

Annapolis Transit Transit Development Plan

FINAL REPORT



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Prepared for
Annapolis Transit, City of Annapolis, Maryland



Prepared by
KFH Group, Inc.
Bethesda, Maryland

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Executive Summary

INTRODUCTION

A Transit Development Plan (TDP), which is required by the Maryland Transit Administration (MTA), is a plan that identifies an area's transportation goals and objectives, the current status of its transportation services, and the proper course to implement those objectives in the short-range future. The TDP planning tool is used to identify the public and specialized transportation needs of the service area, analyze the performance of currently operated transit services, explore alternatives for improving services, and recommend an implementation plan that includes a five-year budget and capital replacement plan. This document is an update to the City of Annapolis TDP; the last TDP was completed in 2010. This Executive Summary provides an overview of the process and describes the recommended transit improvements.

This TDP includes an introduction to the plan with a review of existing services (Chapter 1), an assessment of current and near-term unserved potential needs (Chapter 2), identifying issues and opportunities of this study (Chapter 3), alternatives to address identified needs and performance concerns (Chapter 4), and a recommended plan for improvements (with phased implementation) including capital and operating budget projections (Chapter 5).

Major tasks for the TDP included an extensive transit needs analysis with public, agency and stakeholder outreach; an analysis of existing services; and the development of alternatives to improve public transportation in the study area. The major findings and results from these tasks are highlighted in this Executive Summary.

EXISTING SERVICES

Chapter 1 is a comprehensive review of the existing services to identify any service gaps and areas for improvement in the performance and organizational efficiency of existing transit services. The combined results of the existing service analysis and the needs analysis serves as the basis for service and organizational recommendations. Chapter 1 is divided into seven sections:

- **Annapolis Transit Services** – Description of the governance and organizational structure of Annapolis Department of Transportation (ADOT) and an overview of existing services including route profiles.
- **Funding and Fare Policy** – Identification of operating budget and funding sources and description of the fares available to passengers.

- **Service Performance Evaluation** – Performance analysis at the system and route levels, compared to the Maryland Department of Transportation Maryland Transit Administration (MDOT MTA) service standards.
- **Existing Facilities, Fleet, and Technology** – Descriptions of the Annapolis Transit facilities, current vehicle fleet, and technology related to safety and security and passenger information.
- **Marketing and Communications** – Description of the current approaches to promote Annapolis Transit, convey transit information, and engage the public.
- **Pedestrian and Bicycle Access** – Assessment of pedestrian and bicycle access to Annapolis Transit services.
- **Other Area Transportation Providers** – Identification of other transportation services that operate within or near Annapolis.

Annapolis Transit

The Annapolis Department of Transportation plans and operates public transportation services, known as Annapolis Transit. The Annapolis Transit service area is about 23 square miles including the City of Annapolis and the surrounding Anne Arundel County areas of Parole, Edgewater, and Arnold. Annapolis Transit currently operates seven bus routes, two downtown shuttles, and ADA complementary paratransit service for people with disabilities who are not able to ride the fixed routes.

Since the Transit Development Plan guides development of local transit services, Annapolis Transit is the focus of this review. However, other public and private transportation providers also serve Annapolis and provide connections to destinations in Anne Arundel County and the greater Washington and Baltimore regions.

Fixed Route Service

Annapolis Transit provides fixed route bus service primarily within the City of Annapolis. The system operates six color-coded routes: Brown, Green, Gold, Orange, Red, and Yellow, known as the Rainbow Routes. The Rainbow Routes operate on weekdays between 5:30 a.m. and 7:00 p.m.; and operate on Saturdays between 7:30 a.m. and 7:00 p.m. (except for the Orange Route). The Gold Route provides connections to Edgewater and Anne Arundel Community College (AACC) in Arnold, operating between 6:00 a.m. and 8:00 p.m. on weekdays and between 8:00 a.m. and 8:00 p.m. on weekends. The Purple Route provides evening service

from 7:00 p.m. to 10:30 p.m. Monday through Saturday and all-day service from 8:00 a.m. to 8:00 p.m. on Sundays.¹

Circulator

The Circulator route serves downtown Annapolis. It operates within a two-mile radius connecting four parking garages, businesses and retail shops in historic downtown and inner West Street. The Circulator operates daily, from 7:30 a.m. to 11:00 p.m. Monday through Saturday and from 8:00 a.m. to 8:00 p.m. on Sunday, on a 20-minute headway. ADOT currently contracts with SP+ to operate the service as part of SP+'s parking management contract with the City of Annapolis. The Circulator bus is equipped with Automatic Vehicle Location (AVL) technology, allowing passengers to track the bus in real-time via the Annapolis Circulator website or the Reston Limousine app, available for iPhone or Android smartphone devices.

State Shuttle

The State Shuttle operates within a two-mile radius, connecting the Navy-Marine Corps Memorial Stadium with the Central Business District (Church Circle). The shuttle operates Monday through Friday, from 6:30 a.m. to 8:00 p.m., at a 20-minute headway. Annapolis Transit directly operates this service.

NEEDS ANALYSIS

Chapter 2 provides an updated assessment of transit needs in the Annapolis Transit service area based on demographics and land use, commuting patterns, stakeholder and community input, and a review of recent transportation and planning studies. These inputs helped the study team identify geographic areas and population segments with high transit needs, and whether Annapolis Transit's existing services are meeting those needs.

Input collected through stakeholder interviews and public surveys identified the top transit improvements desired by riders and by potential transit users. Highlights of the community survey input and rider survey input are provided in Figure ES-1 and Figure ES-2 respectively.

¹ In August 2018, while this TDP was under development, Anne Arundel County began operating the Gold and Yellow Routes.

Figure ES-1: Community Survey Input

Need Transit Connections to	Improvements to Try Transit	Other Needs
<ul style="list-style-type: none"> • DC (15) • West Annapolis (8) • Baltimore (6) • BWI (5) • New Carrollton (5) • South County (3) • Arnold (3) • Naval Academy (3) 	<ul style="list-style-type: none"> • More frequent service (53%) • Real-time passenger information (35%) • Electronic fare payment (27%) • Longer hours of service (24%) • Better service reliability (23%) • Shorter travel time (23%) 	<ul style="list-style-type: none"> • More direct service • Newer buses with shock absorbers • Information on how to use transit • Real-time bus arrival information • More marketing of existing service • Extend Circulator to Eastport • Provide safe bike & pedestrian access • Transit for tourists
Communication Preferences		
<ul style="list-style-type: none"> • Website & email • Social media • At bus stops 		

Figure ES-2: Rider Survey Input

Top Areas of Satisfaction	Preferred Service Improvements	Other Comments
<ul style="list-style-type: none"> • Courtesy/Friendliness of Bus Drivers (122) • Sense of Security on Buses/at Stops (108) • Frequency of Bus Service (106) • Cost of Bus Fare (102) • Bus Running On-Time (101) • Areas Served by Bus Routes (100) 	<ul style="list-style-type: none"> • More weekend service (39%) • Later evening hours (33%) • Lower fares (27%) • Better on-time performance (26%) • More bus shelters & benches (24%) • Cleaner buses (24%) • Real-time information on bus arrivals (21%) 	<ul style="list-style-type: none"> • Increase service reliability • Increase weekend service frequency • Restore 30-minute frequency to Yellow Route • Drivers are knowledgeable & courteous • Don't like the trolleys – slippery seats • Don't leave earlier than published times • Need Spanish speaking customer service staff
Top Areas of Dissatisfaction		
<ul style="list-style-type: none"> • Weekend Bus Service (43) • Hours of Bus Service (25) • Availability of Transit Information (18) 		

Additionally, recent studies were reviewed to identify transit related issues and recommendations. Combined with the review of existing services, the study team's evaluation of transit needs from various angles helped identify the top issues and opportunities for Annapolis Transit to address in the TDP service and organizational alternatives.

ISSUES AND OPPORTUNITIES

Chapter 3 presents the goals and objectives of the TDP based on input from the Public Advisory Committee (PAC). The goals and objectives reflect many of the themes identified in the previous analyses and provide a good starting point for considering the transit issues and opportunities in the City of Annapolis and surrounding areas.

Chapter 3 also presents a synthesis of the top challenges and opportunities for improving Annapolis Transit. These challenges and opportunities are the result of the review of existing services and analyses of transit needs and stakeholder and public input.

Goals and Objectives

The PAC updated the goals and objectives from the 2010 TDP to reflect current community needs and priorities and new transit trends, however, some goals remain the same. The following goals and objectives were articulated by the PAC with guidance from city staff:

- Offer safe and reliable mobility options to meet community transportation needs, reduce traffic congestion, address parking constraints, and stimulate healthy living
- Create a seamless system for transit users in the City of Annapolis
- Connect residents to jobs and support economic development
- Explore technology innovations that improve services for existing riders and attract new riders
- Prepare transit to adapt to a new mobility system, where transportation modes are increasingly integrated and flexibility is a top factor in user convenience

Top Issues, Needs, and Opportunities

The top issues that emerged from the analyses, reviews of existing documents, and public inputs through surveys and stakeholders interviews were:

- 1) The need to increase ridership, and
- 2) More reliable and convenient service.

These issues are related and became more dominant following the Annapolis Transit service reduction in November 2014. Annapolis Transit lost about one-quarter of its ridership in the first year following the cuts and an additional 13% in the second year. A ridership loss of 36% over the last two years has resulted in lower productivity on every route.

Much of the input collected from riders, stakeholders, and the general public focused on improvements that would make service more reliable and convenient. These improvements included changes to existing services, new services, more information and marketing, and capital needs. Improved services would benefit existing riders and attract new transit users – subsequently resulting in ridership growth and contributing to service performance improvements (though the latter also depends on the amount and costs of services provided).

PROPOSED SERVICE IMPROVEMENTS AND ALTERNATIVES

Chapter 4 documents the variety of service and organizational alternatives that were presented to and considered by Annapolis Transit and the Public Advisory Committee. These alternatives were developed based on the review of existing services and analysis of transit needs, including stakeholder and public input. They also respond to the issues and objectives for the TDP update that were guided by the PAC, and discussed in the previous chapters.

Overall, the proposed alternatives focused on:

Restoring ridership on the Annapolis Transit system, including service from reductions implemented in 2014	Implementing route modifications to improve current services	Considering fare changes or new fares to attract and increase ridership
Attracting new ridership, with an emphasis on choice riders	Improving the passenger experience at bus stops	Coordinating with the MTA and other transit providers to establish a regional electronic fare system
Implementing operational changes to improve on-time performance and contribute to faster trips	Increasing marketing and communications about Annapolis Transit services	Reconsidering the funding of Annapolis Transit through an Enterprise Fund

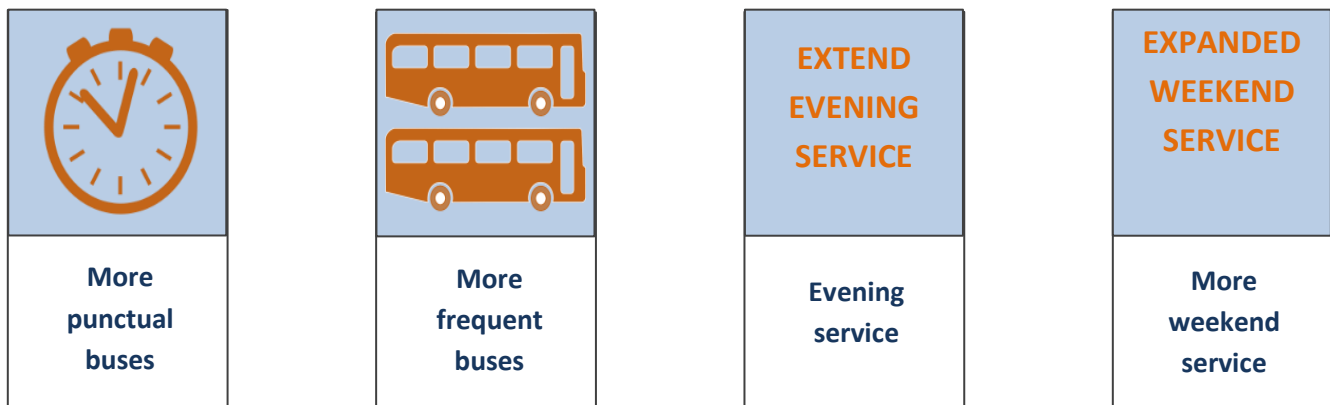
Chapter 4 provides a range of short-, mid-, and long-term improvements for Annapolis Transit to consider. The basic premise behind the alternatives is twofold:

1. Maintain and expand coverage to serve residential and employment growth areas, and
2. Improve the appeal of Annapolis Transit through increases in service, span, and frequency.

TRANSIT PLAN

Chapter 5 presents a five-year plan for implementing improvements. The recommended projects were derived through detailed evaluation of existing services, a comprehensive needs analysis including demographic data, examination of issues and opportunities, an alternatives analysis, and feedback from Annapolis Transit staff, the PAC, and MTA.

As documented in the report, the overwhelming demand was for the following:



One of the most significant features of the five-year plan is the recommendation to restore the core route network to the 2014 level of service to improve on-time performance and convenience for riders. Guidance from the MDOT MTA indicates that in the near-term there is not likely to be funding available for extensive service expansion; as such, this plan calls for a mix of primarily cost-neutral and palatable costing improvements in the short-term and expansionary projects in later years. Annapolis Transit can begin with these improvements, achieved primarily by shifting resources within the network.

Service Plan

The service plan is organized into three phases: short-, mid-, and long-term. It includes all of the service improvements discussed in Chapter 4: Alternatives. However, this plan reflects the decisions of the study team and Annapolis Transit staff on the preferred sub-alternatives for the route network design. One example is that new service feeder coverage was developed by transitioning Orange Route funds to areas where greater requests for service was voiced.

Annapolis Transit will continue to provide demand response and ADA paratransit service as an equivalent service to bus route service, in accordance with applicable laws and regulations. As described in detail in Chapter 1, ADA paratransit service is available to people who live within the Annapolis Transit service area. Potential riders must submit an application form to Annapolis Transit to become certified to use ADA paratransit services. ADA paratransit service is available to people with disabilities that cannot use the fixed route bus.

Implementation Schedule

The implementation timeline is designed to indicate approximate timing and priority; however, implementation of any component is often a function of funding availability. Both an annual budget process and MTA grant application process allow for public input and revisions to the anticipated project phasing based on need and funding. Acceptance of this TDP does not obligate the City of Annapolis or the State of Maryland to fund any particular element at any time. In general, the short-term projects correspond to Years 1 and 2, the mid-term projects to Years 3 and 4, and the long-term projects to Year 5 and beyond. Actual implementation may vary due to the availability of funding and other changing conditions.

Year 1 and Year 2

- Implement Pilot Feeder Connection Route (Figure ES-3). This new route would replace the Orange Route and would link East/Central Annapolis to two of the core routes (Brown and Red) at Annapolis Market Place. The service will run weekdays from 6:00 a.m. to 7:00 p.m. on 45-minute headways. The new Pilot Feeder Connection Route is cost neutral, though, it would require some schedule redesign and printing.
- Complete bus stop amenities initiative – signs, shelters, benches and trash receptacles. Signage branding consistency throughout where stops are located and amenities at the highest ridership stops.



Year 3 and Year 4

- Implement 15-minute headways on the Brown Route, Monday through Friday.
- Implement 30-minute headways on the Pilot Feeder Connection Route, Monday through Friday.
- Work with the city to increase the frequency of the Annapolis Circulator to every 10-minutes.

Figure ES-3: Pilot Feeder Connection Route



Year 5

- Increase frequency on the Green Route to 30-minute headways throughout the day on Saturdays.
- Offer 15-minute peak weekday service on the Green Route (15-minute headways).
- Expand evening hours Monday through Saturday and new Sunday service on the three core routes (Brown, Green and Red). Extended evening service until 10:30 p.m. and new Sunday service from 7:30 a.m. to 8:00 p.m.

Beyond Year 5

- Implement new microtransit service. Smartphone technology is transforming how people access public transit. Building upon the privately-operated transportation network company (TNC) service delivery model, public transit providers across the nation are incorporating an on-demand, dynamic routing and scheduling e-hailing component, known as microtransit, into their operational practice. The primary objectives are to:
 - Serve as a first mile-last mile connection between low-density, low-demand areas and transit facilities/activity centers.
 - Improve system wide efficiency and productivity.
 - Leverage technology to connect customers with on-demand vehicles.

Other Recommendations

The proposed plan recommends several additional improvements and further studies to address issues identified in this study in more detail. These include the following:

Potential Technology

- **Remix Routing Software** – Remix is a web-hosted application for planning public transit systems. It automates the process of route and schedule scenario testing, letting planners draw routes onto a map and immediately see a potential schedule and fleet requirements.
- **Digital Bus Depot Signs** – Transit users can get relevant information without knowing in advance what transit services are available at that location, and they do not need a smart phone with transit apps installed. On-street displays at bus stops provide

real-time passenger information which keeps riders up-to-date with how the bus is running, in “real-time.”

- **SMS Messaging** – SMS alerts allows transit agencies to broadcast system wide text alerts to riders who subscribe to the service.

Financial Plan for Operations and Capital

Table ES-1 summarizes the operating costs for the financial plan. The table uses FY 2020 as the base year for operating costs, and rolls in the full implementation cost of the previous year as the base for the next year in the plan. Table ES-2 presents the summary of the operating, capital, and preventive maintenance and other capital costs by year. While the TDP is meant to be a five-year plan, the years outlined in the plan may also be considered as sequential phases that are implemented over a longer time period, as funding becomes available.

Table ES-1: Operating Expansion Plan Summary (In Current Dollars)

	Operating Budget	TDP Planned Expansion	Total Operating Budget
Plan Year 1	\$ 3,691,335	\$ 0	\$ 3,691,335
Plan Year 2	\$ 3,802,000	\$ 0	\$ 3,802,000
Plan Year 3	\$ 3,916,000	\$ 273,250	\$ 4,189,250
Plan Year 4	\$ 4,033,000	\$ 552,500	\$ 4,585,500
Plan Year 5	\$ 4,154,000	\$ 921,250	\$ 5,075,250

¹Based on FY 2019 ATP plus 3% inflation factor.

Table ES-2: Operating and Capital Plan Summary (In Current Dollars)

	Operating Budget	TDP Planned Expansion	Total Operating Budget	Total Vehicle Capital	Total PM & Other Capital	Total
Plan Year 1	\$ 3,691,335	\$ 0	\$ 3,691,335	\$ 750,000	\$ 479,000	\$ 4,920,335
Plan Year 2	\$ 3,802,000	\$ 0	\$ 3,802,000	\$ 515,000	\$ 475,500	\$ 4,792,500
Plan Year 3	\$ 3,916,000	\$ 273,250	\$ 4,189,250	\$ 1,060,900	\$ 489,400	\$ 5,739,550
Plan Year 4	\$ 4,033,000	\$ 552,500	\$ 4,585,500	\$ 1,092,700	\$ 503,700	\$ 6,181,900
Plan Year 5	\$ 4,154,000	\$ 921,250	\$ 5,075,250	\$ 1,125,500	\$ 518,475	\$ 6,719,225

¹Based on FY 2019 ATP plus 3% inflation factor.

Results

Implementation of this TDP will appreciably improve the quality of transit services in the City of Annapolis. This TDP presents recommendations for transit enhancements and a vision for growth in the city that will:

- Improve service through progressive route modifications to make transit attractive and usable,
- Meet identified transportation needs including access to jobs, schools, and medical services, and
- Provide transit infrastructure improvements to support continued growth in transit services.

The program described in this TDP was developed as the result of analyses on existing services, demographic information, and land use, and incorporated substantial input from the PAC, existing transit riders, and Annapolis Transit staff. This plan aims to improve services within the confines of the City's relatively flat transit operating budget. Some recommendations may be implemented through cost neutral changes of transit policies and practices. New services and transit improvements that would require additional funding were developed to address issues identified during the needs analysis and depend on the future availability of new or additional funding. Public transportation can contribute to the quality of life of city residents by providing a way for residents to get to work and school, access necessary medical services, and support local business and economic development. With the continuing support of the community, these improvements can improve the quality of transit service in Annapolis and promote increased transit use, even if implementation stretches beyond the five-year horizon of this TDP.

Chapter 1: Review of Existing Services

INTRODUCTION

The Annapolis Department of Transportation (ADOT) plans and operates public transportation services, known as Annapolis Transit. The Annapolis Transit service area is about 23 square miles including the City of Annapolis and surrounding Anne Arundel County areas of Parole, Edgewater, and Arnold. Annapolis Transit currently operates seven bus routes, two downtown shuttles, and ADA complementary paratransit service for people with disabilities who are not able to ride the fixed routes.

Since the Transit Development Plan (TDP) guides development of local transit services, Annapolis Transit is the focus of this review. However, other public and private transportation providers also serve Annapolis and provide connections to destinations in Anne Arundel County and the greater Washington and Baltimore regions.

This chapter documents a comprehensive review of the existing services to identify any service gaps and areas for improvement in the performance and organizational efficiency of existing transit services. The combined results of the existing service analysis and the needs analysis will serve as the basis for developing service and organizational recommendations.

This chapter is divided into the following sections:

- **Annapolis Transit Services** – Description of the governance and organizational structure of ADOT and an overview of existing services including route profiles.
- **Funding and Fare Policy** – Identification of operating budget and funding sources and description of the fares available to passengers.
- **Service Performance Evaluation** – Performance analysis at the system and route levels, compared to the Maryland Department of Transportation Maryland Transit Administration (MDOT MTA) service standards.
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ANNAPOLIS TRANSIT SERVICES

Organization and Governance

Annapolis Transit is operated under ADOT, which is part of the city government. ADOT is responsible for providing public transportation services, parking enforcement and management, and licensing and regulating taxicabs. ADOT also participates in regional and state efforts to improve local and regional transportation.

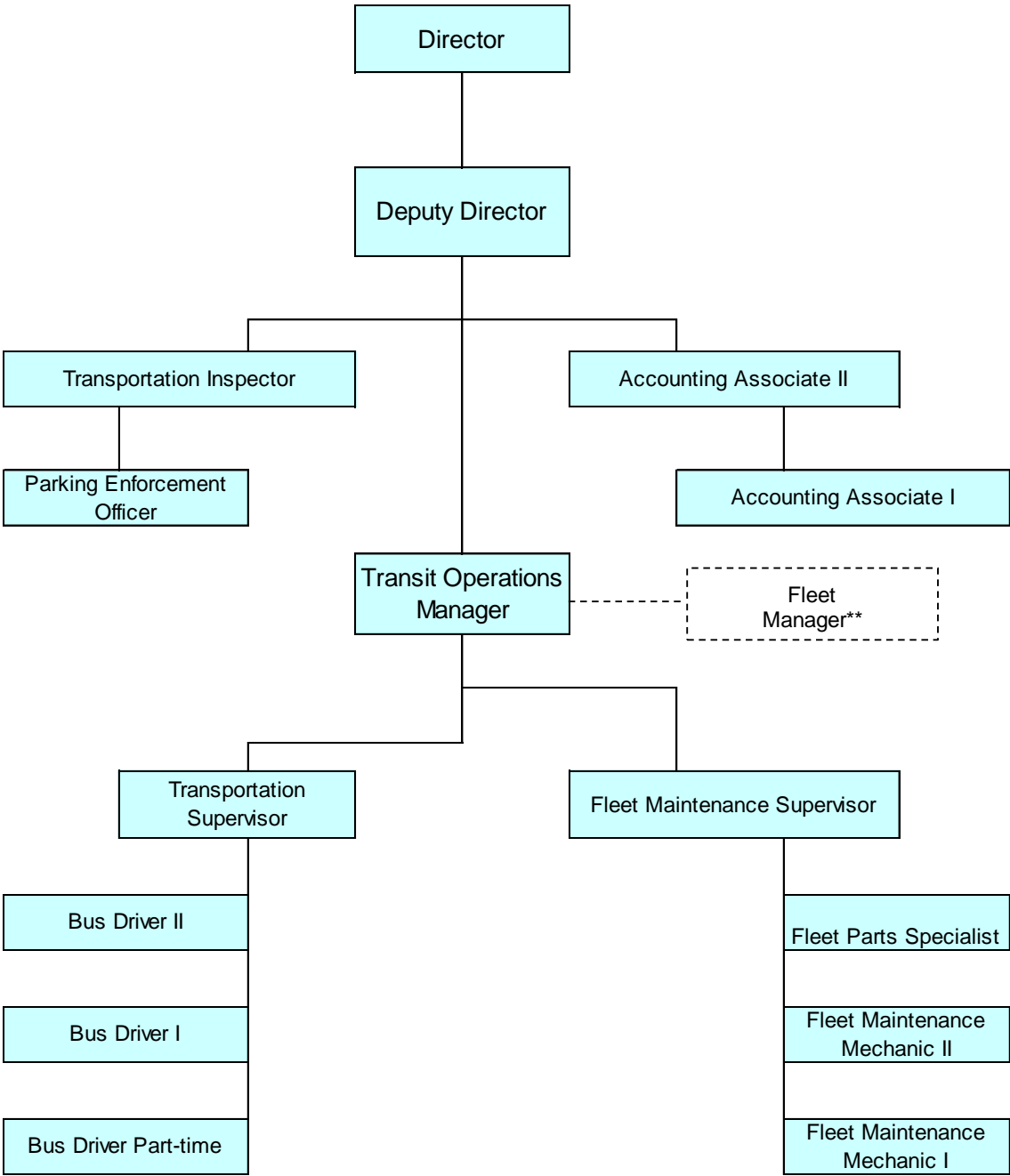
Annapolis Transit is governed by the City of Annapolis' City Council, which is comprised of nine members. The Mayor serves as the Chairman, and one representative from each ward serves as alderperson. The City Council is the legislative body that adopts policy for the City of Annapolis, including service and fare policies and the budget for Annapolis Transit. The Mayor appoints three alderpersons to the Transportation Committee, which oversees issues related to parking, public transportation, and vehicular traffic.

The Transportation Board serves an advisory role to the City Council and other city agencies and commissions on transportation related issues. Duties include recommending a comprehensive transportation master plan for the city and providing guidance and expertise on the city's policies related to transit, traffic, and parking. The Transportation Board's members include city residents representing each ward, representatives of St. John's College and the Naval Academy, and at-large members appointed by the Mayor and confirmed by the City Council.

ADOT established a Public Advisory Committee (PAC) to guide the TDP update. PAC members included riders, Annapolis Transit operators, Annapolis Transportation Board members, residents, and representatives from the Housing Authority of the City of Annapolis, the Annapolis and Anne Arundel County Chamber of Commerce, and the city's Comprehensive Planning Division.

Exhibit 1-1 presents the organizational chart for ADOT. The Director of Transportation oversees three functions: Transit Operations, Parking Operations and Transportation Planning. Annapolis Transit activities include provision of public transportation services, transit grants administration and vehicle maintenance. Day to day transit operations are under the supervision of the transit operations manager. The function of the deputy director includes assisting the director in the administration and management of the department, transit grants management, and transportation planning at local and regional levels.

Exhibit I-1: ADOT Organizational Chart



** Coordinates with ADOT on vehicle maintenance

Source: Annapolis Transit, effective March 2019

Opportunity for Regional Transit Organization

In recent years the city has explored participating in a regional transit system to potentially reduce the costs of operating Annapolis Transit and to improve access to and from regional destinations. The neighboring jurisdictions of Anne Arundel County, Howard County, northern Prince George’s County, and the City of Laurel have participated in a regional transit organization since 2014. The City of Annapolis considered joining the Regional Transit Agency of Central Maryland (RTA), but decided not to given the likely decrease in control over the service area and the level of service provided.

The City of Annapolis has had a long-standing partnership with Anne Arundel County in providing public transportation services to both city and county residents. Since the last TDP, Westfield Mall has become a major transfer point for the Annapolis Transit system, the Yellow route was redesigned to serve major employers along Riva Road and Harry S. Truman Parkway, and several routes serve the new Annapolis Towne Centre at Parole. Anne Arundel County provides funding support to Annapolis Transit to operate the routes that serve areas of the county outside the city limits, including the Gold route service to Arnold and Edgewater.

The city and the county currently have separate transit organizations, which coordinate and communicate regularly. In July 2017 Anne Arundel County established a new Transportation Department to consolidate transportation services and planning, which were previously managed by the Department of Aging and Disabilities and the Office of Planning and Zoning, respectively. Like ADOT, the county’s Transportation Department oversees multi-modal transportation projects including an update to the county’s TDP, which was conducted as a regional effort with its RTA partners.

The city and the county each procure their own transit funding from federal, state, and local sources and manage their own transit programs, though the county provides funding and input on service planning for Annapolis Transit. The potential advantages and disadvantages of consolidating the city’s and county’s transit programs will be explored as an organizational alternative. The transit service recommendations relevant to Annapolis from the Central Maryland TDP will also be considered among the service recommendations.

Fixed Route Service

Annapolis Transit provides fixed route bus service primarily within the City of Annapolis. The system operates six color-coded routes: Brown, Green, Gold, Orange, Red, and Yellow, known as the “Rainbow Routes.” The Rainbow Routes operate on weekdays between 5:30 a.m. and 7:00 p.m.; most also operate on Saturdays between 7:30 a.m. and 7:00 p.m., except for the Orange Route. The Gold Route provides connections to Edgewater and Anne Arundel Community College (AACC) in Arnold, operating between 6:00 a.m. and 8:00 p.m. on weekdays and between 8:00 a.m. and 8:00 p.m. on weekends. The Purple Route provides

evening service from 7:00 p.m. to 10:30 p.m. Monday through Saturday and all day service from 8:00 a.m. to 8:00 p.m. on Sundays.¹

Exhibit 1-2 portrays the routing for the Rainbow Routes. Effective September 1, 2017, the Yellow Route was modified slightly to add stops at the Social Security Administration and Annapolis Harbour Center.

Circulator

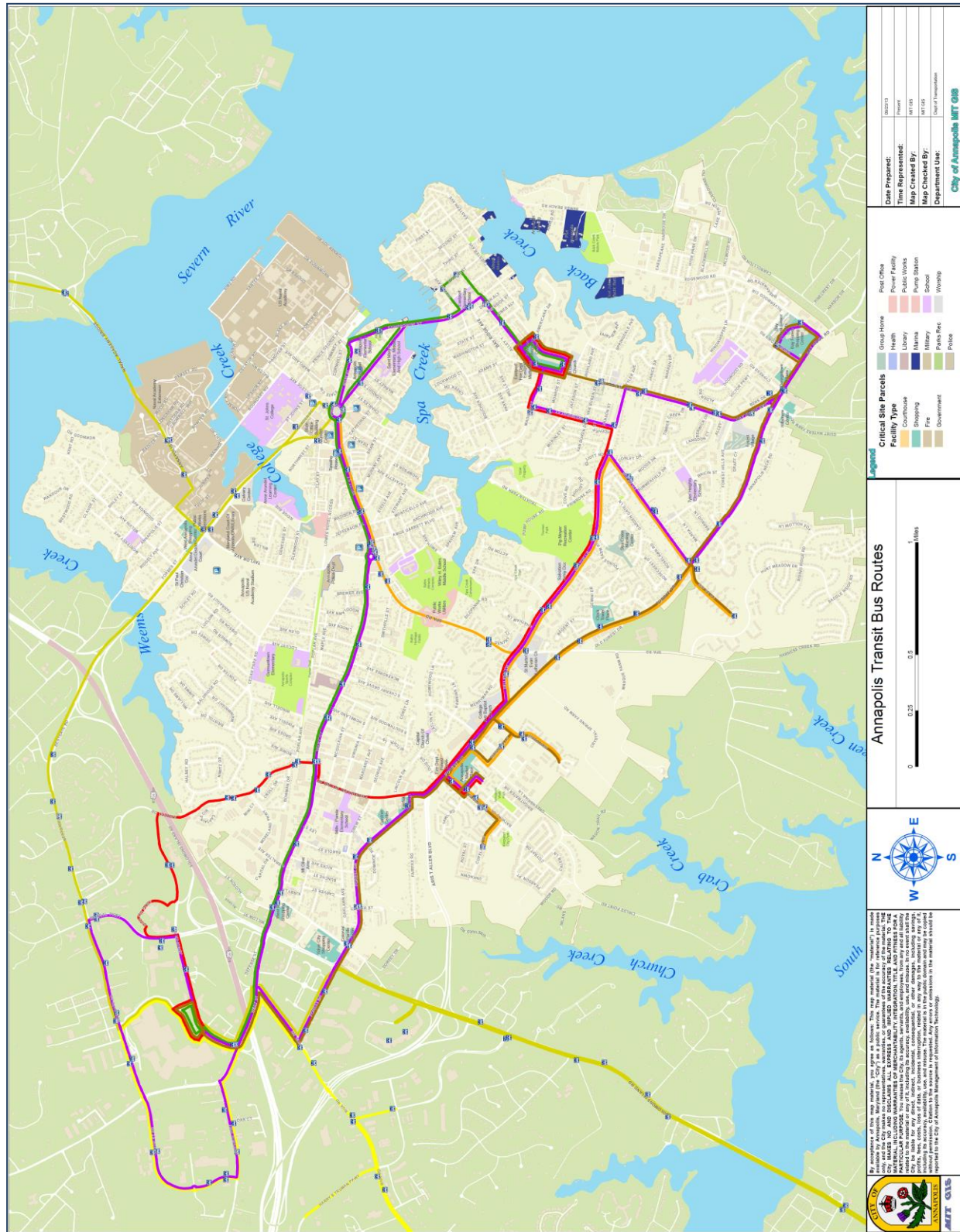
The Circulator route serves downtown Annapolis. It operates within a two-mile radius connecting four parking garages and businesses and retail in historic downtown and inner West Street. The Circulator operates daily, from 7:30 a.m. to 11:00 p.m. Monday through Saturday and from 8:00 a.m. to 8:00 p.m. on Sunday, on a 20-minute headway. ADOT currently contracts with SP+ to operate the service as part of SP+'s parking management contract with the City of Annapolis. The Circulator bus is equipped with Automatic Vehicle Location (AVL) technology, allowing passengers to track the bus in real-time via the Annapolis Circulator website or the Reston Limousine app, available for iPhone or Android smartphone devices. As of July 2017, the Circulator is free to the general public. The city promotes parking at a city garage and using the Circulator to reduce car traffic within the Central Business District (CBD).

State Shuttle

The State Shuttle operates within a two-mile radius, connecting the Navy-Marine Corps Memorial Stadium with the CBD (Church Circle). The shuttle operates Monday through Friday, from 6:30 a.m. to 8:00 p.m., at a 20-minute headway. Annapolis Transit directly operates this service. The Annapolis Transit fares, with a regular fare of \$2.00 one-way, apply to this service. The Maryland Department of General Services contributes funding to the State Shuttle, which allows state employees with a valid state issued identification card to ride for free.

¹ In August 2018, while this TDP was under development, Anne Arundel County began operating the Gold and Yellow Routes.

Exhibit I-2: Annapolis Transit Bus Routes



Source: City of Annapolis Management Information Technology.

Route Profiles

The following section includes profiles for each Annapolis Transit fixed route, presenting service and operating characteristics and FY 2017 performance data:

1. Service and Operating Characteristics by Day of Service

- Span of service
- Service frequency
- Daily service hours
- Average daily boardings
- Passenger trips per hour

2. **Field Observations** - Describes ridership patterns and operational issues based on a study of the system's operating conditions conducted by MDOT MTA's Office of Local Transit Support in fall 2016. The observations were based on weekday service between 7:00 a.m. and 6:00 p.m., and excluded evening and weekend service, the Circulator, and the State Shuttle.

3. **Route Alignment Map** - Serves two purposes: a) Provides a visual representation of the route including the top trip generators, based on weekday ridership by stop, and b) presents annual performance data and measures:

- Passenger trips
- Operating cost
- Fare revenue
- Passenger trips per mile and hour
- Operating cost per passenger trip, mile, and hour
- Farebox recovery ratio (portion of operating costs covered by fare revenue)

*Note: The productivity data by weekday, Saturday, and Sunday and the weekday ridership activity along the routes shown in the maps are based on a sample of boardings data² collected from the electronic fareboxes during September 2017.

Further analysis of system and route level performance is included in the Service Performance Evaluation section.

² For each route profile, the weekday productivity data in the table represents the average for the week of September 25, 2017 and the weekend productivity data represents the average for all Saturdays or Sundays in September 2017. In the map, the weekday boardings by stop represent the weekday with the highest total boardings during the week of September 25, 2017.

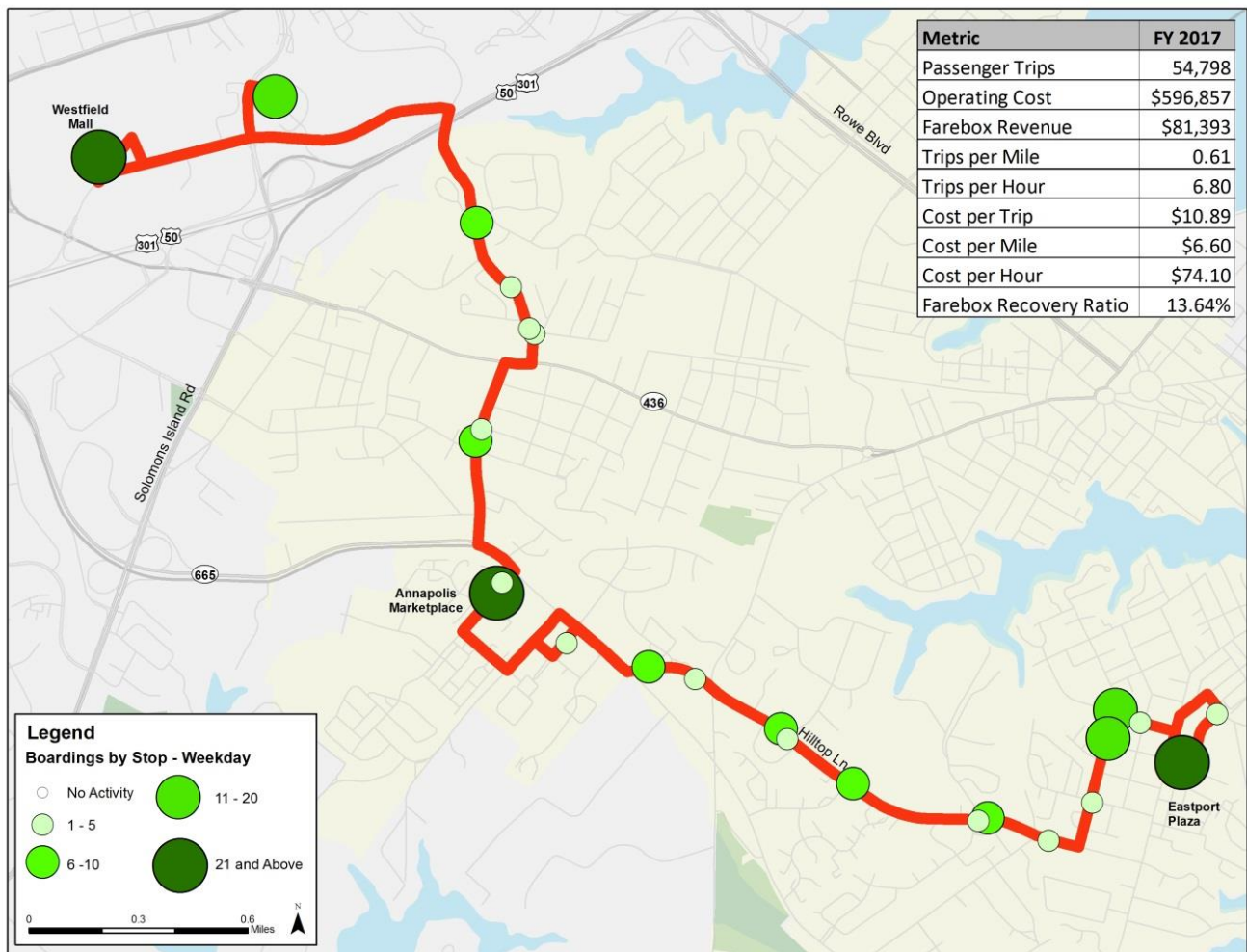
Red Route: Westfield Mall – Eastport Plaza

The Red Route operates between Westfield Mall and Eastport Plaza, primarily along Admiral Drive, Chinquapin Round Road, and Hilltop Lane. Other major trip generators include Arundel Medical Center, Annapolis Marketplace, and Harbor House (a public housing community on President Street). There is notable activity along Hilltop Lane.

Characteristics	Weekdays	Saturdays
Service		
Service Span	5:30am - 6:55pm	7:30am - 6:54pm
Frequency (Minutes)	30	60
Daily Service Hours	26.8	11.4
Productivity (September 2017)		
Daily Boardings	240	117
Boardings per Hour	9	10

Field Observations:

- Majority of riders head westbound in AM; PM ridership split both directions, busiest trips toward Eastport.
- Overall on-time performance is good at 84%, but declined since 2014 due to increased congestion on Forest Drive, especially eastbound in PM peak.



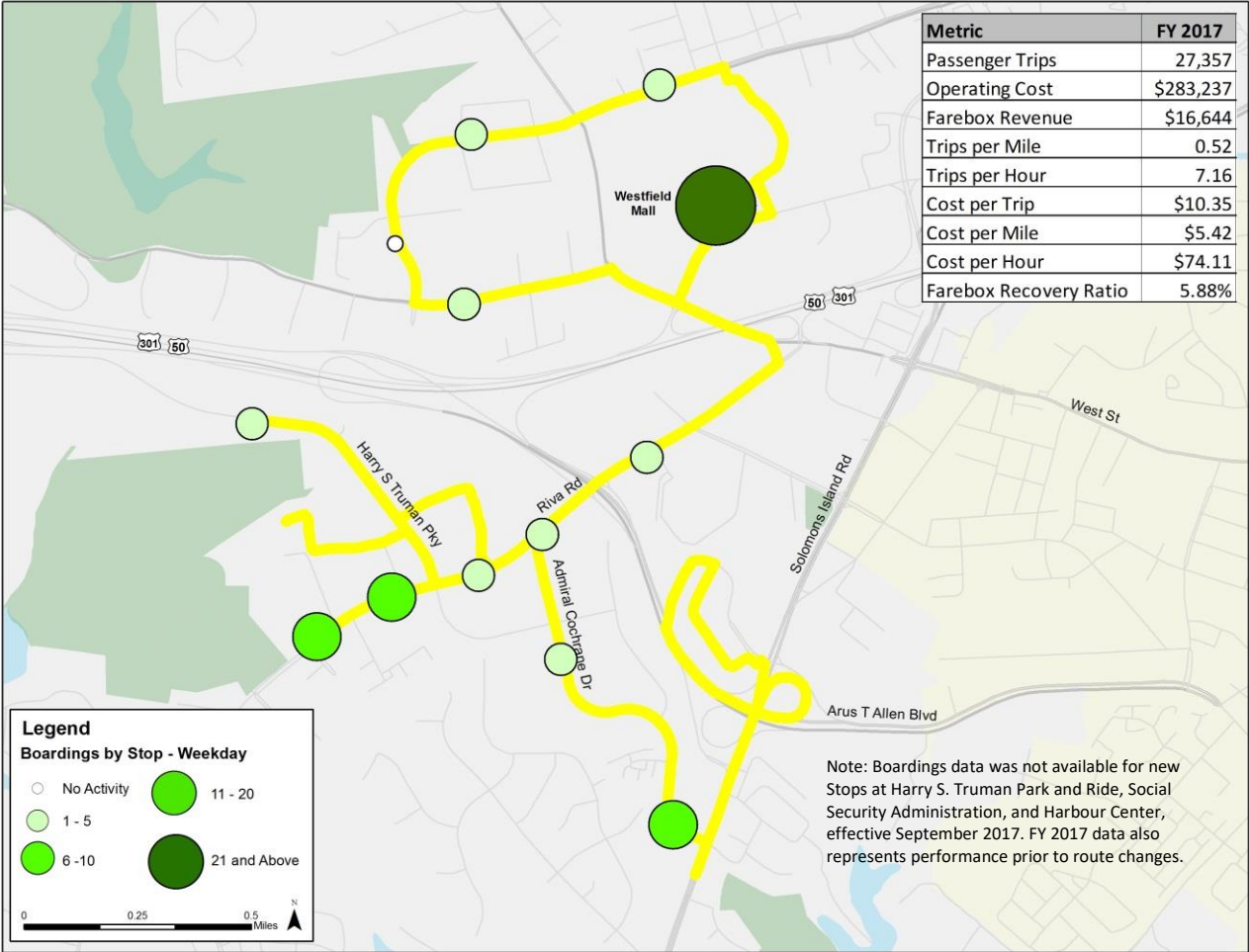
Yellow Route: Westfield Mall – Riva Road

The Yellow Route operates between Westfield Mall and the Harry S. Truman Park and Ride, serving Riva Road and Admiral Cochrane Drive. Aside from Westfield Mall, the next top trip generators are Annapolis Technology Park, the Heritage Office Complex, and Arundel Lodge. The route operates six days per week. Productivity is noticeably lower on Saturdays because most employers and social service agencies along the route are closed.

Characteristics	Weekdays	Saturdays
Service		
Service Span	6:00am - 6:52pm	8:00am - 5:52pm
Frequency (Minutes)	30	30
Daily Service Hours	12.9	10.9
Productivity (September 2017)		
Daily Boardings	104	31
Boardings per Hour	8	3

Field Observations:

- Most riders board at the Mall, ride through first part of the route, and return towards the Mall; nearly all locations served are destinations.
- Ridership was spread throughout the day, with highest ridership trips at 9AM, 10:30AM, and 1PM.



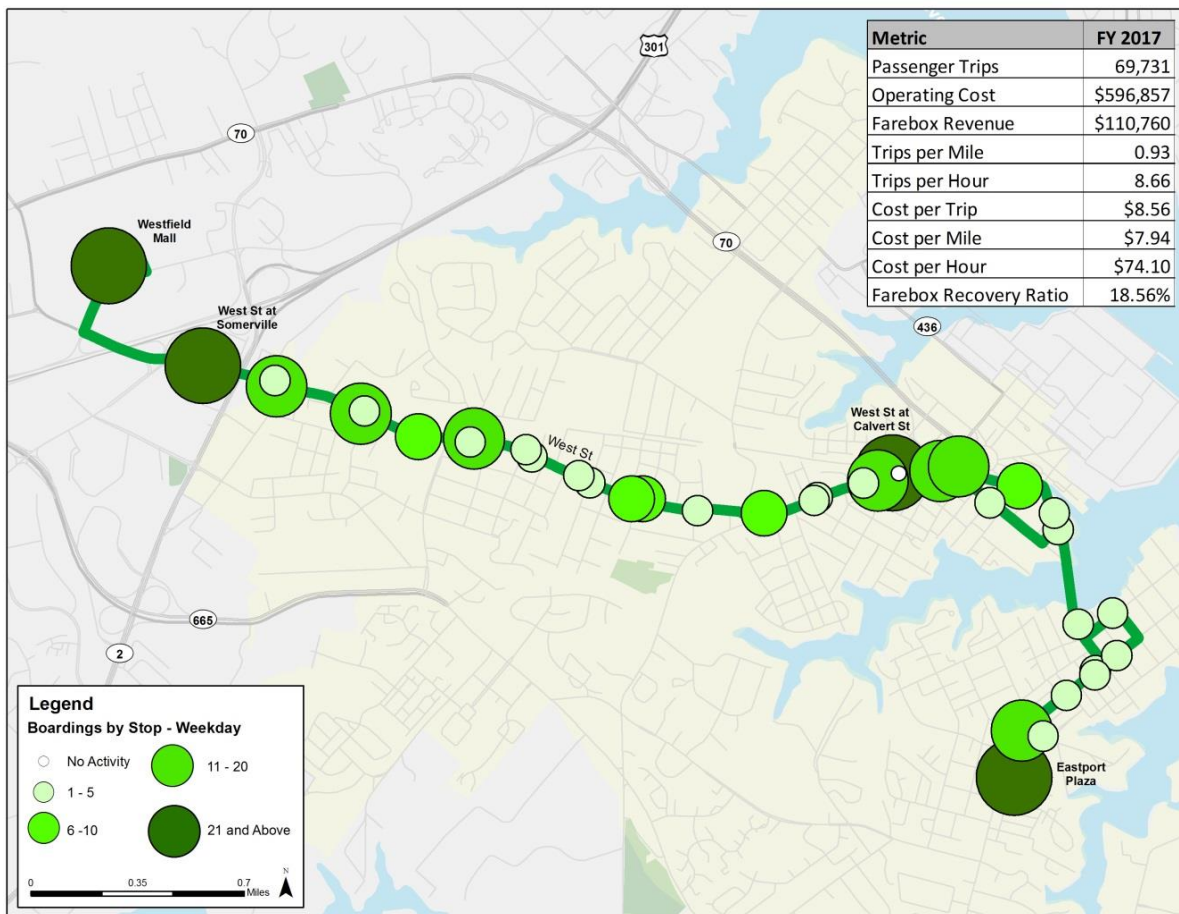
Green Route: Westfield Mall – Eastport Plaza

The Green Route operates between Westfield Mall and Eastport Plaza, primarily traveling along West Street and Chesapeake Avenue. In addition to the two endpoints, the top trip generators are on West Street, at Somerville Road (Whole Foods and Annapolis Towne Centre) and at Calvert Street (Anne Arundel County Department of Social Services). There are steady boardings throughout the bus route, with somewhat lower activity between the City Dock and Eastport Plaza. The route operates six days per week, with similar productivity on weekdays and Saturdays.

Characteristics	Weekdays	Saturdays
Service		
Service Span	5:30am - 6:54pm	8:00am - 6:54pm
Frequency (Minutes)	30	60
Daily Service Hours	26.8	11.4
Productivity (September 2017)		
Daily Boardings	391	179
Boardings per Hour	15	16

Field Observations:

- Busiest, most productive line in system; best on-time performance. Ample layover time, little variation in running times by time of day.
- Peak ridership occurs during earlier morning westbound trips and later afternoon eastbound trips, though ridership is steady in both directions throughout day.



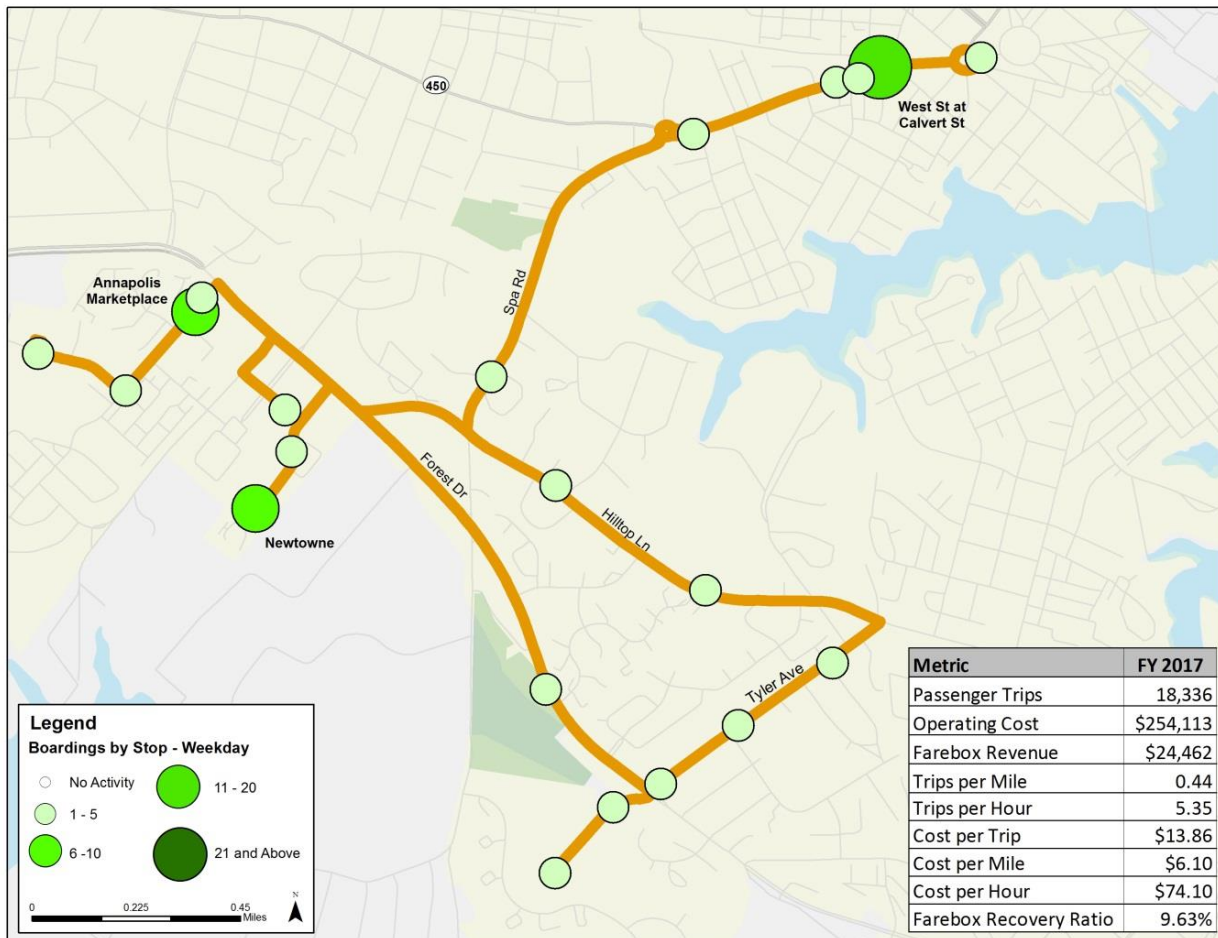
Orange Route: Downtown Annapolis – Forest Drive

The Orange Route operates between Annapolis Marketplace and Church Circle, serving Forest Drive, Hilltop Lane, Spa Road, and West Street. The top trip generators are West Street at Calvert Street, Newtowne Twenty, and Annapolis Marketplace. Notably, there are no high activity stops (more than 21 daily boardings) and the majority of stops have five or less daily boardings. The Orange Route is unique in that it operates on weekdays only, does not serve Westfield Mall or Eastport Plaza, and operates a large loop as part of the route alignment.

Characteristics	Weekdays
Service	
Service Span	5:30am - 6:52pm
Frequency (Minutes)	45
Daily Service Hours	13.4
Productivity (September 2017)	
Daily Boardings	59
Boardings per Hour	4

Field Observations:

- The majority of riders head northbound toward downtown in the AM; ridership higher in PM than in AM.
- Lowest productivity route in system; almost all stops are served by other routes.
- Serves several low-income housing communities, but most riders use the Brown or Red Routes.



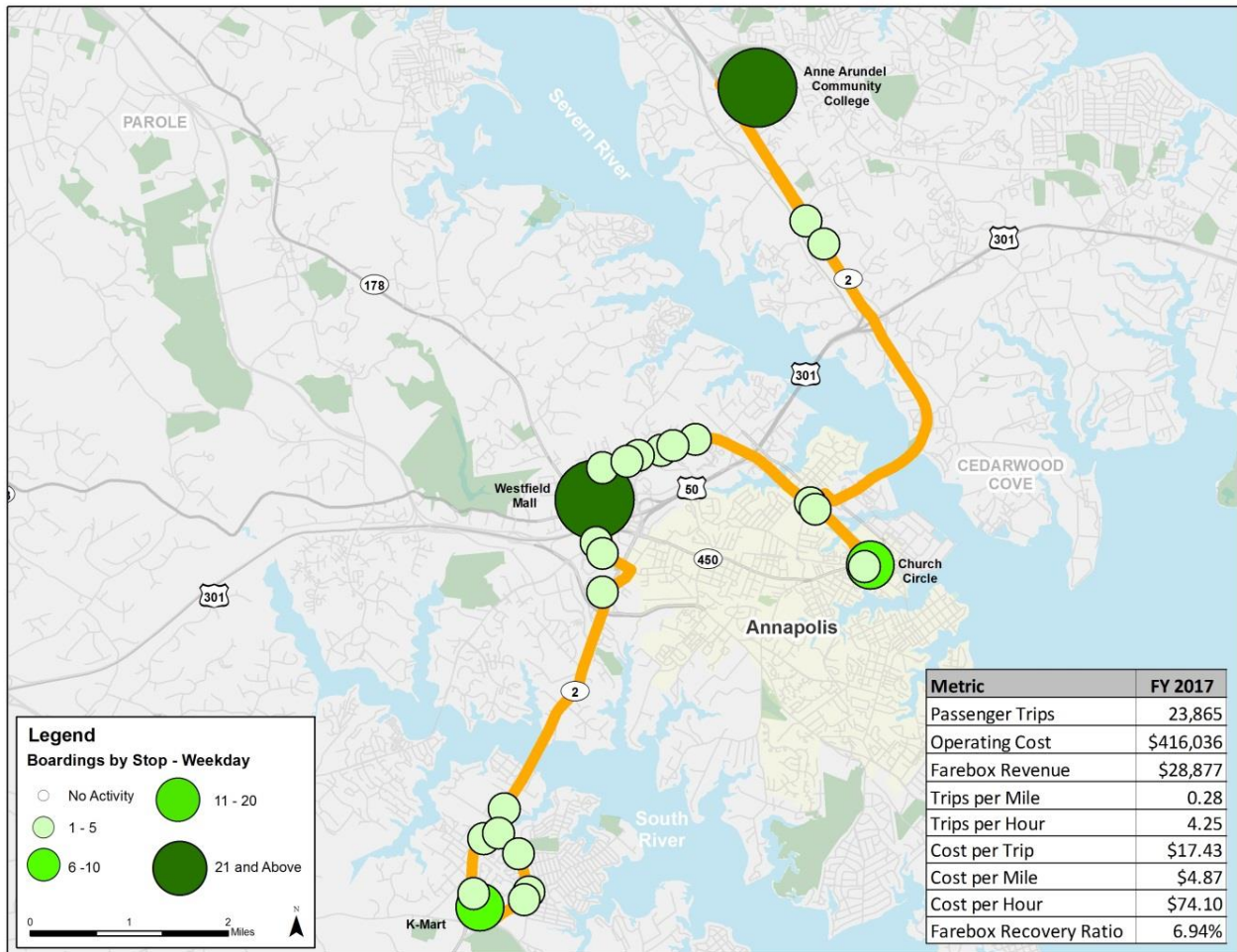
Gold Route: Edgewater – Arnold/AACC

The Gold Route operates between the Edgewater community (K-Mart) and Anne Arundel Community College, via Annapolis Mall and Church Circle. These locations are the top trip generators for the route. The Gold Route is unique in that it has 2-hour headways and operates daily. Productivity on the weekend is about half that during the week.

Characteristics	Weekdays	Saturdays	Sundays
Service			
Service Span	6:00am - 7:56pm	8:00am - 7:56pm	8:00am - 7:56pm
Frequency (Minutes)	120	120	120
Daily Service Hours	14	12	12
Productivity (September 2017)			
Daily Boardings	109	44	37
Boardings per Hour	8	4	3

Field Observations:

- Peak ridership occurs on two trips: 8AM trip northbound and 3PM trip southbound, reflecting class schedule of AACC students.
- Limited ridership along route aside from key trip generators.
- About 1/3 of riders ride through between the northern and southern portions of the route.



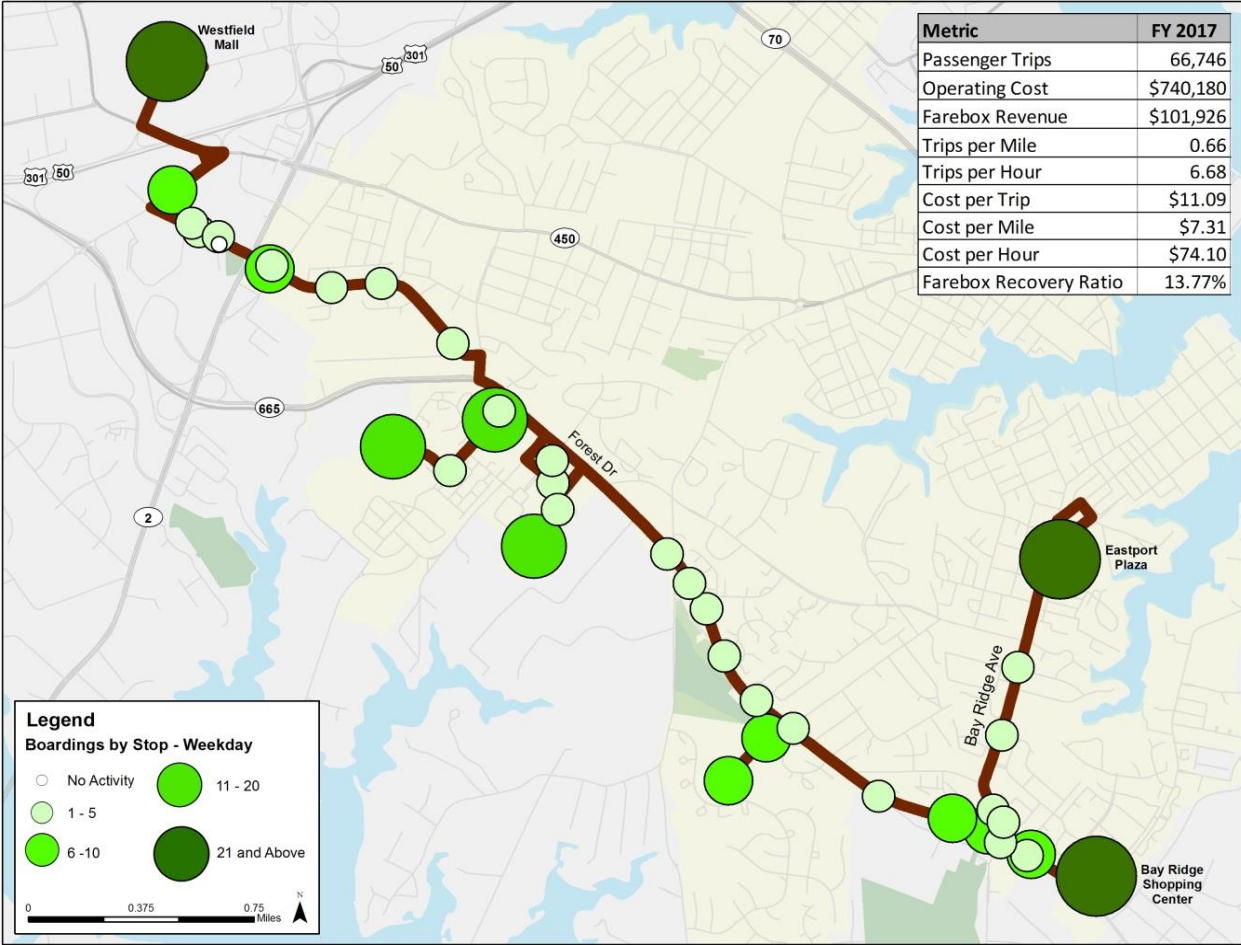
Brown Route: Westfield Mall – Eastport Plaza

The Brown Route operates between Westfield Mall and Eastport Plaza. The end points and Bay Ridge Shopping Center are the top trip generators, followed by Copeland Street (Annapolis Boys & Girls Club), Annapolis Marketplace, and Newtowne Twenty. The route operates six days per week, with similar productivity on weekdays and Saturdays. The Brown Route has a 45-minute headway and operates two buses on Saturdays.

Characteristics	Weekdays	Saturdays
Service		
Service Span	5:30am - 6:53pm	7:15am - 7:08pm
Frequency (Minutes)	45	45
Daily Service Hours	26.7	23.7
Productivity (September 2017)		
Daily Boardings	278	225
Boardings per Hour	10	9

Field Observations:

- Ridership spread throughout day in both directions; highest ridership on PM trips headed to Eastport Plaza.
- On-time performance worsened since 2014 due to increased congestion on Forest Drive, especially in PM peak. Longest cycle time in system; minimal layover makes it difficult to make up delays.

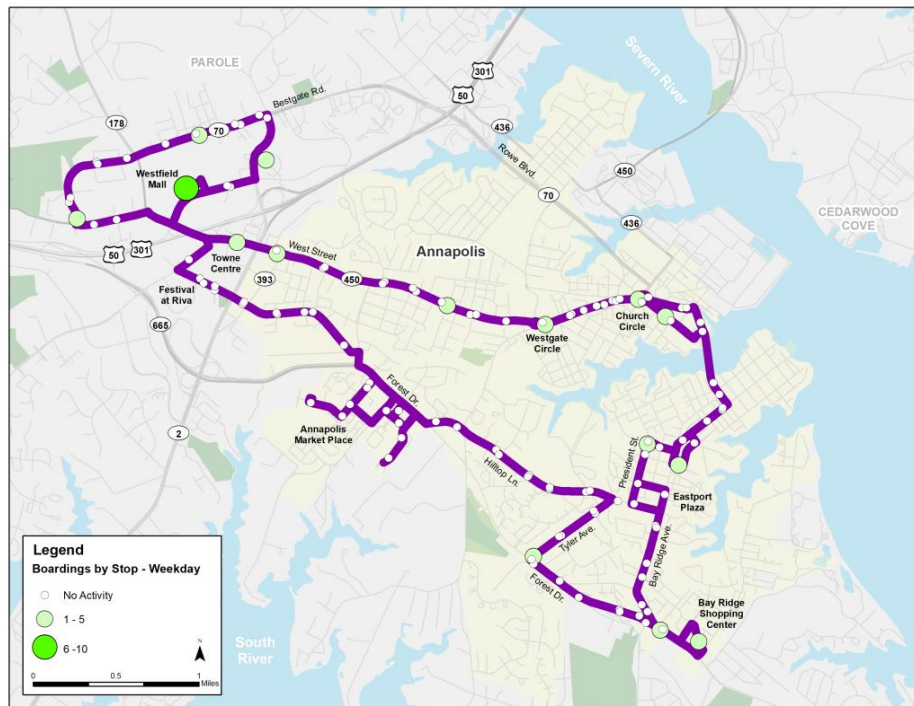


Purple Route: Westfield Mall – Eastport Plaza

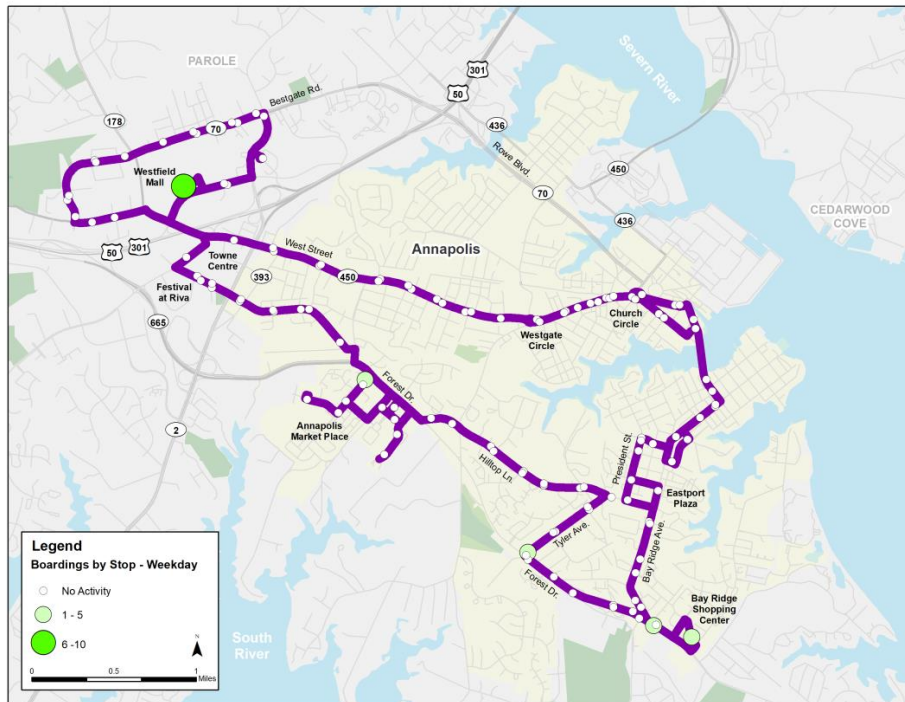
The Purple Route provides evening service Monday through Saturday and all day service on Sunday, when the Rainbow Routes are not in operation. The route alignment is a large loop that covers the system’s major trip generators including Westfield Mall, Church Circle, Eastport Plaza, and Annapolis Marketplace. The Purple Route North starts at Westfield Mall, serves Anne Arundel Medical Center and Housley Road, and then travels clockwise along West Street. The Purple Route South starts at Eastport Plaza and travels counterclockwise along Chesapeake Avenue toward downtown.

The productivity data based on sample ridership is shown separately below for the Purple North and Purple South. Productivity is generally higher on the Purple North than the Purple South. For the Purple North, productivity is higher on weekdays than during the weekend, while on the Purple South productivity is comparable regardless of the day of the week.

Purple North Characteristics	Weekdays	Saturdays	Sundays
Service			
Service Span	7:00pm - 10:36pm	7:00pm - 10:36pm	7:05am - 8:06pm
Frequency (Minutes)	75	75	75
Daily Service Hours	3.6	3.6	13
Productivity (September 2017)			
Daily Boardings	38	24	116
Boardings per Hour	11	7	9



Purple South Characteristics	Weekdays	Saturdays	Sundays
Service			
Service Span	6:57pm - 10:39pm	6:57pm - 10:39pm	7:00am - 8:09pm
Frequency (Minutes)	75	75	75
Daily Service Hours	3.7	3.7	13.2
Productivity (September 2017)			
Daily Boardings	30	28	89
Boardings per Hour	8	8	7



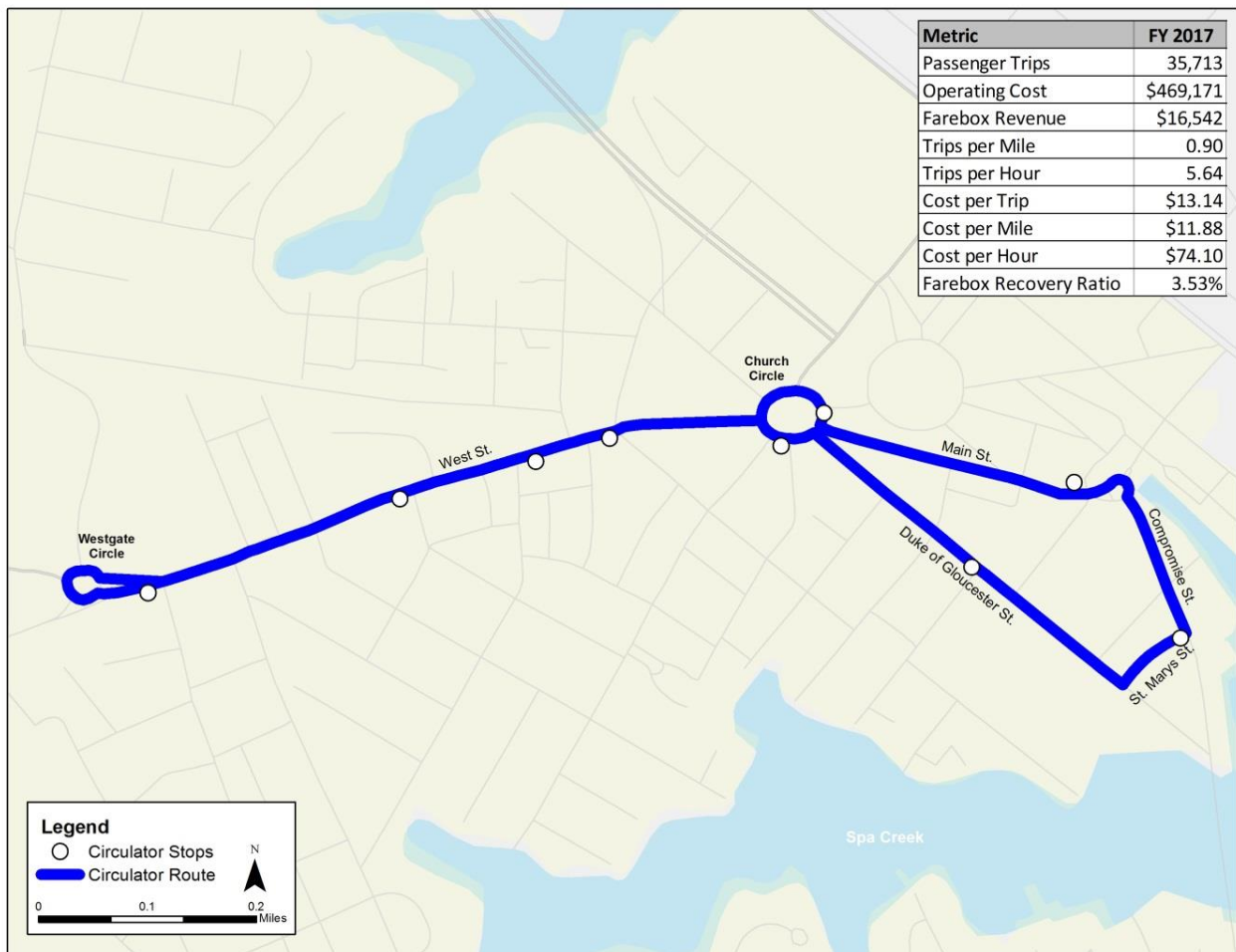
The FY 2017 performance data was collected for the Purple Route as a whole and is summarized below, rather than included in the individual maps.

Purple Route Metrics	FY 2017
Passenger Trips	31,578
Operating Cost	\$299,837
Farebox Revenue	\$32,825
Trips per Mile	0.59
Trips per Hour	7.80
Cost per Trip	\$9.50
Cost per Mile	\$5.61
Cost per Hour	\$74.11
Farebox Recovery Ratio	10.9%

Circulator: Central Business District

The Circulator travels from Westgate Circle to City Hall and City Dock, serving multiple parking garages and Church Circle. The route operates daily at a 20-minute headway. Annapolis Transit contracts with a private operator to run the service. Sample ridership by day of service was unavailable for the route, though the Circulator stops and its annual performance are included in the map below. Note the Circulator charged a fare during FY 2017, which is captured in the performance data below. The service became fare free at the start of FY 2018.

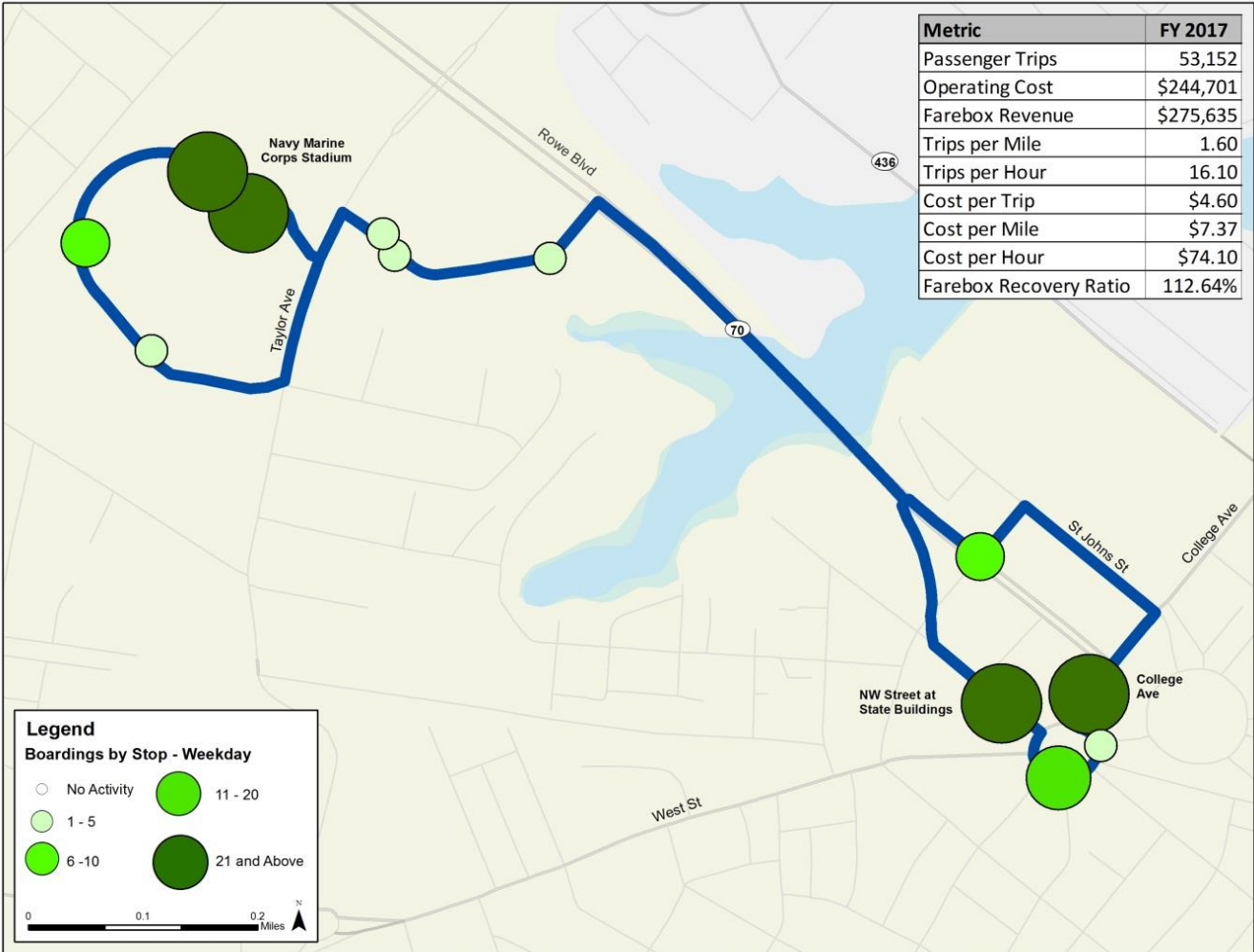
Characteristics	Weekdays	Saturdays	Sundays
Service			
Service Span	7:30am - 11:00pm	7:30am - 11:00pm	8:00am - 8:00pm
Frequency (Minutes)	20	20	20
Daily Service Hours	16	16	13



State Shuttle: Navy Stadium – Downtown Annapolis

The State Shuttle operates on weekdays between the Navy-Marine Corps Memorial Stadium and Church Circle. These are the top trip generators on the route along with the State Buildings on Northwest Street. The State Shuttle operates on weekdays only.

Characteristics	Weekdays
Service	
Service Span	6:30am - 8:00pm
Frequency (Minutes)	20
Daily Service Hours	13.5
Productivity (September 2017)	
Daily Boardings	188
Boardings per Hour	14



ADA Paratransit Service

For eligible riders who have a disability that prevents them from making some or all of their trips on the fixed route buses, Annapolis Transit offers a shared ride curb to-curb service, known as “paratransit,” which complies with the Americans with Disabilities Act of 1990 (ADA). ADA paratransit service is available to people who live within the Annapolis Transit service area; trip origins and destinations must be located within 3/4-mile of the fixed route system. Paratransit service is available during the same days and hours as the fixed route service: Monday through Friday from 6:30 a.m. to 10:00 p.m., Saturday from 7:30 a.m. to 10:00 p.m., and Sunday from 7:30 a.m. to 8:00 p.m.

Potential riders must submit an application form to Annapolis Transit to become certified to use ADA paratransit services. Eligible individuals receive a paratransit photo identification card that must be displayed when boarding an Annapolis Transit paratransit or fixed route vehicle. Riders must call to reserve a ride in the paratransit program. Reservations must be placed anytime during normal business hours on the day preceding service. ADOT does not provide same day trip requests. Subscription service is available for repetitive trips that will continue over a period of 90 days up to 12 months.

Effective November 2014, the one-way fare for paratransit service is \$4.00. An eligible ADA paratransit rider may have one personal care attendant accompany them for free and/or a companion ride with them paying the same fare.

Table I-1 summarizes the service characteristics of Annapolis Transit’s fixed routes, shuttle services, and ADA paratransit service.

Recent Service and Fare Changes

The Annapolis Transit network has changed significantly since the last TDP. In November 2010 Annapolis Transit changed from a “pulse” system to an “arterial” system. Under the pulse system, all fixed routes had timed transfers at the Spa Road Transfer Point, which required many riders to transfer and resulted in poor on-time performance. The new arterial system established several transfer points at popular destinations throughout the city and increased the geographic coverage of service.

After the new arterial system was implemented, the city proposed the following fare changes in 2011 to better manage operating costs and increase service efficiency:

- Increased the regular one-way fare from \$1.00 to \$1.50
- Eliminated transfers

Table I-1: Annapolis Transit Service Characteristics

Route/Service	Summary	Major Trip Generators	Service Characteristics			
			Days	Span	Frequency	Number of Buses
Red	Westfield Mall – Eastport via Admiral Drive & Hilltop Lane	<ul style="list-style-type: none"> Anne Arundel Medical Center Admiral Oaks Apartments Annapolis Marketplace (Safeway) Hilltop Lane Eastport Plaza 	Weekdays	5:30am-6:55pm	30 min.	2
			Saturdays	7:30am-6:54pm	60 min.	1
Yellow	Westfield Mall – Riva Road	<ul style="list-style-type: none"> Westfield Mall Housley Road Riva Road Truman Parkway (Park and Ride, County Health Dept., Motor Vehicle Administration, Social Security Administration) Heritage Complex Admiral Cochrane Drive (hotels, Arundel Lodge) Annapolis Harbour Center 	Weekdays	6:00am-6:52pm	60 min.	1
			Saturdays	8:00am-5:52pm	60 min.	1
Gold	Edgewater - Arnold/AACC	<ul style="list-style-type: none"> South River Colony (K-Mart) Annapolis Harbour Center Westfield Mall Anne Arundel Medical Center Downtown (Church Circle) Anne Arundel Community College 	Weekdays	6:00am-7:56pm	120 min.	1
			Weekends	8:00am-7:56pm	120 min.	1
Purple	Westfield Mall – Eastport (North route travels clockwise, South counter clockwise)	<ul style="list-style-type: none"> Westfield Mall Annapolis Towne Center West Street Library Downtown (Church Circle, Main Street) Eastport Plaza Bay Forest Center (Giant) Hilltop Lane Annapolis Marketplace (Safeway) 	Mon-Sat	7:00am-10:30pm	75 min.	2
			Sundays	7:00am-8:00pm	75 min.	2

Route/Service	Summary	Major Trip Generators	Service Characteristics			
			Days	Span	Frequency	Number of Buses
Brown	Westfield Mall – Eastport via Forest Drive	<ul style="list-style-type: none"> Westfield Mall Annapolis Marketplace (Safeway) Newtowne Robinwood Bay Forest Center (Giant) Eastport Plaza 	Weekdays	5:30am-6:53pm	45 min.	2
			Saturdays	7:15am-7:08pm	45 min.	2
Orange	Downtown – Forest Drive via Spa Road	<ul style="list-style-type: none"> Downtown (Church Circle) West Street Annapolis Marketplace (Safeway) Newtowne Robinwood Hilltop Lane 	Weekdays	5:30am-6:52pm	45 min.	1
Green	Westfield Mall – Eastport via West Street	<ul style="list-style-type: none"> Westfield Mall West Street Library Downtown (Church Circle, Main Street) Eastport Plaza 	Weekdays	5:30am-6:54pm	30 min.	2
			Saturdays	8:00am-6:54pm	60 min.	1
Circulator	Downtown	<ul style="list-style-type: none"> City Hall City Dock Church Circle City parking garages 	Mon-Sat	7:30am-11:00pm	20 min.	1
Sundays	8:00am-8:00pm	20 min.				
State Shuttle	Navy-Marine Corps Memorial Stadium – Downtown	<ul style="list-style-type: none"> Navy-Marine Corps Memorial Stadium Court of Appeals Church Circle (State Government Buildings, Lawyer’s Mall, Circuit Court House) 	Weekdays	6:30am-8:00pm	20 min.	1*
ADA Paratransit	Shared-ride curb-to-curb service	<ul style="list-style-type: none"> Locations within ¼ mile of fixed routes 	Mon-Fri	6:30am-10:00pm	On-demand**	1
Saturdays	7:30am-10:00pm					
Sundays	7:30am-8:00pm					

*Two buses during peak periods.

**Reservations required at least one day in advance.

Note: As of August 1, 2018, the Gold and Yellow Routes are not operated by the City of Annapolis.

- Introduced 1-Day, 7-Day, 30-Day, 90-Day, and annual passes (to mitigate the elimination of free transfers)
- Eliminated the Fare Free Zone downtown, from Compromise Street to Westgate Circle, which covered Duke of Gloucester, Main, and West Streets and Church Circle

In 2012 the regular one-way fare increased again from \$1.50 to \$2.00. Several service and fare changes were implemented in November 2014 due to budget constraints:

- Brown Route:
 - Decreased the service frequency from 30 minutes to 45 minutes and eliminated one bus
- Gold Route:
 - Decreased the service frequency from hourly to every two hours
 - Reduced the span of service by 3 hours (ended service earlier) on weekdays
- Circulator:
 - Decreased the service frequency from 10 minutes to 20 minutes and eliminated one bus
 - Reduced the span of service by one hour Monday-Thursday, 3 hours on Friday and Saturday, and 4.5 hours on Sunday (ended service earlier)
 - Implemented a \$1.00 one-way fare (service was previously free)
- Green and Red Routes:
 - Decreased Saturday service frequency from 30 minutes to hourly

The most recent changes implemented in FY 2018 included:

- Effective July 1, 2017 the Circulator became fare free again with financial support from the city
- Effective September 1, 2017 the Yellow Route was modified to:
 - Add a new stop at the Social Security Administration at Annapolis Corporate Center
 - Improve safety by moving the turnaround location to Harbour Center
 - Decrease the service frequency from 30 minutes to 60 minutes to improve on-time performance given increased traffic and congestion

FUNDING AND FARE POLICY

Budget and Funding Sources

Annapolis Transit is funded through federal, state, and local sources. MDOT MTA's Office of Local Transit Support administers federal and state funding for the Local Operating Transit Systems in Maryland. Annapolis Transit receives federal and state funding through the Federal Transit Administration's Urbanized Area Formula Funding program (Section 5307) and the ADA Paratransit program. Local funding for Annapolis Transit is provided through fare revenue, advertising revenue, the City of Annapolis, Anne Arundel County, and a contribution from the Maryland Department of General Services (DGS) for the State Shuttle.

Table 1-2 presents Annapolis Transit's operating budget based on its FY 2017 actual expenditures and revenues. The \$4.1 million annual operating budget did not include department or city overhead expenses. Local funding included contributions from the city and from Anne Arundel County for transit services in Parole, Edgewater, and Arnold. Note the FY 2017 contribution from Anne Arundel County was notably higher than in years past, but is not guaranteed at the same level for future years. The contribution from DGS was considered fare revenue.

Table 1-2: Annapolis Transit's FY 2017 Operating Budget

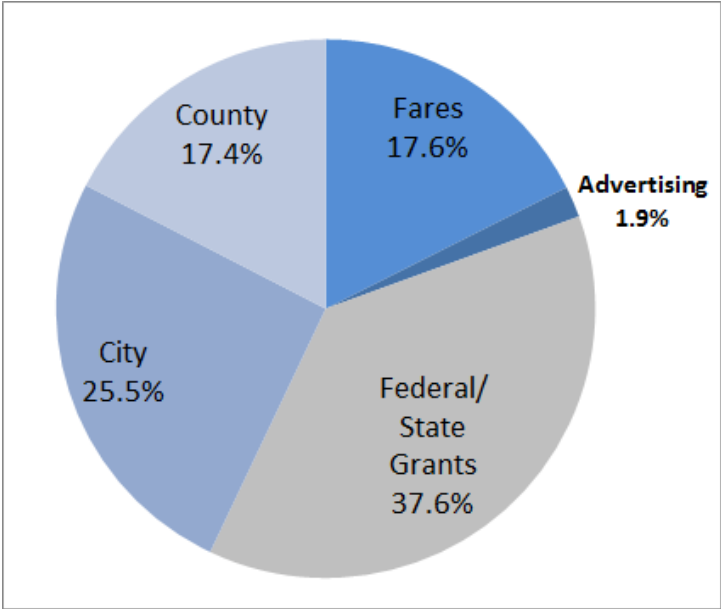
	FY 2017
Operating Expenses	
Vehicle Operations (fixed routes)	\$ 3,199,092
Maintenance (fixed routes)	\$ 701,895
ADA Paratransit	\$ 229,352
Total Operating Expenses	\$ 4,130,339
Operating Revenues	
Fare Revenue	\$ 725,576
Advertising Revenue	\$ 77,235
Total Operating Revenues	\$ 802,811
Net Deficit	\$ 3,327,528
Funding Assistance	
Federal & State Grants	\$ 1,553,625
Local Funding - City of Annapolis	\$ 1,053,767
Local Funding - Anne Arundel County	\$ 720,136
Total Funding Assistance	\$ 3,327,528

Note: Operating expenses do not include department or city overhead.
Source: Annapolis Transit, FY2017 Operating Statistics.

Figure 1-1 captures the share that each funding source constitutes of Annapolis Transit's operating budget. Federal and state grants fund nearly 40% of the operating budget. Fares

and advertising comprise about 20%, and local funding from the city and county fund the remaining 40%.

Figure 1-1: FY 2017 Operating Funding Sources



Source: Annapolis Transit, FY2017 Operating Statistics.

Enterprise Fund

The city’s funding for Annapolis Transit is currently captured in an Enterprise Fund. Public transportation is one of six enterprise funds that the city has established for services to the general public, where the city considers the operations to be similar to private business enterprises with a goal to establish rates that provide for self-sufficiency. However, the Transportation Fund consistently operates at a deficit, which is offset by transfers from the Parking Enterprise Fund and the General Fund.

The main benefit of a Transportation Enterprise Fund is that a mechanism exists for meeting the city ordinance that mandates parking revenues (captured in the Parking Enterprise Fund) help fund public transportation services. Annapolis Transit may also be more likely to receive General Fund dollars that can be designated to a specific fund for public transportation. However, separate enterprise funds for Annapolis Transit and parking operations result in a complicated budget management process for ADOT, which covers both functions. Excess revenues from parking operations, once the expenses are covered, are first transferred to the General Fund and then to the Transportation Enterprise Fund to support Annapolis Transit. ADOT’s financial management processes including grants management and monitoring could potentially be streamlined if the expenditures and revenues for Annapolis Transit and parking operations were managed together.

Fare Policy

Table 1-3 displays the various payment categories Annapolis Transit offers riders. The base adult fare is \$2.00 per one-way trip, and the ADA paratransit base fare is \$4.00 per one-way trip. In addition to the base fare, discounts are available based on age, disability, and for Medicare card holders. Several passes including unlimited ride passes on fixed route buses and an ADA 10-Ride Pass are available to passengers. Day passes may be purchased on the bus. The other passes may be purchased at ADOT.

The 7-Day, 30-Day, and 90-Day Passes are valid for the specified time period, starting from the day of first use. Annapolis Transit previously sold tokens, for use on the fixed routes, in bulk (\$150 for 100 tokens) for community promotions and to non-profit organizations by prior agreement. The tokens were discontinued with the installation of the new electronic fareboxes in July 2017.

Table 1-3: Annapolis Transit Fares

Service	Fare	Description
Fixed Route Base Cash Fare	\$2	One-way trip
Seniors, Individuals with Disabilities, Students, and Medicare Card Holders	\$1	With valid photo ID; includes adults age 60 and over and students in private schools, colleges, Naval Academy in the service area
Children (5 years old and under)	Free	Up to 3 children ride for free with a paying adult
Circulator	Free	Central Business District service
ADA Service Cash Fare	\$4	One-way trip, curb-to-curb service
ADA 10-Ride Pass	\$40	10 trips, curb-to-curb service
Day Pass	\$4	Unlimited rides on regular bus routes
7-Day Pass	\$20	Unlimited rides on regular bus routes
30-Day Pass	\$80	Unlimited rides on regular bus routes
90-Day Pass	\$200	Unlimited rides on regular bus routes
Annual Pass (Fiscal Year, July1-June 30)	\$500	Unlimited rides on regular bus routes
Passes for Seniors, Persons with Disabilities, Students(private schools and colleges), and Medicare Card Holders	Half price of regular passes with valid phot ID	With valid photo ID; unlimited rides on regular bus routes; not for paratransit service
Summer Youth Pass	\$35	Requires valid school-issued ID; June 16 to Labor Day; for students 18 years and under
One Ride Pass (Sold in bulk, minimum of 100)	\$150	For community promotions, non-profit organizations by prior agreement

Source: Annapolis Transit website, December 2017.

SERVICE PERFORMANCE EVALUATION

Evaluating Annapolis Transit's current service performance was a key task to better understand how the system operates, develop route profiles, and develop service improvement recommendations. The study team reviewed several resources to identify metrics for evaluating systemwide and individual route performance: *TCRP Report 141: A Methodology for Performance Measurements and Peer Comparison in the Public Industry*³, MDOT MTA's Office of Local Transit Support, and ADOT's performance measurements described in the city's adopted budget. Based on recommendations from TCRP Report 141, performance was examined for the following metrics:

1. **Service Supplied**, identifies how much service was provided. The following metrics were used to measure service supplied:
 - **Revenue Miles** are the total number of miles the service operates while in revenue service, which typically excludes miles traveled when passengers are not able to board (deadhead travel).
 - **Revenue Hours** measure the total number of hours the service operates while picking up and dropping off passengers.

This performance analysis used the available data on service miles and hours, which are comparable to revenue miles and hours given the central location of the Annapolis Transit facility to route start and end points.

2. **Service Utilization**, measures how passengers use the service that is provided. The following metric was examined to measure utilization:
 - **Passenger Trips** capture the number of times a person boarded the bus.
3. **Service Effectiveness (or Productivity)**, measures ridership productivity. The metric measures the number of passengers that are served per unit of service. The following metrics were used to measure service effectiveness:
 - **Passenger Trips per Revenue Mile** evaluates effectiveness by measuring the number of passenger boardings (ridership) transported per revenue mile of service provided.
 - **Passenger Trips per Revenue Hour** evaluates effectiveness by measuring the number of passenger boardings (ridership) carried per revenue hour of service provided.

³ TCRP Report 141 A Methodology for Performance Measurements and Peer Comparison in the Public Industry, 2010. Retrieved from http://www.tcrponline.org/PDFDocuments/TCRP_RPT_141.pdf

4. **Cost Efficiency**, compares the cost of providing service to the outcomes resulting from the provided service. The following metrics were used to measure cost efficiency:
- **Operating Cost per Passenger Trip** describes how much it costs to transport a passenger for a one-way trip.
 - **Operating Cost per Mile** describes how much it costs to provide service for one revenue mile.
 - **Operating Cost per Hour** describes how much it costs to provide service for one revenue hour.
 - **Farebox Recovery Ratio** measures how much of the agency's operating cost is covered by farebox revenue. This measure is influenced by ridership, fare levels, and the amount (and cost) of service provided.
 - **Local Operating Revenue Ratio** measures how much of the agency's operating cost is covered by farebox revenue and other local revenue, including advertising and local government contributions. This measure takes into account alternative local funding sources, particularly where agencies prefer to keep fare levels low or go fare-free.

MDOT MTA's Office of Local Transit Support has established performance standards for transit agencies throughout the state. The performance standards are used as a tool for monitoring agencies' services for effectiveness and efficiency. The rating structure is used as a basis for offering technical assistance. The program is set up such that services can be rated as "Successful," "Acceptable," or "Needs Review" in each operating measure. In addition, these standards are utilized in determining whether new services requested by the systems should be funded based on their potential for being successful.

Table 1-4 outlines the state's performance standards for small urban transit services, which apply to Annapolis Transit.

Table 1-4: MDOT MTA Performance Standards for Small Urban Transit Services

Performance Measure	Successful	Acceptable	Needs Review
For Fixed Route Services			
Passenger Trips per Mile	> 1.25	0.75 – 1.25	< 0.75
Passenger Trips per Hour	> 16.0	12.0 – 16.0	< 12.0
Operating Cost per Passenger Trip	< \$4.07	\$4.07 – \$7.12	> \$7.12
Operating Cost per Mile	< \$4.07	\$4.07 – \$6.10	> \$6.10
Operating Cost per Hour	< \$66.11	\$66.11 – \$86.45	> \$86.45
Local Operating Revenue Ratio	> 55%	45% - 55%	< 45%
Farebox Recovery Ratio	> 20%	10 – 20%	< 10%
For Demand Response Services			
Passenger Trips per Mile	> 0.20	0.10 – 0.20	< 0.10
Passenger Trips per Hour	> 3.0	1.5 – 3.0	< 1.5
Operating Cost per Passenger Trip	< \$20.34	\$20.34 – \$40.68	> \$40.68
Operating Cost per Mile	< \$3.56	\$3.56 – \$7.12	> \$7.12
Operating Cost per Hour	< \$61.02	\$61.02 – \$81.36	> \$81.36
Local Operating Revenue Ratio	> 60%	40% - 60%	< 40%
Farebox Recovery Ratio	> 12%	6 – 12%	< 6%

Source: MDOT MTA, 2017 LOTS Manual.

Systemwide Performance

Annapolis Transit’s systemwide performance based on FY 2018 data is shown in Table 1-5. The performance metrics for fixed route and ADA paratransit services are shown in green, blue, and red if they were considered Successful, Acceptable, or Needs Review, respectively, by the state standards.

Fixed Route Performance

The fixed route services were in need of review in the productivity and cost efficiency measures related to ridership. Fixed route ridership decreased 36% in the last two years. This was due in large part to the November 2014 service cuts, which cut 13% of service hours and miles. Ridership decreased not only on the routes where service was reduced, but also on other routes that riders previously transferred to and from. For example, some riders reportedly stopped taking the Brown route once the frequency changed to 45 minutes because they had a longer wait time for transfers to the Green and Red routes, which operate on 30 minute headways. As a result, the Green and Red routes also experienced ridership losses.

Table 1-5: FY 2018 Systemwide Performance

Route	Fixed Route	ADA Paratransit	TOTAL
Operating Data			
Unlinked Passenger Trips	461,706	2,748	464,454
Service Miles	571,445	26,931	598,376
Service Hours	52,209	6,190	58,399
Operating Cost	\$3,043,816	\$269,202	\$3,313,017
Farebox Revenue	\$641,266	\$8,282	\$649,548
Other Local Operating Revenue	\$883,574	\$34,900	\$918,474
Performance Metrics			
Trips per Mile	0.81	0.10	0.78
Trips per Hour	8.84	0.44	7.95
Cost per Passenger Trip	\$6.59	\$97.96	\$7.13
Cost per Mile	\$5.33	\$10.00	\$5.54
Cost per Hour	\$58.30	\$43.49	\$56.73
Farebox Recovery Ratio	21.10%	3.10%	19.60%
Local Operating Revenue Ratio	54.00%	18.10%	51.10%

Performance Metrics Key (for comparison against MDOT MTA standards):

Green = Successful, Blue = Acceptable, Red = Needs Review

Sources: Form 2A for ridership and service levels, and operating statistics from Annapolis Transit for cost, farebox revenue, and other local revenue.

Note: the operating cost does not include department administrative overhead cost.

From FY 2016 to FY 2017, service remained stable but ridership still fell by 13%, which indicates that external factors including lower gas prices (which attracts shifts to automobile use) and the increasing use of transportation network companies, such as Uber and Lyft, likely contributed to the ridership decline. While Annapolis Transit's recent ridership loss was significant, it should be considered in the context of falling bus ridership trends nationally and regionally. Bus ridership nationwide decreased by 6% in the last few years.⁴ Regional examples of notable ridership decreases over the same period include:

- Locally Operated Transit Systems in Maryland combined (-10%)
- Regional Transportation Agency of Central Maryland, serving Howard County, Anne Arundel County, Northern Prince George's County, and the City of Laurel (-22%)

⁴ Based on changes in annual total bus ridership for U.S. and Canadian transit agencies from 2014 to 2016, as reported in the American Public Transportation Association's *Public Transportation Ridership Report*.

- RideOn in Montgomery County (-19%).⁵

The fixed routes met the Acceptable standards for the other cost efficiency measures and were considered successful in their local operating revenue ratio.

ADA Paratransit Performance

The ADA paratransit service has experienced a 28% decrease in ridership in the last two years. Annual ridership actually increased by 10% in FY 2016, but saw a significant decrease by 35% in FY 2017. The level of service and fares have remained the same over this period, so external factors such as lower gas prices potentially contributed to this ridership trend. It is also possible that eligible city residents are using Anne Arundel County's Van Program or Taxi Voucher Program, which both serve older adults and adults with disabilities. The Van Program provides trips to medical appointments for free, while the Taxi Voucher Program can be used for any trip purpose and vouchers offer a 50% discount to regular taxi fares.

Annapolis Transit Performance Standards

MDOT MTA's performance standards were developed based on national peer agencies with similar size operations to Maryland's Locally Operated Transit Systems. However, even Maryland's local transit systems vary widely in their size, geographic areas served, and other operating characteristics. Therefore, the study team recommends establishing performance standards specific to Annapolis Transit based on FY 2017 performance, which reflects the ridership decrease the system has experienced following recent service cuts.

A top goal for the TDP timeframe is to restore ridership back to 2014 levels, but at a minimum, systemwide performance should not fall below FY 2017 levels. Table 1-6 summarizes the recommended benchmarks for monitoring and evaluating systemwide performance over the five-year timeframe of this TDP.

Table 1-6: Recommended Systemwide Performance Standards

Performance Area	Measure	Performance Standard
Ridership Productivity	Passenger trips/hour	6.54
Cost Efficiency	Operating cost/passenger trip	\$10.73
	Farebox recovery ratio	17.57%
	Local subsidy per passenger trip	\$4.81
On-time Performance	Percentage of on-time departures from major time points, where "on time" is defined as leaving 0 minutes early up to 5 minutes late	80%

⁵ Based on MDOT MTA data for FY 2014 to FY 2016 and RTA and RideOn data for FY 2015 to FY 2017.

The systemwide on-time performance standard was based on an evaluation conducted by MDOT MTA's Office of Local Transit Support in fall 2016. This analysis reviewed schedule adherence on a sample of weekday trips representing all Rainbow Routes.⁶ The evaluation results indicated that Annapolis Transit trips were on time⁷ 80% of the time. The punctuality of the individual routes ranged from about 60% to 90%.

Route Level Performance

Table 1-7 summarizes the FY 2017 performance by route compared to the state standards. The measures related to ridership need review and reflect the significant ridership decline the system has experienced since the November 2014 service cuts. The State Shuttle has the best overall performance in productivity and cost efficiency; the farebox recovery ratio is greater than 100% because the fare revenue includes the annual DGS contribution and rider fares.⁸

Table 1-7: FY 2017 Fixed Route Performance Statistics

Route	Unlinked Passenger Trips	Service Supplied		Financials		Systemwide	
		Service Miles	Service Hours	Operating Cost	Farebox Revenue	Percent of Ridership	Percent of Operating Cost
Red	54,798	90,464	8,054	\$596,857	\$81,393	14.4%	15.3%
Yellow	27,357	52,246	3,822	\$283,237	\$16,644	7.2%	7.3%
Green	69,731	75,161	8,054	\$596,857	\$110,760	18.3%	15.3%
Orange	18,336	41,685	3,429	\$254,113	\$24,462	4.8%	6.5%
Gold	23,865	85,409	5,614	\$416,036	\$28,877	6.3%	10.7%
Brown	66,746	101,232	9,988	\$740,180	\$101,926	17.5%	19.0%
Purple	31,578	53,469	4,046	\$299,837	\$32,825	8.3%	7.7%
Circulator	35,713	39,506	6,331	\$469,171	\$16,542	9.4%	12.0%
State Shuttle	53,152	33,207	3,302	\$244,701	\$275,635	13.9%	6.3%
System Total	381,276	572,379	52,640	\$3,900,988	\$689,064		

⁶ The evaluation excluded evening and weekend service, the Purple route, the Circulator, and the State Shuttle.

⁷ In the MDOT MTA evaluation, buses were considered "on time" when leaving between 1 minute ahead of the scheduled departure time and 5 minutes behind the scheduled departure time. However, moving forward it is recommended that Annapolis Transit define "on time" as 0 minutes to 5 minutes late.

⁸ In August 2018, while this TDP was under development, the City of Annapolis terminated operations of the Gold and Yellow Routes.

Table 1-7: FY 2017 Fixed Route Performance Statistics (continued)

Route	Productivity		Cost Efficiency				Speed
	Passenger Trips per Mile	Passenger Trips per Hour	Cost per Passenger Trip	Cost per Mile	Cost per Hour	Farebox Recovery Ratio	
Red	0.61	6.80	\$10.89	\$6.60	\$74.10	13.6%	11
Yellow	0.52	7.16	\$10.35	\$5.42	\$74.10	5.9%	14
Green	0.93	8.66	\$8.56	\$7.94	\$74.10	18.6%	9
Orange	0.44	5.35	\$13.86	\$6.10	\$74.10	9.6%	12
Gold	0.28	4.25	\$17.43	\$4.87	\$74.10	6.9%	15
Brown	0.66	6.68	\$11.09	\$7.31	\$74.10	13.8%	10
Purple	0.59	7.80	\$9.50	\$5.61	\$74.10	10.9%	13
Circulator	0.90	5.64	\$13.14	\$11.88	\$74.10	3.5%	6
State Shuttle	1.60	16.10	\$4.60	\$7.37	\$74.10	112.6%	10
System Total	0.67	7.24	\$10.23	\$6.82	\$74.10	17.7%	11

Note: The total farebox revenue is lower than that reported in the systemwide summary because this table does not capture tokens, tickets, and miscellaneous fares.

Source: FY17 Operating Statistics from Annapolis Transit for operating cost (excludes department and city overhead); FY17 Form 2A for other operating data.

Figure 1-2 presents internal rankings of the fixed routes based on select productivity and cost efficiency measures. These graphs indicate that the Gold and Orange Routes are consistently among the lowest performing routes. The Yellow Route and the Circulator are also among the bottom three in these performance areas. For FY 2018, ridership on the Yellow Route is expected to decrease given the reduced service frequency, while ridership on the Circulator is anticipated to increase since the route became fare free.

Figure 1-2: Rankings by Route in Productivity and Cost Efficiency



Peer Analysis

The purpose of this peer review was to compare Annapolis Transit's performance with a group of similar transit agencies. The peer review helped identify areas in which Annapolis Transit is performing better than its peers and areas that it is lagging.

Annapolis Transit is a unique transit system whose service area is relatively small but includes high density areas and numerous major trip generators including employers, educational institutions, a regional hospital, and shopping destinations. Annapolis is both the state capital and a major tourism destination located on a peninsula on the Chesapeake Bay. Connections to regional bus transportation are available in the city and at the Harry S. Truman Park and Ride, but the closest rail service (Amtrak and WMATA Metrorail) is over 20 miles away.

It was difficult to identify peer agencies that match all these characteristics. Neighboring transit agencies may have routes similar to Annapolis Transit's routes, but the systems serve larger areas and provide more diverse types of services. In selecting the peers the study team prioritized transit agencies in the D.C. and Baltimore regions, which serve urban settings and face similarly high labor costs. Arlington Transit, CUE, DASH, and Harford Transit have a university or college presence in their service areas. DASH serves Old Town Alexandria, which is a historic downtown and tourism attraction similar to downtown Annapolis.

The following six transit agencies were used in this peer review:

- Arlington Transit (ART), Arlington County, Virginia
- City-University Energysaver (CUE) Bus, City of Fairfax, Virginia
- DASH, City of Alexandria, Virginia
- TransIT, Frederick County, Maryland
- Harford Transit, Harford County, Maryland
- RTA, serving Howard County, Anne Arundel County, Northern Prince George's County, and the City of Laurel, Maryland

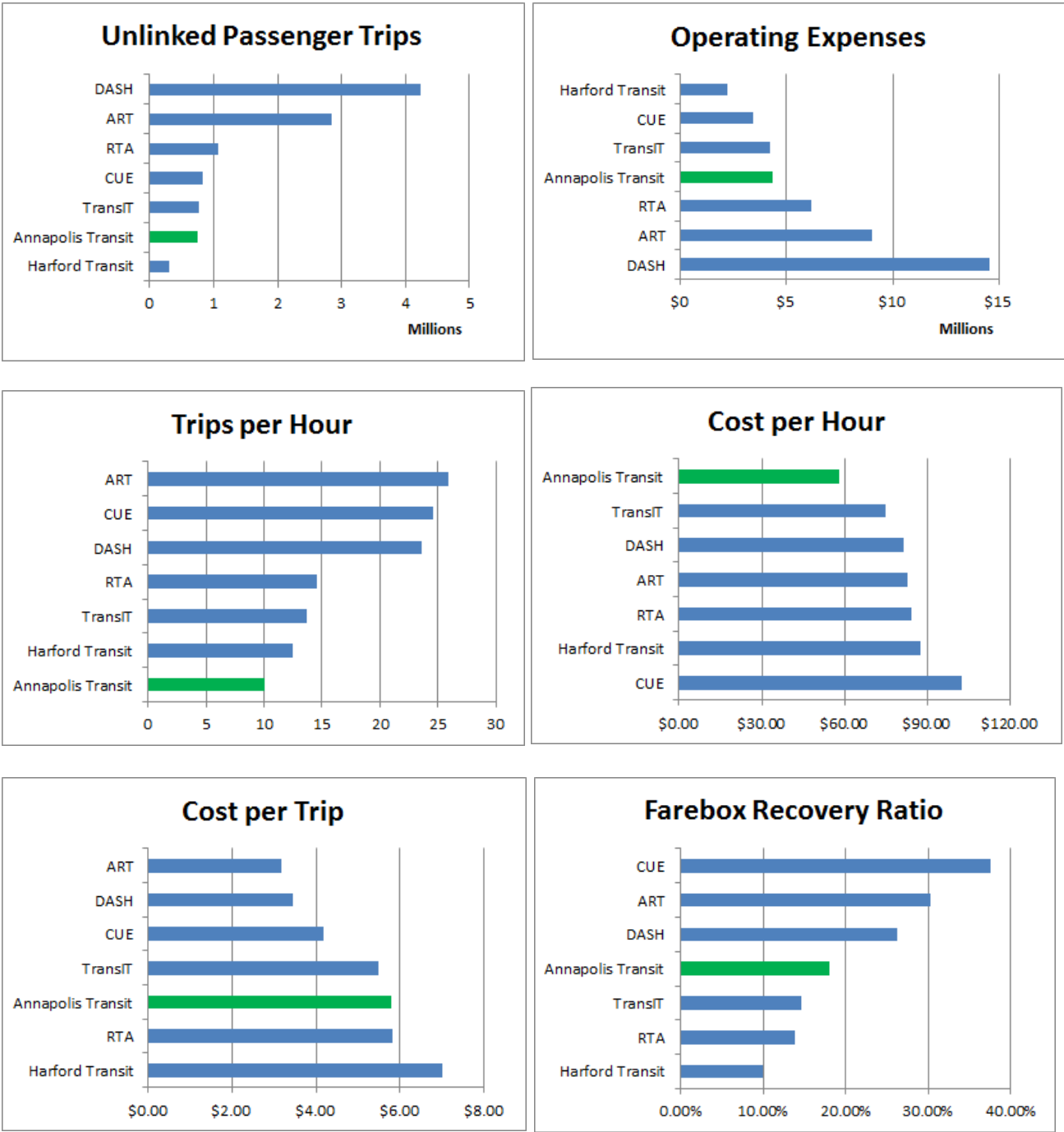
The Federal Transit Administration's National Transit Database (NTD) was used to compile data for this peer review. The study team assessed data from the agencies' FY 2014 annual profiles including service area statistics and bus-only operations and performance data. The key findings from the peer review were as follows:

- Annapolis Transit's total ridership and productivity (passenger trips per hour) were among the lowest in the peer group.

- Annapolis Transit's total operating expenses and farebox recovery ratio represented the median of the peer group.
- Annapolis Transit's cost per hour was the lowest among its peers, about 23% lower than the next lowest cost per hour.
- Annapolis Transit's cost per trip was 16% higher than the peer average.

The peer comparisons for select performance measures are portrayed in Figure 1-3. The complete peer data are presented in Table 1-8. The peer analysis results indicated that Annapolis Transit has the lowest operating cost per hour of its peers and performs about average in other cost efficiency measures. Ridership and productivity are areas where Annapolis Transit lags behind this peer group. Compared to its peers with a similar number of vehicles in peak service, Annapolis Transit operates more revenue hours, which decreases its productivity. On the other hand, some peers provide a higher level of service in larger areas, which results in significantly greater ridership than Annapolis Transit has historically served.

Figure I-3: Annapolis Transit Performance against Peers for Select Measures



Source: 2014 NTD.

Table 1-8: Selected Peer Comparison

Agency	Service Area Population	Number Vehicles in Peak Service	Unlinked Passenger Trips	Revenue Miles	Revenue Hours	Operating Expenses	Fare Revenues
Annapolis Transit	130,600	17	748,205	806,508	74,828	\$4,340,144	\$778,860
Arlington Transit	210,000	39	2,837,023	1,094,223	109,343	\$9,025,423	\$2,726,909
City of Fairfax CUE	22,565	8	826,747	440,755	33,697	\$3,445,055	\$1,293,130
DASH (Alexandria)	139,966	60	4,238,784	1,530,544	179,684	\$14,585,357	\$3,822,560
TransIT (Frederick)	65,787	16	770,028	635,027	56,277	\$4,215,177	\$617,511
Harford Transit	218,590	15	313,676	463,141	25,196	\$2,195,313	\$217,294
RTA (Central MD)	284,952	17	1,062,781	1,111,266	73,246	\$6,175,714	\$853,192
Mean	153,209	25	1,542,463	868,781	78,896	\$6,283,169	\$1,472,779

Agency	Trips per Hour	Trips per Mile	Cost per Trip	Cost per Hour	Cost per Mile	Farebox Recovery Ratio
Annapolis Transit	10	0.93	\$5.80	\$58.00	\$5.38	17.95%
Arlington Transit	25.95	2.59	\$3.18	\$82.54	\$8.25	30.21%
City of Fairfax CUE	24.53	1.88	\$4.17	\$102.24	\$7.82	37.54%
DASH (Alexandria)	23.59	2.77	\$3.44	\$81.17	\$9.53	26.21%
TransIT (Frederick)	13.68	1.21	\$5.47	\$74.90	\$6.64	14.65%
Harford Transit	12.45	0.68	\$7.00	\$87.13	\$4.74	9.90%
RTA (Central MD)	14.51	0.96	\$5.81	\$84.31	\$5.56	13.82%
Mean	17.82	1.57	\$4.98	\$81.47	\$6.84	21.47%

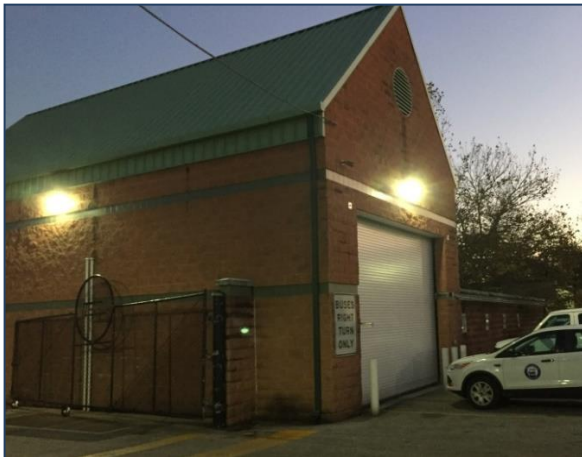
Source: 2014 NTD.

EXISTING FACILITIES, FLEET, AND TECHNOLOGY

Administration, Maintenance, and Operations Facility

Annapolis Transit’s facility is located at 308 Chinquapin Round Road in Annapolis. The facility houses the administrative offices, operations, and maintenance including a bus wash and fueling facilities. Built in 1995, the facility’s most recent improvements include a new HVAC system, tire storage facility, a major upgrade to the bus wash, and a new operation control center in 2015. Figure 1-4 portrays photos of the facility taken in October 2017.

Figure 1-4: Annapolis Transit Facility



Bus Stops and Amenities

Annapolis Transit maintains almost 240 bus stops, with about 80 of them containing shelters. Amenities provided at bus shelters may include benches, trash receptacles, newspaper

dispensers, and bicycle racks. The remaining bus stops are marked with bus stop signs on poles. ADOT owns 50 of the 80 bus shelters. A private company through a revenue-sharing agreement installed the remaining 30 bus shelters.

ADOT has two contracts for advertising on the bus shelters. The contractors install the bus shelters and advertisements, in exchange for a share of the advertising revenues. However, Annapolis Transit must maintain the shelters and amenities and has experienced the following issues in recent years:

- Challenges managing the trash receptacles at bus shelters
- Limited advertising revenue from the bus shelters provided by the private company through the revenue-sharing agreement
- Some shelters are dirty and marked with graffiti

As shown in Figure 1-5, the bus shelters provided by ADOT and the private contractor also look different and do not provide a cohesive appearance for the transit system. Further, some shelters are not marked with “Annapolis Transit” nor do they have an Annapolis Transit bus stop sign, which is potentially confusing to the public since MDOT MTA and Young Transportation Services also operate in the service area.

Figure 1-5: Annapolis Transit Bus Shelters



Not only do the bus shelters look different, but different bus stop signs can be found throughout the system, as seen in Figure 1-6. Annapolis Transit has planned a systemwide bus stop replacement to provide updated and consistent signage.

Figure 1-6: Annapolis Transit Bus Stop Signs



Transfer Points

The Annapolis Transit system has four transfer points where multiple routes meet, and route schedules are coordinated to facilitate transfers between routes: Westfield Mall, Church Circle, Eastport Plaza, and Annapolis Marketplace. The Harry S. Truman Park and Ride, located off Riva Road on Harry S. Truman Parkway, is the primary park and ride facility in the service area. The Harry S. Truman Park and Ride serves as a transfer point to regional transit and intercity bus services. Table 1-9 summarizes the transit services and available connections at each transfer point.

Table 1-9: Major Transfer Points

Location	Annapolis Transit	Other Providers
Westfield Mall	<ul style="list-style-type: none"> • Green • Gold • Red • Yellow • Brown • Purple 	<ul style="list-style-type: none"> • MDOT MTA 210 & 215 to Baltimore • Young Transportation Services to New Carrollton
Church Circle	<ul style="list-style-type: none"> • Green • Gold • Orange • Purple 	<ul style="list-style-type: none"> • MDOT MTA 210 & 215 to Baltimore • MDOT MTA 220 & 230 to DC (1 block away at West St & Calvert St) • Young Transportation Services to New Carrollton (1 block away at West St & Calvert St)
Eastport Plaza	<ul style="list-style-type: none"> • Brown • Green • Red • Purple 	None
Annapolis Marketplace	<ul style="list-style-type: none"> • Brown • Orange • Red • Purple 	None
Harry S. Truman Park & Ride	<ul style="list-style-type: none"> • Yellow 	<ul style="list-style-type: none"> • MDOT MTA 210 to Baltimore • MDOT MTA 220 & 230 to DC • Greyhound to Baltimore, DC & national network • Young Transportation Services to New Carrollton

Transit Options to Regional Destinations

Transportation to regional destinations, particularly for employment, was a need identified in the last TDP and continues to be a need today. Table 1-10 outlines the fastest transit options currently available to reach regional destinations from Annapolis, based on weekday peak period travel. Note the bus travel time does not account for internal travel within Annapolis to reach the trip origin described below. Other transit options were available for these trips, taking up to 30 minutes more per one-way trip.

The table indicates that the current transit travel time to Baltimore and Washington, D.C. is only 20% longer than the average drive time by automobile, namely due to direct service provided by MDOT MTA commuter bus. However the transit options available to reach Arundel Mills Mall and BWI Airport require multiple transfers and take more than twice as long as driving.

Table 1-10: Existing Transit Options to Regional Destinations

Regional Destination	Fastest Existing Transit Trip from Annapolis (AM Peak)	Total Travel Time by Bus	Average Travel Time by Automobile	Bus: Automobile Travel Time Ratio
Arundel Mills Mall	MDOT MTA 70 from Church Circle to Cromwell Light Rail Station, transfer to RTA 201 to reach Arundel Mills Mall	90 minutes	34 minutes	265%
Baltimore (downtown)	MDOT MTA 210 from Westfield Mall to downtown Baltimore	52 minutes	43 minutes	120%
BWI Airport	MDOT MTA 70 from Church Circle to Cromwell Light Rail Station, transfer to northbound light rail service to Linthicum Station, transfer to southbound light rail service to BWI Station	90 minutes	33 minutes	270%
Washington, D.C. (downtown)	MDOT MTA 230 from Church Circle to downtown D.C.	80 minutes	68 minutes	120%

Source: Google Maps Trip Planner, November 2017.

Vehicle Fleet Inventory

Shown in Table 1-II, Annapolis Transit's fleet includes 16 revenue vehicles and seven non-revenue vehicles. Most of the revenue vehicles are 30-foot heavy-duty buses that are lift equipped, with space for two wheelchair seats. The current spare ratio for its revenue service fleet is 46%, which is higher than industry standards. However, the spare ratio includes the four oldest revenue service buses, which have met the vehicle useful life standards (in years) and are in marginal condition.

The remaining revenue buses were purchased between 2008 and 2011 and two have already exceeded the vehicle useful life standards (in mileage). The three cutaway vehicles, one of which is used for ADA paratransit service, have met the useful life standards (in miles), and Annapolis Transit is requesting replacement vehicles in FY 2018.

Table I-II: Annapolis Transit Vehicle Inventory

Fleet Number	Make	Type	Model Year	Seating Capacity		Mileage (March 2019)	Status	Condition
				Ambulatory	Wheelchair			
253	Cable Car Concepts	Bus Medium Duty	2005	30	2	146,598	Spare	Poor
256	Cable Car Concepts	Bus Medium Duty	2005	30	2	162,620	Spare	Poor
400	NABI	Bus Heavy Duty Med	2008	27	2	96,941	Spare	Adequate
401	NABI	Bus Heavy Duty Med	2008	27	2	87,731	Spare	Adequate
402	NABI	Bus Heavy Duty Med	2009	27	2	49,379	Spare	Adequate
5209	Gillig	Bus Heavy Duty Med	2009	30	2	461,881	Active	Poor
5409	Gillig	Bus Heavy Duty Med	2009	30	2	448,140	Active	Marginal
5111	Gillig	Bus Heavy Duty Med	2011	30	2	344,731	Active	Adequate
5211	Gillig	Bus Heavy Duty Med	2011	30	2	356,924	Active	Adequate
5311	Gillig	Bus Heavy Duty Med	2011	30	2	383,890	Active	Adequate
5411	Gillig	Bus Heavy Duty Med	2011	30	2	340,525	Active	Adequate

Fleet Number	Make	Type	Model Year	Seating Capacity		Mileage (March 2019)	Status	Condition
5511	Gillig	Bus Heavy Duty Med	2011	30	2	356,137	Active	Adequate
4311	Gillig Hybrid	Bus Heavy Duty Med	2011	30	2	231,280	Active	Adequate
1800	CEQ	Accessible Van	2018	20	2	22,439	Active	Excellent
1801	CEQ	Bus Light Duty	2018	20	2	40,617	Active	Excellent
1802	CEQ	Bus Light Duty	2018	20	2	43,809	Active	Excellent
90	Ford Expedition	Support Car Truck	2008	7	0	164,846	Active	Marginal
73	Ford F350	Support Car Truck	2011	5	0	79,229	Active	Good
74	Ford E350	Support Van	2011	12	0	65,802	Active	Good
7	Ford Escape	Support Car Truck	2013	5	0	43,455	Active	Excellent
1711	Ford Edge	Support Car Truck	2014	5	0	46,301	Active	Excellent
9	Ford Explorer	Support Car Truck	2017	7	0	12,161	Active	Excellent
77	Ford F250	Support Car Truck	2016	3	0	5,200	Active	Excellent

Source: FY 2019 Annual Transportation Program, fleet inventory as of March 2019.

Technology

Annapolis Transit employs technology in its safety and security measures, provision of public service information, and collection of performance data. In 2013 Annapolis Transit installed surveillance cameras onboard its buses and a server for the bus video surveillance system. In 2015 cameras with closed-circuit television (CCTV) technology were installed at the Annapolis Transit facility to improve safety and security for employees and equipment. Operations managers and drivers communicate by two-way radio.

Annapolis Transit provides General Transit Feed Specification (GTFS) data to Google Maps, which allows riders and the general public to use the trip planner on the Google Maps website to plan a bus trip or see the scheduled times for the next buses that serve their trip needs. Google Maps also allows users to see the available transit options for regional trips including connections with other transit services and estimated travel times.

The Circulator bus is equipped with AVL technology, which allows riders to track the bus in real time on the Annapolis Circulator website or using the RLS Shuttle app (provided by Ride Systems) on their smartphone. This Circulator service is provided by SP+ through Reston Limousine as part of SP+'s parking management contract with the City of Annapolis. Annapolis Transit previously engaged Ride Systems directly to discuss the possibility of making real-time arrival information available for all routes, but the cost of \$1,500 per bus per month was considered cost prohibitive at the time.

Transit vehicle location is currently tracked by the onboard video surveillance system installed in 2013 by Apollo Video Technology. The video surveillance system provides real-time location of all transit buses and video feeds to the operation control center in the ADOT administrative building.

In July 2017 Annapolis Transit installed new electronic fareboxes on all its buses. This allowed the system to upgrade its fare media options, introducing smart card technology, and improve fare and revenue tracking. Provided by TripSpark Technologies, the new farebox system allows Annapolis Transit to automatically collect ridership, fare, and other operating data.

MARKETING AND COMMUNICATIONS

Annapolis Transit conducts several marketing initiatives to promote transit to Annapolis residents, workers, and visitors:

- **Bus Shelters and Signs** – Newer shelters are marked with large Annapolis Transit logos, and the system map and other service information are located on the shelter interior. Bus stop poles have Annapolis Transit signs, with plans to provide additional transit information on the signs.

- **Websites** – Annapolis Transit’s webpages on the city’s website are among the most frequently requested. The Circulator has its own webpage as part of the Annapolis Parking website. Information about Annapolis Transit including route schedules and trip planners can be found on the Transportation Resource Information Point (TRIP) website, a one-stop transportation resource center for Maryland, and the RideSchedules website, which provides schedule information by stop. Links to the Annapolis Transit website are provided on the Anne Arundel County Transportation and Westfield Mall websites.
- **Social Media** –The City of Annapolis provides information and updates on Annapolis Transit service through the following social media accounts:
 - **Facebook:** www.facebook.com/cityofannapolis
 - **Twitter:** <https://twitter.com/cityofannapolis>
 - **Youtube:** <https://www.youtube.com/user/CityofAnnapolis>
- **Brochures** – “System Map” brochures describe the routes, fares, and other transportation services in English and Spanish. Brochures are also available for individual routes.
- **Publications** – Annapolis Transit is listed as a transportation service or has paid ads in PortBook marine services directory, Visit Annapolis’ annual Visitors Guide, the Capital Gazette’s Annual Guide to Living in Anne Arundel County, and the Verizon and Yellow Book telephone directories.
- **Community Events** – Staff participates in events sponsored by 1430WNAV Radio, meets with community groups, and attends neighborhood association meetings.

The ADOT Director serves as the main point of contact for public inquiries and comments regarding Annapolis Transit. The public may provide input at City Council meetings, including review of the Annual Transportation Program and proposed service and fare changes, and Transportation Board meetings.

Information regarding transit services is posted on buses, at bus shelters, and on the city’s website. The city’s Office of Communications provides support and oversight for all external communications from city departments including ADOT.

PEDESTRIAN AND BICYCLE ACCESS

The Bike Annapolis Program is a city initiative to promote biking, and its goals include reducing traffic congestion and parking pressures, promoting exercise, and enhancing mobility. Exhibit 1-3 displays the bike facilities and infrastructure in the city. Several bike

facilities are available along Annapolis Transit routes, such as Hilltop Lane and Bay Ridge Avenue, and adjacent to Annapolis Transit routes, such as Poplar Trail and Medical Parkway.

Exhibit I-3: Bike Facilities and Infrastructure



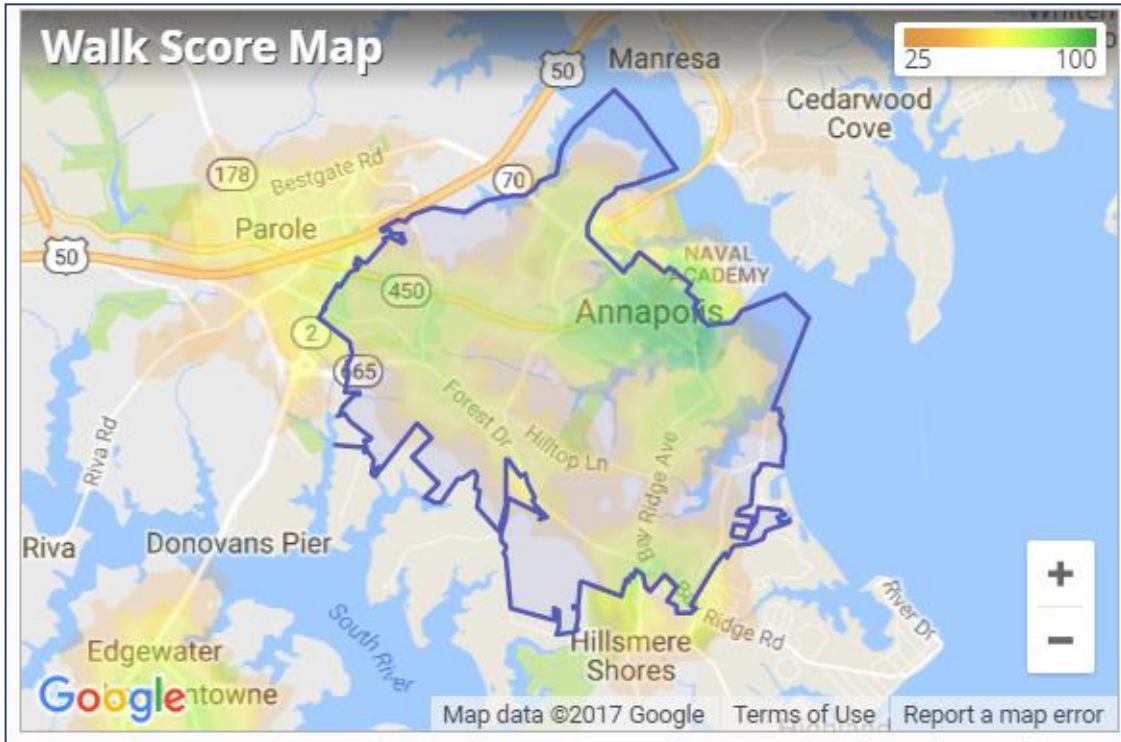
Source: City of Annapolis, Bike Annapolis Program website.

Annapolis Transit promotes biking to access transit service through its Bike-On-Bus Program. All Annapolis Transit vehicles are equipped with bike racks, which are free of charge. The Annapolis Bicycle Master Plan identified connections to other transportation modes, such as transit, as an important way to encourage biking in Annapolis. The city is in the process of implementing the bike facility improvements recommended in the Annapolis Bicycle Master Plan.

Based on the service Walk Score, which evaluates the walkability of neighborhoods, the City of Annapolis received an average rating of 50 (out of 100), indicating that “some errands can be accomplished on foot.” Walk Score’s rating is based on the walking distance to amenities, population density, intersection density, and block length. Exhibit I-4 is Walk Score’s heat map for walkability in the Annapolis Transit service area, where green indicates the most pedestrian friendly areas and orange the least pedestrian friendly areas. Most areas along

Annapolis Transit routes are considered average or better, with downtown Annapolis, Eastport, and segments of West Street noted as the most pedestrian friendly areas.

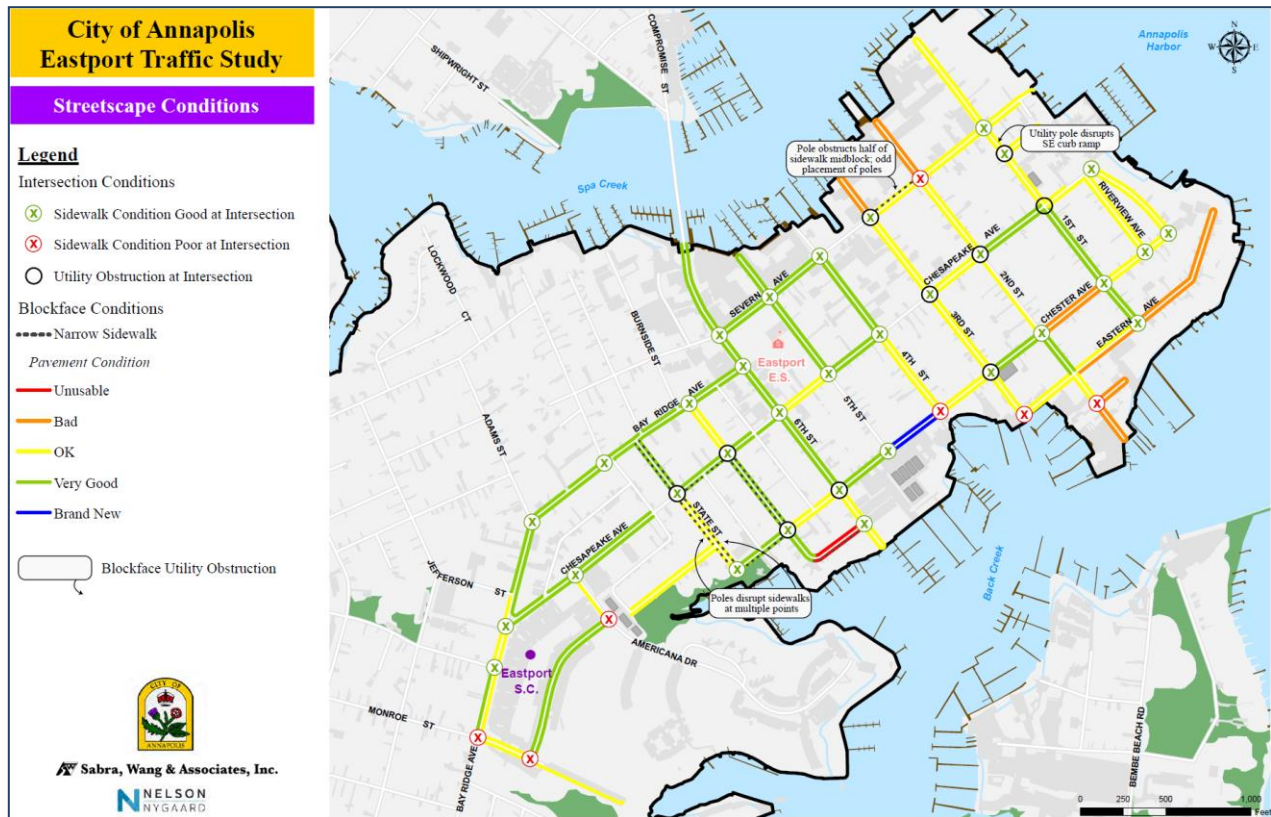
Exhibit 1-4: Walk Score Map for Annapolis Transit Service Area



Note: City of Annapolis boundary is shown in blue.
Source: Walk Score, www.walkscore.com

The city regularly conducts transportation studies including review of bicycle and pedestrian access. These studies provide in-depth reviews of streetscapes and intersections, including sidewalk conditions and obstructions, crosswalks, and ADA compliant curb ramps, to identify pedestrian accessibility issues. Exhibit 1-5 provides an example of streetscape conditions from the Eastport Traffic Study. Improving pedestrian infrastructure and amenities, as identified in these transportation studies, is important to enhancing the transit experience since the majority of Annapolis Transit riders walk to the bus.

Exhibit I-5: Sample Inventory of Streetscape Conditions to Evaluate Pedestrian Accessibility



Source: City of Annapolis Eastport Traffic Study.

OTHER AREA TRANSPORTATION PROVIDERS

Several other transportation services are available in or near the Annapolis Transit service area including Anne Arundel County's transportation programs, MDOT MTA, Greyhound Lines, and Young Transportation Services.

Amtrak

It must be noted that Annapolis Transit used to run a service (Route C-60) from Annapolis to Arundel Mills and BWI Marshall Airport including a stop at the Amtrak station at BWI. The service was discontinued in 2010.

The closest Amtrak stations to Annapolis are each about 20 miles away at BWI and at New Carrollton. At the BWI station riders can take free shuttles to/from the airport terminal. At these Amtrak stations, Annapolis area residents can access the following routes:

- Acela Express, which travels between Washington, D.C. and Boston (only serves BWI)

- Northeast Regional, which runs between Virginia Beach, Washington, D.C., New York, Hartford, and Boston
- Silver Service/Palmetto which runs from New York, through Washington, D.C. and into Miami
- Vermonter, which runs between Washington, D.C. and St. Albans in northern Vermont

Anne Arundel County Transportation Department

The Anne Arundel County Transportation Department provides two transportation programs for eligible county residents including Annapolis residents. Older adults, ages 55 and older, and persons with disabilities, ages 18 and older, are eligible to participate in a Van Program or Taxi Voucher Program. The Van Program provides curb-to-curb service with small, accessible buses during the week from 7:00 a.m. to 5:00 p.m. This program mainly serves medical trips including dialysis, but also provides subscription service to senior centers, nutrition sites, and community colleges. Services provided by the Van Program are free of charge, but donations are accepted. The Taxi Voucher Program allows eligible persons to purchase coupons for rides, at a 50% discount, with 15 participating cab companies. Participants may request transportation seven days a week for any trip purpose.

Anne Arundel County's Transportation Department also receives funding from MDOT MTA to promote ridesharing, particularly for out-of-county commutes. A Rideshare Coordinator uses the Commuter Connections rideshare database for the Washington, D.C. region to connect county residents with similar commutes to form or join carpools and vanpools. The Rideshare Coordinator also promotes public transportation alternatives and online resources for trip planning.

MDOT MTA

The MDOT MTA routes that serve Annapolis include one local bus (LocalLink) and four commuter bus (Commuter BusLink) routes, summarized in Table 1-12. The route alignments within Annapolis for each service are shown in Exhibit 1-6.

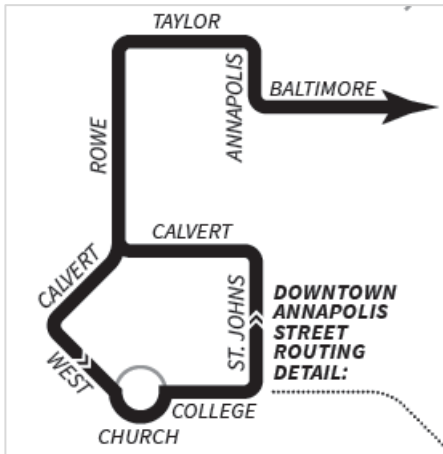
Table 1-12: MDOT MTA Routes that Serve Annapolis

MDOT MTA Route	Overview	Areas Served	Service Days, Times, and Frequency	Transfer Points with Annapolis Transit
LocalLink 70	Downtown Annapolis-Downtown Baltimore	Arnold/AACC, Severna, Glenburnie/Cromwell Light Rail, Patapsco Light Rail	Daily 5:00am-3:00am, peak 40 mins, off-peak 60 mins	Church Circle
Commuter BusLink 210	Queen Anne's County-Downtown Baltimore	Stevensville, Annapolis	Weekday peak service 5:30am-9:05am, 3:10pm-6:50pm, peak 30 mins	Church Circle, Westfield Mall, Harry S. Truman Park and Ride
Commuter BusLink 215	Downtown Baltimore-Downtown Annapolis (reverse commute)	Cromwell Light Rail	Weekday peak service 5:45am-9:00am, 3:15pm-6:30pm, peak 60 mins	Church Circle, Westfield Mall
Commuter BusLink 220	Annapolis-Downtown D.C.	n/a	Weekday peak service 4:55am-9:25am, 3:00pm-7:40pm, peak 15 mins, plus 1 midday trip to Annapolis	West Street, Harry S. Truman Park and Ride
Commuter BusLink 230	Severna Park-Annapolis-Downtown D.C.	n/a	Weekday peak service 5:00am-8:40am, 3:00pm-7:50pm, peak 15 mins, plus 1 midday trip to Annapolis	West Street, Harry S. Truman Park and Ride

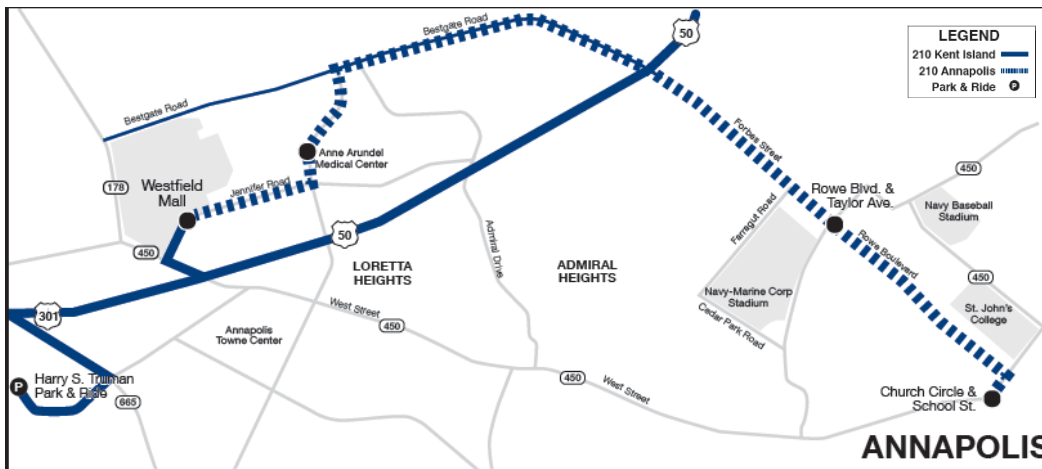
Source: MTA schedules, effective March 2017.

Exhibit I-6: Route Alignments for MDOT MTA Routes in Annapolis

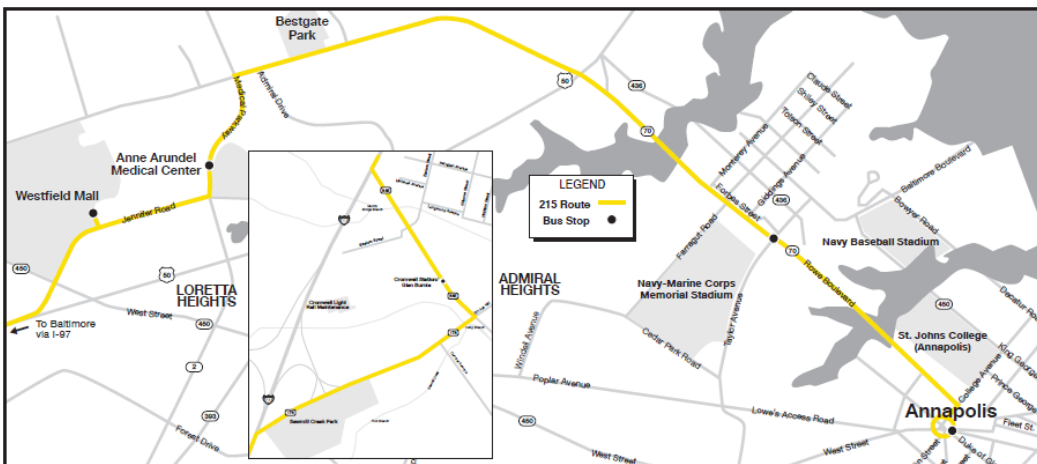
LocalLink 70



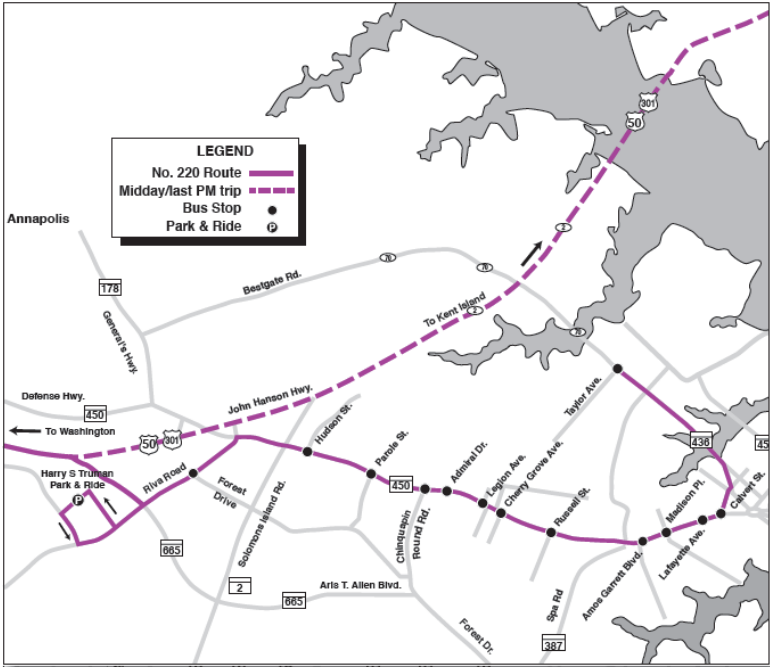
Commuter BusLink 210



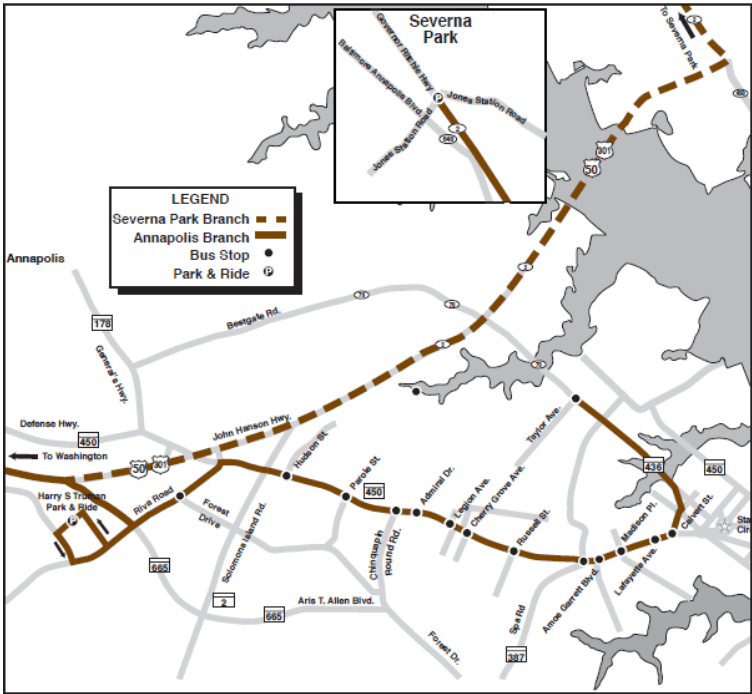
Commuter BusLink 215



Commuter BusLink 220



Commuter BusLink 230



Source: MTA schedules, effective March 2017.

Greyhound Lines Incorporated

Greyhound serves the Annapolis Transit service area, providing connections to downtown Washington, D.C., downtown Baltimore, and Salisbury, Maryland. The Greyhound stop is at the Harry S. Truman Park and Ride. Customers may purchase tickets online at Greyhound's website or using the Greyhound app via smartphone. Currently, customers are unable to purchase tickets from the bus operator at the Harry S. Truman Park and Ride. Annapolis Transit riders may use the Yellow Route for a direct connection to Greyhound; the closest Purple Route stop is 0.8 miles away. Table 1-13 displays the schedules for the northbound and southbound trips. All schedules operate six days a week.

Table 1-13: Greyhound Table 421

Washington/Baltimore to Eastern Shore Southbound		
Schedule Number	951	2309
Frequency	Daily, except Tuesdays	Daily, except Wednesdays
Washington, DC	11:40am	-
New Carrollton, MD	12:05pm	-
Baltimore, MD	-	5:00pm
Annapolis, MD	12:30pm	5:30pm
Easton, MD	1:35pm	6:25pm
Cambridge, MD	-	6:45pm
Vienna, MD	-	7:05pm
Mardela Springs, MD	-	7:15pm
Salisbury, MD	2:30pm	7:35pm

Eastern Shore to Baltimore/Washington Northbound		
Schedule Number	2322	954
Frequency	Daily, except Thursdays	Daily, except Tuesdays
Salisbury, MD	10:00am	4:30pm
Mardela Springs, MD	10:20am	-
Vienna, MD	10:30am	-
Cambridge, MD	10:45am	-
Easton, MD	11:10am	5:35pm
Annapolis, MD	12:05pm	6:30pm
Baltimore, MD	12:35pm	-
Washington, DC	-	7:10pm

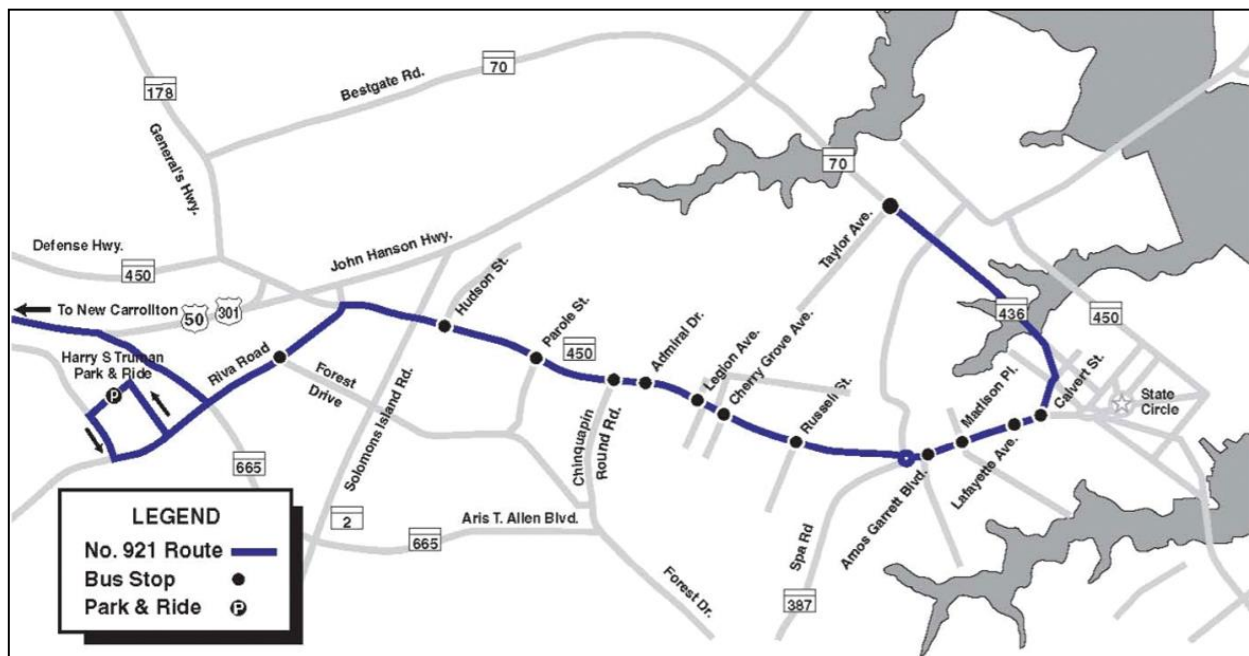
Source: Greyhound schedules, effective June 2017.

Young Transportation Services

Young Transportation Services operates the 921 Connector, shown in Exhibit I-7, to connect Annapolis with the New Carrollton Metro Station, providing bi-directional service in the Route 50 corridor. The service operates daily at 90-minute headways on:

- Monday to Friday from 6:15 am-11:50 am and 2:00 pm-7:50 pm.
- Saturdays from 7:10 a.m.-11:50 a.m. and 2:00 p.m.-7:50 p.m.
- Sundays from 8:45 a.m.-11:50 a.m. and 2:00 p.m.-6:25 p.m.

Exhibit I-7: Young Transportation Services Route to New Carrollton



Source: Young Transportation Services website.

Taxicabs

Nine taxicab companies are registered to operate in the City of Annapolis, with approximately 200 cabs servicing the area. There are also 25 independent cab owners. The registered taxicab companies are identified below:

- ABC Green Cab: 410-897-1010
- Annapolis Cab - Diamond Cab: 410-573-0000
- Annapolis City Taxi Service: 443-852-0686
- Annapolis Flyer Cab: 410-766-7433
- Annapolis Taxi Service: 443-995-0022
- Bay Area Cab: 410-267-7004

- Neat N Klean: 410-320-3374
- Reliable Cab: 410-268-4714
- Yellow Checker Cab: 410-268-3737⁹

The larger taxicab companies have radio-dispatched systems, and staff is experienced in meeting various trip needs. The independent cab owners generally use the dispatching services of an incorporated or limited partnership cab company. Since ADOT is also responsible for licensing and regulating taxicabs, there are opportunities to coordinate public transportation and taxicab services in the Annapolis Transit service area.

Transportation Network Companies (TNCs)

Uber and Lyft provide on-demand, ride-hailing transportation services in the Annapolis Transit service area. Service is available 24 hours a day, 7 days a week though the supply of vehicles varies by time of day. Customers are required to set up an account with Uber or Lyft and link a debit/credit card to their account. No cash is exchanged between drivers and passengers, and two or more passengers can split payments.

To reserve a trip, customers are required to use a smartphone to request a vehicle, indicating their pickup location and destination. The TNCs guarantee a vehicle will arrive at a passenger's location within minutes. Passengers are sent the vehicle type, color, and license plate number of the vehicle coming to pick them up. Upon arrival at the requested origin, drivers wait two minutes for passengers. After two minutes, the driver cancels the trip and charges the passenger a cancellation fee (\$7).

Both Uber and Lyft offer several classes of service at different costs, which vary by the vehicle used and whether the ride is shared with other passengers. Sample fares from Westfield Mall to Eastport Plaza were \$8-\$11 using UberX (Uber's lowest cost, shared ride service) and \$13 using Lyft.¹⁰ These price points indicate that TNCs compete more with taxis than with Annapolis Transit, which is only \$2 per trip. However, choice riders may be willing to pay for the convenience of TNC services, and transit dependent riders may use TNCs occasionally to supplement Annapolis Transit service.

⁹ ADOT website, November 2017.

¹⁰ Based on Uber and Lyft Fare Estimator websites, November 2017.

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Chapter 2: Review of Transit Needs

INTRODUCTION

This chapter provides an updated assessment of transit needs in the Annapolis Transit service area based on demographics and land use, commuting patterns, stakeholder and community input, and a review of recent transportation and planning studies. These inputs helped the study team identify geographic areas and population segments with high transit needs, and whether Annapolis Transit's existing services are meeting those needs.

Input collected through stakeholder interviews and public surveys identified the top transit improvements desired by riders and by potential transit users. Recent studies were reviewed to identify transit related issues and recommendations. Combined with the review of existing services, the study team's evaluation of transit needs from various angles helped identify the top issues and opportunities for Annapolis Transit to address in the TDP service and organizational alternatives.

DEMOGRAPHICS AND LAND USE

The study team analyzed current and future population trends in the Annapolis Transit service area including the demographics of population groups that often depend on transportation options beyond an automobile. Data sources for this analysis included the U.S. Census Bureau's 2010 Census and 2011-2015 American Community Survey (ACS) five-year estimates. The demographic analysis was conducted at the census block group level, which is the smallest geographic unit for which ACS data is available.

The study area includes the City of Annapolis and the census block groups adjacent to the city. Note that for some block groups, potential transit need may be concentrated around specific trip generators, though the entire block group appears to have high needs. Thus it is important to consider land uses and stakeholder and public input in identifying areas with potential transit needs or markets.

Population Trends

Table 2-1 shows the U.S. Census population counts for the City of Annapolis along with counts for Anne Arundel County and Maryland for comparison. The data showed that since the 1990 Census, the population of Annapolis increased by 16%, which is somewhat lower than the population increases in Anne Arundel County and the state.

Table 2-1: Historical Population

Place	1990	2000	2010	1990-2000 % Change	2000-2010 % Change	1990-2010 % Change
City of Annapolis	33,195	35,838	38,394	8%	7%	16%
Anne Arundel County	427,239	489,656	537,656	15%	10%	26%
Maryland	4,780,753	5,296,486	5,773,552	11%	9%	21%

Source: U.S. Census, American Factfinder.

Shown in Table 2-2, the most recent ACS data indicated that the city's population has remained stable since the 2010 Census.

Table 2-2: Recent Population Trends

Place	2010	2015	2010-2015 % Change
City of Annapolis	38,394	38,841	1%
Anne Arundel County	537,656	555,280	3%
Maryland	5,773,552	5,930,538	3%

Source: 2011-2015 ACS, American Factfinder.

Population Density

A determinant for the type of public transportation that is feasible in an area is population density. Typically, an area with a density greater than 2,000 persons per square mile will be able to sustain daily fixed route bus service. Areas with higher population densities generally can support and often warrant higher frequency transit service. Areas with lower population densities below 2,000 persons per square mile may be better suited for deviated fixed route, flex schedule, or dial-a-ride service.

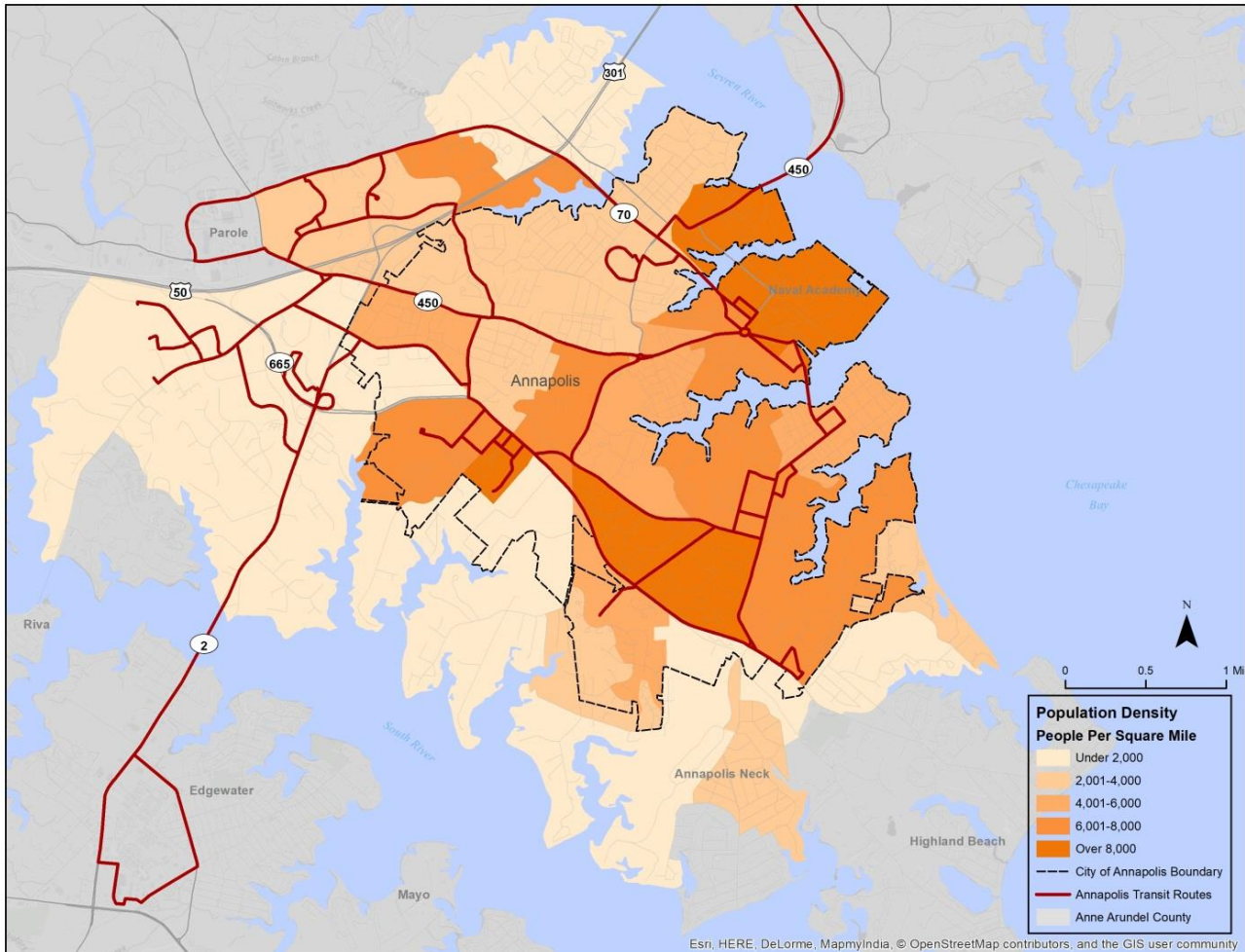
Figure 2-1 shows the population density at the census block group level and Annapolis Transit's fixed route service. Annapolis Transit already serves the high density areas along Forest Drive, Hilltop Lane, and Bay Ridge Avenue, and Spa Road. West Annapolis, the Naval Academy, and Back Creek along Edgewood Road are high density areas with limited or no transit service.

Transit Dependent Populations

It is important to identify the relative size and location of segments within the general population that are more likely to depend on transit service when defining public transportation needs. Transit dependent populations include individuals who may not have access to a personal vehicle or may be unable to drive due to reasons such as age or income

status. The study team used the Transit Dependence Index, a relative measurement based on the study area's average for each demographic characteristic, to examine potential transit needs.

Figure 2-1: Population Density



Transit Dependence Index

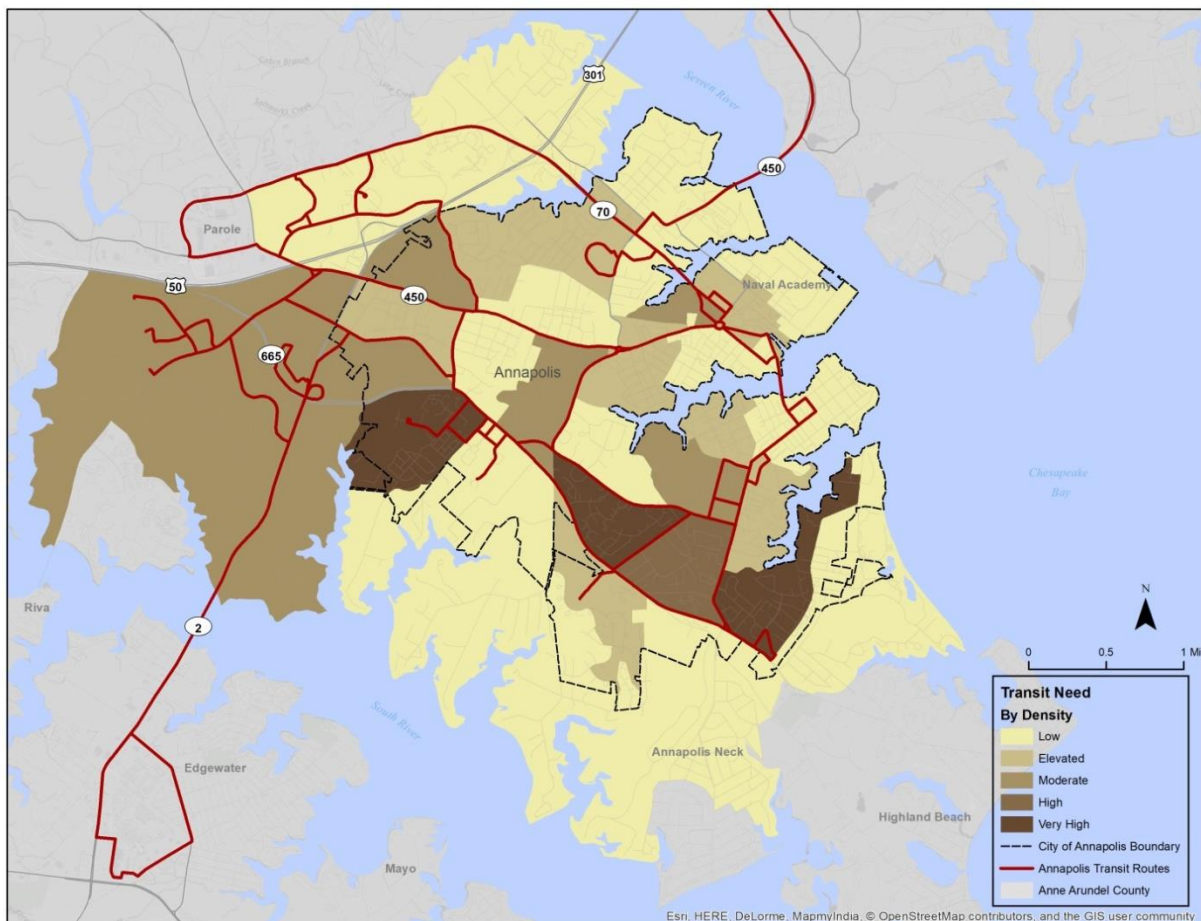
The Transit Dependence Index (TDI) is an aggregate measure that utilizes recent data from the ACS five-year estimates and the decennial Census to display relative concentrations of transit dependent populations. Five factors make up the TDI calculation:

- Population density (persons per square mile)
- Zero vehicle households
- Elderly population
- Youth population
- Below poverty population.

For each factor, individual block groups were classified according to the prevalence of the vulnerable population relative to the study area average. The factors were then put into the TDI equation to determine the relative transit dependence of each block group (low, elevated, moderate, high, or very high). The TDI highlights the areas with the greatest potential transit needs based on population density and significant numbers of populations that typically rely on public transportation. While some block groups show low need, they may include major destinations that should be served by transit. Persons with disabilities were not included in the TDI, though this population was examined separately in the needs analysis.

Figure 2-2 provides the results of the TDI analysis. The areas of highest need are located along Forest Drive, near Annapolis Marketplace, Tyler Heights Elementary School, and Bay Ridge Shopping Center. Annapolis Transit currently serves all areas with high or very high transit need by density. While it appears that Edgewood Road is very high need, most high density housing is located near Annapolis Transit stops along Bay Ridge Avenue and at Bay Ridge Shopping Center. The areas with low need based on the TDI may be areas with transit dependent populations at lower densities (see the Transit Dependence Index Percentage analysis below) or potential markets of choice riders.

Figure 2-2: Transit Dependence Index

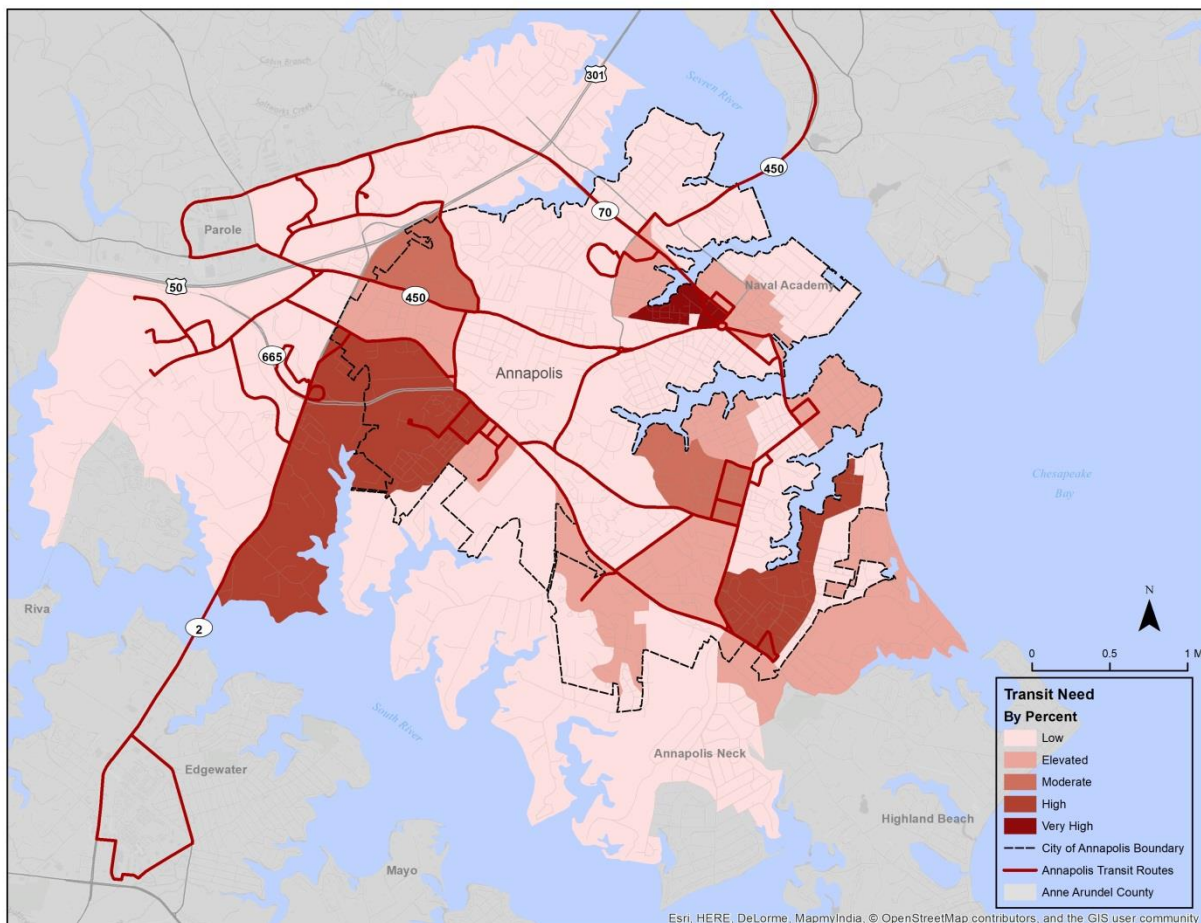


Transit Dependence Index Percentage

The Transit Dependence Index Percentage (TDIP) provides a complementary analysis to the TDI measure. It is nearly identical to the TDI measure with the exception of the population density factor. The TDIP measures the degree rather than the amount of vulnerability, and captures areas that have a significant number of potentially transit dependent populations that is geographically spread out. A composite score for transit need is calculated based on the percentages of the vulnerable populations in each block group, which is categorized following the TDI's five tiers from low to very high.

Shown in Figure 2-3, the results of the TDIP analysis revealed a few additional areas with potential transit need: the West Annapolis area located east of Taylor Avenue, Eastport, neighborhoods off Bay Ridge Road just east of the city border, and Newtowne. These areas are served by Annapolis Transit except for the easternmost portions of the study area. As mentioned previously, the areas identified with relatively low need through the TDI and TDIP may indicate potential markets of choice riders. These areas include Bestgate Road, parts of West Annapolis (along West Street and Wardour), south of Church Circle, the Naval Academy, and the southern part of the study area along South River.

Figure 2-3: Transit Dependence Index Percentage



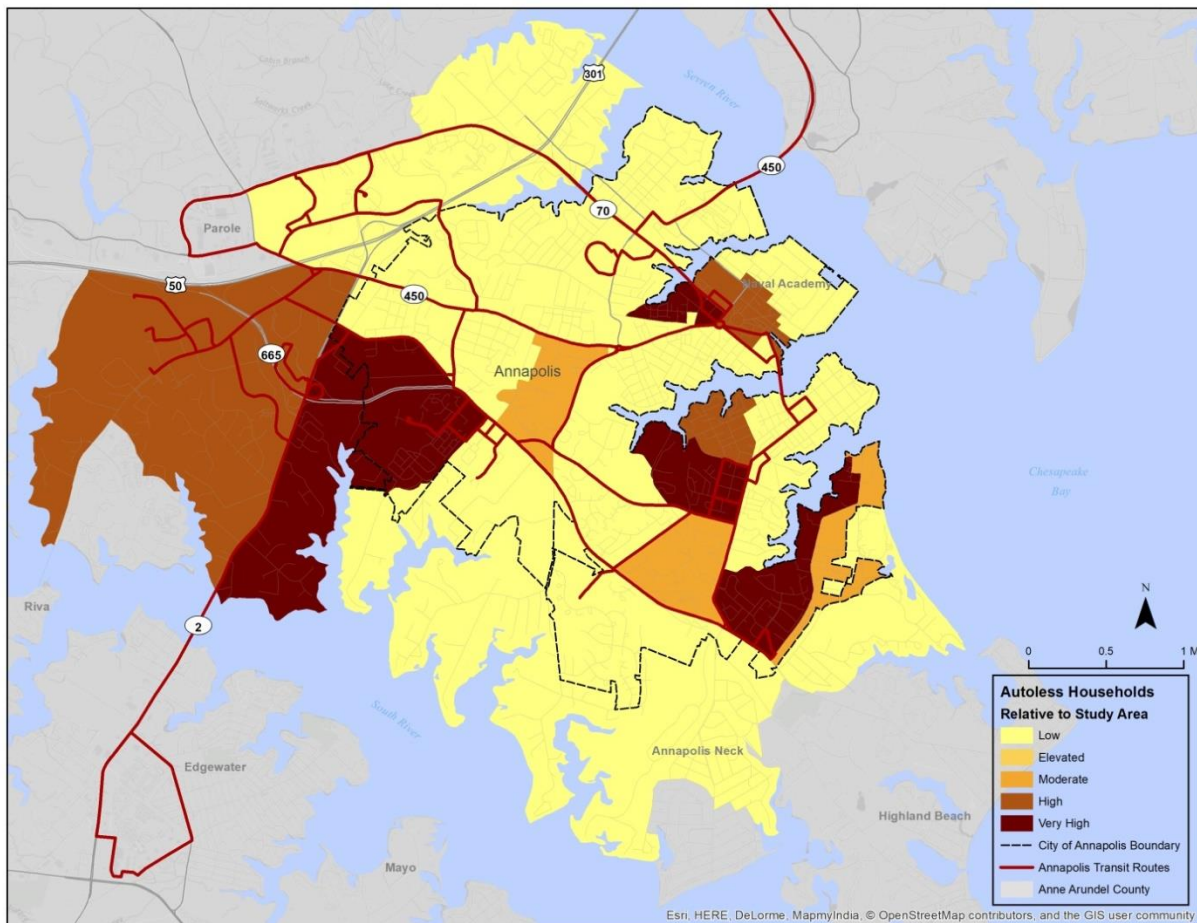
Autoless Households

Households without access to a personal vehicle are often more reliant on the mobility offered by public transit. Identifying the size and location of this population is important because some land uses are located at distances too far for non-motorized travel. Figure 2-4 illustrates relative transit need based on the number of autoless households.

In the western section of the study area, there are two block groups with very high numbers of autoless households located south of Forest Drive and east of Solomons Island Road. Annapolis Transit’s Brown and Gold Routes serve the periphery of these two block groups. Adjacent to the block groups previously mentioned is a large block group with a high number of autoless households that is primarily served by the Yellow Route.

In the eastern portion of the study area, the areas near Church Circle, Eastport Plaza, and Bay Ridge Shopping Center were identified as having high or very high numbers of autoless households. These areas are served by Annapolis Transit, except for some housing along Edgewood Road.

Figure 2-4: Autoless Households Relative to Study Area

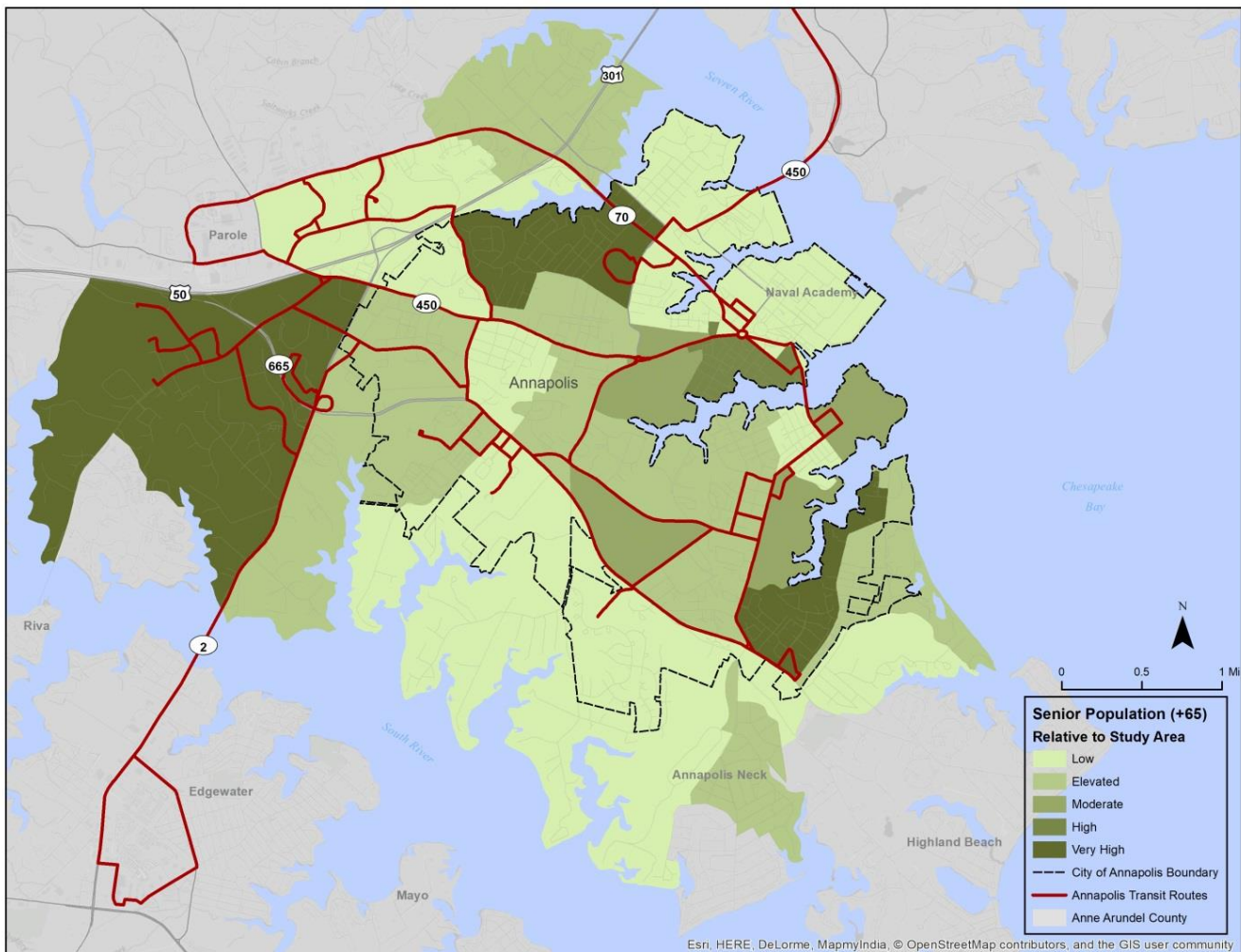


Senior Adult Population

Individuals ages 65 and older may begin to scale back their use of personal vehicles and rely more on public transportation compared to those in other age brackets. Figure 2-5 shows the senior adult population in the study area, indicating three block groups with very high senior adult populations and one with a high number of seniors.

The northwest section of the study area contains a geographically large block group with a very high concentration of senior adults; the Yellow, Brown, and Gold Routes serve this block group. West Annapolis and the area near Bay Ridge Shopping Center also have very high senior populations. The area south of Church Circle and downtown has a high senior population. Annapolis Transit serves these block groups, though the Gold Route service to West Annapolis is limited and the northern portion of Edgewood Road has no service.

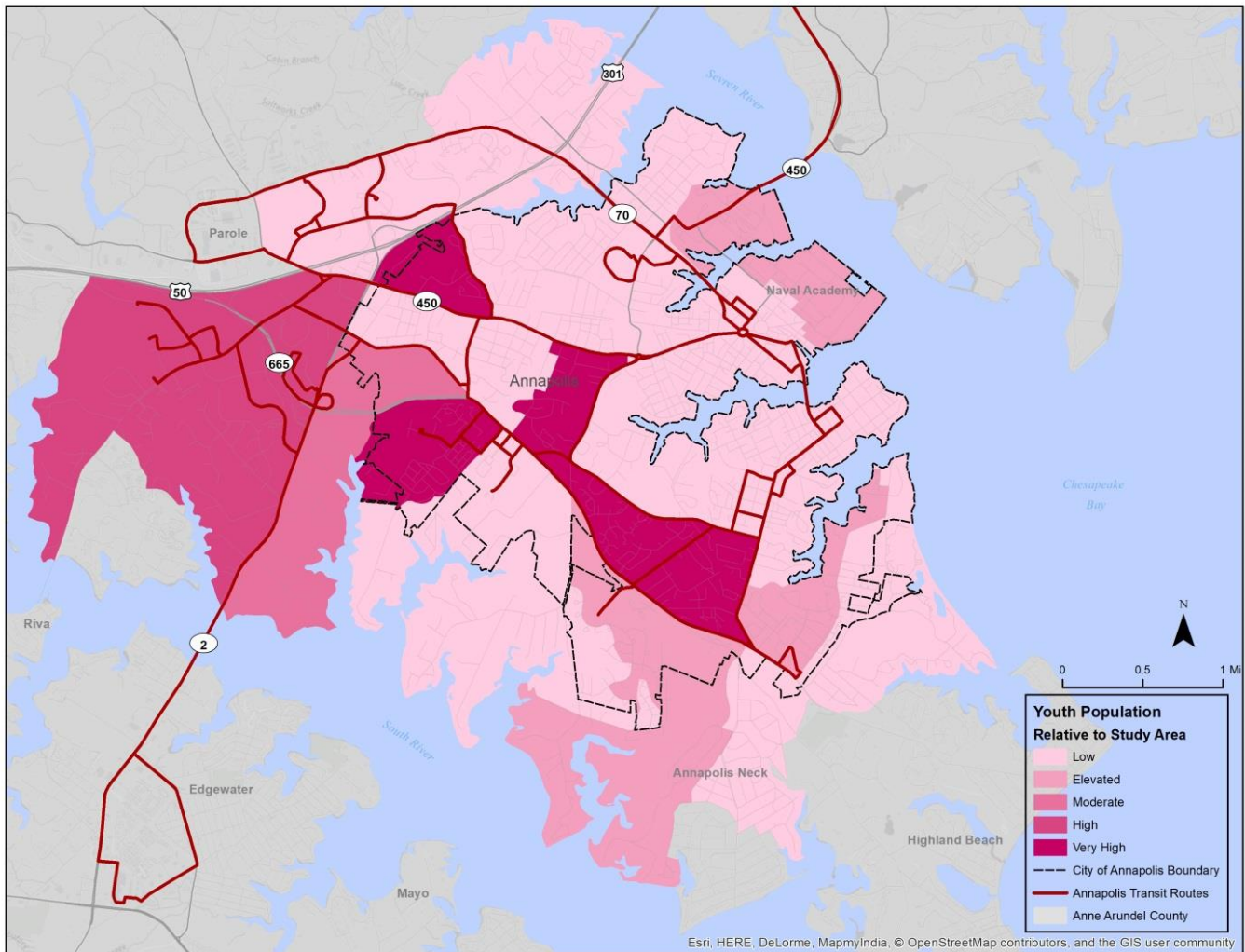
Figure 2-5: Senior Adult Population Relative to Study Area



Youth Population

Public transportation can be an important mobility option for youths and teenagers, ages 10 to 17, who cannot drive or are just starting to drive but may not have an automobile available. Figure 2-6 indicates that the block groups with very high youth populations are located along West Street, Spa Road, Hilltop Lane, and Forest Drive. The Riva Road corridor also has a high concentration of youth. Annapolis Transit serves all these areas.

Figure 2-6: Youth Population Relative to Study Area

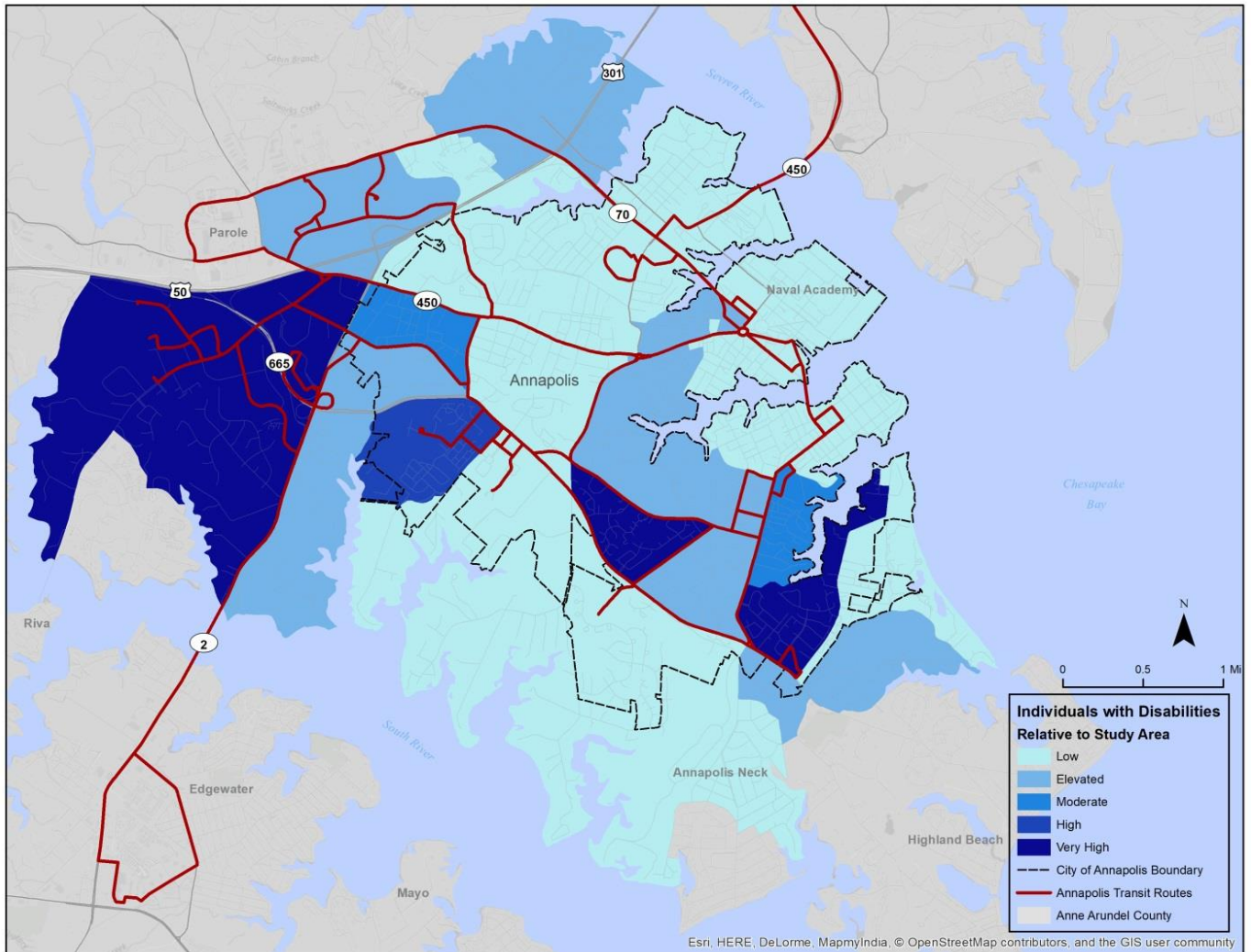


Individuals with Disabilities

Persons who have disabilities that prevent them from or make it difficult to own and operate a personal vehicle often rely on public transit for their transportation needs. Figure 2-7 portrays potential transit need based on the number of individuals with disabilities (ages 16 and over). The areas with high or very high numbers of individuals with disabilities include the southwestern part of the study area and areas along Forest Drive near Annapolis

Marketplace, Tyler Heights, and Bay Ridge Shopping Center. Annapolis Transit serves these areas, except for some housing along Edgewood Road.

Figure 2-7: Individuals with Disabilities Relative to Study Area



Title VI Analysis

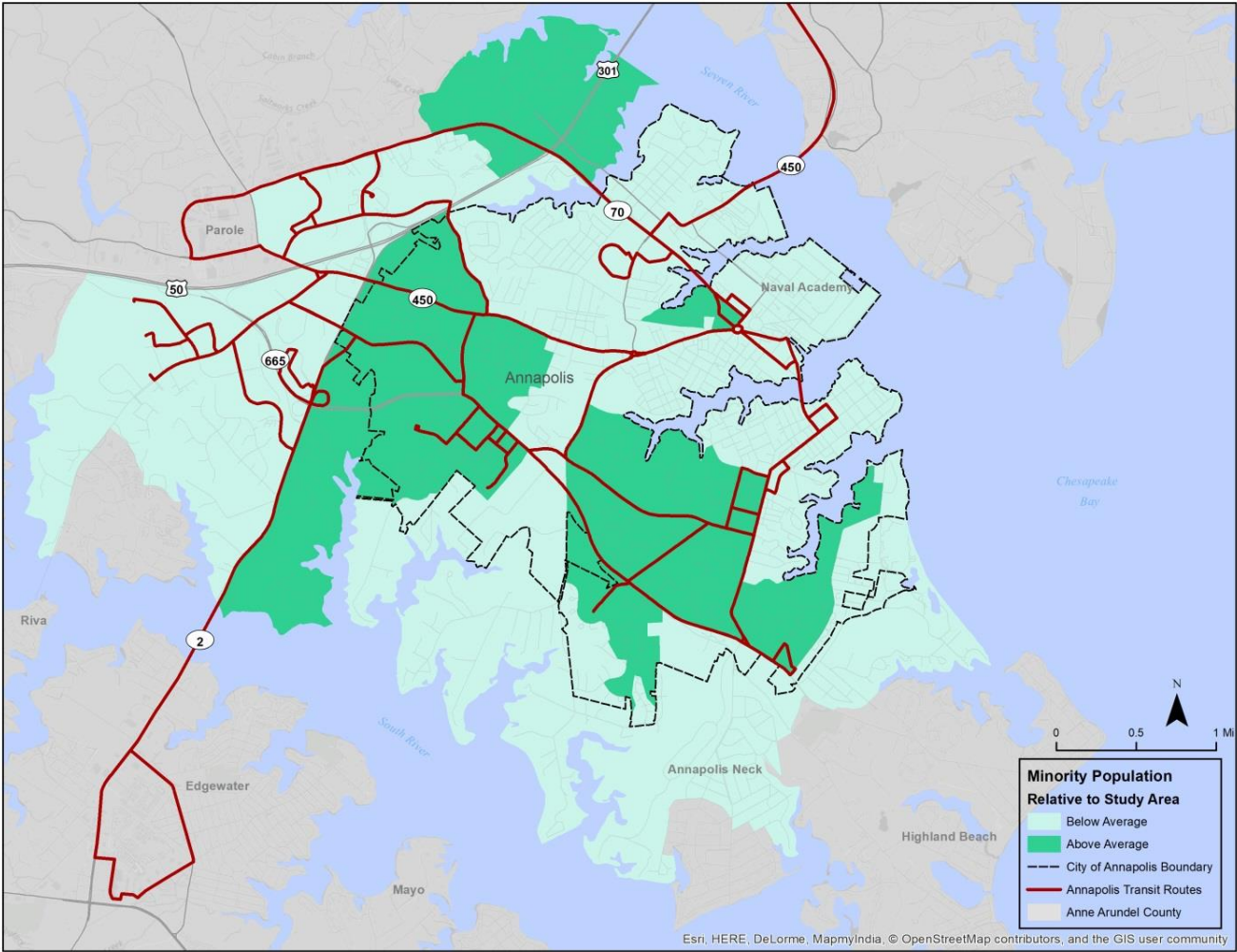
Title VI of the Civil Rights Act of 1964 prohibits discrimination by race, color or national origin in programs and activities receiving federal subsidies; this includes agencies providing public transportation services such as Annapolis Transit. The following section examines the minority and below poverty populations in the service area and summarizes the prevalence of residents with limited English proficiency.

Minority Population

In accordance with Title VI of the Civil Rights Act of 1964, it is important to ensure that proposed alterations to existing public transportation services do not negatively impact areas with a higher than average concentration of racial and ethnic minorities. To determine whether an alteration would have an adverse impact it is necessary first to understand where concentrations of minority individuals reside.

Figure 2-8 provides a map of the service area showing the census block groups that have minority populations above or below the service area average of 27.1%. Above average concentrations of minority populations are located predominately in the western and southern parts of the city. There is also an above average concentration of minorities in the northeast section of the study area. The areas with an above average minority population are accessible by Annapolis Transit, though the Gold Route provides limited service along Bestgate Road and Solomons Island Road.

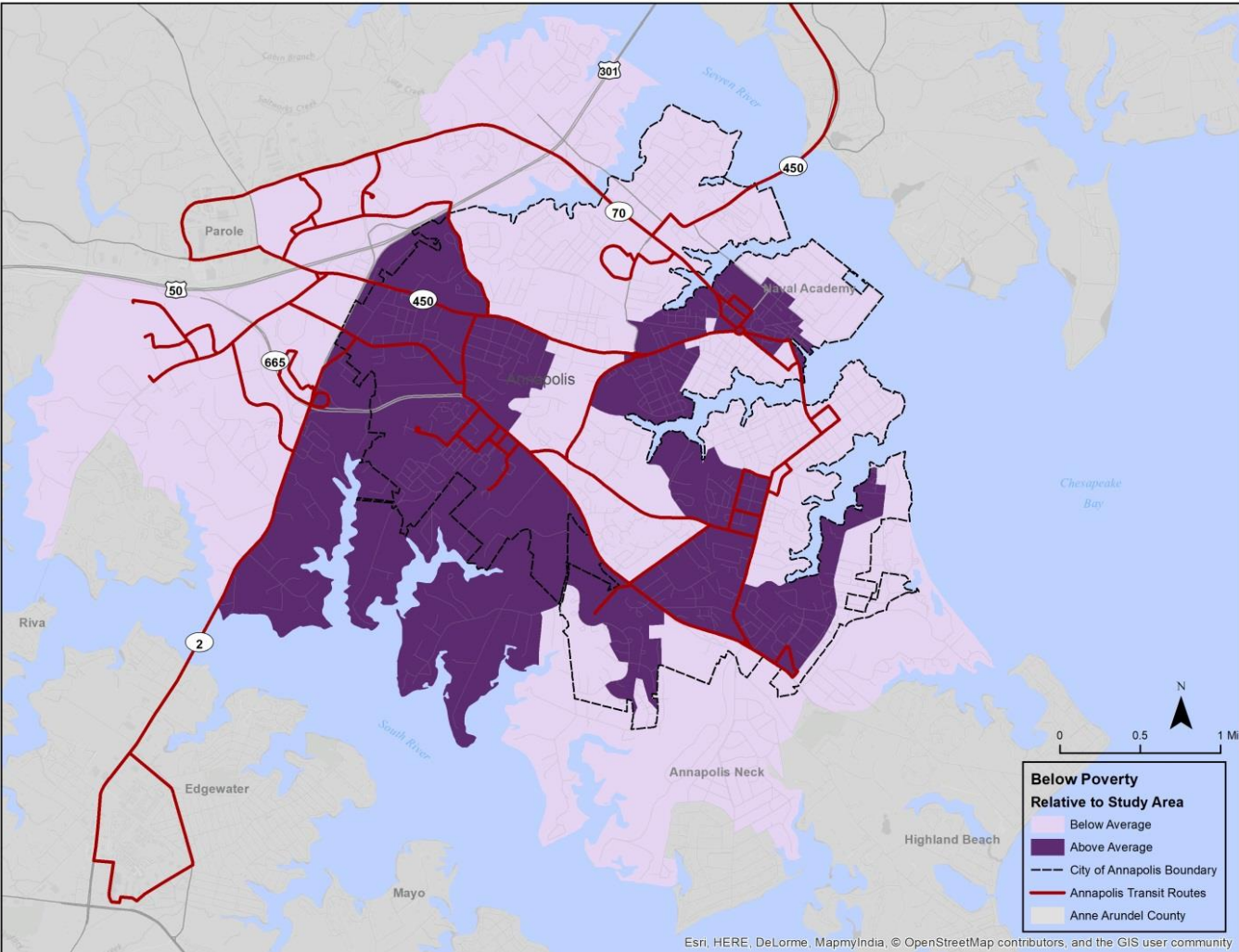
Figure 2-8: Minority Population Relative to Study Area



Low Income Population

This socioeconomic group represents individuals who earn less than the federal poverty level. These individuals face financial hardships that may make owning and providing the necessary maintenance of a personal vehicle difficult. For this segment of the population, public transportation may be the more economical choice. Figure 2-9 provides a map that shows the census block groups according to whether the poverty rate is above or below the study area average of 7.2%. Most of these areas are served by Annapolis Transit, except for the northern part of Edgewood Road and the southern portion of the study area along South River.

Figure 2-9: Below Poverty Population Relative to Study Area



Limited English Proficiency (LEP)

In addition to providing public transportation to individuals of diverse socioeconomic backgrounds, it is also important to realize the variety of languages spoken by area residents so that public information can be provided in other languages if needed. According to the 2011-2015 ACS five-year estimates, about 5,800 residents in the service area speak English less than “very well” and are considered to have limited English proficiency. Table 2-3 provides the LEP data for the service area including the top languages spoken by LEP individuals.

Spanish is the top language, spoken by over 60% of the LEP population. Annapolis Transit already provides service information in Spanish on its system map brochures, in bus shelters, and on notices regarding service and fare changes. Annapolis Transit conducts passenger and community surveys in both English and Spanish and hires Spanish speaking bus operators.

Table 2-3: Limited English Proficiency in Annapolis Transit Service Area

ADOT Service Area	Number	Percent
Total Population (Age 5+)	100,429	--
Total LEP Population	5,770	5.75%
Top 10 Languages Spoken by LEP Populations	Number	Percent
Spanish or Spanish Creole	3,521	3.51%
Tagalog	320	0.32%
Korean	302	0.30%
Other Indic languages	277	0.28%
African languages	167	0.17%
Vietnamese	163	0.16%
Chinese	125	0.12%
French (incl. Patois, Cajun)	108	0.11%
Polish	88	0.09%
Arabic	83	0.08%

Source: 2011-2015 ACS Five-Year Estimates, Table B16001. Note: Data at Census tract level.

Land Use Profile

Identifying land uses and major trip generators in the study area complemented the above demographic analysis by indicating where transit services may be most needed. Trip generators attract transit demand and include common origins and destinations such as high density housing, major employers, medical facilities, educational facilities, non-profit and governmental agencies, and shopping centers. Figure 2-10 illustrates the locations of the major trip generators in the study area.

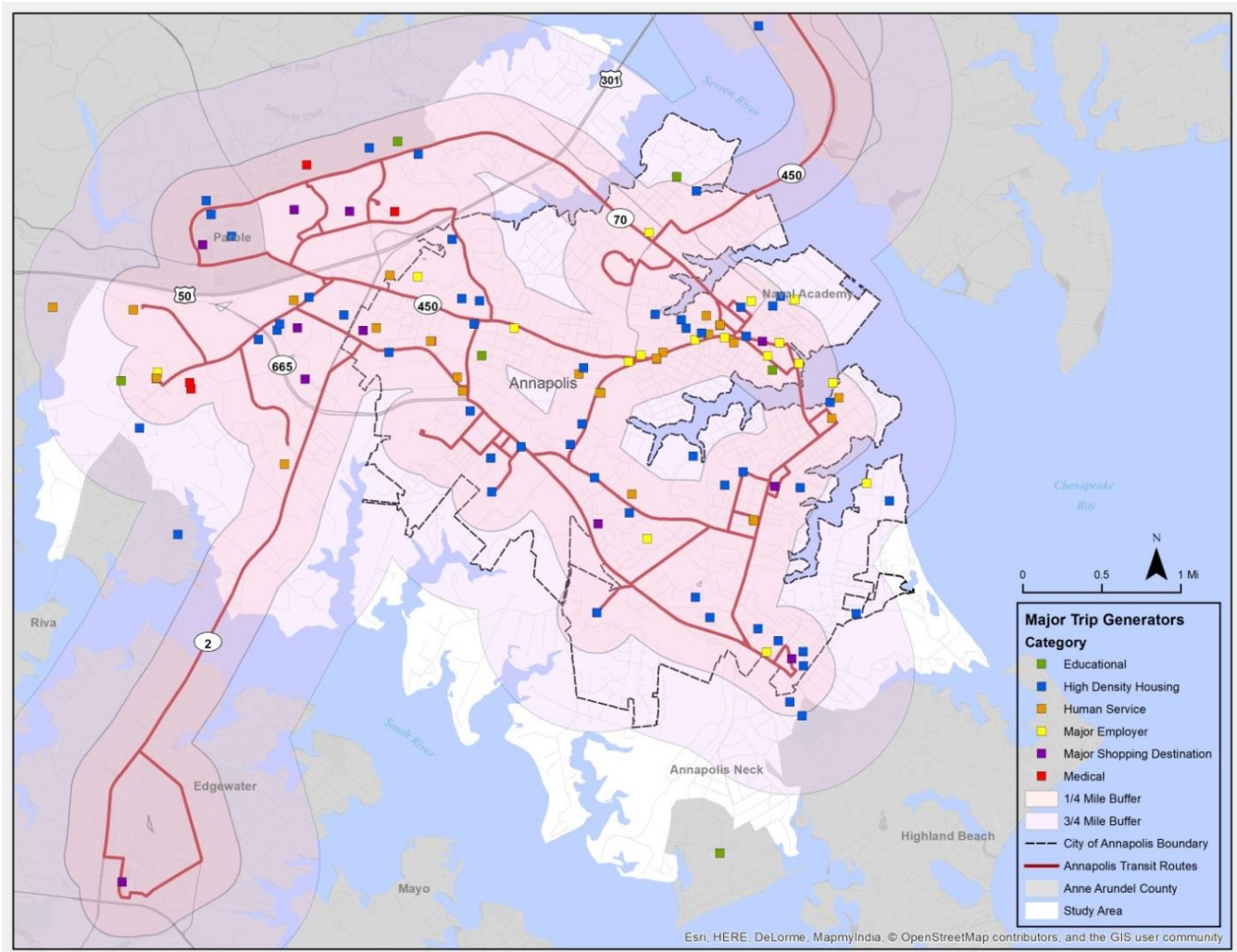
The trip generators were evaluated in terms of access by existing Annapolis Transit services, where locations within one-quarter mile of the bus routes were considered to have good

access, those within three-quarters of a mile were considered to have moderate access, and those beyond three-quarters of a mile were considered to have no access.

Educational Facilities

Many individuals that comprise the school age population are unable to afford or operate a personal vehicle; therefore, this segment of the population may be more reliant on public transportation. Additionally, educational institutions are a place of employment for faculty and staff members. The biggest educational facilities in the study area include AACC, the U.S. Naval Academy, and St. Johns College. AACC is directly served by the Gold Route and the latter two are located three to four blocks away from Annapolis Transit services. Other educational facilities have good or moderate access to transit, except for the Key School on Hillsmere Drive.

Figure 2-10: Major Trip Generators



Major Employers

Public transportation can be a vital link for transit dependent populations to reach employment opportunities. Choice riders may be willing to commute by public transportation if the service is convenient, the travel time is comparable to driving, or parking is difficult or costly at their workplace. The city's top 20 employers identified by the Anne Arundel Economic Development Corporation are included in the above map.

The State of Maryland is by far the largest employer, with over 12,000 employees, followed by Anne Arundel County (5,200 employees) and the U.S. Naval Academy (2,300 employees). The City of Annapolis, The Arc Central Chesapeake Region and Annapolis Marriott Waterfront Hotel employ about 300 to 500 employees each. The remaining major employers have 100 to 200 employees. All the major employers have good access through Annapolis Transit services.

Medical Facilities

Medical facilities, classified as general hospitals and their immediate network of outpatient services, represent significant destinations for users of public transportation. Older adults and persons with disabilities often rely more heavily upon the services offered by medical facilities than other population segments. Public transportation provides an important mobility option for these medical trips. The major medical facilities located in the study area include Anne Arundel County Department of Health, Anne Arundel Medical Center, Children's National Healthy System, Parole Health Center, Riva Road Surgical Center, Potomac Physicians, Anne Arundel Medical Center Psychiatric Day Hospital, and NMS Healthcare. All of the major medical facilities are located on Annapolis Transit routes.

Multi-Unit/High-Density Housing

Residents who live in multi-family or high-density housing tend to drive fewer miles and use public transportation more frequently than residents of single family housing. There are nearly 60 high density and multi-family housing developments in the study area. Nearly all have good access to Annapolis Transit service. A few housing developments in the Riva Road corridor (beyond the Yellow Route) and along Edgewood Road have limited transit access.

Shopping Destinations

Providing public transportation to major shopping destinations is important because it gives riders the ability to purchase goods and necessities such as groceries or medicine. Malls, plazas, shopping centers, and large retail establishments were considered major shopping destinations. One of the largest shopping destinations in the study area is Westfield Annapolis Mall, which also serves as a major transfer point in the Annapolis Transit system. All major shopping destinations are served by Annapolis Transit.

Planned Development

Annapolis Transit plays a key role in supporting the City of Annapolis' transportation policies identified in the 2009 Annapolis Comprehensive Plan. These principles and objectives include:

- Providing safe access to opportunities – linking land uses and activity centers including employment, medical, educational, recreational, and shopping destinations.
- Improving the environment and moving toward a “Green” Annapolis – making public transportation an attractive alternative to automobiles.
- Supporting environmentally and economically sustainable development patterns.
- Prioritizing alternative transportation including transit, pedestrians, and bicycles over automobiles – promoting Annapolis as a compact and walkable community.
- Using parking as an incentive and disincentive to achieve transportation goals.¹

The study team examined the city's planned developments over the TDP timeframe to determine whether they are served by the existing routes.

Opportunity Areas

The Annapolis Comprehensive Plan designated four areas as “Opportunity Areas” with the intent to direct growth and development in these areas. The four Opportunity Areas are West Annapolis, south of Bay Ridge Road near Hillsmere, Forest Drive at Spa Road, and Outer West Street. Figure 2-II represents the four opportunity areas in Annapolis.

¹ 2009 Annapolis Comprehensive Plan, Chapter 4 – Transportation.

Figure 2-II: City of Annapolis Four Opportunity Areas



West Annapolis Opportunity Area



Bayridge Opportunity Area



Forest Drive Opportunity Area



Outer West Street Opportunity Area

Source: 2009 Annapolis Comprehensive Plan

Projects under Review and Construction

The City of Annapolis’ Department of Planning & Zoning identified planned developments that are under review or construction². Planned projects include commercial, institutional, mixed use, and residential. Table 2-4 shows the major development projects in progress for the City of Annapolis. Nearly all of these planned development projects are located along Annapolis Transit routes (within one-quarter mile). However, Villages of Providence Point is 0.7 miles from service on Forest Drive and Chesapeake Grove at Bembe Beach is more than a mile from the closest stop at Bay Forest Shopping Center.

² The City of Annapolis keeps an updated spreadsheet of major development projects in the City at <https://www.annapolis.gov/928/Current-Planning-Development-Review>.

Table 2-4: List of Major Projects under Review or Construction

Project Name	Address	Description	Units	Type	Annapolis Transit Access
110 Compromise St	110 Compromise Street	Renovation of existing structure to accommodate retail maritime and restaurant tenants as well as various site improvements	N/A	Commercial	Green & Purple
Villages of Providence Point	2625 Mas Que Farm Road/Spa Rd & Forest Drive	Continuing Care Retirement Community	383	Institutional	0.7 miles to Brown, Orange & Purple
141 West St	141 West Street	4-story condominium building with retail space, 24 residential dwelling units, and on-site parking	24	Mixed Use	Green, Orange & Purple
Bay Village Assisted Living	979 Bay Village Drive	Proposed development of an 88-unit, full service assisted living facility	88	Mixed Use	Brown & Purple
Eastport Sail Loft	Fourth St/ Chesapeake Avenue	Construction of a mixed use building including residential units, four retail/ commercial spaces, along Fourth Street	11	Mixed Use	Green
Lofts at Eastport Landing	Chesapeake Avenue	Redeveloping an approximately 2-acre portion of the existing Eastport Shopping Center site.	106	Mixed Use	Green, Brown, Red & Purple
Parole Place	103 Solomons Island Road	A planned unit development including retail, multi-family and townhouses	N/A	Mixed Use	Gold, Brown & Purple
Village Greens of Annapolis, Phase III	Forest Drive and S. Cherry Grove	89 multifamily units and Children's Daycare Center	89	Mixed Use	Brown, Red, Orange & Purple
285 West St	285 West Street	18 New Townhouse Units	18	Residential	Green, Orange & Purple
2010 West St	2010 West Street	Residential Development	N/A	Residential	Green & Purple
Annapolis Towns at Neal Farm	Dorsey Lane off Solomons Island Road	50 single family attached townhomes	50	Residential	0.3 miles to Brown & Purple
Central Park	9 Elliot Road	45 Single-family attached townhomes located on the west side of Elliot Road at Hilltop Lane	45	Residential	Red, Orange & Purple
Chesapeake Grove at Bembe Beach	Bembe Beach Road	Residential Development	42	Residential	1.3 miles to Brown & Purple

Project Name	Address	Description	Units	Type	Annapolis Transit Access
Enclave on Spa	1023 Spa Road	Residential planned development replacing auto repair and rental	36	Residential	Orange
Griscom Square	Tyler Avenue/Bay Ridge Avenue	12 residential units	12	Residential	Brown, Red & Purple
Parkside Preserve	745 Annapolis Neck Road	Residential panned development	152	Residential	Brown & Purple
Primrose Hill	Milkshake Lane	Residential planned development	26	Residential	Red & Purple

Source: City of Annapolis Division of Comprehensive Planning, September 2017.

Regional Travel Patterns

The study team examined several data sources to identify regional travel patterns to and from the Annapolis area that may be candidates for new or improved transit services. The data sources varied in the geographic level of data available and the types of trips captured. Each data source was analyzed individually but the findings contributed to the overall picture of regional travel trends to and from the Annapolis Transit service area. Note trips to and from Parole were considered local travel since Annapolis Transit serves Parole.

The following data sources helped identify regional travel patterns to and from the Annapolis area:

- **U.S. Census Bureau’s 2011-2015 ACS five-year estimates.** This data on employment locations and means of transportation to work for workers ages 16 and over was available for the City of Annapolis.
- **U.S. Census Bureau’s 2015 Longitudinal Employer-Household Dynamics (LEHD) origin-destination employment statistics.** This source provided job data for workers ages 14 and over at the place level (cities, towns, and census designated places).
- **Baltimore Metropolitan Council’s Trip Based Model.** This source provided average 2017 weekday home based work, home based shopping, and home based other motorized person trips between regional planning districts, which generally capture multiple places.

ACS Five-Year Estimates

According to ACS five-year estimates, the majority of workers who live in Annapolis also work in the city and drive alone to work using a personal vehicle. Seven percent of Annapolis workers use public transportation as their primary means of transportation to work. Table 2-5

provides an overview of Annapolis workers' employment locations and transport mode to work.

Table 2-5: Journey to Work Patterns for Study Area

Place of Residence	Annapolis	
Workers (Age 16+)	20,433	
Employment Location	Number	Percent
In State of Residence	18,733	92%
In Annapolis	15,026	74%
Outside of Annapolis	3,707	18%
Outside State of Residence	1,700	8%
Means of Transportation to Work	Number	Percent
Car, Truck, or Van - drove alone	14,241	70%
Car, Truck, or Van - carpooled	1,618	8%
Public Transportation	1,472	7%
Walked	841	4%
Taxicab, Motorcycle, Bicycle, Other	1,035	5%
Worked at Home	1,226	6%

Source: 2011-2015 ACS Five-Year Estimates, Table B08130.

LEHD Origin-Destination Employment Statistics Data

The Census Bureau's LEHD Origin-Destination Employment Statistics provides job data for workers ages 14 and over, including the connections between employment and residential locations. According to 2015 LEHD data, Annapolis and Parole are in the top three major work destinations for workers living in Anne Arundel County.

Table 2-6 provides the top ten work destinations of workers who live in Annapolis and the top ten origins from which workers employed in Annapolis are coming. The data indicates that 35% of workers living in Annapolis commute within the Annapolis Transit service area. Baltimore has significant commute flows in both directions, though the majority commutes from Baltimore to Annapolis. Washington D.C. is a top destination for workers who live in Annapolis, while Arnold, Annapolis Neck, Glen Burnie, and Severna Park have more commuters traveling into Annapolis.

Table 2-6: Top Commute Patterns To/From Annapolis

Workers (Age 14+) Who Live in Annapolis		17,957
Commute From Annapolis to Destination:		
Destination	Number	Percent
Annapolis	3,635	20.2%
Parole	2,584	14.4%
Washington D.C.	1,160	6.5%
Baltimore	806	4.5%
Columbia	448	2.5%
Glen Burnie	377	2.1%
Severna Park	358	2.0%
Arnold	280	1.6%
Annapolis Neck	230	1.3%
Bowie	185	1.0%
All Other Locations	7,894	44.0%

Source: Census Bureau, OnTheMap Application and LEHD Origin-Destination Employment Statistics, 2015.

Workers (Age 14+) Who Work in Annapolis		27,297
Commute from Origin to Annapolis:		
Origin	Number	Percent
Annapolis	3,635	13.3%
Baltimore	1,547	5.7%
Arnold	1,147	4.2%
Annapolis Neck	968	3.5%
Glen Burnie	911	3.3%
Severna Park	857	3.1%
Parole	797	2.9%
Crofton	514	1.9%
Cape St. Claire	483	1.8%
Odenton	446	1.6%
All Other Locations	15,992	58.6%

Baltimore Metropolitan Council's Trip Based Model

The Baltimore Metropolitan Council provided simulation results from the region's aggregate Trip Based Model. The data represented motorized person trips from home to work, to shopping, and for other trip purposes on an average weekday in 2017. The origins and destinations of the trips were captured at the regional planning district (RPD) level.

Data for the Annapolis Transit service area was represented by two RPDs, with the first capturing the City of Annapolis north of Forest Drive and the second capturing the city south of Forest Drive along with Annapolis Neck, Edgewater, and Mayo. Note Parole was captured in the Crownsville RPD, which was not considered part of the Annapolis Transit service area for this analysis because the RPD represented a larger area beyond Parole.

Table 2-7 summarizes the top regional destinations with 500 or more motorized person trips originating from the Annapolis Transit service area on a typical weekday. While the list is sorted by the most popular commute destinations from the Annapolis Transit service area, many of the same destinations are also popular for non-work trips.

Table 2-7: Top Regional Destinations for Trips Originating in the Annapolis Transit Service Area

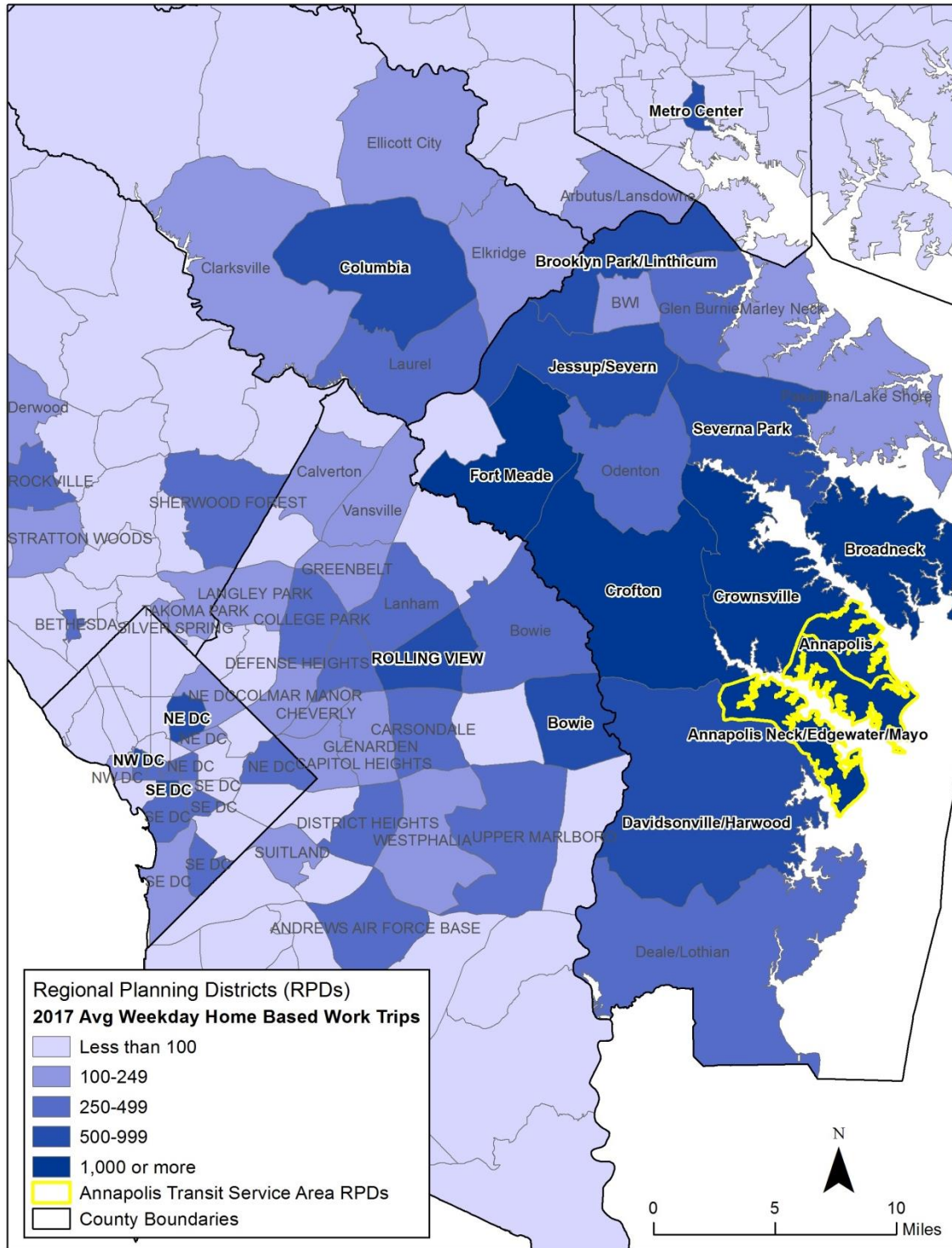
Destination RPD	2017 Average Weekday Home Based Work Trips	Percent of Total	2017 Average Weekday Home Based Shopping and Other Trips	Percent of Total
Annapolis	10,396	20.9%	37,138	32.9%
Crownsville (including Parole)	7,799	15.7%	20,226	17.9%
Annapolis Neck/Edgewater/Mayo	3,072	6.2%	38,945	34.5%
Fort Meade	1,427	2.9%	347	0.3%
Broadneck	1,242	2.5%	4,196	3.7%
Crofton	1,187	2.4%	1,344	1.2%
Davidsonville/Harwood	884	1.8%	2,599	2.3%
SE DC	853	1.7%	4	0.0%
Severna Park	696	1.4%	925	0.8%
Jessup/Severn	637	1.3%	254	0.2%
Columbia	620	1.2%	172	0.2%
NE DC	618	1.2%	15	0.0%
Metro Center (Baltimore)	609	1.2%	60	0.1%
NW DC	578	1.2%	16	0.0%
Bowie	531	1.1%	455	0.4%
Rolling View	528	1.1%	90	0.1%
Brooklyn Park/Linthicum	523	1.1%	60	0.1%
NE DC	511	1.0%	68	0.1%

Notes: This table captures the regional destinations with 500 or more home based work or non-work trips on an average weekday originating from the Annapolis Transit service area. The destinations with more than 1,000 motorized person trips are shown in bold.

Figure 2-12 portrays the RPDs by the number of home based work trips originating from the Annapolis Transit service area, while Figure 2-13 portrays the RPDs by the number of home

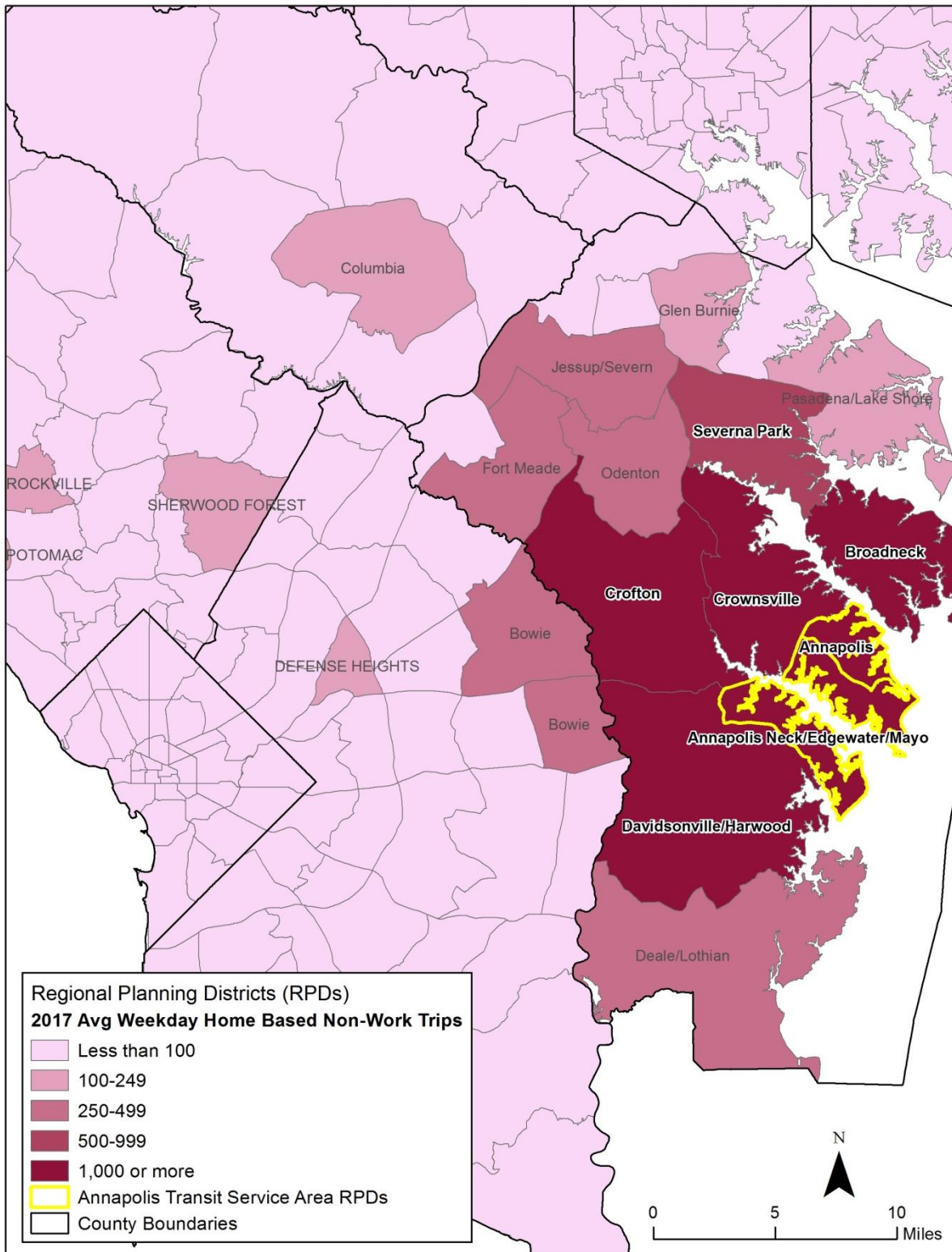
based non-work trips (covering shopping and other trip purposes) originating from the Annapolis Transit service area.

Figure 2-12: Regional Destinations for Work Trips Originating in the Annapolis Area



Note: The destinations with more than 500 trips originating from the Annapolis Transit Service Area are shown in bold.
 Source: Baltimore Metropolitan Council Trip Based Model.

Figure 2-13: Regional Destinations for Non-Work Trips Originating in the Annapolis Area



Note: The destinations with more than 500 trips originating from the Annapolis Transit Service Area are shown in bold.
 Source: Baltimore Metropolitan Council Trip Based Model.

Table 2-8 summarizes the top regional origins for travel, both work trips and non-work trips, to the Annapolis Transit service area on a typical weekday. Again, the table is sorted by the most popular commute origins to the Annapolis Transit service area, and many of the same origins are also popular for non-work trips.

Table 2-8: Top Regional Origins for Trips Coming to Annapolis Transit Service Area

Origin RPD	2017 Average Weekday Home Based Work Trips	Percent of Total	2017 Average Weekday Home Based Shopping and Other Trips	Percent of Total
Annapolis	8,491	23.7%	35,771	30.9%
Annapolis Neck/Edgewater/Mayo	4,976	13.9%	40,312	34.8%
Broadneck	3,120	8.7%	7,431	6.4%
Crownsville (including Parole)	1,958	5.5%	5,940	5.1%
Severna Park	1,725	4.8%	2,436	2.1%
Crofton	1,576	4.4%	3,423	3.0%
Deale/Lothian	998	2.8%	1,780	1.5%
Pasadena/Lake Shore	870	2.4%	1,403	1.2%
RPD in Queen Anne's County	703	2.0%	66	0.1%
Davidsonville/Harwood	688	1.9%	5,109	4.4%
Glen Burnie	643	1.8%	404	0.3%
Jessup/Severn	624	1.7%	593	0.5%
Odenton	520	1.5%	740	0.6%
Bowie	275	0.8%	933	0.8%
Bowie	232	0.6%	867	0.7%
Upper Marlboro	149	0.4%	1,136	1.0%

Notes: This table captures the regional origins with 500 or more home based work or non-work trips on an average weekday going to the Annapolis Transit service area. The origins with more than 1,000 motorized person trips are shown in bold.

The data from the region's aggregate Trip Based Model indicated:

- On an average weekday, the total number of home based shopping and other trips (about 113,000) originating from the Annapolis area is more than double the number of home based work trips (about 50,000).
- Most travel is local – the highest numbers of home based work trips and non-work trips are staying within the Annapolis Transit service area. As seen in Table 2-7, local trips including trips to Parole account for 43% of work trips and 85% of non-work trips.

- The top regional employment destinations are Fort Meade, Broadneck, Crofton, and Washington, D.C. Each has over 1,000 home based work trips on an average weekday.
 - Other major employment destinations include Severna Park, Jessup/Severn, Columbia, and downtown Baltimore (Metro Center).
 - BWI, Arundel Mills Mall, and Odenton have been identified by stakeholders as regional employment destinations. Based on the model data, on an average weekday 180 home based work trips originate from the Annapolis area to BWI, about 640 work trips go to Jessup/Severn where Arundel Mills is located, and 465 work trips go to Odenton.
- The top regional destinations for non-work trips are Broadneck, Davidsonville/Harwood, and Crofton. Each have over 1,000 home based shopping and other trips on an average weekday.
 - Other notable destinations for non-work trips are Severna Park and Bowie.
- Broadneck, Severna Park, and Crofton are the top regional origins for both work and non-work trips coming to the Annapolis Transit service area.
 - In addition, Davidsonville/Harwood, Deale/Lothian, Pasadena/Lake Shore, and Upper Marlboro each has over 1,000 non-work trips coming to the Annapolis Transit service area.
- Broadneck and Crofton have significant travel flows in both directions to and from the Annapolis area for both work and non-work trips. Severna Park is a third location with significant travel to and from the Annapolis Transit service area for work and non-work trips. In addition, Davidsonville/Harwood is a top location for non-work trips to and from the Annapolis Transit service area.

STAKEHOLDER AND PUBLIC INPUT

An important piece of the TDP process involved gathering community feedback to determine the level of community support for transit, to gauge how well existing services are meeting community needs, and to identify opportunities for improvement and attracting more ridership. The study team interviewed community stakeholders and conducted surveys of the general public, existing riders, and employers to gather input on the community's top issues and needs regarding public transportation. In addition, Annapolis Transit's bus operators and the Public Advisory Committee provided input on transit needs and potential alternatives. The stakeholders were interviewed from July through September 2017, while the other public engagement activities were conducted in late September 2017 to mid-October 2017.

Stakeholder Interviews

Over ten community stakeholders participated in interviews by phone, email, or in person to discuss transit needs and issues in the Annapolis area. These stakeholders included:

- Annapolis and Anne Arundel County Chamber of Commerce
- Annapolis Business Association/Downtown Annapolis Partnership
- Annapolis Commission on Aging
- Annapolis Department of Planning and Zoning – Division of Comprehensive Planning
- Annapolis Towne Centre
- Annapolis Visitors Center
- Anne Arundel County Transportation Department
- Centro de Ayuda (Center of Help)
- Housing Authority of City of Annapolis
- SOFO (South Forest Drive)
- Westfield Mall

A summary of the stakeholder input is provided below by topic category, with frequently mentioned items shown in bold.

Current Services

- **Free Circulator is great**
- Current routes cover most of the city
- Drivers are knowledgeable
- Good coverage to the schools, stadium, and Boys and Girls Club
- Buses are clean and well maintained

Improvements to Existing Services

- More frequency
- Later service
 - Current hours do not serve low income workers with late night shifts at Westfield Mall (need 10:15 p.m. - 10:30 p.m. trip), Parole Towne Centre, and downtown Annapolis
 - Service until 2 a.m. on Friday and Saturday including Circulator
- Improve connections to regional transit
- Extend Circulator to Eastport
- More weekend service
- Improve on-time performance
- Increase reliability

Unmet Needs

- Cross-county transportation
 - Serve or facilitate transfers to regional employment destinations including Arundel Mills Mall, BWI Airport, Odenton, Crofton
 - County residents need to go to Westfield Mall and Anne Arundel Community College

- Areas that people would like to use transit to access:
 - Maryland Avenue (3 blocks from Church Circle)
 - Naval Academy (2 blocks to City Dock or 4 blocks to Church Circle)
 - St. John's College (3 blocks from Church Circle)
 - Back Creek (both sides) businesses and residences
 - Quiet Waters Park/Hillsmere
 - Truxtun Park (served by Red and Purple Routes)
 - Ridgely Ave/West Annapolis (served by Gold Route)

- Older adult transportation to social/recreational events and shopping
 - Can use county transportation for medical trips, limited options for other trips
 - Older residents along Forest Drive are taking taxis to the grocery

- Direct service for commuters from Eastport and Forest Drive to Harry S. Truman Park and Ride

- Serve more markets
 - Commuters - Partner with major employers in region; it is cheaper for major downtown employers to pay for employee bus passes than parking
 - Visitors need transportation from Baltimore, Washington, D.C. and BWI to Annapolis
 - Shoppers
 - Youth to schools and camps
 - Choice riders - Transit needs to be faster and cheaper than other modes to be attractive

Vehicles

- Smaller vehicles
 - Run more frequently
 - Use smaller buses inside the city and larger buses on outer city routes
 - Operate on demand (e.g., serve tourists, casual trips)

- Need new, reliable buses

- Use smaller, electric vehicles such as e-cruisers
 - Use on the Circulator
 - Serve Maryland Avenue, Eastport, Forest Drive
 - South Forest Drive businesses may be willing to pay for electric vehicles to transport customers from downtown to Forest Drive restaurants and bars
- Use cabs, Uber/Lyft, pedicabs to provide service
 - Other comments not in favor of Uber/Lyft due to increase in car traffic through downtown

Amenities and Infrastructure

- Better maintenance of bus shelters and bus stop signs (e.g., remove graffiti)
 - Beautify bus shelters (e.g., install artwork) to prevent damage/vandalism
- Need more bus shelters and benches
- Add Wi-Fi on board buses
- Add annunciator to provide audio announcements on board buses – include Spanish announcements
- Bus on shoulder on Rt. 50 and I-97 during peak periods to make transit faster than cars to commute to Washington, D.C. and Baltimore
- Dedicated bus lanes or shoulders on Forest Drive, Main Street, Rowe Boulevard during peak periods to make transit faster than cars
 - Forest Drive and West Street are county/state roads

Increase Marketing

- Partner with community associations, Visitors Center, and businesses to market transit
- Provide marketing information in city water bills and water quality newsletter
- To shoppers. As an example, the Downtown Annapolis Partnership has a Park ‘N’ Shop Program, where participating businesses will validate parking for shoppers who park at a city garage. A similar program could be developed to promote transit use.

Increase Transit Information

- How to use any transit services to get from point A to B – Many people are unaware of Google transit trip planner

- Need a phone app for transit information and fare payment
- How to ride Annapolis Transit services
- Provide information at stops (system map and schedule information for service at that stop). Note: system map and fare information are posted in newer shelters.
- Public unaware of Circulator (promote that it is free) and State Shuttle
- Public unaware of places currently served, monthly pass, bike racks on buses
- Need ability to track your bus
- Provide more transit information in Spanish including:
 - Notices of upcoming service changes
 - Bus stop signs
 - Information about routes, connections, rules, and customer service
 - Trip planning

Employ a Holistic Approach to Transportation/Mobility

- Consider all modes including parking; determine how modes affect each other and identify the priorities
- Improve bike access – incomplete bike trail system in city to help those that may ride and bike
 - Complete bike lanes/routes per the city bike master plan
 - Add bike lanes on Forest Drive, Bay Ridge Avenue, and Bay Ridge Road
- Improve pedestrian access to bus stops
 - Increase sidewalk maintenance and remove obstacles (e.g., phone poles) on sidewalks
 - People with physical disabilities have challenges getting to bus stops
- Transit can help mitigate parking issues in Eastport and downtown Annapolis
- Transit can help decrease traffic congestion (e.g., Navy Stadium events)

Other

- Lower fares
- There is support for transit, but the city subsidizes cars more than transit

- Residents, workers, and visitors are aware of Annapolis Transit, but do not know the specifics
- People who cannot drive are now using Uber
 - One comment that it may be affordable even for those who cannot afford a car
 - Other comment that Uber is an expensive alternative, and the bus is more affordable for regular transportation
- Planned residential developments are mostly located along existing routes
- Need better management and accountability for the transit system
- Consider combining Annapolis Transit with Anne Arundel County services, and implement a Transportation Network Company (such as Uber/Lyft) partnership to improve connections to employment destinations and major activity centers

Community Survey

The study team conducted an online survey for the general public to gather input on transportation needs and improvements that could attract new riders to try transit. The community survey was available in English and Spanish, and copies are included in Appendix A. The Public Advisory Committee and stakeholders helped distribute the survey links through social media, neighborhood groups, and constituent email listservs. Centro de Ayuda, a local community organization that works with Hispanic-Latinos and other immigrants, also distributed hard copy surveys to their constituents. Based on 240 responses, the majority of community survey respondents:

- Currently drive as their primary form of transportation (83%).
 - In addition 10% use public transportation, 5% walk, and 3% bike.
- Are considered “choice riders” – about 90% have a driver’s license and a car available.
- Occasionally use some form of alternative transportation (listed in order starting with the most popular): Uber/Lyft, Amtrak, taxis, WMATA Metrorail, Annapolis Transit, MTA bus, MTA light rail, and MARC train.
 - Less than 5% use Young Transportation Services, vanpool/carpool, or RTA.
- Are aware of Annapolis Transit (55%) and has a neutral impression of the system.
 - In addition 20% have a positive impression, while 22% have a negative impression.
- Are aware of the free Circulator (70%), but not aware of the real-time information available for the Circulator (77%).

- Are employed (62%) full-time or part-time.
 - In addition 25% are retired and 12% are students.
- Are Caucasian (78%).
 - In addition 15% are African American, 4% are Asian, and 8% identify as Hispanic or Latino.
- Are considered higher income with an annual household income over \$60,000 (68%).

The highlights of the community survey input are provided in Figure 2-14.

Figure 2-14: Community Survey Input

Need Transit Connections to	Improvements to Try Transit	Other Needs
<ul style="list-style-type: none"> • DC (15) • West Annapolis (8) • Baltimore (6) • BWI (5) • New Carrollton (5) • South County (3) • Arnold (3) • Naval Academy (3) 	<ul style="list-style-type: none"> • More frequent service (53%) • Real-time passenger information (35%) • Electronic fare payment (27%) • Longer hours of service (24%) • Better service reliability (23%) • Shorter travel time (23%) 	<ul style="list-style-type: none"> • More direct service • Newer buses with shock absorbers • Information on how to use transit • Real-time bus arrival information • More marketing of existing service • Extend Circulator to Eastport • Provide safe bike & pedestrian access • Transit for tourists
<p style="text-align: center;">Communication Preferences</p> <ul style="list-style-type: none"> • Website & email • Social media • At bus stops 		

The community survey responses indicated that the general public needs more information about existing transit services provided by Annapolis Transit and other providers in the area. For example, the survey respondents requested transit service from Annapolis to Washington, D.C. and Baltimore, which MDOT MTA provides through commuter bus service. The top improvements to attract new riders were providing more frequent service and real-time bus arrival information. Several respondents also requested the ability to pay for fares by credit card, online or by app, and to increase the locations where transit passes are sold. Some respondents were also interested in a rail connection between Annapolis and Baltimore or Washington, D.C.

Rider Survey

A rider survey was conducted to gather feedback on customers' levels of satisfaction and unmet needs, as well as data on demographics and trip patterns. The rider survey was available in English and Spanish, and copies are included in Appendix B. Annapolis Transit drivers distributed hard copy surveys onboard the fixed route and paratransit buses. Notices were placed on the buses providing links to online versions of the survey. The study team also distributed hard copies to riders at major stops including Westfield Mall, Church Circle, Eastport Plaza, and the Department of Social Services. Centro de Ayuda distributed hard copy surveys to their constituents. Riders who completed surveys through the latter two received a free day pass.

One hundred and sixty surveys were collected representing every route, though about half were from the Green and Gold Routes, and less than ten surveys were collected on each the Yellow Route, Circulator, and paratransit service. The survey responses indicated that the majority of riders:

- Depend on Annapolis Transit services – 82% do not own a car and 55% do not have a driver's license.
- Use it for work (56%).
 - In addition 19% are shopping, 11% are going to a medical appointment, and 9% are going to school.
- Are employed, full-time or part-time (68%).
 - In addition 11% are retired, 10% are students, and 8% are unemployed.
- Have an annual household income of \$40,000 or less (55%).
 - In addition 12% have moderate incomes and 12% have incomes over \$60,000.
- Are minorities (64%) including 13% of Hispanic or Latino origin.
- Walk to the bus stop (79%).
 - In addition 11% drive and 4% get a ride with family or friends.
- Ride the bus daily (60%).
 - In addition 34% ride a few days per week.
- Are on the bus for 30 minutes or less (71%).
 - In addition 16% have a 31-45 minute trip and 10% have a 46-60 minute trip.
- Have a cell phone with internet access (82%).

The highlights of the rider survey input are provided in Figure 2-15. Overall satisfaction with Annapolis Transit services is high (75% satisfied or strongly satisfied, with 20% neutral). The majority of survey respondents (80%) are satisfied with the places currently served by Annapolis Transit. The top requests for service improvements include more weekend service, particularly more service frequency but also longer spans of service, later evening hours, lower fares, and greater service reliability including improved on-time performance.

Figure 2-15: Rider Survey Input

Top Areas of Satisfaction	Preferred Service Improvements	Other Comments
<ul style="list-style-type: none"> • Courtesy/Friendliness of Bus Drivers (122) • Sense of Security on Buses/at Stops (108) • Frequency of Bus Service (106) • Cost of Bus Fare (102) • Bus Running On-Time (101) • Areas Served by Bus Routes (100) 	<ul style="list-style-type: none"> • More weekend service (39%) • Later evening hours (33%) • Lower fares (27%) • Better on-time performance (26%) • More bus shelters & benches (24%) • Cleaner buses (24%) • Real-time information on bus arrivals (21%) 	<ul style="list-style-type: none"> • Increase service reliability • Increase weekend service frequency • Restore 30-minute frequency to Yellow Route • Drivers are knowledgeable & courteous • Don't like the trolleys – slippery seats • Don't leave earlier than published times • Need Spanish speaking customer service staff
Top Areas of Dissatisfaction		
<ul style="list-style-type: none"> • Weekend Bus Service (43) • Hours of Bus Service (25) • Availability of Transit Information (18) 		

Employer Survey

The Anne Arundel County Chamber of Commerce helped distribute an employer survey to gather input on employee transportation needs and issues from area employers. Four survey responses were collected, providing a snapshot of employer concerns. All respondents were small businesses located in Annapolis or Eastport. The majority of employees currently drive to work, with a handful using alternative transportation including Annapolis Transit. The employers identified parking difficulties, including high costs and aggressive tickets, and heavy traffic as the transportation issues affecting their workers. They reported shift times starting as early as 6:00 a.m. and ending as late as 11:30 p.m.

Open House

The city's Division of Comprehensive Planning helped collect input on transit needs and issues during an open house in September 2017 for its Forest Drive/Eastport Sector Study. Sixty percent of participants were aware of Annapolis Transit services, though the comments overall indicated a need for increased awareness of existing transit services. For example, individuals requested frequent bus service to Westfield Mall and service from the Harry S. Truman Park and Ride to Washington, D.C., which are currently provided by Annapolis Transit and MDOT MTA, respectively. The top requested service improvement was more service frequency, followed by enhancing the quality of bus shelters. Other individual service ideas and comments included:

- Additional shuttles to AACC from locations other than Westfield Mall.
- Electric shuttle on Forest Drive to Harry S. Truman Park and Ride to connect to commuter bus service to Washington, D.C.
- Frequent shuttle on nights and weekends from Annapolis Peninsula to downtown Annapolis.
- Circulator between Eastport and downtown Annapolis.
- Install art on bus shelters to beautify and prevent vandalism.
- Provide bike parking and safe routes to transit.
- Extend light rail from Glen Burnie to Annapolis.

Annapolis Transit Operators

The study team met with the Annapolis Transit operators during their October 2017 safety meetings. As the frontline staff that works with customers daily, the operators provided invaluable input. The operators' suggestions and ideas for service changes and improvements are summarized in Table 2-9. The operators noted that several factors have contributed to ridership decline since the 2014 service cuts: some riders bought cars, some riders started taking taxis and Uber, and new city leadership caused a sense of uncertainty regarding the future of transit services in Annapolis.

Table 2-9: Input from Annapolis Transit Operators

Service Improvements	<ul style="list-style-type: none"> • Top need is more frequent service • Make travel times faster • Better coordination of existing route schedules to facilitate transfers; can be difficult to make up delays after drivers are asked to hold for transferring passengers • Add Sunday service
Changes to Existing Routes	<ul style="list-style-type: none"> • Gold: Return to 60-minute headway; serve medical facilities on Ridgley Avenue • Green: Increase service frequency to 30 minutes on weekends; eliminate routing on 4th Street and use 6th Street instead; schedule has room (bus usually arrives early) • Red: Increase service frequency to 30 minutes on weekends; schedule is tight during peak periods • Brown: Return to 30-minute headway (current 45-minute headway makes connections difficult); schedule needs leeway on West Street near Westfield Mall due to congestion (especially during holidays); reconsider operating on Newtowne Drive (difficult to maneuver) • Yellow: Don't serve major employers (which are closed) on Saturdays, focus on Riva Road • Orange: Operate on weekends to serve special events • Purple: Serve Forest Drive instead of Hilltop Lane; reconsider operating on Newtowne Drive (difficult to maneuver)
New Services	<ul style="list-style-type: none"> • Replace the Purple North and South with Green, Red, and Brown for evening service; three routes meet at Mall at 10pm for last trip • Improve frequency by adding Purple Route during day to supplement regular routes • Reinstate service to Cromwell Light Rail Station and BWI • Network with Uber and taxis
Capital Needs and Improvements	<ul style="list-style-type: none"> • New bus stop signs • Lights on bus stops and shelters, which are difficult to see at night • New buses with reliable air conditioning and heat • More spare vehicles • Consolidate bus stops on Forest Drive • Implement bus only lanes during peak hour at least • Train drivers, especially night crew, to take better care of equipment
Marketing and Passenger Information	<ul style="list-style-type: none"> • Promote connections to regional transportation; increase awareness of service to Harry S. Truman Park and Ride • Provide real-time arrival information at major stops • Provide customer service in Spanish • Work with employers to promote or subsidize transit passes
Fares and Payment	<ul style="list-style-type: none"> • Decrease the fares • Provide a better discount for passes • Paratransit riders would rather use fixed route service for \$2 than pay \$4 for paratransit • Concern about potential abuse of half-price student pass by non-students

Other

- Create Guaranteed Ride Home program where riders can Uber home for emergencies
- Naval Academy students previously used Annapolis Transit, but the buses didn't have capacity to serve large numbers of students; Naval Academy now provides its own shuttle to Westfield Mall
- Establish Operators Advisory Board
- Complaints that Young Transportation Services is not reliable (does not operate on schedule) and no customer service

Public Advisory Committee

Annapolis Transit established a Public Advisory Committee (PAC) to guide the TDP update. PAC members included riders, Annapolis Transit operators, Annapolis Transportation Board members, residents, and representatives from the Housing Authority of the City of Annapolis, the Annapolis and Anne Arundel County Chamber of Commerce, and the city's Comprehensive Planning Division. The PAC provided the following input regarding transit needs and issues:

- Approach the TDP from an overall mobility perspective including transit's role among various mobility choices, the impact of parking policies on transit usage, and adapting transit to new transportation models such as smartphone enabled ride hailing services.
- Develop alternatives to increase ridership and reduce parking pressures, including attracting choice riders to try transit.
 - Parking is especially difficult downtown. Increase marketing and awareness that drivers can park their cars and catch the bus. It is a three minute ride from the Navy-Marine Corps Stadium to downtown.
- Ensure proposed service alternatives are "right-sized" to meet demand.
 - Consider smaller vehicles providing flexible service.
 - Address the perception of empty buses (e.g., they are going to pick someone up).
- Examine the fare pricing structure; consider distance based fares or different fares by trip, market, or route.
- Examine the pros and cons of joining a regional transit organization.
- Unmet needs include:
 - Transportation for shift workers including early morning shifts that start at 6:00 a.m. and late night shifts that end at 2:00 a.m.
 - Service to Edgewood Road (senior apartments) and Back Creek (boating population needs access to groceries and supplies).

- Improved transit services to access regional destinations including Arundel Mills and BWI Airport.
- Fare reciprocity with MDOT MTA services.
- Expanded electronic fare payment through mobile phones.
- Technological improvements including voice annunciators on buses, real-time arrival information, and a mobility app for multiple modes (e.g., bus, parking, bikes).

REVIEW OF RECENT PLANS AND STUDIES

Part of the needs analysis included reviewing recent plans and studies that have addressed transportation needs and land use in the City of Annapolis and surrounding areas of Anne Arundel County. This section provides a summary of relevant plans and studies including the challenges, goals, and recommendations related to transportation and transit. In addition to the last TDP, the study team reviewed the following plans:

- Annapolis Neck Small Area Plan (2003)
- Annapolis Regional Transportation Vision and Master Plan (2007)
- Annapolis Comprehensive Plan (2009)
- Anne Arundel County General Development Plan (2009)
- West Street Transit Study (2009)
- Annapolis Bicycle Master Plan (2011)
- Anne Arundel County Corridor Growth Management Plan (2012)
- Anne Arundel County Pedestrian and Bicycle Master Plan (2013)
- West Annapolis Sector Study (2015)
- Forest Drive/Eastport Sector Study (In progress)
- Parole Urban Design Concept Plan (1994) – Update in progress

Annapolis Neck Small Area Plan (2003)

The Annapolis Neck Small Area Plan was adopted in 2003 with the intent to implement the goals and recommendations of the Anne Arundel County General Development Plan in the Annapolis Neck area. The plan provides an overview of the area's history, land use, zoning, circulation, natural and historic resources, utilities, community facilities, and design.

Challenges or Issues	Objectives	Recommendations
<ul style="list-style-type: none"> •Traffic congestion on major roads (Forest Drive, West Street, and Riva Road) •Arterial road system servicing Parole and Annapolis Neck has not kept pace with growth in these areas •Lack of interconnectedness in Parole and Annapolis Neck •Safety on major roads for drivers and pedestrians 	<ul style="list-style-type: none"> •Maintain acceptable levels of service during peak periods •Coordinated and effective provision of multi-modal transportation resources and practices •Increase the use of bus service and vanpools by residents •Use vehicles powered by sources other than gasoline or diesel fuel •Integrated City-County network of pathways linking neighborhoods, parks, schools, waterways, and activity centers 	<ul style="list-style-type: none"> •Ensure development will not generate traffic that exceeds level of service standards •Explore options to relieve traffic congestion on Forest Drive •Complete the extension of Harry S. Truman Parkway to Admiral Cochran Drive •Bikeways along the MD 2 connection to Jennifer Road •Complete the state's feasibility study for a location for a regional multi-modal transportation center •Investigate feasibility of a two-tiered transit system, using a paratransit operation

Annapolis Regional Transportation Vision and Master Plan (2007)

The Annapolis Regional Transportation Vision and Master Plan consists of three volumes that address transportation issues in the Annapolis area. The first volume gives a summary of the planning process and recommendations made in the plan. The second volume introduces background information and additional recommendations. The third volume is the appendices, which provide more background information and analysis.

Challenges or Issues	Goals and Objectives	Recommendations
<ul style="list-style-type: none"> •Traffic congestion •Limited transportation choices •Competition for limited parking •Need more intergovernmental coordination •Need to address issues from a user and system perspective 	<ul style="list-style-type: none"> •Maximize connectivity between activity centers •Improve circulation patterns within Downtown and Parole •Maximize effectiveness of parking facilities •Improve overall mobility, safety, comfort, and convenience for all user groups 	<ul style="list-style-type: none"> •New Annapolis Transit Routes: College Parkway, Edgewater-Mayo •Provide real time information •Transportation demand modeling •Priority transit treatments •Transit center feasibility study and development •Pilot jitney program •Reduce transit headways •Replace Spa Road transfer point •Explore TravelSmart

Annapolis Comprehensive Plan (2009)

The Annapolis Comprehensive Plan was developed to direct development in Annapolis over the next ten years. The three main ideas that build the foundation of the plan are Preserve and Enhance Community Character, Maintain a Vibrant Economy, and promote a “Green” Annapolis.

Challenges or Issues	Goals and Objectives	Recommendations
<ul style="list-style-type: none"> • Changing commute patterns • Congestion caused by special events • Highway system near capacity • Limited housing and travel options due to lower income levels, driving ineligibility, or disability 	<ul style="list-style-type: none"> • Transit accessible neighborhoods • Integration of information and communication technology in transportation system • Acknowledge shifting development patterns and emphasize high capacity modes of transport • Access to local and regional public transportation for every citizen. • Recognize the importance of bicycles in the transportation network 	<ul style="list-style-type: none"> • Leverage the Opportunity Areas to expand the entire transit system • Explore a regional transit system • Prioritize local street improvements that improve cross-town circulation, route continuity for transit, and intersection capacities • Adopt complete streets • Use travel demand management to improve circulation, accessibility, and mobility

Anne Arundel County General Development Plan (2009)

The Anne Arundel County General Development Plan is a comprehensive land use plan developed to establish land use decisions over a 20-year planning horizon. The plan guides the vision for development in Anne Arundel County based on four principles: balanced growth and sustainability, community preservation and enhancement, environmental stewardship, and quality public services. Plan 2040 is the anticipated update to the current adopted Anne Arundel County General Development Plan. The update process began in September 2017 with an anticipated completion date in 2019.

Challenges or Issues	Goals and Objectives	Recommendations
<ul style="list-style-type: none"> •Growth in households, population, and employment leading to an increase in travel demand •The 2005 Base Realignment and Closure will change Fort Meade to an employment center which will impact travel demand 	<ul style="list-style-type: none"> •Provide a safe, efficient and affordable multimodal transportation system in Anne Arundel County •Create and maintain a pedestrian and bicycle friendly community with a convenient and efficient multi-modal system •Design and improve the roadway network to further land use, community preservation, environmental protection, public safety, and neighborhood compatibility goals 	<ul style="list-style-type: none"> •Extension of transit along major transportation corridors. •Promote carpooling, vanpooling, transit programs, and improvements to park and ride lots •Provide public information and education on local transportation conditions •Improve transportation and utilities infrastructure in the vicinity of BWI and Tipton airports •Improve coordination of transportation services in the county •Continue implementation of the Anne Arundel County Pedestrian and Bicycle Master Plan

West Street Transit Study (2009)

The West Street Transit Study was initiated by the City of Annapolis in 2008, with funding from the Maryland Transit Administration. The purpose of the study was to conduct a preliminary analysis of West Street as a major transit corridor that connects downtown Annapolis, Inner West Street, and Parole Towne Centre with districts directed for growth and investment along the corridor. Many aspects of the plan emphasize the physical elements required to create a transit-friendly access route between two of Annapolis' major economic centers.

Challenges or Issues	Goals and Objectives	Recommendations
<ul style="list-style-type: none"> • Internal neighborhood traffic circulation and safety, parking, and non local traffic diversions • Existing level of service during PM peak hour on non-event days • Fastest travel times crossing the Severn River or leaving Downtown Annapolis are provided by US 50 and Rowe Blvd. • Approximately a quarter of the traffic MD 450 carries is neither originating from or destined to West Annapolis • Limited coordination between stakeholder agencies 	<ul style="list-style-type: none"> • Provide a high quality transit circulator route • Establish an intermodal transit center servicing both the city and the county • Encourage redevelopment that is transit-oriented • Create a distinct and attractive Capital City Gateway • Plan an attractive and functional road and streetscape corridor, designed for an integration of modes 	<ul style="list-style-type: none"> • Create a West Street branded bus service • Establish a transportation management association • Prepare plans for an intermodal center oriented development • Update the West Street Corridor to include safety, pedestrian, and transit accommodations • Coordinate pedestrian and bicycle systems improvement strategies

Annapolis Bicycle Master Plan (2011)

The Annapolis Bicycle Master Plan was inspired by the Annapolis Bicycle Committee's 2008 report that recognized the city's need to improve its bicycle network. The plan discusses ways to institutionalize bicycling and addresses non-infrastructure elements of bicycling, which include unsafe behaviors, lack of bicycling skills, and disinterest in biking. The plan documents existing programs and identifies opportunities for additional programs. The Annapolis Bicycle Master Plan also explores the condition of the current bicycle network and facilities and makes the appropriate recommendations. Lastly, the plan discusses its implementation strategy including phasing and opportunities to implement bicycle facilities and maintenance.

Challenges or Issues	Objectives	Recommendations
<ul style="list-style-type: none"> • Existing network of on-street bicycle facilities is limited and disconnected, consisting primarily of isolated segments of bike lanes • Bicycling conditions along the major thoroughfares • Connections to destinations in Anne Arundel County • Access to the Naval Academy campus is prohibited 	<ul style="list-style-type: none"> • A lasting bicycle transportation program integrated with Anne Arundel County and the State of Maryland • Ongoing programs for bicycle safety, education, and encouragement • A convenient and attractive network of on-street and off-street bicycle routes for all abilities, ages, and skill levels • Connections to other modes of transportation • A financial plan for construction, maintenance, and programming 	<ul style="list-style-type: none"> • Dedicated funding • One full-time, permanent staff position • Integrate plan recommendations into land development review and capital project scoping • Expand and enhance the Bike Annapolis Website • Expand the Coexist - Give Respect, Get Respect campaign

Anne Arundel County Corridor Growth Management Plan (2012)

The Anne Arundel County Corridor Growth Management Plan addresses the limited ability to add road capacity by exploring the feasibility of increasing the use of alternative modes of travel in Anne Arundel County’s top nine regional highway corridors and four major connector roads.

Challenges or Issues	Objectives	Recommendations
<ul style="list-style-type: none"> • Congested and failing commuter rush hour conditons 	<ul style="list-style-type: none"> • Develop transportation solutions for viable alternative modes of travel, with concept-level impacts and costs 	<ul style="list-style-type: none"> • Specific corridor recommendations include providing all day weekend, limited stop transit service • Intermodal hub in the Parole Towne Center area

Anne Arundel County Pedestrian and Bicycle Master Plan (2013)

The 2013 update of the Anne Arundel County Pedestrian and Bicycle Master Plan focuses on identifying opportunities that will increase walking and bicycling while making these modes of travel safer.

Challenges or Issues	Objectives	Recommendations
<ul style="list-style-type: none"> • Gaps requiring pedestrian and bicycle improvements • Almost all schools lack a complete network of sidewalks • Gaps between newly constructed neighborhoods and older areas 	<ul style="list-style-type: none"> • Provide a complete Americans with Disabilities Act (ADA) compliant pedestrian network • Provide a complete bicycle network throughout urbanized Anne Arundel County • Provide an off-road shared use facility along community streets leading to all schools • Encourage all new development to provide links to the pedestrian and bicycle network along the roadway 	<ul style="list-style-type: none"> • Changes to the Anne Arundel County Design Manual, Anne Arundel County Code, and the Anne Arundel County Landscape Manual to promote walking and bicycling • Education and safety programs • Develop Complete Streets Policy • Database to manage and analyze crash reports using GIS or other Crash Data Software • Pedestrian and Bicycle Coordinator permanent staff position

West Annapolis Sector Study (2015)

The West Annapolis Sector Study is a result of the 2009 Annapolis Comprehensive Plan identifying “opportunity areas,” places where the city wants to direct growth. The Comprehensive Plan recommended a sector study to better understand site-specific issues for growth and development policies. The West Annapolis Sector Study concentrates on transportation, a market analysis, and land use.

Challenges or Issues	Objectives	Recommendations
<ul style="list-style-type: none"> •Deficiencies in the non-motorized transportation network in the study area •Concerns about internal neighborhood traffic circulation and safety, parking, and non-local traffic diversions •Existing level of service during the PM peak hour on non-event days •A lack of clear wayfinding and coordinated, distinct signage within the business district 	<ul style="list-style-type: none"> •A detailed examination of recurring (i.e., rush hour or “non-event”) and non-recurring (i.e., special event) traffic impacts on West Annapolis and the impact of overflow traffic from US 50 	<ul style="list-style-type: none"> •Develop multi-modal intelligent transportation systems (ITS) plan •Active Traffic Management along US 50 •Traffic calming at Annapolis Street and Giddings Avenue, Melvin Avenue at Ridgely Avenue, Mevlin Avenue at Annapolis Steet

Forest Drive/Eastport Sector Study (In Progress)

The Forest Drive/Eastport Sector Study will influence land use, bicycle, and pedestrian improvements in the Forest Drive corridor and Eastport. The study recommendations may include creating new or modifying existing development and zoning models based on input from community stakeholders including local citizens. In fall 2018 the Forest Drive/Eastport Sector Study was in its second phase, identifying policies and actions based on input.

Challenges or Issues	Objectives	Recommendations
<ul style="list-style-type: none"> •Forest Drive is at capacity •Better regional transit •Need a transit center 	<ul style="list-style-type: none"> •Produce a strategy for modernizing the Forest Drive corridor zoning and design 	<ul style="list-style-type: none"> •In progress

Parole Urban Design Concept Plan (Update in Progress)

The Parole Urban Design Concept Plan was adopted in 1994 and is currently undergoing an update with an anticipated adoption in the summer of 2018. The plan has guided land use and development and set general standards for the quality of design within the Parole Growth Management Area (PGMA). Since the plan's adoption, the PGMA and provisions that oversee land use have undergone significant changes. The update for the Parole Urban Design Concept Plan will:

- Gather input and establish a community vision for the future of the PGMA
- Update and assess the conditions and data used as a basis for planning in the area
- Evaluate and clarify the regulatory framework for the area to achieve the community vision
- Maintain aspects of the existing plan which function well
- Organize the plan to facilitate its use by business and property owners, citizens, developers, and planning staff

Challenges or Issues	Objectives	Recommendations
<ul style="list-style-type: none"> • Highway oriented growth with commercial uses but little housing or pedestrian amenities • No sense of place • Current transportation system reinforces current development patterns 	<ul style="list-style-type: none"> • Create a high quality system of new streets and public spaces friendly to pedestrians and linking north and south Parole • Promote land uses which complement commerce and support 24-hour community activities • Coordinate and distribute development to achieve a community focus in balance with present and future transportation facilities • Preserve natural areas and water quality as part of an open space system within the overall pedestrian-oriented development scheme 	<ul style="list-style-type: none"> • Use multi-passenger modes of travel to increase vehicle occupancy rates • New park and ride lots in coordination with new development • Develop a commuter transportation program • Light rail or commuter service to the Annapolis Parole area (long range recommendation) • Multi-modal transit center • HOV lanes • Parking management incentives • Private sector engagement

Chapter 3: Issues and Opportunities

INTRODUCTION

This chapter presents the goals and objectives of the TDP based on input from the Public Advisory Committee (PAC). The goals and objectives reflect many of the themes identified in the previous analyses and provide a good starting point for considering the transit issues and opportunities in the City of Annapolis and surrounding areas.

This chapter also presents a synthesis of the top challenges and opportunities for improving Annapolis Transit. These challenges and opportunities are the result of the review of existing services and analyses of transit needs and stakeholder and public input.

TDP GOALS AND OBJECTIVES

The PAC updated the goals and objectives from the 2010 TDP to reflect current community needs and priorities and new transit trends. However, some goals remain the same including the vision to create a seamless transit experience for riders, providing transit services to connect residents to job opportunities, and providing a transportation alternative that helps reduce traffic congestion.

Goal: Offer safe and reliable mobility options to meet community transportation needs, reduce traffic congestion, address parking constraints, and stimulate healthy living

Objectives:

- Provide convenient access to employment, educational institutions, medical facilities, shopping, and social and recreational activities within the service area
- Explore service and fare improvements to increase transit use by existing riders
- Improve and promote transit services to attract choice riders
- Promote transit as an easy way to get around for visitors

Goal: Create a seamless system for transit users in the City of Annapolis

Objectives:

- Facilitate connections between Annapolis Transit and other public transportation services, particularly to reach regional destinations
- Pursue fare arrangements with other transit providers in the region and work toward a seamless electronic fare system

Goal: Connect residents to jobs and support economic development

Objectives:

- Explore options to meet the needs of shift workers
- Serve work trips within the city and facilitate connections to regional employment destinations

Goal: Explore technology innovations that improve services for existing riders and attract new riders

Objectives:

- Explore technology that provides visual and auditory passenger information
- Pursue technology that provides convenient fare payment options

Goal: Prepare transit to adapt to a new mobility system, where transportation modes are increasingly integrated and flexibility is a top factor in user convenience

Objectives:

- Explore opportunities to partner with on-demand services (e.g., transportation network companies, microtransit services) to increase transit usage
- Promote transit as a complementary option to the sharing economy (e.g., ridesharing, car sharing, bike sharing)

TOP ISSUES, NEEDS, AND OPPORTUNITIES

The top issues that emerged from the analyses, reviews of existing documents, and public inputs through surveys and stakeholders interviews were:

- 1) The need to increase ridership, and
- 2) More reliable and convenient service.

These issues are related and became more dominant following the Annapolis Transit service reduction in November 2014. Annapolis Transit lost about one-quarter of its ridership in the first year following the cuts and an additional 13% in the second year. A ridership loss of 36% over the last two years has resulted in lower productivity on every route.

Much of the input collected from riders, stakeholders, and the general public focused on improvements that would make service more reliable and convenient. These improvements included changes to existing services, new services, more information and marketing, and capital needs. Improved services would benefit existing riders and attract new transit users – subsequently resulting in ridership growth and contributing to service performance improvements (though the latter also depends on the amount and costs of services provided).

Better transit service to regional destinations was a need identified in the last Transit Development Plan (TDP) and continues to be a need today. The review of existing services indicated that the MDOT MTA commuter bus service to downtown Baltimore and downtown Washington, D.C. provides comparable travel times to driving. However, this service is limited to weekday peak periods. The existing transit options to Arundel Mills Mall and BWI Airport require transfers and have travel times that are 2.5 times longer than driving. Both service improvements and organizational changes present opportunities to make transit a more attractive and feasible option for travel between Annapolis and regional destinations.

The top issues, needs, and opportunities facing Annapolis Transit are summarized below. The TDP will outline service and organizational alternatives including the potential cost, revenue, and ridership impacts to address these specific areas.

Improvements to Existing Services

- **Increase service frequency** - Not only to make services more convenient but also to facilitate transfers between routes and minimize wait times
- **Provide later evening service** – Serve low income workers with late night shifts, as well as patrons of businesses with late night hours
- **Provide more weekend service** – Include more frequent service and longer hours of service

- **Improve on-time performance** – Address buses leaving early before the published schedule time and buses arriving late, often due to traffic congestion (particularly heavy on Forest Drive)

New/Improved Services

- **Better transit service to and from regional destinations** – Transit options that are more competitive with drive times, particularly to employment destinations including Arundel Mills Mall and BWI Airport
- **New transit access to locations in Annapolis** – Including West Annapolis, Maryland Avenue, Ridgely Avenue, and Edgewood Road/Back Creek
- **Circulator between Eastport and downtown Annapolis** – Common request in stakeholder interviews and community survey

Transit Information and Marketing

- **Increase information on existing transit services and resources** – Promote information widely so Annapolis residents, employees, and visitors know about the places served, fares, and how to use Annapolis Transit and other transit services; provide route information at stops; promote the availability of trip planning through Google Transit and real-time information on the Circulator
- **Develop a smartphone application** – Make it easy to use transit by increasing access to transit information including real-time bus arrivals and providing a convenient option to pay fares including by credit or debit card
- **Provide more transit information in Spanish** – Including trip planning and customer service resources

Capital

- **New buses** – Require less maintenance, thereby increasing service reliability and reducing maintenance costs, and provide a safer and more comfortable ride for customers
- **Voice annunciators onboard buses** – To increase the safety and accessibility of services by providing passenger information including upcoming stops and safety and service announcements

- **Explore smaller vehicles** – Better navigate the narrow streets found in Annapolis’ historic downtown and neighborhoods and “right size” service to meet demand; would also address public perceptions of the buses running empty
- **Explore electric vehicles** – Address community interest in electric vehicles and contribute to the city’s goal to promote a “Green” Annapolis

Other Improvements

- **Lower fares** – A priority identified by both stakeholders and riders
- **Improve bus shelters and benches** – Better maintain existing amenities, and add bus shelters and benches
- **Improve and promote bike and pedestrian access to transit** – Promote the existing Bike-On-Bus Program, increase bicycle and pedestrian facilities, and address safety concerns

Transit Organization and Service Models

- **Explore on demand transit** – Identify opportunities to integrate technology enabled mobility options to address needs for more convenient and direct service
- **Explore organizational alternative with Anne Arundel County** – Determine the potential advantages and disadvantages of consolidating Annapolis Transit and the county transportation program

Chapter 4: Proposed Service Improvements Alternatives

INTRODUCTION

This chapter provides a variety of service and organizational alternatives for Annapolis Transit and the Public Advisory Committee (PAC) to consider. These alternatives were developed based on the review of existing services and analysis of transit needs, including stakeholder and public input. They also respond to the issues and objectives for the Transit Development Plan (TDP) update that were guided by the PAC, and discussed in the previous chapters.

Overall, the proposed alternatives focus on:

- Restoring ridership on the Annapolis Transit system, including service from reductions implemented in 2014.
- Attracting new ridership, with an emphasis on choice riders.
- Implementing operational changes to improve on-time performance and contribute to faster trips.
- Implementing route modifications to improve current services.
- Improving the passenger experience at bus stops.
- Increasing marketing and communications about Annapolis Transit services.
- Considering fare changes or new fares to attract and increase ridership.
- Coordinating with the MTA and other transit providers to establish a regional electronic fare system.
- Reconsidering the funding of Annapolis Transit through an Enterprise Fund.

The alternatives presented in this chapter serve as a starting point to be modified based on changing needs and additional input. Due to inevitable funding uncertainty, the alternatives are presented as short-, mid-, or long-term. Short-term alternatives are either cost neutral or incur minimal costs given the potential benefits achieved and are actions Annapolis Transit can take right away. The mid- and long-term alternatives are also priorities, but may require

more resources than are feasible within the next few years. Depending on changing state and federal funding, these projects may be more appropriate for implementation at a later date.

PROPOSED ROUTE SERVICE REVISIONS

The following service expansions respond to service reductions that were implemented in 2014. The key goal is to streamline the route network. To accomplish this, the four daytime Annapolis Transit routes are described in two groups. One significant note is that during the TDP study process, Anne Arundel County took over operation of the Gold and Yellow Routes previously managed by Annapolis Transit. This transition occurred August 1, 2018; the service operation and times did not change, everything remained the same except that the county is now operating the service.

- Brown and Orange Routes – Grouped together because some of the proposed changes to one route affects the other route.
- Green and Red Routes – Not dependent on each other; they are grouped together for convenience.
- Purple Route – A set of proposals is offered for night-time and Sunday service.

Each route-pair stands alone; changes to one pair are independent and do not affect the other pairs. Also, all cost figures shown are based on an operating cost of \$74.10, per hour, based on Annapolis Transit's FY 2017 data. The cost information is expressed as the fully allocated costs, which means we have considered all of the program's costs on a per unit basis when contemplating the operating budget. This overstates the incremental cost of minor service expansion, as there are likely to be some administrative expenses that would not be increased with the addition of a few service hours.

Table 4-1 through Table 4-4 presents and summarizes the alternatives based on short-term, mid-term, and long-term service improvements.

Table 4-1: Short-Term Service Improvements Summary

Route	Headway (Minutes)			
	Weekday Peak	Weekday Midday	Saturday	Sunday
Brown				
Current Service	30	30	45	0
Service Constancy - Option 1	30	30	45	0
Service Constancy - Option 2	15	15	45	0
Orange				
Current Service	45	45	45	0
Service Constancy - Option 1	45	45	45	0
Service Constancy - Option 2	0	0	0	0
Green				
Current Service	30	30	60	0
Service Constancy - Option 1	30	30	60	0
Service Constancy - Option 2	30	30	60	60
Red				
Current Service	30	30	60	0
Service Constancy - Option 1	30	30	60	0
Service Constancy - Option 1	30	30	60	0

Table 4-2: Mid-Term Service Improvements Summary (Brown Route)

Route	Headway (Minutes)		
	Weekday Evening	Weekday Midday	Saturday
Brown			
Current Service	30	30	45
Service Expansion	15	15	45

Table 4-3: Long-Term Service Improvements Summary (Green Route)

Route	Headway (Minutes)			
	Weekday Peak	Weekday Midday	Saturday	Sunday
Green				
Current Service	30	30	60	0
Service Expansion – Option 1	30	30	30	0
Service Expansion – Option 2	15	30	60	0

Table 4-4: Long-Term Service Improvements Summary (Brown, Green, Red, and Purple Routes)

Route	Headway (Minutes)		
	Weekday (Evening)	Saturday (Evening)	Sunday
Brown			
Current Service	30	45	0
Service Expansion	75	75	75
Green			
Current Service	30	60	0
Service Expansion	60	60	60
Red			
Current Service	30	60	0
Service Expansion	60	60	60
Purple			
Current Service	75	75	75

Short-Term Service Improvements (1-2 Years)

This section discusses the potential short-term service alternatives for Annapolis Transit. The alternatives were a collaborative effort between Annapolis Transit, the PAC, the MTA Office of Local Transit Support (OLTS) and KFH Group staff. These alternatives are designed to be modified based on the needs of the City of Annapolis and supplemental PAC input. In addition, due to indeterminate economic times, the directive was given to create a route network that achieved greater efficiencies while initially keeping costs constant.

Brown and Orange Routes

Two “cost neutral” proposals are presented below.

Brown/Orange Option 1

This option keeps service the same as it currently operates (the Brown Route operates every 30 minutes as of August 1, 2018 – which is a restoration of the service that existed prior to the fall 2014 service cuts). Neither route would be changed, and there would be no impact to cost or vehicle requirements. This option is shown in Figure 4-1.

Brown/Orange Option 2

The second option proposes operating the Brown Route every 15 minutes on weekdays. This would provide riders the most frequent service since the arterial-based system was established in 2010. In order to achieve this at “no cost”, the Orange Route would be discontinued. This option is presented in Figure 4-2.

Advantages

- Level of service available to the stops along the route would be increased.
- All Brown Route trips would offer direct transfers to the Green Route at Eastport Plaza.

Disadvantages

- Would force Orange Route riders to use the Brown or Red routes to either Eastport Plaza or Westfield Mall and then transfer to the Green Route in order to go downtown.
- No service along Spa Road.

Expenses

- The route adjustments are cost-neutral.

Table 4-5 provides a visual representation of the current and proposed service levels.

Table 4-5: Brown and Orange Routes Level of Service Proposal

Route	Headway (Minutes)			
	Weekday Peak	Weekday Midday	Saturday	Sunday
Brown				
Current Service	30	30	45	0
Service Constancy - Option 1	30	30	45	0
Service Constancy - Option 2	15	15	45	0
Orange				
Current Service	45	45	45	0
Service Constancy - Option 1	45	45	45	0
Service Constancy - Option 2	0	0	0	0

Figure 4-1: Brown/Orange Route – Option 1

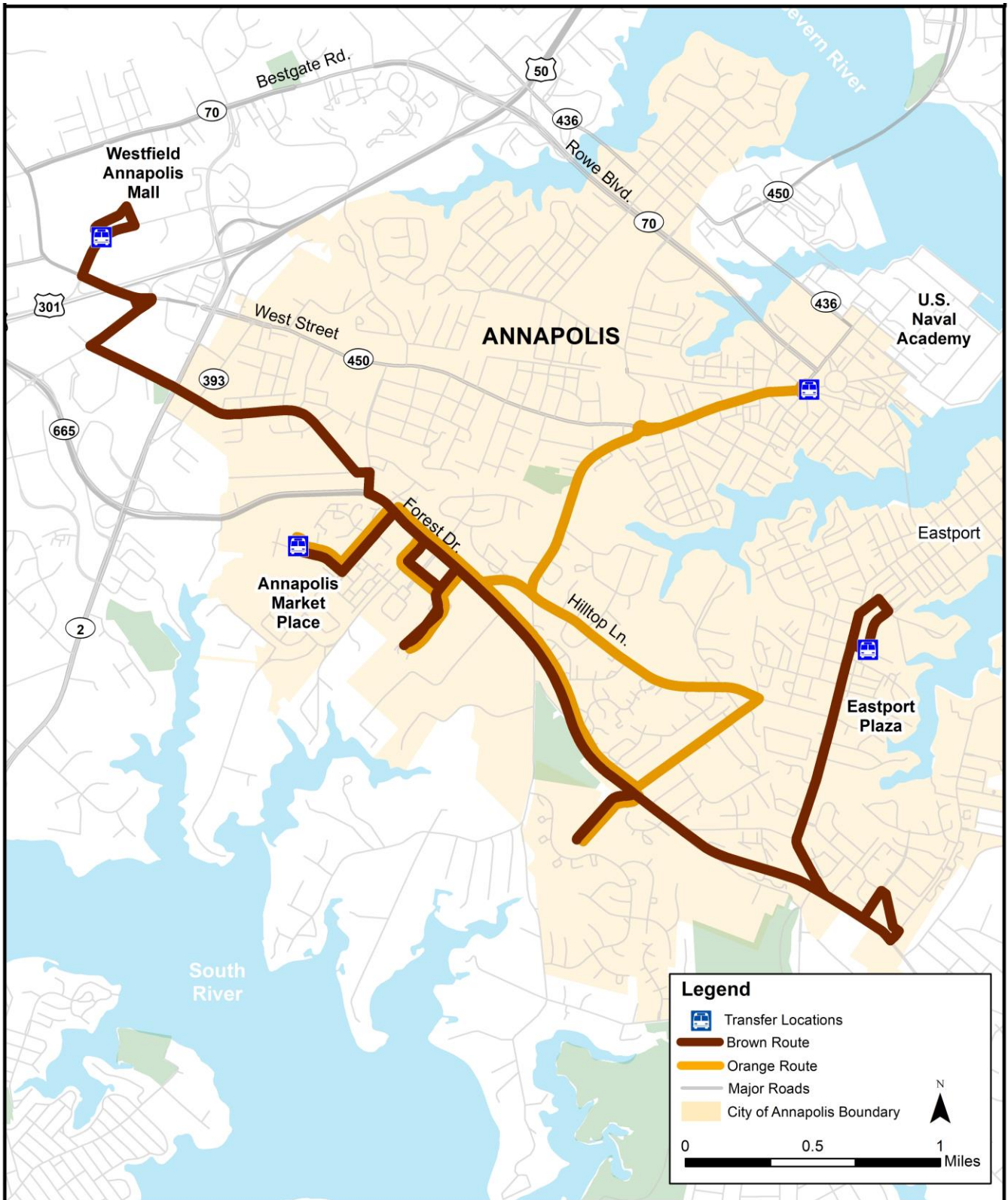
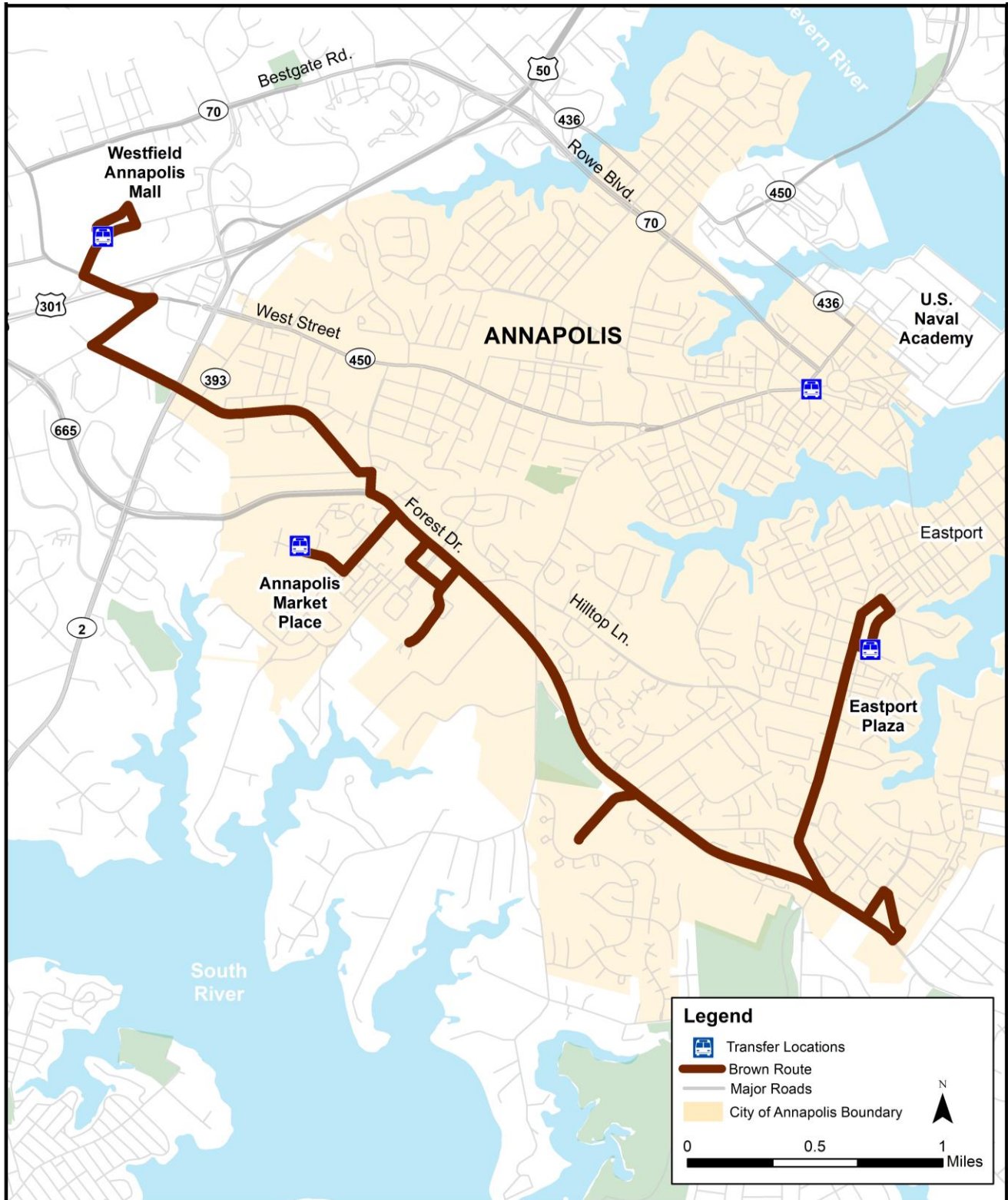


Figure 4-2: Brown/Orange Route – Option 2



Green and Red Routes

The “cost neutral” recommendation is to keep the existing service for these two routes unchanged. Thus, there would be no impact to cost or vehicle requirements. Figure 4-3 presents the current alignment of the Green and Red routes.

Monday-Saturday Evenings and Sunday Service Routes

There are two “cost neutral” proposals presented below.

Option 1

This option keeps service the same as it currently operates. The existing Purple Route service would not be changed, and there would be no impact to cost or vehicle requirements.

Option 2

The second option proposes operational changes to the Green and Purple routes. Service on the Green Route would change by extending the span of service to operate every hour between 7:00 p.m. and 10:30 p.m. on weeknights and Saturdays. Additionally, this alternative implements Sunday service to operate every hour between 7:30 a.m. and 7:30 p.m. Concurrently, the Purple Route would solely follow the Purple South Route (eliminating the Purple North Route now covered by the Green Route). The “new” Purple Route would follow the existing alignment the Purple-South Route between Westfield Mall and Eastport Plaza, including the portion via Anne Arundel Medical Center and Housley Road. Service would operate every 90 minutes between 7:00 p.m. and 10:45 p.m. on weeknights and Saturday nights, and between 7:45 a.m. and 7:45 p.m. on Sundays.

Advantages

- Increased service frequency on what was previously served by the Purple North Route (service currently provided via the Red Route).
- Less confusion since there will only be one Purple Route.

Disadvantages

- Purple South Route would now operate every 90 minutes instead of every 75 minutes.

Expenses

- The route adjustments are cost-neutral.

Figure 4-4: Green/Red Route – Current Alignment

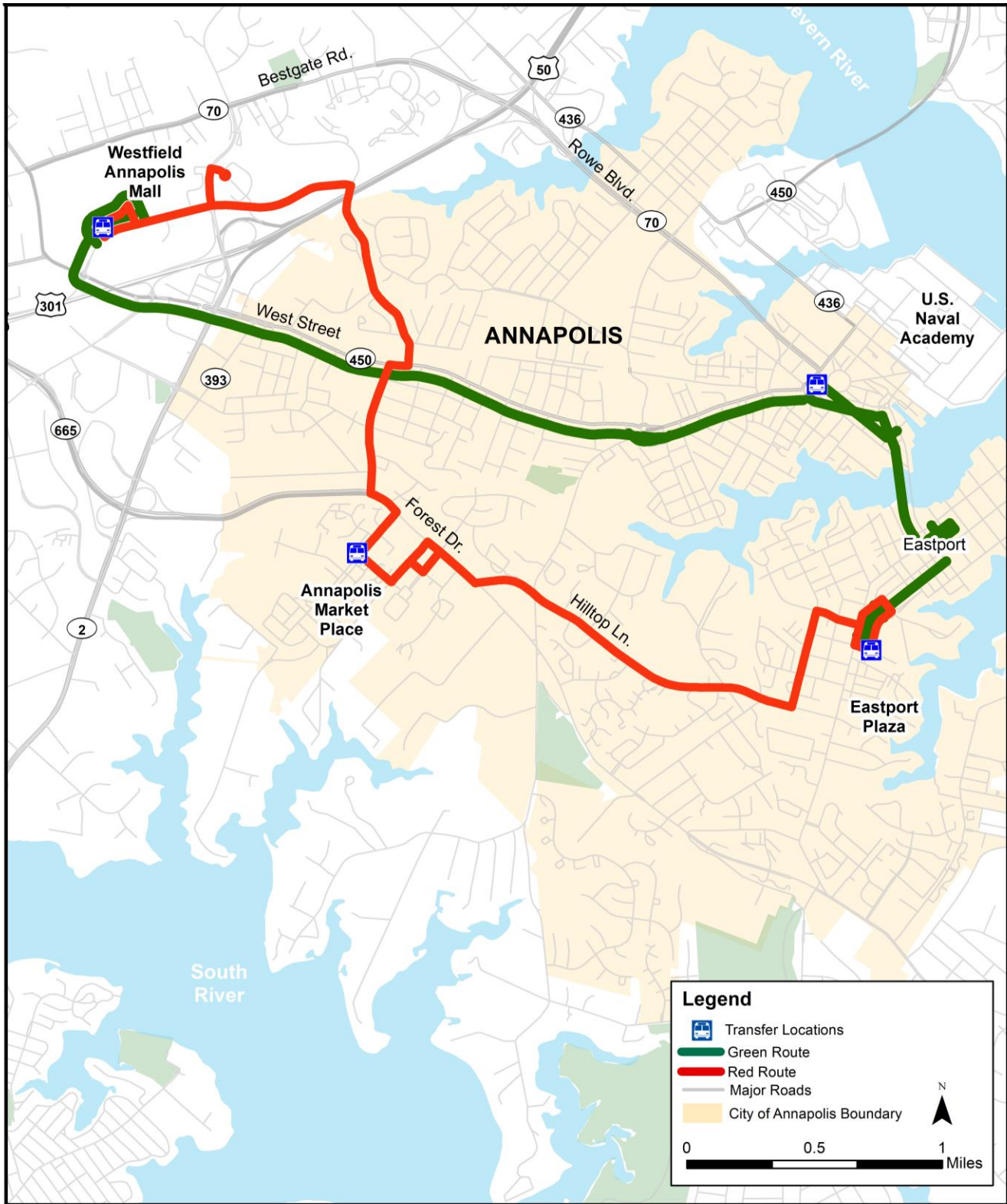


Table 4-6 provides a visual representation of the current and proposed service levels.

Table 4-6: Green and Red Routes Level of Service Proposal

Route	Headway (Minutes)			
	Weekday Peak	Weekday Midday	Saturday	Sunday
Green				
Current Service	30	30	60	0
Service Constancy - Option 1	30	30	60	0
Service Constancy - Option 2	30	30	60	60
Red				
Current Service	30	30	60	0
Service Constancy - Option 1	30	30	60	0
Service Constancy - Option 1	30	30	60	0

Mid-Term Improvements (2-5 Years)

This section discusses the potential mid-term service alternatives for Annapolis Transit. Similar to the short-term alternatives, these alternatives were a collaborative effort between the MTA OLTS and KFH Group staff.

Brown and Orange Routes

The service expansion proposed for the Brown Route would operate every 15 minutes during the week. This would provide the highest level of service to the key destinations and connections within Annapolis for both transit dependent and choice riders. No changes to the existing Orange Route are included in this option.

Advantages

- Offers additional mobility for employment and shopping.
- Addresses a need articulated in the rider surveys.
- Restores service level for one of the core routes.

Disadvantages

- Additional service would increase annual operating expenses.
- Schedule adjustments would require Annapolis Transit to update its print and web materials.

Expenses

- The route adjustments necessitate additional costs associated with the addition of a new vehicle to the route. Using Annapolis Transit’s average fixed-route operating cost of \$74.10 per hour, approximately 3,375 service hours (one bus operating 13.5 hours per day) would cost around \$250,000 annually in operating expenses.
- One additional vehicle would be needed on weekdays, costing roughly \$250,000.
- The schedules re-design and printing would incur minimal costs.

Ridership

- Assuming a very conservative ridership estimate of half the current fixed-route average (3.5 passengers per hour), 3,375 annual service hours is likely to generate around 11,800 trips.

Table 4-7 provides a visual representation of the current and proposed service levels.

Table 4-7: Brown Route Level of Service Proposal

Route	Headway (Minutes)		
	Weekday Evening	Weekday Midday	Saturday
Brown			
Current Service	30	30	45
Service Expansion	15	15	45

Restore Circulator Hours of Service

The Annapolis Circulator is a trolley that links the city’s four parking garages around the Central Business District, and travels between Westgate Circle and Memorial Circle. The Circulator makes stops along its route at:

- Noah Hillman Parking Garage – 150 Gorman Street
- Park Place – 5 Park Place
- Knighton Parking Garage – 1A Colonial Avenue



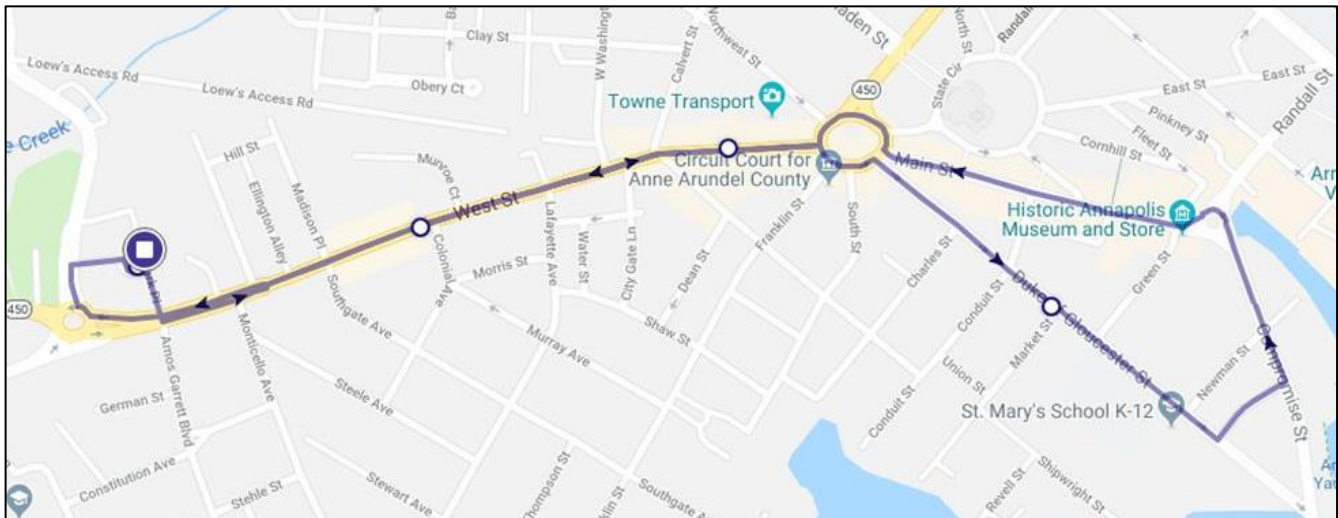
- Gotts Court Parking Garage – 25 Northwest Street
- Lafayette and West Street
- Church Circle at South Street
- Annapolis City Hall
- Annapolis City Dock
- Church Circle near Main Street

The Circulator runs Monday through Saturday from 7:30 a.m. to 11:00 p.m., and Sunday from 8:00 a.m. to 8:00 p.m. The bus, which seats 24 passengers and is wheelchair accessible, travels along a 2.1 mile loop from Westgate Circle to Memorial Circle on 20-minute intervals.

This alternative proposes increasing the frequency on the existing route to 10-minute headways. The service would continue to operate within the same span of service.

Figure 4-5 presents the Circulator Route.

Figure 4-5: Annapolis Circulator Route



Advantages

- Offers additional mobility for employment, shopping, and tourists.
- Addresses a need articulated in the rider surveys.
- Restores service level to original hours.

Disadvantages

- Additional service would increase annual operating expenses.

- Schedule adjustments would require Annapolis Transit to update its print and web materials.

Expenses

- The expanded hours would necessitate additional costs associated with the Circulator service. Using Annapolis Transit’s average fixed-route operating cost of \$74.10 per hour, approximately 950 service hours (2 additional hours weekdays, 4 additional hours on Saturdays, and 5 additional hours on Sundays) would cost around \$70,500 annually in operating expenses.
- The schedule re-design and printing would incur minimal costs.

Ridership

- Since ridership would be added to the “fringe” service hour periods, a conservative ridership estimate of 3 was assumed (just over half the current fixed-route average of 5.64 passengers per hour). Based on this, 2,850 annual trips would be added.

Long-Term Improvements (5 Plus Years)

Long-term service alternatives for Annapolis Transit are highly important to improving service growth and efficiency, though due to financial constraints and other higher priorities, long-term service improvements are goals to accomplish in the outlying years of the plan horizon. As noted in recent area plans and studies, long-term traffic will have to be managed through investments in other modes of transportation. A residual cause of this congestion is that curbside parking is in high demand, particularly on Saturdays and during events. Key to managing traffic are improvements to bus service that include providing routing and span-of-service information at all stops, as well as recommendations to improve bus boarding and accessibility.

Green Route

The Green Route is the “backbone” of Annapolis Transit’s routing network. As such, there are two service expansion proposals to enhance ridership for both “choice” riders and passengers who have no other means for transportation.

1. Operate service every 30 minutes on Saturdays between approximately 8:00 a.m. and 6:00 p.m.
2. Operate every 15 minutes on weekdays during peak hours.

Advantages

- Offers additional mobility for employment and shopping, and will attract choice riders.
- Addresses a need articulated in the rider surveys.
- Restores Saturday service to previous levels.

Disadvantages

- Additional service would increase annual operating expenses.
- Schedule adjustments would require Annapolis Transit to update its print and web materials.

Expenses

- Option 1: There are costs associated with the addition of a vehicle on Saturdays between 8:00 a.m. – 6:00 p.m. Applying the \$74.10 per hour operating cost, 500 service hours (one bus operating 10 hours per Saturday) would cost roughly \$37,000 annually in operating expenses. One additional vehicle would be needed on Saturdays, however this would only be an operational cost due to vehicles being available in the fleet.
- Option 2: Costs are linked to decreasing the headways to 15 minutes during peak hours on weekdays. Similar to other cost estimates, the \$74.10 per hour operating cost was used. Based on 1,500 new service hours (daily 3 morning hours during peak and 3 evening hours during peak service, with 15-minute headways), higher frequency peak service operating expenses would cost about \$111,150 annually .
- One additional vehicle would be needed to cover the additional peak hour service, costing roughly \$250,000.
- The schedule re-design and printing would incur minimal costs.

Ridership

- Option 1: Since this service is directed at Saturday patron ridership, which typically falls below average ridership levels, 4 passengers per hour was assumed in the calculation (8.66 passengers per hour is the current performance). This option would add 2,000 annual trips.

- Option 2: Establishing peak hour 15-minute headways would attract both “choice” riders and “captive” riders. Thus, the anticipated trips per hour would equal the current productivity of 8.66 riders per hour. Using this figure, approximately 13,000 trips would be realized annually.

Table 4-8 provides a visual representation of the current and proposed service levels.

Table 4-8: Green Route Level of Service Proposal

Route	Headway (Minutes)			
	Weekday Peak	Weekday Midday	Saturday	Sunday
Green				
Current Service	30	30	60	0
Service Expansion – Option 1	30	30	30	0
Service Expansion – Option 2	15	30	60	0

Monday-Saturday Evenings and Sunday Service Routes

There is one expansion proposal for evening service and Sunday service. Under this proposal, the Purple Route (north and south) would be discontinued.

The Brown, Green, and Red routes would have their hours of operation extended on Monday – Saturday evenings, and would have Sunday service implemented. The Orange Route would not operate during these hours.

Brown Route

- Extend the span of service to operate every 75 minutes between 7:30 p.m. and 10:30 p.m. on weeknights and Saturday nights.
- Implement Sunday service to operate every 75 minutes between 7:30 a.m. and 8:00 p.m.
- Follow the alignment of the current Brown Route, except that it would not serve Bywater Homes, Newtowne Twenty, or Robinwood.

Green Route

- Extend the span of service to operate every hour between 7:00 p.m. and 10:30 p.m. on weeknights and Saturday nights.
- Implement Sunday service to operate every hour between 7:30 a.m. and 7:30 p.m.

Red Route

- Extend the span of service to operate every hour between 7:00 p.m. and 10:30 p.m. on weeknights and Saturday nights.
- Implement Sunday service to operate every hour between 7:30 a.m. and 7:30 p.m.

Advantages

- Less confusing for riders by eliminating the Purple North and South Routes.
- Offers greater service frequency.
- Addresses a need articulated in the rider surveys.

Disadvantages

- Additional service would increase annual operating expenses.
- Schedule adjustments would require Annapolis Transit to update its print and web materials.

Expenses

- Costs are associated with the addition of service hours for the Brown, Green, and Red routes. Applying the \$74.10 per hour operating cost to 5,850 service hours (Brown Route – 1,550 hours; Green Route – 1,850 hours; and Red Route – 1,800 hours) would cost around \$435,000 annually in operating expenses. One additional vehicle would be needed on Saturdays, however this would only be an operational cost since there are vehicles available in the fleet.
- Offsetting this increase is a decrease in expenses due to the elimination of the Purple Route (both North and South). Calculating approximately 3,750 hours of service for the Purple Route (operating cost of \$74.10 per hour), about \$280,000 would be available to be reapportioned.
- The schedule re-design and printing would incur minimal costs.

Ridership

- Higher ridership is anticipated due to a more straightforward route network as well as increased hours of operation. Matching the Purple Routes, 7.8 trips per hour would produce over 9,000 annual trips.

Table 4-9 provides a visual representation of the current and proposed service levels.

Table 4-9: Weekday Evenings and Sunday Route Level Service

Route	Headway (Minutes)		
	Weekday (Evening)	Saturday (Evening)	Sunday
Brown			
Current Service	45	45	0
Service Expansion	75	75	75
Green			
Current Service	30	60	0
Service Expansion	60	60	60
Red			
Current Service	30	60	0
Service Expansion	60	60	60
Purple			
Current Service	75	75	75

OPERATIONAL CHANGES

One of the top issues noted through community input and assessment of existing services was the need to improve on-time performance. This issue is exacerbated by buses leaving earlier than the published schedule time; buses arriving late, often due to traffic congestion (particularly heavy on Forest Drive); and delays with customers boarding or paying their fares. The following options can be considered to improve on-time performance. This would have the benefit of providing current customers with a faster trip, and potentially attracting new riders.

All-Door Boarding

A new concept that is being evaluated in the transit industry is all-door boarding. This type of operation is contingent upon a fleet that would support this alternative. If Annapolis Transit switches to vehicles with front and rear/mid bus doors they should explore the possibility of a temporary pilot program testing all-door boarding. During this test period, riders would be able to board and exit buses through all doors (as opposed to the current practice of boarding only at the front door in a single file line, paying upon entry); this would allow Annapolis Transit to compare whether this change could create a faster, more convenient ride.

The article “All-Door Boarding” Improves Reliability, Bus Rider Experience on Silver Line, in Mass Transit (October 20, 2017) revealed that 65% of rider respondents reported that their

all-door boarding trip was faster and 70% stated that the all-door boarding demonstration made them more likely to ride the route again. Additionally, data collected during the demonstration showed that:

- All-door boarding allowed for more buses to leave on time with fewer delays at the busiest stops.
- All-door boarding had a significant effect on the route's slowest trips, improving those trips to be more like a typical trip, and making the overall rider experience more reliable.
- All-door boarding has the potential to make buses run more frequently, which was the top priority identified by riders in surveys.

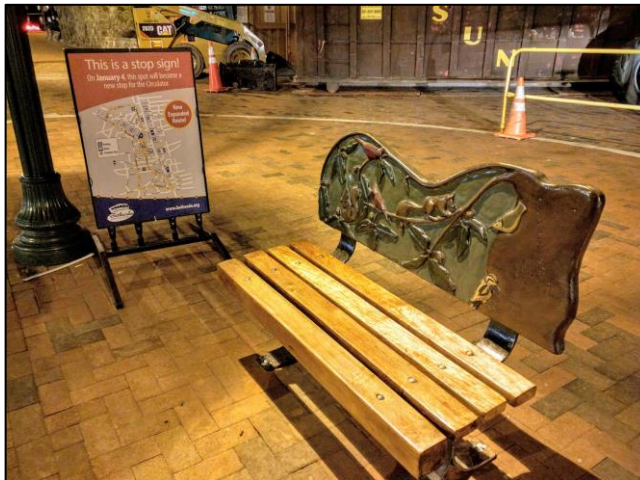
BUS STOP IMPROVEMENTS

Through the assessment of existing services and input from riders and the community, several opportunities to enhance the passenger experience and to improve current bus stops were identified.

Improve Cleanliness of Existing Bus Shelters

Improve cleanliness of existing bus shelters through trash management options:

- Currently Annapolis Department of Transportation is responsible for trash removal; ensure this is being done promptly.
- Adopt a shelter.
- Work with downtown Annapolis to provide artistic benches at key stops.



Example of Artistic Benches – Bethesda Circulator (Woodmont Avenue)

Expand Visibility and Awareness of Available Transit Services

Several improvements to current bus stops can be considered that would provide customers with greater information while at the stop, and to help market transit services to the Annapolis community. These options include:

- Provide route maps and schedules at bus stops.
- Provide real time information at bus stops.
- Install larger bus stops signs.
- Provide a trip planner on the City of Annapolis website.
- Create a transit application for smart phones.

MARKETING AND COMMUNICATIONS

In conjunction with the opportunity to expand awareness of Annapolis Transit services is a need for an improved marketing and communications effort. Options identified through the TDP process include:

- Conducting a marketing study that explores possible rebranding of Annapolis Transit services.
- Updating the system map on a regular basis to reflect route changes, with a focus on distributing maps online and also some hard copies.
- Providing copies of the bilingual system map/rider brochure at key public locations, including the library, City Hall, Westfield Mall, and the Visitors Center.
- Partnering with employers, hotels, schools, and community organizations to distribute Annapolis Transit information and materials (online, electronic files, and hard copies as appropriate for the audience).
- Creating new marketing materials targeted to specific audiences and services, such as a New Riders Guide (featuring “How to Ride” and how to reach common destinations), a Circulator brochure, a Student Ride Guide.

FARE PAYMENT CONSIDERATIONS

Input was received regarding the need to consider fare changes or implement new fare structures to attract and increase ridership. Opportunities include pursuing partnerships with employers and schools to provide reduced fares or free rides for their constituents. Some examples are:

- State employees: ride State Shuttle free.
- General public: ride Circulator free, George Mason partnership with CUE.
- School opportunities: AACC, St. John's College, US Naval Academy, and city schools.
- Employer opportunities: Anne Arundel Medical Center, County employees at Heritage Complex.

REGIONAL TRANSIT COORDINATION

In addition to potential changes to the Annapolis Transit fare structure is consideration of improving fare coordination with other transit providers in the region. Options include:

- Fare reciprocity of existing media (day pass, other passes) with the MTA.
- Coordinate with other providers to plan regional electronic fare system.

Advantages

- Convenient and seamless passenger experience.
- Potentially attracts ridership.
- Ability to examine data and plan services with a regional perspective.

Disadvantages

- Depends on partnerships; planning and implementation requires high level of coordination.
- Costs to implement; upgrade farebox equipment and software.
- Potentially reduces revenue from transferring riders if discount is in place.

FUNDING STRUCTURE FOR TRANSIT

The city could consider changing the funding structure for Annapolis Transit to increase transparency and accountability. One option would be to combine Transportation and Parking into one Enterprise Fund.

Advantages

- This option would remove the administrative step of transferring revenue out of a separate Enterprise Fund to the Transportation Fund. Annapolis DOT is already responsible for overseeing Parking Operations, and should have fiscal oversight over both expenditures and revenues.

Disadvantages

- The potential disadvantage to this approach is the need to differentiate between Annapolis Transit and Parking Operations budgets. This would be necessary so that the city can comply with monitoring and reporting requirements for its transit grants from MDOT MTA.

A second option would be to dissolve the Transportation Enterprise Fund and make Annapolis Transit part of the General Fund. The two main tenets behind establishing Enterprise Funds do not apply well to Annapolis Transit: local public transportation services in the United States typically do not operate like private business enterprises, and user fees do not typically cover the majority of operating costs. As shown previously in this report, FY 2017 fare revenue accounted for less than 20% of Annapolis Transit's operating budget. With federal and state grants contributing about 40% of the operating budget, the remaining 40% must be covered through local funding. While Anne Arundel County increased its contribution amount in FY 2017, the city must still pay for over 30% of the operating budget through the General Fund and the Parking Fund. There is precedent in city government in dissolving Enterprise Funds due to a historical inability to achieve self-sufficiency. For example, effective FY 2016, the Dock Fund and Market Fund were reverted to the General Fund and incorporated into the Recreation and Parks and Public Works operating budgets, respectively.

Advantages

- The city's local funding for Annapolis Transit already comes primarily from the General Fund. Dissolving the Transportation Fund could increase transparency regarding the flow of funds to and from Annapolis Transit.

Disadvantages

- N/A

TECHNOLOGY-BASED TRANSIT

In response to privately supplied technology-based, on-demand, shared-used services, compounded with declining ridership and increasing cost, public transit operators are

adopting their service delivery models to include an e-hailing component. The purpose is to retain and attract customers with a competitive priced, on-demand app-based transit service. During the past two years, transit operators have experimented with three app-enabled service delivery models. Primarily, the agencies are substituting fixed-route bus service with e-hailing service in low-density, low-demand areas as a first-mile/last-mile feeder service. The three options are identified below for consideration by the PAC. If the City of Annapolis decides upon any of these options, it is recommended that the city identifies and works with shared-used app-based companies to develop a pilot study to determine if the service is feasible within the Annapolis Transit service area.

Option 1: City of Annapolis/ Transportation Network Company Partnership

The first option is for the City of Annapolis to develop a public-private partnership with a Transportation Network Company (TNC) – i.e. Uber, Lyft, Via, Juno. With this option, the TNC would supply the service for Annapolis Transit customers, and the City of Annapolis would subsidize a portion of the passenger’s trip.

- **Option IA.** Use the TNC to serve as a first-mile/last-mile mobility solution between existing bus routes. The city would pay for customer TNC trips to/from any bus stop, up to an agreed upon distance.
- **Option IB.** Same as above, however, the city would pay for customer TNC trips to/from designated bus stops or high frequency bus routes.
- **Option IC.** Annapolis Transit customer TNC trips would be subsidized up to a dollar amount to accommodate early morning and late night shift workers,

Advantages

- On-demand, e-hailing service available to residents and visitors of Annapolis.
- Replace low productivity routes, and increase performance.
- Reduce fixed-route bus operating cost.

Disadvantages

- Must ensure TNC drivers are compliant with FTA regulations.
- Limited vehicles available for ADA paratransit and aging populations.

Option 2: City of Annapolis Operated e-Hailing Microtransit

The second option is for the City of Annapolis to work with a tech-based mobility company in which a customized app is developed for Annapolis Transit. This option allows the City of Annapolis to use their existing fleet to supply on-demand, e-hailing bus service. The app will allow customers to plan, request, pay, and track the bus to their door-step or up to two blocks away.

- **Option 2A.** Replace low productive bus routes with e-hailing bus service. The bus would operate between the origin-terminus of the replaced route, but only along major thoroughfares, and would deviate up to a $\frac{3}{4}$ -mile radius when a customer uses the app to request the bus.
- **Option 2B.** Divide the service area into quadrants (no larger than a 3-square mile radius per quadrant), and operate an on-demand, e-hailing bus. Maintain limited bus service along thoroughfares, forcing customers to transfer to major destinations.
- **Option 2C.** To accommodate early morning and late night shift workers, Annapolis Transit can replace the fixed route service with on-demand, e-hailing service..

Advantages

- On-demand, e-hailing service available to residents and visitors of Annapolis.
- Use existing fleet and personnel.
- All vehicles are ADA accessible.

Disadvantages

- Procurement of new technology and the cost to train bus operators on new technology.
- If too much demand, has the potential to increase the operating cost.

Option 3: City of Annapolis Contracted e-Hailing Microtransit

The third option is for the City of Annapolis to partner with a microtransit company (Via, TransLoc) and contract microtransit service delivery. With this option, the City of Annapolis procures a contract with a microtransit company, the company agrees to adhere to all federal compliance regulations, and operates the service.

- **Option 3A.** Replace the existing fixed-route and paratransit services with microtransit service.
- **Option 3B.** Divide the service area into quadrants (no larger than a 6-square mile radius), and operate an on-demand, e-hailing bus. Maintain limited bus service along thoroughfares in which customers can transfer.

Advantages

- On-demand, e-hailing service available to residents and visitors of Annapolis.
- Can use current bus operators to drive vehicles.
- All vehicles are ADA accessible.

Disadvantages

- Cost to purchase new app-enabled vehicles (microtransit companies are donating a select number of vehicles to agencies during the pilot testing phase).
- Ensure TNC drivers are compliant with FTA regulations.
- If too much demand, has the potential to increase the operating cost.

SUMMARY

This chapter provides a range of short-, mid-, and long-term improvements for Annapolis Transit to consider. The basic premise behind the alternatives is twofold:

1. Maintain and expand coverage to serve residential and employment growth areas.
2. Improve the appeal of Annapolis Transit through increases in service, span, and frequency.

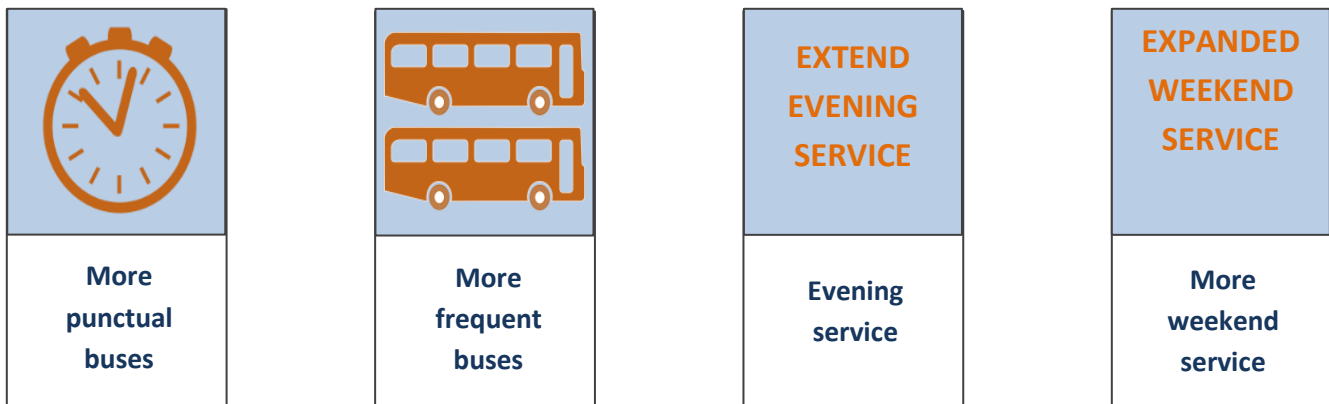
The alternatives presented are a starting point for the five-year plan. Based on feedback and guidance from Annapolis Transit and the PAC, the alternatives will be modified into a recommended plan.

Chapter 5: Transit Plan

INTRODUCTION

This five-year plan is the product of an intensive TDP process. The recommended projects were derived through detailed evaluation of existing services (Chapter 1); a comprehensive needs analysis including demographic data (Chapter 2); issues and opportunities (Chapter 3); an alternatives analysis (Chapter 4); and feedback from Annapolis Transit staff, the PAC, and MTA.

As documented in the report, the overwhelming demand was for the following:



One of the most significant features of the five-year plan is the recommendation to restore the core route network to the 2014 level of service to improve on-time performance and convenience for riders. Guidance from the Maryland Transit Administration (MDOT MTA) indicates that in the near-term there is not likely to be funding available for extensive service expansion; as such, this plan calls for a mix of primarily cost-neutral and palatable costing improvements in the short-term and expansionary projects in later years. Annapolis Transit can begin with these improvements, achieved primarily by shifting resources within the network.

The five-year plan is organized into six sections:

1. Service plan describing phased projects
2. Title VI analysis
3. Implementation schedule
4. Financial plan for operations

5. Capital plan detailing vehicle replacement and other capital needs
6. Financial plan for capital

SERVICE PLAN

The service plan is organized into three phases: short-, mid-, and long-term. It includes all of the service improvements discussed in Chapter 4: Alternatives. However, this plan reflects the decisions of the study team and Annapolis Transit staff on the preferred sub-alternatives for the route network design. Specifically, new service feeder coverage was developed by transitioning Orange Route funds to areas where greater requests for service was voiced.

Annapolis Transit will continue to provide demand response and ADA paratransit service as an equivalent service to bus route service, in accordance with applicable laws and regulations. As described in detail in Chapter 1, ADA paratransit service is available to people who live within the Annapolis Transit service area. Potential riders must submit an application form to Annapolis Transit to become certified to use ADA paratransit services. ADA paratransit service is available to people with disabilities that cannot use the fixed route bus.

Short-Term Improvements

Pilot Feeder Connection to Core Route

The new Pilot Feeder Connection Route replaces the Orange Route and links East/Central Annapolis to two of the core routes (Brown and Red) at Annapolis Market Place. The service will run weekdays from 6:00 a.m. to 7:00 p.m. on 45-minute headways. The pilot service is an initial step in determining microtransit viability within the Annapolis Transit service area. The new route connects underserved transit dependent neighborhoods that were voiced by local officials and Annapolis Transit staff.

The Pilot Feeder Connection Route will operate between Annapolis Marketplace and Bloomsbury Square, serving Forest Drive, Hilltop Lane, Spa Road, Taylor Avenue, Glenwood Street, Clay Street, St. Johns Street and Bloomsbury Square. The components of the proposed route are illustrated in Figure 5-1. Notably, this route aims to eliminate the duplicative nature of the Orange Route with the Red Route and particularly the Brown Route, considering that both of these routes have 30-minute headways. It was important to link the Pilot Feeder Connection Route to Annapolis Market Place so that riders will only require one transfer to reach both Westfield Mall and Eastport Plaza. The new Pilot Feeder Connection Route is cost-neutral. However, it would require some schedule re-design and printing.

Figure 5-1: Pilot Feeder Connection Route



Table 5-1 provides a summary of implementation details for this route. Costs are based on headways (time between buses), span of service (hours of operation per day), days of service (weekday, Saturday, Sunday), and year-round service.

Table 5-1: Pilot Feeder Connection Summary of Route

Route	Round-Trip Route Length	Estimated Speed	Cycle Time	Base Headway	Base Vehicles	Headway	Vehicles
Pilot Feeder Connection Route East/Central Annapolis to Annapolis Market Place Weekdays: 6:00 am to 7:00 pm	8.0	12	40	45	1	45	1

Route	Daily Service Span	Total Trips	Daily Miles	Daily Hours	Days Per Year	Annual Miles	Annual Hours	Cost Per Hour	Annual Operating Cost
Pilot Feeder Connection Route East/Central Annapolis to Annapolis Market Place Weekdays: 6:00 am to 7:00 pm	13	13	104	13	250	26,000	3,250	\$74.10	\$240,825

Improve Bus Stop Amenities and Accessibility

Annapolis Transit provides a range of passenger amenities (shelters, benches and trash receptacles) at a number of its bus stops throughout Annapolis. A few examples can be seen in in this section.

Bus stop amenities are currently located at some of the highest ridership stops throughout the system, though branding consistency is an issue. Amenities should be placed based on high average ridership numbers, or at unique locations that warrant them.



While passenger amenities should be placed using specific guidelines, accessible pathways to bus stops should be the standard system wide. Noting the City of Annapolis' historic characteristic non-ambulatory riders face significant challenges using the service due to a lack of accessible sidewalks. Improving access to bus stops will require a long-term coordinated effort by Annapolis Transit and the City of Annapolis.



The costs associated with bus stop passenger amenities can range from \$200 to \$15,000 depending on the amenity and whether costly engineering is required to meet the ADA's bus stop design guidelines. Specific estimated bus stop improvement costs are shown in Table 5-2.

Table 5-2: Estimated Bus Stop Improvement Costs

Improvement	Unit Cost
Shelter (installed)	\$5,000 - \$10,000
Bench (installed)	\$800 - \$1,200
Trash Can	\$20.00 - \$25.00 per linear feet
4' Wide Sidewalk	\$20.00 - \$25.00 per linear feet
Bicycle Racks	\$200 - \$500
Curb Ramps	\$2,000 - \$2,500

Mid-Term Improvements

Implement 15-minute Headways on Brown Route

The recommendation to increase frequency responds to the community survey's greatest response for residents in terms of what improvements could be made for them to try transit;

and ties into the rider survey input of increasing service reliability (knowing that the bus will be there). Annapolis Transit should decrease headways on the Brown Route to 15 minutes, Monday through Friday, thus providing the highest level of service to the key destinations and connections within Annapolis for both transit dependent and choice riders. This change will increase operating and capital equipment costs, but will also increase convenience for customers and increase ridership. The operating cost to implement 15-minute service on the Brown route Monday through Friday is estimated to be about \$250,000 annually (3,375 additional service hours). One additional vehicle would cost about \$250,000.

Implement 30-minute Headways on Pilot Feeder Connection Route

The short-term recommendation introduced the Pilot Feeder Connection Route. Based on the success of this pilot project, this recommendation calls for expanded connector service to every 30 minutes. Making this investment will strengthen the network of services since all routes will have a 30-minute frequency (except the Brown Route which would have 15-minute headways). This change will increase operating and capital equipment costs, but will also increase convenience for customers and increase ridership. The operating cost to implement 30-minute service during the day Monday through Friday is estimated to be about \$241,000 annually (3,250 additional service hours). One additional vehicle would cost about \$250,000.

Restore Circulator Hours of Service

The recommendation to increase frequency of the Annapolis Circulator, and survey respondents and other stakeholder reiterated this need. This alternative proposes increasing the frequency on the existing route to 10-minute headways within the same span of service. This service is currently contracted out by the City of Annapolis and funded using parking revenue.

Long-Term Improvements

Green Route Service Expansions

The Green Route is one of the core routes in Annapolis Transit's routing network. There are two key service expansion proposals to enrich ridership.

1. Operate service every 30 minutes on Saturdays between approximately 8:00 a.m. and 6:00 p.m. This recommendation would cost approximately \$37,000 annually in operating expenses.
2. Operate every 15 minutes on weekdays during peak hours. This recommendation would cost approximately \$111,150 annually (1,500 new service hours).

Extend Evening Hours Monday Through Saturday and New Sunday Service

Rider surveys indicated that later evening hours was a priority improvement. Annapolis Transit should extend the Brown, Green, and Red routes evening hours (Monday through Saturday) from its current ending time (operate every 75 minutes until 10:30 p.m.). Further, Sunday service would be initiated on these three routes between 7:30 a.m. and 8:00 p.m. Adding hours would accommodate late night trips and would cost about \$435,000 (5,850 additional hours for service).

Compensating this increase is a decrease in expenses due to the elimination of the Purple Route (both North and South). Approximately \$280,000 would be available to be reapportioned. No additional capital would be required.

Microtransit

Smartphone technology is transforming how people access public transit. Building upon the privately-operated Transportation Network Company (TNC) service delivery model, public transit providers across the nation are incorporating an on-demand, dynamic routing and scheduling e-hailing component, known as microtransit, into their operational practice. The primary objectives are to:

1. Serve as a First Mile-Last Mile (FM-LM) connection between low-density, low-demand areas and transit facilities/activity centers.
2. Improve system wide efficiency and productivity.
3. Leverage technology to connect customers with on-demand vehicles.

During the long-term period, there is an opportunity for the City of Annapolis to leverage emerging technologies and allow customers to use a smartphone application to plan, request, and pay for their transit trip. Similar to the TNC model, public transit customers would create an account with an agency sponsored microtransit smartphone app and connect a debit or credit card to their account. When the customer is ready to take a trip, they can open the app and enter their pick-up and drop-off locations, view the estimated pick-up, drop-off and wait times, pay for the trip, and track the vehicles exact arrival time to the trip origin. The following sections present and describe the minimum components to implement a microtransit pilot service in Annapolis.

Public-Private Partnership

The City of Annapolis will have to develop a partnership with a tech-based company to identify the technology platforms and service provider. In addition, the city can develop partnerships with local retailers, social service agencies, and community centers to ensure

equitable access to unbanked¹ customers and passengers with no access to smartphone or internet.

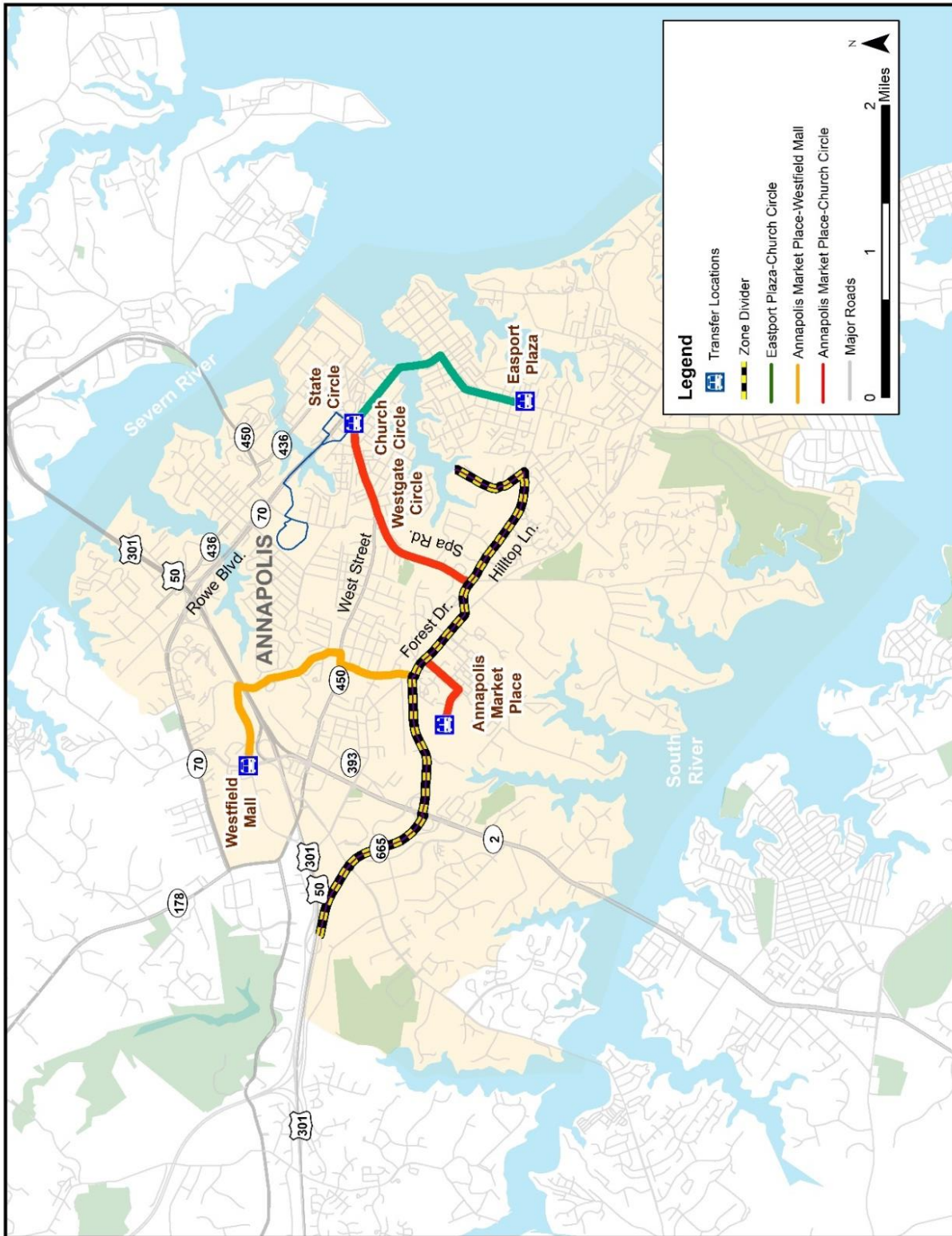
- **Technology platform.** An essential component of the program is the development of a public transit provider sponsored smartphone app. In current practice, most public entities are not equipped to develop the app. Therefore, agencies are dependent upon tech-based companies to develop the app. While the primary method prefers that passengers use a smartphone to plan, pay, and request a vehicle, the program should be designed for customers to also be able to use a desktop, laptop, or tablet.
- **Service provider.** Based on the contractual agreements, there are two options for the service operation:
 1. **In-House.** The City of Annapolis can use existing vehicles to operate the service, and install the on-board driver turn-by-turn software to connect the vehicle with the customer. The agency can also purchase new vehicles that are equipped with on-board technologies to connect with passengers.
 2. **Contractor.** The City of Annapolis can contract the service to a tech-based mobility company, in which the private company would supply the vehicles. The vehicles will be equipped with the on-board technology to connect the driver and passengers.

Service Area Provision

- **Service area.** The microtransit service should be a phased test approach, replacing the fixed-route and fixed-schedule with on-demand, e-hailing service.
 - **Phase I:** Divide the City of Annapolis into two zones. As shown in Figure 5-2, Zone 1 is the area north of Forest Drive and Hilltop Lane and Zone 2 is the area south of Forest Drive and Hilltop Lane. Within these two separate areas, passengers would be able to use their smartphone to request an on-demand vehicle anywhere within the respective zone. For those customers that need to travel between zones, they could use the on-demand bus to/from Westfield Mall, Church Circle, Eastport Plaza, and Annapolis Market Place. Three fixed-route buses could operate between the four transfer points:
 - Annapolis Market Place and Westfield Mall via Chinquapin Round Road and Admiral Drive

¹ A person is unbanked when he or she does not participate in the banking system and relies on the use of cash rather than checks or credit cards.

Figure 5-2: Microtransit



- Annapolis Market Place and Church Circle via Spa Road
- Eastport Plaza and Church Circle via Sixth Street and Main Street
- **Phase 2:** Convert entire City of Annapolis into one zone. During Phase 2, all fixed-route bus service would be eliminated.
- **Bus stops.** There are two bus stop typologies the City of Annapolis can employ:
 1. **Virtual bus stops** will allow passengers to book a trip between an infinite number of stops within the defined service area.
 2. **Designated bus stops** can be identified throughout the service area. Similar to the demand response connector model, passengers will be restricted to boarding and alighting the vehicle at one of the pre-determined designated stops.
- **First Mile-Last Mile (FM-LM).** In addition to the designated stops, the service should serve as a FM-LM connection for residents, employees, and visitors to points of interest within the City Annapolis. Table 5-3 identifies the residential areas, trip generators, and transit connections that should be included within the on-demand service zone.

Table 5-3: First Mile-Last Mile Connections

Residential	Trip Generators	Transit Connections
<ul style="list-style-type: none"> • Robinwood • Heritage Complex • Admiral Cochrane Drive • Newtowne 	<ul style="list-style-type: none"> • Westfield Mall • Annapolis Market Place (Towne Center) • Eastport Plaza • St. John's College • Annapolis Harbour Center • West Street Library • Bay Forest Center (Giant) • City Hall • City Dock 	<ul style="list-style-type: none"> • State Circle • Westfield Mall • Church Circle

- **Frequency.** While both the virtual and designated bus stop typology are on-demand and require a reservation, to ensure time-pulse connections to other transit services, scheduled departure/arrival times could be designated at the locations listed in Table 5-4.

Table 5-4: Microtransit Timed Locations

Location	Connection
Harry S. Truman Parkway	<ul style="list-style-type: none"> • Greyhound • Megabus
Westfield Mall	<ul style="list-style-type: none"> • Gold • Yellow • MDOT MTA 210 & 215 to Baltimore • Young Transportation Services to New Carrollton
Church Circle	<ul style="list-style-type: none"> • MDOT MTA 210 & 215 to Baltimore • MDOT MTA 220 & 230 to DC (1 block away at West Street & Calvert Street) • Young Transportation Services to New Carrollton

- **Walking Distance.** Will be based on the bus stop typology. If the City of Annapolis implements a virtual bus stop model, passengers will have curb-to-curb transit anywhere within the service area. With the designated bus stop model, passengers will be informed of the pickup location - varying from a minimum of direct curbside service, up to a three-block walk. Similar to the Uber Pool and Lyft Line model, each trip may have different walking distances.
- **Wait Times.** Will vary based on real-time demand and number of vehicles in service. Using the app, when customers enter their pick-up and drop-off location, they will be able to view the estimated wait time prior to paying for the trip. *Based on a review of other pilot programs, wait times are between 10 and 15 minutes from the time the customer reserves the vehicle.*
- **Service Span Hours.** Should remain comparable to the existing hours of operation. The hours can be adjusted to match demand:
 - Weekday: 5:30 a.m. - 10:30 p.m.
 - Saturday: 7:00 a.m. - 7:00 p.m.
 - Sunday: 7:00 a.m. - 8:00 p.m.

Civil Rights Compliance

To ensure the microtransit program is compliant with the Federal Civil Rights legislation, the City of Annapolis must consider alternative methods for Title VI, Environmental Justice, and ADA protected populations.

- **Unbanked customers** are persons with no bank account (debit card) or credit card. To guarantee this population group and other customers who prefer to pay cash can access the service, as part of the program, the City of Annapolis can partner with local retailers, social service agencies, and community centers. As part of the agreement, customers

will be allowed to purchase a prepaid (refillable) card or smartcard with cash in the dollar amount of their choosing. The prepaid card can be connected to the smartphone app.

- **Customers with no smartphone or internet access** can be allowed to call in to a customer center and book an on-demand vehicle within the same parameters as passengers who use a smartphone.
- **ADA complementary paratransit** is required by the FTA. If the City of Annapolis operates the service in-house with the existing vehicles, the city will remain within federal compliance. If the City of Annapolis elects to contract the service to a private tech-company, the city must ensure the contractor supplies complementary wheelchair accessible vehicles that customers can request in real-time. While the microtransit program will be considered a premium service, the City of Annapolis should maintain the traditional ADA paratransit service.

Financial

With the proliferation of publicly regulated microtransit programs across the nation, there are various funding opportunities to finance the program.

- **Federal Transit Administration (FTA).** In 2016, the FTA developed the Mobility On-Demand (MOD) Sandbox Program. Public transit agencies that established partnerships with the private sector, and developed programs that demonstrated a collaborative approach to publicly regulated on-demand, e-hailing service was awarded \$8 million. In early 2019, the FTA plans to release another round of funds for projects that demonstrate a public-private partnership to supply on-demand mobility services.

This will be an entirely new type of service for the City of Annapolis and the exact public-private partnership, service provision characteristics, civil rights compliance, and financial will require further analysis prior to implementation.

TITLE VI ANALYSIS

Title VI of the Civil Rights Act of 1964 prohibits discrimination on the basis of race, color, or national origin. Public transportation agencies have the ability and responsibility to enhance the social and economic quality of life for people in their communities. As such, public transportation agencies must ensure that changes in services do not have a disproportionately high negative impact on below poverty or minority populations.

Annapolis Transit is not required by the FTA to evaluate its service and fare changes under Title VI due to thresholds regarding UZA populations (200,000 or more) and number of vehicles operated in peak service. However, Annapolis Transit should still consider the impacts

of proposed changes based on the distribution of the city's minority and below poverty populations. Chapter 2 includes maps that show this distribution. In addition, Appendix C outlines the key service changes in light of Title VI. It includes maps that depict the distribution of below poverty and minority populations along with proposed changes.

Overall, minority and below poverty individuals stand to benefit from the proposed service changes included in this TDP, as do all Annapolis residents. The proposed routes have nearly the same geographic coverage as existing routes, and the operating changes are intended to increase service quality and availability. However, Annapolis Transit should continue its monitoring and evaluation efforts once these service changes are implemented to ensure that below poverty and minority populations do not experience adverse and disproportionate impacts.

IMPLEMENTATION SCHEDULE

The proposed projects described in the service plan are summarized below in an implementation timeline. In general, the short-term projects correspond to Year 1 and 2, the mid-term projects to Year 3 and 4, and the long-term projects to Year 5 and beyond. Actual implementation may vary due to the availability of funding and other changing conditions.

Year 1 and 2

- Implement Pilot Feeder Connection Route replaces the Orange Route and links East/Central Annapolis to two of the core routes (Brown and Red) at Annapolis Market Place. The service will run weekdays from 6:00 a.m. to 7:00 p.m. on 45-minute headways. The new Pilot Feeder Connection Route is cost-neutral, though, it would require some schedule re-design and printing.
- Complete bus stop amenities initiative – signs, shelters, benches and trash receptacles. Signage branding consistency throughout where stops are located and amenities at the highest ridership stops. \$135,000 in funding is currently available from a previous year's grant.

Year 3 and 4

- Implement 15-minute headways on the Brown Route, Monday through Friday. With a 13.5-hour span; the operating costs would be about \$250,000 annually. One additional vehicle would cost approximately \$250,000.
- Implement 30-minute headways on the Pilot Feeder Connection Route, Monday through Friday. With a 13-hour span, the operating costs would be roughly \$241,000 annually. One additional vehicle would cost approximately \$250,000.

- Work with the city to increase the frequency of the Annapolis Circulator to every 10-minute. This effort would not affect the Annapolis Transit budget.

Year 5

- Increase frequency on the Green Route to 30-minute headways throughout the day on Saturdays. This would cost \$37,000 annually. No additional capital would be required.
- Offer 15-minute peak weekday service on the Green Route (15-minute headways). This would cost \$37,000 annually. One additional vehicle would be required costing roughly \$250,000.
- Expand evening hours Monday through Saturday and new Sunday service on the three core routes (Brown, Green and Red). Extended evening service until 10:30 p.m. and new Sunday service from 7:30 a.m. to 8:00 p.m. would cost approximately \$155,000 (service cost of \$435,000 minus the savings realized from the elimination of the Purple Route). No additional capital equipment would be required.

Beyond Year 5

- Implement new microtransit service.

OTHER RECOMMENDATIONS

Potential Technology

In considering transit technology applications, it is important to understand the existing organizational structure, how functions are executed, and the organizational (personnel and equipment) capacity to implement any potential transit technology. Based on the overall mission of providing efficient transportation service, Annapolis Transit identified the need to improve schedule adherence, improve communication with riders, and tap into software technology to assist in the planning of services.

The investment in transit technology is sizeable, and it is important to understand the associated impacts, not accounted for in the unit cost estimate, prior to seriously committing to a potential option. In addition to price estimates, Annapolis Transit should consider other factors like current staff capacity to implement and monitor the new technology, training, and maintenance, compared with the overall objective of improving service and convenience. Three projects that should be explored during the TDP planning duration are described below.

Remix Routing Software

Remix is a web-hosted application for planning public transit systems. It automates the process of route and schedule scenario testing, letting planners draw routes onto a map and immediately see a potential schedule and fleet requirements. Remix allows the user to design routes in any city and immediately understand the cost and demographic impact of a proposed change. It has the capability to automatically pull in a region's existing transit networks to quickly evaluate different alternatives.

Digital Bus Depot Signs

There are a variety of digital signs displaying transit information in locations throughout the Baltimore area. These signs provide information that applies specifically to each sign's location. Transit users can get relevant information without knowing in advance what transit services are available at that location, and they do not need a smart phone with transit apps installed. On-street displays at bus stops provide real-time passenger information which keeps them up-to-date with how the bus is running, in "real-time." Prominent electronic bus stop displays and bus shelter displays enable the public to see specific information about their journey such as when their bus is due to arrive, and other general information which may have an impact on their journey.

SMS Messaging

SMS alerts allows transit agencies to broadcast system wide text alerts to riders who subscribe to the service. Types of alerts may include temporary route changes due to construction or other unforeseen circumstances, new schedules, stop relocations, additions and eliminations. Riders may also subscribe to scheduled alerts that notify them of arrival information for a particular stop.

FINANCIAL PLAN FOR OPERATIONS

Table 5-5 provides the conceptual financial plan for transit operations, including operating, maintenance, and administrative expenses for the five-year period. The estimated total budget for each year assumes all service improvements occur in the year planned and at the level of service planned.

Annapolis Transit develops an annual grant application to the MDOT MTA that includes operating and capital grant requests. This grant application must be approved by the city each year. Maryland's transit program combines available federal and state funds to provide local assistance, and the allocation to the different localities is not strictly formula driven. Therefore, any estimate for the amount of grant funding available to the City of Annapolis is somewhat speculative. The amounts for local jurisdictions, state, and federal shares of the total operating

budget in Table 5-5 are based on the shares in the FY 2018 ATP transportation award. Annapolis Transit's annual proposals will have to compete in a discretionary program.

The TDP serves an important role in the MTA's annual process of reviewing grant applications: typically, the projects proposed in Annapolis Transit's annual grant application had to have been identified in the TDP in order to receive funding.

Table 5-5: Conceptual Operations Financial Plan

Projects	Short and Mid-Term					Long Term
	Year					
	1	2	3	4	5	
FY 2020 Operating Budget with Inflationary Increase ¹	\$3,691,335	\$3,802,075	\$3,916,137	\$4,033,621	\$4,154,630	
Pilot Feeder Connection Route	X	X	X	X	X	
Complete Bus Stop Initiative	X	X	X	X	X	
15-minute Headway on the Brown Route			\$ 273,277	\$ 281,476	\$ 289,920	
30-minute Headway on the Pilot Feeder Connection Route				\$ 271,051	\$ 279,182	
10-minute Headways for the Annapolis Circulator				X	X	
30-minute Headway on Saturday for Green Route					\$ 42,951	
15-minute Headway Weekdays on Green Route					\$ 128,853	
Additional Evening Hours (M-Sat.) and Sunday Service					\$ 180,395	
Microtransit						TBD
Total New Operating Expenses	\$ -	\$ -	\$ 273,277	\$ 552,526	\$ 921,301	TBD
Subtotal Proposed Transit Operating Expenses	\$3,691,335	\$3,802,075	\$4,189,415	\$4,586,148	\$5,075,931	

Anticipated Funding Sources for Operating	1	2	3	4	5
State					
Large Urban	\$1,870,162	\$1,926,267	\$1,984,055	\$2,043,577	\$2,104,884
ADA	\$247,776	\$255,209	\$262,866	\$270,752	\$278,874
Subtotal State	\$2,117,938	\$2,181,476	\$2,246,920	\$858,626	\$2,383,758
Local					
Passenger Fares-Fixed Route and ADA ²	\$882,229	\$908,696	\$1,001,270	\$1,096,089	\$1,213,148
Advertising ²	\$70,135	\$72,239	\$79,599	\$87,137	\$96,443
General Funds	\$621,033	\$639,664	\$861,625	\$1,088,594	\$1,382,583
Subtotal Local	\$1,573,397	\$1,620,599	\$1,942,494	\$2,271,820	\$2,692,173
Total Projected/Proposed Operating Revenues	\$3,691,335	\$3,802,075	\$4,189,415	\$4,586,148	\$5,075,931

¹Operating Budget includes fixed routes and ADA; 3% annual inflation factored each year.

²Farebox recovery ratio of 23.9% based on FY 2018 Actuals.

³Advertising revenue assumes 1.9% of operating expense per year based on FY 2018 Actuals.

CAPITAL PLAN

This section details the capital infrastructure needed to maintain the current level of service and to implement the operating plan presented above. The capital plan includes a vehicle replacement plan to improve the quality of service of the existing transit system. The capital plan for the vehicles applies FTA/MDOT MTA vehicle replacement standards to the Annapolis Transit current fleet. These vehicle replacement standards are as follows:

- Heavy Duty Bus (over 35'): at least 12 years of service or 500,000 miles.
- Heavy Duty Bus (under 35'): at least ten years of service or 350,000 miles.
- Medium Duty Bus (under 30', > 15,000 lbs): at least eight years of service or 250,000 miles.
- Light Duty Small Bus (15,000 lbs or less): at least six years of service or 200,000 miles.
- Raised Roof Vans, Standard Vans, Mini-Vans, and Automobiles: at least four years of service and 150,000 miles; at least five years of service and 100,000 miles; or at least six years of service regardless of mileage.

The builders of these vehicles are required to designate the projected life cycle when the vehicles are submitted for testing by the FTA, and the vehicles are designed to meet these standards. If vehicles greatly exceed the expected life, the consequent maintenance costs for over-age vehicles can significantly increase operating costs. In addition, the reliability of vehicles generally declines as they age, particularly after their design life is exceeded. This decrease in vehicle reliability also affects operating costs and impacts the quality of service for passengers. A vehicle replacement and expansion program is necessary to maintain a high quality fleet and to dispose of vehicles.

Table 5-6 details the Annapolis Transit fleet with projected mileage (based on current services), useful life status in relation to MDOT MTA's replacement schedule, and projected replacement years.

Table 5-6: Annapolis Transit Fleet

Agency Fleet Number	Model Year	Vehicle Type	Current Mileage	Useful Life Criteria (Miles)	Eligible Replacement Fiscal Year
253	2005	Bus Medium Duty	146,598	250,000	2012
256	2005	Bus Medium Duty	162,620	250,000	2012
400	2008	Bus Heavy Duty Med	96,941	350,000	2018
401	2008	Bus Heavy Duty Med	87,731	350,000	2018
402	2009	Bus Heavy Duty Med	49,379	350,000	2018
5209	2009	Bus Heavy Duty Med	461,881	350,000	2019
5409	2009	Bus Heavy Duty Med	448,140	350,000	2019
5111	2011	Bus Heavy Duty Med	344,731	350,000	2026
5211	2011	Bus Heavy Duty Med	356,924	350,000	2026
5311	2011	Bus Heavy Duty Med	383,890	350,000	2021
5411	2011	Bus Heavy Duty Med	340,525	350,000	2026
5511	2011	Bus Heavy Duty Med	356,137	350,000	2026
4311	2011	Bus Heavy Duty Med	231,280	350,000	2021
1800	2018	Bus Light Duty	22,439	200,000	2023
1801	2018	Bus Light Duty	40,617	200,000	2021
1802	2018	Bus Light Duty	43,809	200,000	2021
90	2008	Support Car Truck	164,846	200,000	2014
73	2011	Support Car Truck	79,229	200,000	2016
74	2011	Support Van	65,802	200,000	2017
7	2013	Support Car Truck	43,455	200,000	2018
1711	2014	Support Car Truck	46,301	200,000	2020

FINANCIAL PLAN FOR CAPITAL

Table 5-7 provides the financial plan for vehicle replacement and expansion. The plan is based on the vehicle replacement needs identified above, beginning with FY 2020. No additional

vehicles are required to implement the short-term projects, and for the mid-term projects, only nominal capital is required (one vehicle in Year 4 and 5). Likewise, only one long-term project requires an additional vehicle.

Table 5-7: Conceptual Operations Financial Plan¹

	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
Number of Vehicles					
Replacement	3	2	3	3	3
Expansion	-	-	1	1	1
Total	3	2	4	4	4
Vehicle Type					
Small Cutaway	-	-	-	-	-
Medium Under 30' - 23 Passenger	3	2	4	4	4
Support Vehicle	-	-	-	-	-
Total	3	2	4	4	4
Vehicle Costs					
Replacement	\$ 750,000	\$515,000	\$795,675	\$819,545	\$844,132
Expansion	--	--	\$265,225	\$273,182	\$281,377
Total Projected Costs	\$ 750,000	\$515,000	\$1,060,900	\$1,092,727	\$1,125,509
Anticipated Funding Sources					
Federal	\$ 600,000	\$ 412,000	\$ 848,720	\$ 874,182	\$ 900,407
State	\$ 75,000	\$ 51,500	\$ 106,090	\$ 109,273	\$ 112,551
Local	\$ 75,000	\$ 51,500	\$ 106,090	\$ 109,273	\$ 112,551
Total Projected Funding	\$ 750,000	\$ 515,000	\$1,060,900	\$1, 092,727	\$1, 125,509

¹Based on FY 2019 ATP plus 3% inflation factor.

OTHER CAPITAL EXPENSES AND FUNDING SOURCES

The financial plan for equipment and other capital is provided in Table 5-8. These expenses are associated with passenger amenity and information improvements, as well as tools and communication upgrades. The other identified capital needs were included to upgrade the expansion vehicles with the necessary communication equipment.

Table 5-8: Financial Plan for Other Capital Equipment

Projects	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
Facilities and Maintenance					
Preventive Maintenance	\$ 450,000	\$ 463,500	\$ 477,405	\$ 491,727	\$ 506,479
Technology					
Remix – Routing Software	\$ 12,000	\$ 12,000	\$ 12,000	\$ 12,000	\$ 12,000
Three (3) Electronic Bus Depot Signs	\$ 17,000	\$ -	\$ -	\$ -	\$ -
SMS Messaging	\$ -	\$ -	\$ -	\$ -	\$ -
Passenger Amenities					
	--	--	--	--	--
Total Projected Non-Vehicle Capital Expenses	\$ 479,000	\$ 475,500	\$ 489,405	\$ 503,727	\$ 518,479

Anticipated Funding Sources	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023
Federal/State	\$ 431,100	\$ 427,950	\$ 440,465	\$ 453,354	\$ 466,631
Local	\$ 47,900	\$ 47,550	\$ 48,940	\$ 50,373	\$ 51,848
Total Projected Non-Vehicle Capital Funds	\$ 479,000	\$ 475,500	\$ 489,405	\$ 503,727	\$ 518,479

¹Based on FY 2019 ATP plus 3% inflation factor.

BENEFITS OF THE TRANSIT PLAN

This TDP presents recommendations for transit improvements in the City of Annapolis that:

- Improve service through progressive route modifications to make transit attractive and usable.
- Meet identified transportation needs including access to jobs, schools, and medical services.
- Provide transit infrastructure improvements to support continued growth in transit services.

This plan aims to improve services within the confines of the city's relatively flat transit operating budget. Some recommendations may be implemented through cost-neutral changes of transit policies and practices. New services and transit improvements that would require additional funding were developed to address issues identified during the needs analysis and depend on the future availability of new or additional funding. With the uncertain economy, public transportation can contribute to the quality of life of city residents

by providing a way for residents to get to work and school, access necessary medical services, and support local business and economic development.

Appendix A

City of Annapolis Community Transportation Survey



City of Annapolis Community Transportation Survey

The City of Annapolis is conducting a Transit Development Plan, which will guide the local transit system, Annapolis Transit, in implementing service improvements during the next five years. Your input will help us better understand the travel patterns and transit needs of city residents, workers, and visitors. Thank you for sharing your opinions!

Please help us learn more about the transit needs of Annapolis by completing this survey.

1. What is your primary mode of transportation?

Please check only one.

- Car Taxi Walk Bicycle Uber/Lyft
 Public transportation
 A friend or family member drives
 Other: _____

2. Are you aware of the services provided by Annapolis Transit? Yes No

a. If yes, please rate your overall impression of Annapolis Transit services?

- Positive Neutral Negative

3. Do you use any of the following public transportation services? Please check all that apply.

- Annapolis Transit MTA Commuter Bus
 MTA Local/Express Bus MTA Light Rail
 WMATA Metrorail MARC Train
 Amtrak Vanpools or carpools
 RTA (Connect-A-Ride/ Howard Transit)
 Young Transportation Services
 Taxis Uber/Lyft Other: _____

4. If you do currently use public transportation services, how frequently do you use them?

- 5 days/week or more
 1-4 days/week
 Less than 1 day/week

5. Are there specific destinations you need to go to on a regular basis that transit does not serve?

- Yes No

a. If yes, where: _____

6. What is your zip code? _____

7. Do you have a driver's license? Yes No

8. Do you have a car available to drive on a regular basis?

- Yes No

9. Please indicate your age:

- 17 or under 18-24 25-44
 45-59 60 or older

10. How would you classify yourself? Check all that apply.

- Caucasian/White African American/Black
 Asian American Indian/Alaska Native
 Native Hawaiian/Other Pacific Islander
 Other: _____

11. If you DO NOT currently use public transportation, what improvements would be needed for you to ride public transportation? Please check your top 3.

- More frequent service Shorter travel time
 Longer hours of service Fewer transfers
 Better service reliability Safer vehicles
 Real-time passenger information
 Electronic fare payment (smartphone, SmarTrip card)
 Employer provided transit benefit
 Guaranteed ride home for emergencies/overtime
 Better connections to MTA bus service

More direct service from _____
to _____ *Provide specific locations.*

Other: _____

12. Are you aware that Annapolis Transit provides a free Circulator downtown? Yes No

13. Are you aware that you can get real-time information about the scheduled arrival time and location of the Circulator bus via the Circulator website or app?

- Yes No

14. How would you prefer to receive information about public transportation? Please check your top 3.

- Website Bus Stops Brochure
 Email Direct Mail City Government
 TV Social Media Friends/Family
 Radio Newspaper Other: _____

15. Which of the following best describes your current employment status? You may check more than one.

- Employed, full-time Employed, part-time
 Student, full-time Student, part-time
 Retired Homemaker
 Unemployed Other: _____

16. What is your annual household income?

- \$20,000 or less \$21,000 to \$40,000
 \$41,000 to \$60,000 \$61,000 to \$80,000
 \$Over 80,000 Don't Know

17. Are you of Hispanic or Latino origin? Yes No

18. Do you speak a language other than English at home?

- Yes No

a. If yes, what is this language? _____
For example: Spanish, Korean, Chinese.

b. If yes, how well do you speak English?

- Very Well Well Not Well Not at All

Encuesta sobre el transporte en la comunidad para la Ciudad de Annapolis



La Ciudad de Annapolis está desarrollando un Plan de Desarrollo del Tránsito. El Plan servirá como guía para el sistema de tránsito local en la implementación de mejores de servicios durante los próximos cinco años. Con su ayuda, podemos entender mejor los patrones de viaje y las necesidades de tránsito en el Ciudad de Annapolis. Para completar esta encuesta en línea, por favor visite a https://es.surveymonkey.com/r/AnnapolisTransit_EncuestaParaLaComunidad. Gracias.

Para ayudarnos a aprender más sobre las necesidades de tránsito el Ciudad de Annapolis, por favor complete esta encuesta.

1. ¿Cuál es su método **principal** de transporte?
(Por favor, seleccione solamente una opción.)
 Vehículo Taxi A pie Bicicleta
 Uber/Lyft Transporte público
 Me lleva un amigo o pariente que maneja
 Otro: _____
2. ¿Sabe usted los servicios suministrados por Annapolis Transit? Sí No
 - a. Si respondió sí, por favor, indique su impresión general de los servicios de Annapolis Transit.
 Positiva Neutra Negativa
3. ¿Utiliza usted algunos de los siguientes servicios de transporte público? (Por favor, seleccione todos los que aplican)
 Annapolis Transit Bus suburbano del MTA
 Bus local/expreso del MTA Light Rail del MTA
 Tren metropolitano del WMATA Tren del MARC
 Amtrak Vehículo o furgoneta compartido
 RTA (Connect-A-Ride/ Howard Transit)
 Young servicios de transporte
 Taxis Uber/Lyft Otro: _____
4. Si usted utiliza los servicios de transporte público, ¿con qué frecuencia los utiliza?
 5 días por semana o más
 1-4 días por semana
 Menos de 1 día por semana
5. ¿Existen algunos destinos específicos donde usted tiene que ir con regularidad que no tienen servicio de tránsito público? Sí No
 - a. Si responde sí, ¿dónde? _____
6. ¿Cuál es su código postal? _____
7. ¿Tiene usted una licencia de conducir? Sí No
8. ¿Tiene usted un vehículo a su disponibilidad para manejar con regularidad? Sí No
9. Por favor, indique su edad:
 17 ó menos 18-24 25-44 45-59 60 ó más
10. ¿Cómo se clasificaría usted? (Por favor seleccione todas las opciones que aplican)
 Blanco(a) Afro-americano(a)/negro(a)
 Asiático(a) Indígena americano(a)/Nativo(a) de Alaska
 Nativo(a) de Hawaii/de otra isla del pacífico
 Otro: _____
11. Si usted NO utiliza el transporte público, ¿cuáles mejoras se necesitarían para que usted pueda usar el transporte público?
(Por favor escoja los 3 más importantes para usted)
 Servicio más frecuente Tiempo de viaje más corto
 Horarios de servicio más largos Menos transferencias
 Mejor confianza en el servicio Vehículos más seguros
 Información en tiempo real
 Pago de tarifa electrónica (smartphone, SmarTrip card)
 Beneficios de tránsito proporcionado por el empleador
 Transporte garantizado a casa en caso de emergencia o sobretiempo
 Conexiones mejoras a los servicios de autobus de MTA
 Servicio más directo desde _____ a _____ (Especifique los lugares)
 Otro: _____
12. ¿Sabe usted que Annapolis Transit proporciona un servicio del Circulator gratuito al centro? Sí No
13. ¿Sabe usted que información del horario y locación del Circulator bus en tiempo real está disponible por el app o sitio web de Circulator?
 Sí No
14. ¿Cómo preferiría recibir información sobre el transporte público? (Por favor, seleccione todas las opciones que aplican)
 Internet Paradas de buses Folleto
 Correo Correo directo Oficina de la ciudad o condado electrónico
 Televisión Medios sociales Amigos/parientes
 Radio Periódico Otro: _____
15. ¿Cuáles de las siguientes opciones describen mejor su situación actual de empleo? (Puede seleccionar más de una)
 Empleado, a tiempo completo Empleado, a medio tiempo
 Estudiante, a tiempo completo Estudiante, a medio tiempo
 Retirado Ama de casa
 Desempleado Otro: _____
16. ¿Cuál es el ingreso total de los miembros de su hogar?
 \$20.000 ó menos \$21,000 a \$40.000
 \$41.000 a \$60.000 \$61.000 a \$80.000
 Mas de \$80.000 No sé
17. ¿Es usted de origen hispano o latino? Sí No
18. ¿Habla usted inglés? Sí No
 - a. Si respondió sí, indique el nivel que habla inglés?
 Muy bien Bien Más o menos No para nada

Por favor, continúe al reverso

Appendix B

Annapolis Transit Rider Survey

Annapolis Transit – RIDER SURVEY

Annapolis Transit is conducting a Transit Development Plan, and we need to better understand the travel patterns of our riders. Please complete this survey for your current bus trip. If you have already completed a survey, you do not need to fill this out again. To complete this survey online, please visit: https://www.surveymonkey.com/r/AnnapolisTransit_RiderSurvey
Thank you for sharing your opinions!

1. What route or service are you riding for this trip?

- Red Route Orange Route Green Route Purple Route State Shuttle
 Yellow Route Gold Route Brown Route Circulator Paratransit

2. Where did your trip start? Please indicate the street address, intersection, building, or landmark. *For example, Westfield Mall or Stadium Park & Ride.* Please do not use vague terms, such as “home” or “work.”

3. What is your final destination? Please indicate the street address, intersection, building, or landmark. *For example, Eastport Plaza.* Please do not use vague terms such as “home” or “work.”

4. If you are transferring to/from another bus to complete your trip, please indicate which route. Otherwise skip to Question 5.

- Red Route Gold Route Purple Route MTA Commuter Bus MTA Local Bus
 Yellow Route Green Route Circulator Young Transportation Services
 Orange Route Brown Route State Shuttle Other: _____

5. How did you get to or from the bus stop? You may check more than one.

- Walked Drove myself Taxi Other: _____
 Bicycle Got a ride Uber/Lyft

6. Approximately how long will it take you to make this bus trip?

- 30 minutes or less 31-45 minutes 46-60 minutes More than 60 minutes

7. What is the purpose of your bus trip today? You may check more than one.

- Work School Medical Government Service
 Shopping Social/Recreation Other: _____

8. Please rate Annapolis Transit in the following areas:

	<u>Strongly Satisfied</u>	<u>Satisfied</u>	<u>Neutral</u>	<u>Dis-satisfied</u>	<u>Strongly Dis-satisfied</u>	<u>No Opinion</u>
a. Frequency of Bus Service	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Areas Served by Bus Routes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Bus Running On-Time	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Hours of Bus Service	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. Weekend Bus Service	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f. Availability of Transit Information	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g. Cost of Bus Fare	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h. Sense of Security on Buses/at Stops	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i. Reliability and Condition of Vehicles	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
j. Courtesy/Friendliness of Bus Drivers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
k. New electronic fareboxes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
l. Overall Service	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

9. What service improvements would you like to see? Please check your top 3.

- Cleaner buses Earlier morning hours Better on-time performance
 Safer buses Later evening hours More bus shelters & benches
 Lower fares More Sunday service Service information at stops
 Electronic fare payment (smartphone, SmarTrip card) Real-time information on bus arrivals
 More direct service between _____ and _____ *Provide specific locations.*

10. Are there specific destinations you need to go to on a regular basis that transit does not serve? Yes No

- a. If Yes, please describe: _____

Please tell us a little about yourself:

11. How often do you ride Annapolis Transit?

- 5 days/week or more 1-4 days/week Less than 1 day/week

12. Do you have a car? Yes No

13. If Yes, was a car available for this trip? Yes No

14. Do you have a driver's license? Yes No

15. Do you have a cell phone with Internet access? Yes No

16. Are you: Male Female

17. Please indicate your age group:

- 17 or under 18-24 25-44 45-59 60 or older

18. What is your employment status? You may check more than one.

- Employed, full-time Student, full-time Retired Unemployed
 Employed, part-time Student, part-time Homemaker Other: _____

19. What is your total annual household income?

- \$20,000 or less \$41,000 - \$60,000 Over \$80,000
 \$21,000 - \$40,000 \$61,000 - \$80,000 Don't Know

20. How would you classify yourself? Please check all that apply.

- Caucasian/White African American/Black Asian
 American Indian/Alaska Native Native Hawaiian/Other Pacific Islander Other: _____

21. Are you of Hispanic or Latino origin? Yes No

22. Do you speak a language other than English at home? Yes No

a. If Yes, what is this language? _____ *For example, Spanish, Korean, Chinese.*

b. If Yes, how well do you speak English? Very Well Well Not Well Not at All

23. Please provide any comments you may have concerning public transportation in the Annapolis area:

24. If you would like to receive updates about the Transit Development Plan, please provide your contact information:

Name: _____ Email: _____

Thank you!

If you need additional time to complete the survey, please return it to an Annapolis Transit bus driver or mail it to:
KFH Group, 4920 Elm Street, Suite 350, Bethesda, MD 20814

Annapolis Transit – ENCUESTA PARA LOS PASAJEROS

Annapolis Transit esta conduciendo una investigación de transporte público y tenemos la intención de entender la demanda para los servicios de transporte públicos de los pasajeros. Por favor, complete esta encuesta para su viaje de autobús actual. Si usted ya ha llenado una encuesta, usted no necesita llenarla de nuevo. Para completar esta encuesta en línea, por favor visite a https://es.surveymonkey.com/r/AnnapolisTransit_EncuestaParaLosPasajeros. Gracias.

1. ¿En cuál ruta se encuentra ahora?

- Ruta Roja Ruta Naranja Ruta Verde Ruta Purpura State Shuttle
 Ruta Amarillia Ruta Oro Ruta Cafe Circulator Paratransit

2. ¿Dónde empezó su viaje? Por favor indique la calle, intersección, edificio o sitio de referencia. (Por ejemplo: Westfield Mall). Por favor de no usar términos como “casa” o “trabajo”.

3. ¿Cuál es su destino? Por favor indique la calle, intersección/esquina, edificio o sitio de referencia. (Por ejemplo: Eastport Plaza). Por favor de no usar términos como “casa” o “trabajo”.

4. Si se va a transferir en este viaje, ¿desde cual servicio se transfirió o a cual servicio se va a transferir?

- Ruta Roja Ruta Oro Ruta Purpura Bus suburbano del MTA Bus local del MTA
 Ruta Amarillia Ruta Verde Circulator Young servicios de transporte
 Ruta Naranja Ruta Café State Shuttle Otra: _____

5. ¿Cómo llegó a la parada para este autobús? Usted puede identificar más de una razón.

- Caminando Manejando Taxi Otra: _____
 Bicicleta Paseo de alguien Uber/Lyft

6. ¿Aproximadamente, cuánto tiempo tomará para completar este viaje en autobús?

- 30 minutos o menos 31 a 45 minutos 46 a 60 minutos Más de 60 minutos

7. ¿Cuál es la razón de su viaje en autobús hoy? Usted puede identificar más de una razón.

- Trabajo (Empleo) Escuela Atención Médica Agencia Gubernamental
 Ir de Compras Social/Recreación Otra razón: _____

8. Por favor evalúe al Annapolis Transit en los siguientes áreas:

		<u>Muy satis- fecho(a)</u>	<u>Satis- fecho(a)</u>	<u>Neu- tro(a)</u>	<u>Insatis- fecho(a)</u>	<u>Muy insa- tisfecho(a)</u>	<u>Sin opinión</u>
a.	Frecuencia del servicio de autobuses	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b.	Areas donde funcionan las rutas de autobuses	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c.	Puntualidad de los autobuses	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d.	Horario de servicios de los autobuses	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e.	Servicio de autobús durante el fin de semana	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f.	Disponibilidad de información sobre el tránsito	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g.	Costo del pasaje de los autobuses	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h.	Sentido de seguridad en los autobuses/ las paradas	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i.	Confianza y condición del vehículo	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
j.	Cortesía y amabilidad de los conductores de los autobuses	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
k.	Nuevo tarifa del autobús electrónica	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
l.	El servicio en general	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

9. ¿Cuáles mejoramientos de servicios de este servicio preferiría? Por favor identifique tres preferencias:

- Autobuses limpios Servicio mas temprano Llegar a tiempo
 Autobuses seguros Servicio a noche Mas marquesinas y bancos
 Tarifa menor/rebajada Mas servicio en Domingo Información de servicios a la parada
 Pago de tarifa electrónica (smartphone, SmarTrip) Información en tiempo real de horas de llegada
 Servicio mas directo entre _____ y _____ *Facilitar ubicaciones específicas.*

10. ¿Hay sitios donde usted necesita ir que no tienen servicios del Annapolis Transit? Sí No

a. Si respondió sí, ¿dónde? _____

Por favor díganos un poco sobre usted:

11. ¿Con que frecuencia viaja usted en los servicios de Annapolis Transit?
 5 días por semana o más 1 a 4 días por semana Menos de 1 día por semana
12. ¿Tiene vehículo? Sí No
13. ¿Si marcó "Sí", el vehículo fue disponible para tomar este viaje? Sí No
14. ¿Tiene permiso de conducir / manejar? Sí No
15. ¿Tiene usted un teléfono celular con acceso al internet? Sí No
16. ¿Es usted: varón? hembra?
17. ¿Cuál es tu grupo de edad? (Años):
 Menos de 17 18 a 24 25 a 44 45 a 59 Más de 60
18. ¿Cuál describe mejor su situación actual de empleo? Usted puede marcar más de una posibilidad:
 Empleado, a tiempo completo Estudiante, a tiempo completo Retirado Desempleado
 Empleado, a tiempo parcial Estudiante, a tiempo parcial Ama de Casa Otra: _____
19. ¿Cuál es el ingreso total de los miembros de su hogar?
 Menos de \$20.000 \$41.000 - \$60.000 Más de \$80.000
 \$21.000-\$40.000 \$61.000 - \$80.000 No sé
20. ¿Cómo se clasificaría usted? Por favor seleccione todas las opciones que aplican:
 Blanco(a) Afro-americano(a)/negro(a) Asiático(a)
 Indígena americano(a)/Nativo(a) de Alaska Nativo(a) de Hawaii/de otra isla del pacífico
 Otro: _____
21. ¿Es usted de origen hispano o latino? Sí No
22. ¿Habla usted inglés? Sí No
a. Si respondió sí, indique el nivel que habla inglés?
 Muy bien Bien Más o menos No para nada
23. Por favor, haga cualquier comentario que tenga acerca del transporte público del Annapolis:

24. Si desea recibir información al día acerca del Plan de desarrollo del tránsito para el Annapolis, por favor indique cómo podemos comunicarnos con usted:

Nombre: _____ Correo electrónico: _____

¡Gracias!

Por favor, devuelva esta encuesta a conductor de autobus de Annapolis Transit o envíe la encuesta por correo a:
KFH Group, 4920 Elm Street, Suite 350, Bethesda, MD 20814

Appendix C

Title VI of the Civil Rights Act of 1964

Appendix C

Title VI of the Civil Rights Act of 1964

Title VI of the Civil Rights Act of 1964 prohibits discrimination on the basis of race, color, or national origin. The FTA provides guidance to help public transportation agencies verify that service and fare changes are not discriminatory in nature. The Annapolis Department of Transportation can take the following steps when evaluating service changes:

- Describe proposed changes and the rationale behind them.
- Describe the impacts of service changes on below poverty and/or minority communities. In particular, establish why the proposed service would not have a disproportionately high and adverse effect on below poverty and/or minority populations.
- Describe transit alternatives available to riders impacted by proposed changes and identify measures that would be taken to avoid, minimize, or mitigate any adverse effects. Also describe any enhancements or offsetting that would be implemented in conjunction with the service.
- Describe how the agency intends to reach out and involve minority and below poverty populations to make sure their viewpoints are considered.
- Determine whether it is necessary to disseminate information that is accessible to Limited English Proficient (LEP) persons. If so, describe the steps that will be taken to provide information in languages other than English.

MINORITY AND BELOW POVERTY INVOLVEMENT

To satisfy the requirements of Title VI, the Annapolis Department of Transportation will continue to reach out to minority and below poverty populations to make sure their viewpoints are considered. The Annapolis Department of Transportation uses press releases, advertising, public notices, websites, rider bulletins, and other means to communicate with the general public, minorities, and below poverty populations. The Annapolis Department of Transportation advertises public meetings in the local newspaper, onboard vehicles, and issues press releases on service changes and proposals.

The Annapolis Department of Transportation staff members also regularly attend community events to publicize available transit options and involve minorities and below poverty individuals. The Annapolis Department of Transportation staff visit schools, senior/assisted-living complexes, and human service agencies to engage segments of the population that tend not to provide input.

LIMITED ENGLISH PROFICIENCY

The Annapolis Department of Transportation must determine whether it is necessary to disseminate information accessible to persons with LEP. According to the 2011-2015 ACS five-year estimates, about 5,800 residents in the service area speak English less than “very well” and are considered to have limited English proficiency. Spanish is the top language, spoken by over 60% of the LEP population. Annapolis Transit already provides service information in Spanish on its system map brochures, in bus shelters, and on notices regarding service and fare changes. Annapolis Transit conducts passenger and community surveys in both English and Spanish and hires Spanish speaking bus operators.

PROPOSED SERVICE CHANGES

This Title VI analysis only considers one of the proposed service changes in depth: the Pilot Feeder Connection Route. For the other proposed changes, minority and below poverty individuals will likely share proportionately (if not more so) in the benefits. No measures to avoid, minimize, or mitigate adverse effects, or enhancements or offsetting, would need to be implemented to ensure non-discrimination.

Implementing new Sunday service, adding additional evening hours, and reducing headways during the day and peak hours are changes that increase the level of service of the entire system. These service changes do not come at the expense of reductions in service in other areas. For those improvements that do pertain to particular routes (i.e., peak headways and weekend service on only the core routes), the routes were chosen due to current activity in order to benefit the greatest number of riders.

Maps of the City of Annapolis’ minority and below poverty populations are shown in Chapter 2. In Census block groups where the population in question is greater than the average for all block groups, Annapolis Transit should demonstrate that any proposed service and fare changes avoid discrimination. The relevant service changes are listed below, including information to help verify that the changes are not discriminatory in nature.

Pilot Feeder Connection to Core Route

- The new Pilot Feeder Connection replaces the Orange Route and links East/Central Annapolis to two of the core routes (Brown and Red) at Annapolis Market Place. Route frequencies either remain the same or increase for this portion of the service area. As shown in Figure A-1, the redesign focuses on serving new areas of the City not currently served.
- The redesign is unlikely to have a disproportionately high and adverse effect on below poverty or minority populations. Service is only eliminated on one short segment in the network – Tyler Avenue.

- Due to the minor nature of the coverage changes, no measures to avoid, minimize, or mitigate adverse effects, or enhancements or offsetting, would need to be implemented to ensure non-discrimination.

Figure A-1: Title VI Analysis – Pilot Feeder Connection Route

