specialty buses with separate branding on this route.

⁶ Howard County, Maryland, [Downtown Columbia Plan: A General Plan Amendment](#), February 1, 2010; and Wallace Montgomery, [Draft Feasibility Study for Downtown Columbia Transportation Improvements-Little Patuxent Parkway/U.S.29 Interchange](#), January 2012.

Figure 7-1: East-West Transitway Concepts: Using Proposed Third Interchange Bridge or Transit/Bicycle/Pedestrian Replacement Bridge

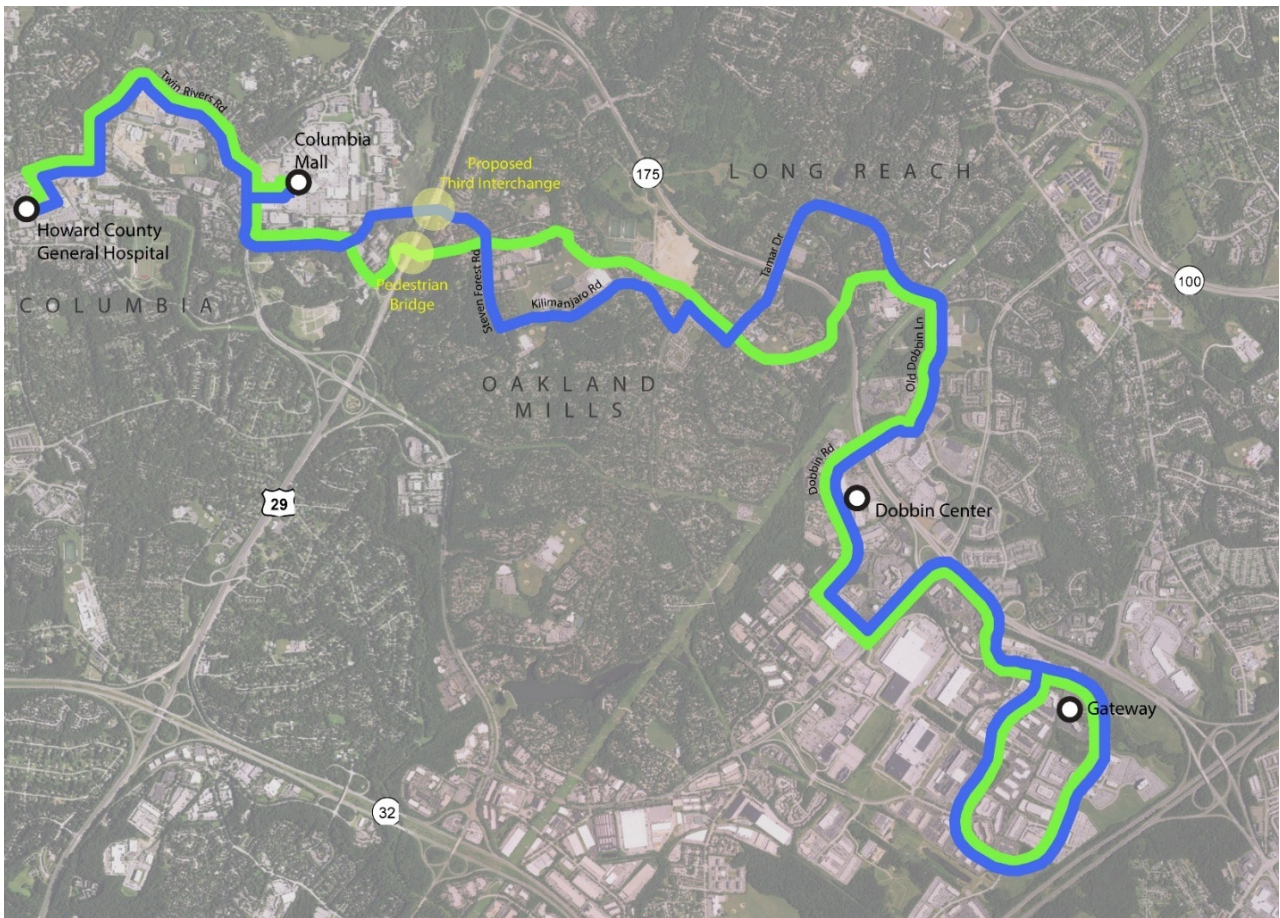


Exhibit 7-4: Electric Bus Used on RTA 401 Service

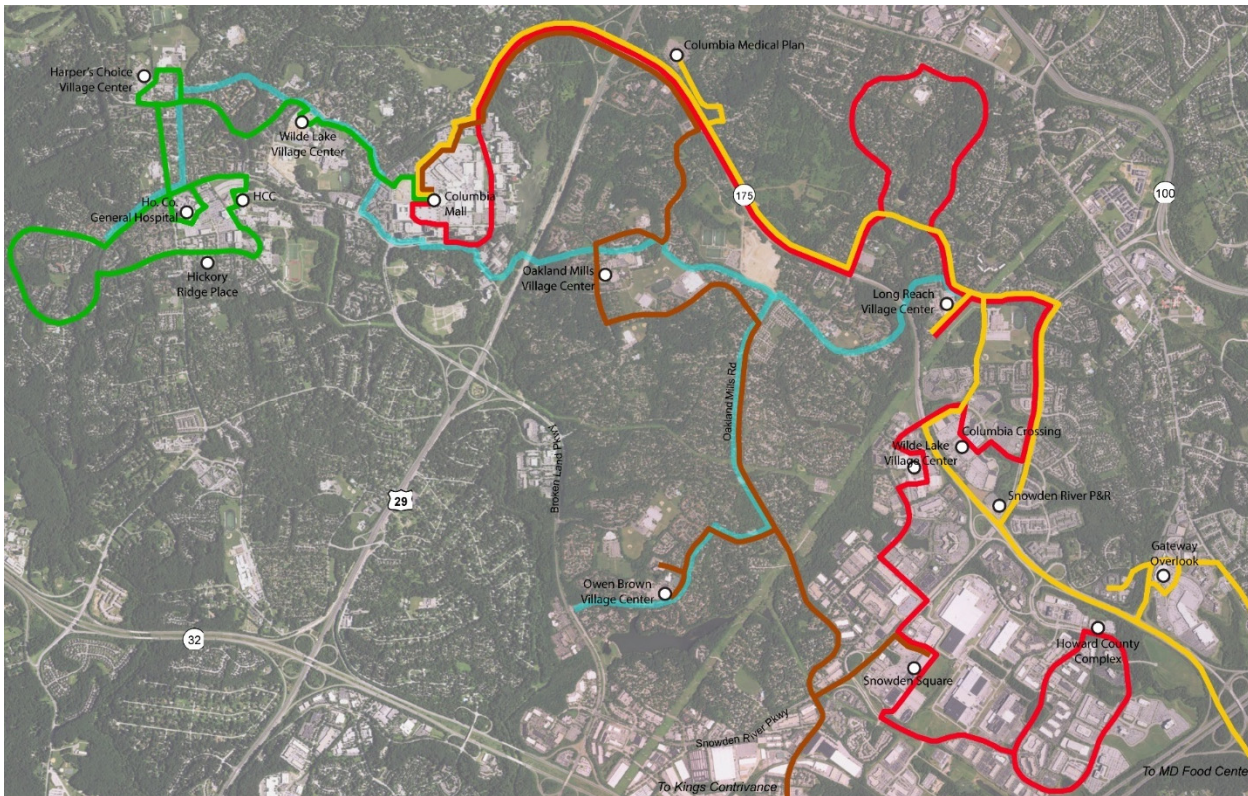


Source: RTA of Central Maryland

Building on Existing Services

Currently there are four RTA routes that operate in the area served by the Corridor—the 401, 406, 407 and 408, as shown in Figure 7-2. The 401, the 407 and the 408 are proposed to operate at 30 minute headways. The long-range concept for the east-west transitway service would combine the 401 and the 406 into a single route, operating at higher frequencies as ridership increases with the growth of Downtown Columbia and the redevelopment of Gateway.

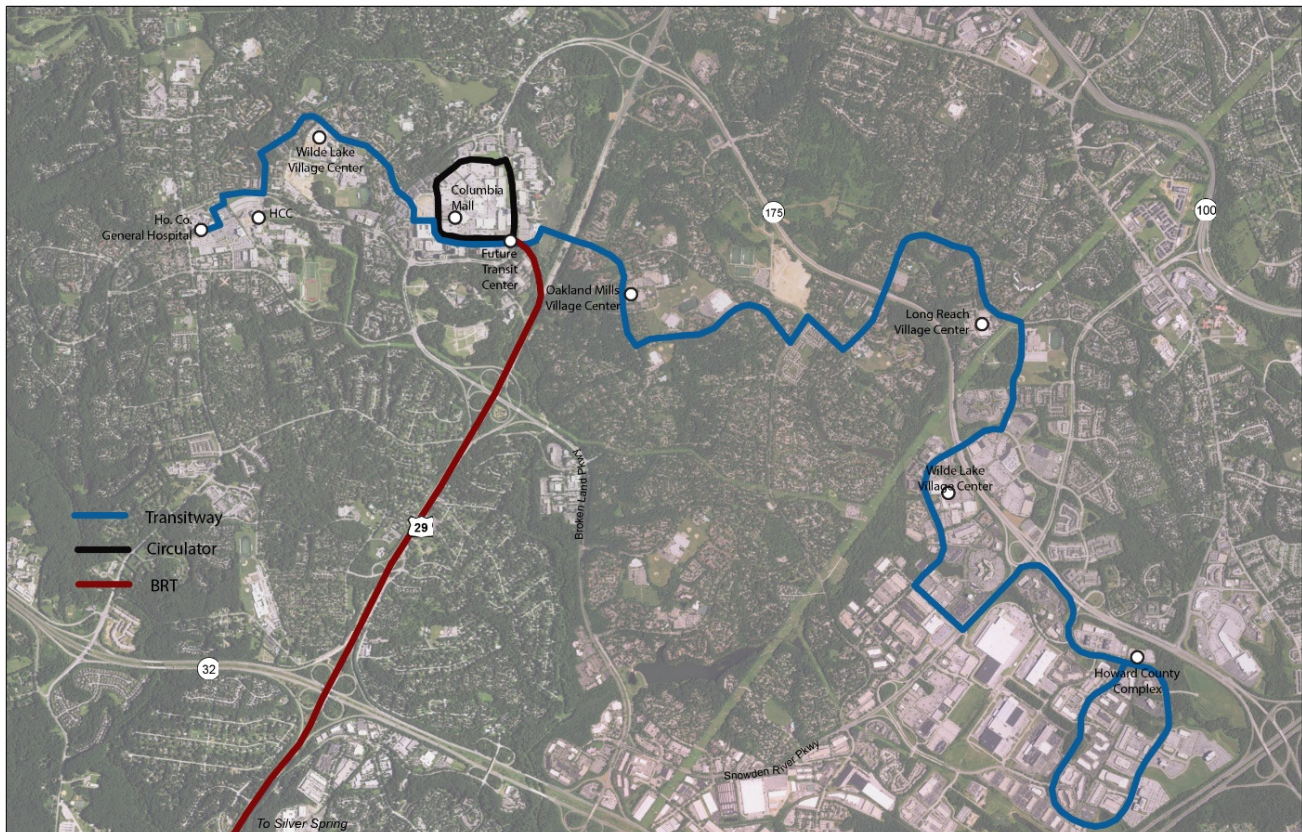
Figure 7-2: Existing RTA Services and the Transit right-of-way.



Connecting with Future Services

As noted above, this proposed new east-west route would connect with the future Downtown Columbia circulator shuttle at the new Downtown Columbia Transit Center. It would also connect with the future BRT on US 29. Figure 7-3 presents a map of these proposed high-frequency transit services.

Figure 7-3 Howard County's Future High Frequency Transit Services



If operated at planned Montgomery County frequencies, it would operate at 7.5 minute headways in the peak, and 15 minute headways off-peak. An east-west transit service operating at similar headways could effectively extend the impact of the BRT to much of Columbia, particularly the major activity centers.

Timing

The potential timing of implementation is linked to the future implementation of a number of elements. The Montgomery County BRT is slated to begin service from Burtonsville in 2020. The timing of an extension to Columbia is not known, but likely be later. The Downtown Columbia Transit Center is estimated for construction in eight to ten years. The Third

Interchange Bridge is included in the Downtown Columbia plan, but there is no estimate of the date when it will be warranted. The redevelopment of the Gateway area will take a number of years, perhaps achieving most of its growth by 2040.

Consequently the development of the East-West Transitway high-frequency bus service will not likely occur during the period covered by this TDP, but it is potentially a part of the next one. At that point the basic combined east-west route could be evaluated, and perhaps implemented at current frequencies using the existing roads, perhaps with priority treatments. By then BRT implementation will be in place, and the need for the Third Interchange bridge will be better understood and there may be more certainty about the potential routing.

DOWNTOWN COLUMBIA CIRCULATOR

Howard County's 2010 Downtown Columbia Plan recommends a circulator shuttle to reduce Downtown Columbia traffic as residents, employees and visitors "park once," then walk or take the shuttle to other destinations in Downtown Columbia. Under the Plan's Community Enhancement, Program and Public Amenity (CEPPA) #23 requirements GGP (now Howard Hughes) must provide \$1,000,000 towards the initial funding of a Downtown Circulator Shuttle prior to issuance of a building permit for the 5 millionth square foot of development. Issuance of a building permit for the 1.3 millionth square foot of development is expected in late 2017 or early 2018. Due to market conditions it is uncertain when a permit for the 5 millionth square foot of development will be issued but it will likely be in at least four or five years towards the end of the life of this TDP.

CEPPA #5 required a study of the shuttle to evaluate and determine appropriate levels of service and phasing in of service at various levels of development. Howard Hughes completed this study in 2011⁷. The study's key recommendations were (in summary):

- A Downtown Columbia circulator should begin operations when there are enough new residents in Downtown Columbia seeking such service, as determined through the results of monitoring surveys.
- A transportation demand management plan should be established for Downtown Columbia with a periodic monitoring program that can establish a clear metric(s) for when a circulator shuttle is appropriate.
- The short-term circulator should utilize existing mall and surrounding roads with approximately six stops near existing buildings and the mall. The circulator should operate on a fixed schedule, departing the transit center every 20-minutes.

⁷ Downtown Columbia Downtown Transit Center and Circulator Shuttle Feasibility Study.

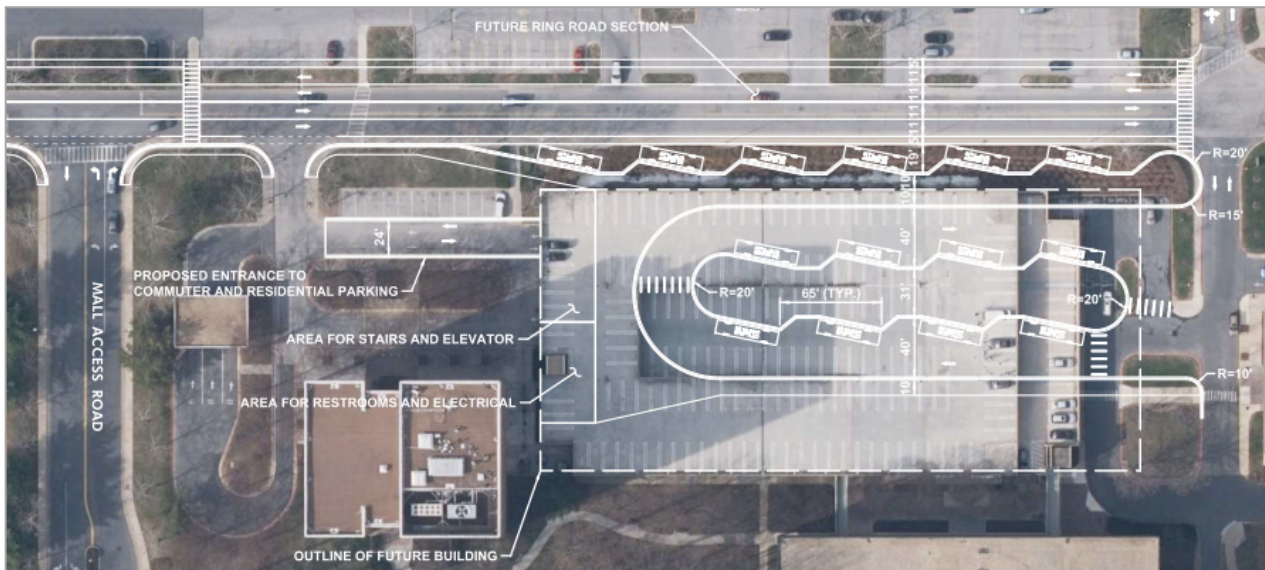
- In the long-term, the circulator should extend its route to the Crescent area when new development in that area is occupied and reporting a need through the monitoring program's surveys. Frequencies should increase to 15- minutes.

DOWNTOWN COLUMBIA TRANSIT CENTER

As noted in Chapter 6, planning is underway for a new Downtown Columbia Transit Center to serve as the central station for the BRT, RTA routes, MTA commuter bus, the Downtown Columbia shuttle. The facility will be centrally located in Downtown Columbia.

An alternatives analysis conducted for Howard County evaluated several sites, and the recommended site (known as Site 3) is located on the southside of Mall Ring Road along Little Patuxent Parkway (near Union Jacks Pub/Restaurant)⁸. The analysis call for fourteen bus bays—eight for existing RTA routes, two for RTA growth, two for MTA, and two for BRT routes. It will have sheltered waiting areas, bicycle parking, a transit information booth, facilities for driver break time (including restrooms), real-time transit information, and commuter parking for MTA routes. The facility is intended to be part of a mixed-use, mixed-income residential project developed by the Howard County Housing Commission.

Figure 7-4: Downtown Columbia Transit Center Concept



Source: Downtown Columbia Transit Center Location and Site Analysis Study

The Transit Center portion of the project will be funded from the Downtown Columbia property tax increment.

⁸ Downtown Columbia Transit Center –Location and Site Analysis Study, October 2017

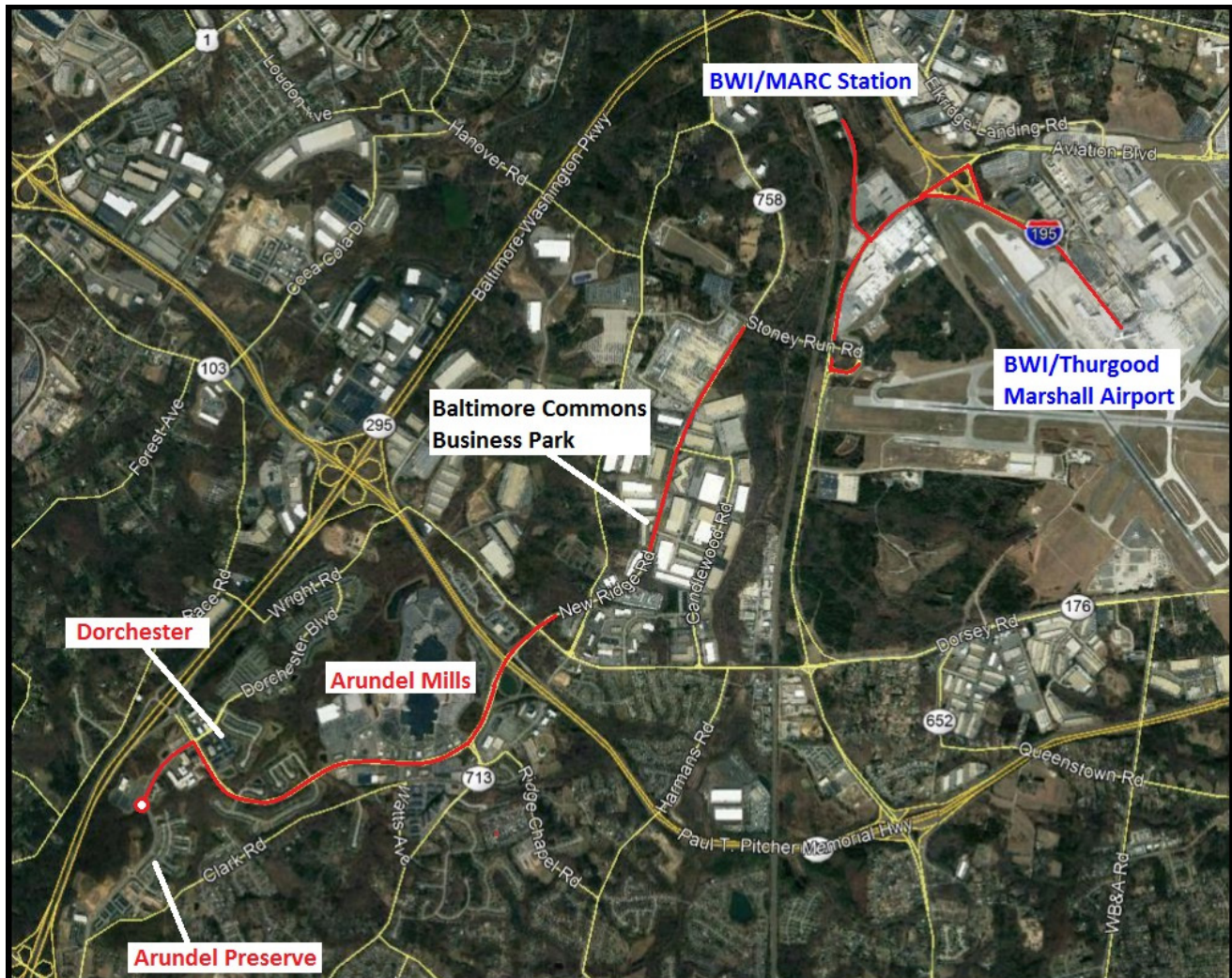
The Downtown Columbia Plan requires General Growth Properties, (now Howard Hughes Corporation) to provide the site prior to issuance of a building permit for the 1.3 million square foot development, however, the timing may be changed to coincide better with the planned redevelopment of the chosen site. As a result the implementation of the new transit center is likely to be in the eight to ten year time frame.

ARUNDEL MILLS-BWI MARSHALL HIGH-FREQUENCY SHUTTLE

In this TDP there are individual route plans for multiple routes that include service between Arundel Mills and BWI Marshall Airport. The proposed 505 from Columbia, the proposed 502 from Laurel, and the proposed Annapolis-BWI-Arundel Mills services all include service between those two points, with the same stops. In addition, the MTA LocalLink 75 provides service between the airport and Arundel Mills, and there are plans for the WMATA Metrobus B30 to service both points. BWI Marshall and Arundel Mills are two major regional destinations that are in close proximity, and there is a need for service to both of them from a number of points in the region.

An alternative to operating all of these routes to both points is to provide a higher frequency shuttle between Arundel Mills and BWI Marshall, allowing each of the longer distance routes to serve one or the other while passengers needing to travel to the other key destination can catch the shuttle. Figure 7-5 presents a conceptual version of this route, which could initially operate at half hour headways with a future vision of higher frequency. The span of service would need to include seven day per week service, from early morning to the closing of the MTA light rail services

Figure 7-5: Arundel Mills-BWI Marshall Airport High Frequency Shuttle Route



CONCLUSION

This TDP calls for a significant restructuring and expansion of transit services in Central Maryland, including:

- Howard County: Restructuring of Howard County services to short routes, cut travel times, and improve frequencies, followed by expanded frequencies and hours of service, new connections, and expansion of coverage to three new areas.
- Anne Arundel County: Expansion of existing services in terms of hours and frequencies, a high-frequency shuttle between Arundel Mills and BWI Marshall

Airport, creation of Call N’Ride last-mile/first-mile demand-response service in community zones, and a number of new connecting routes to link these communities.

- New service in northern Prince George’s County to link new development (Konterra) with Laurel.

It also includes a plan for bringing the region’s local transit services fleet to a point where no active vehicles are operated beyond their expected lifetimes. The goals are to provide safe, reliable service, meeting the needs of persons who wish to use transit to connect to employment in the region, to access medical care, or for shopping or social trip purposes.

These improvements in the local transit services set the stage for the next round of improvements that have been presented in this chapter—BRT on US 29, a Howard County East-West Transitway, a new Downtown Columbia Transit Center, and a Downtown Circulator Shuttle.