

# Williamsburg Area Transit Authority

## *Transit Development Plan Comprehensive Operational Analysis Final Report*

June 2016



Prepared for  
Williamsburg Area Transit Authority



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# Executive Summary

## INTRODUCTION

The development of the combined WATA Transit Development Plan (TDP) and Comprehensive Operational Analysis (COA) has included the following major tasks:

1. An overview of public transportation in the WATA service area.
2. The discussion and revision of goals, objectives, and standards.
3. A detailed analysis of the current transit services operated by WATA.
4. An analysis of WATA staffing.
5. Passenger and community surveys.
6. An analysis of unmet, current, and future transit needs in the region.
7. The development of COA and TDP alternatives for consideration.
8. The development of a series of recommendations for both the COA and the TDP.
9. A long-range forecast for inclusion in the 2040 Long Range Transportation Plan.

Significant stakeholder outreach has occurred through the process, including rider input through an on-board survey; community input through a general survey; staff input, through individual interviews; and community stakeholder input, through both a working group as well as individual interviews.

This executive summary details the specific projects that WATA and local stakeholders have chosen to implement, presented as short-term and vision phases. The short-term projects follow a six-year timeline, and three of the vision projects have been tentatively assigned to the later years of the plan. Including the vision projects in the plan allows WATA to adapt to changing circumstances, and consider accelerated implementation during its yearly reviews, if funding opportunities are presented. The operations plan includes the changes planned for the route network, system-wide improvements, staffing recommendations, fare and pass changes, and infrastructure and communications improvements. Companion capital and financial plans were also prepared.

The Plan is organized into the following six sections, with the highlights described in this Executive Summary:

- Changes to Current Routes and Potential New Routes
- System-Wide Improvements
- Staffing
- Fare and Pass Improvements
- Infrastructure and Communications Improvements
- Vision Projects

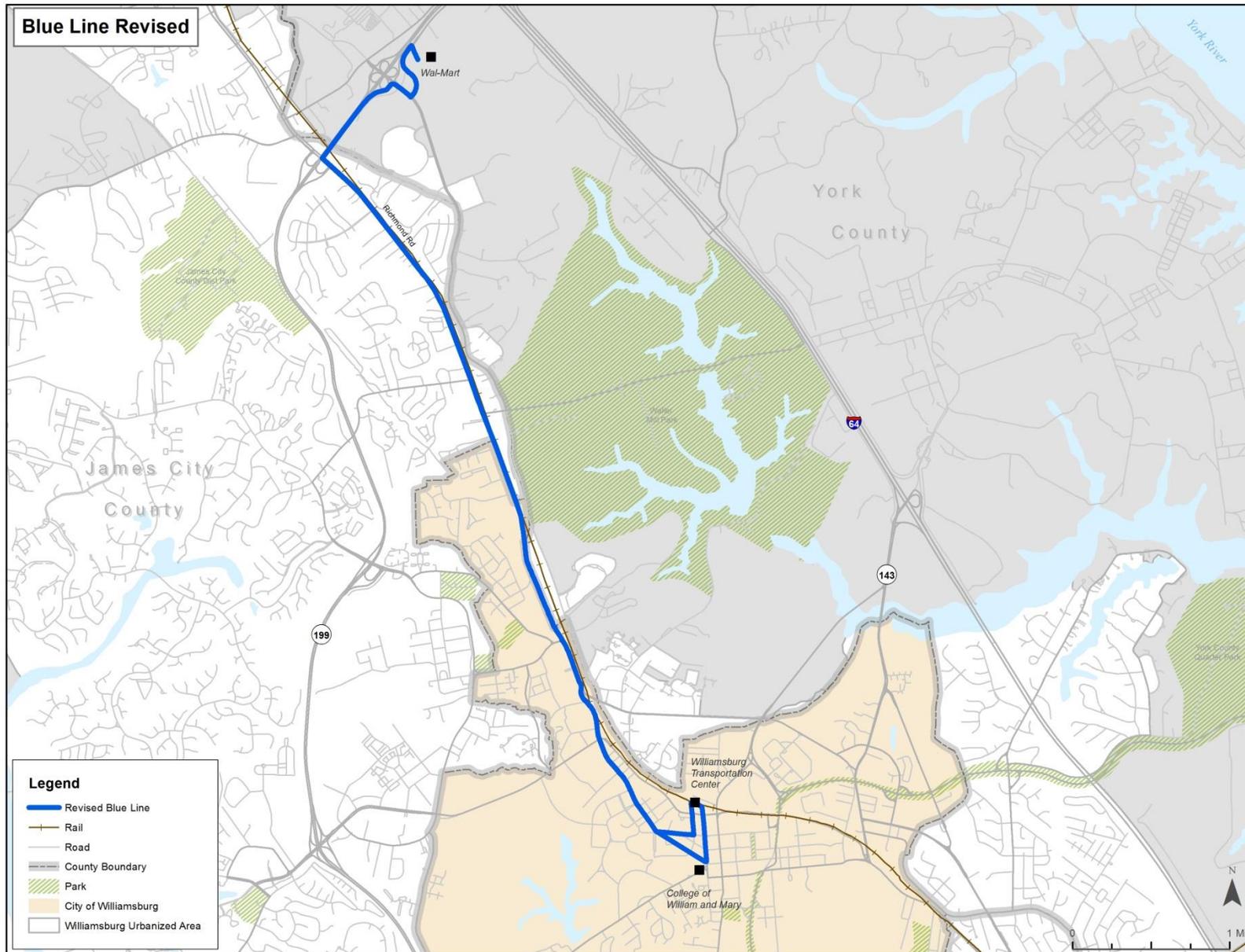
## CHANGES TO CURRENT ROUTES AND POTENTIAL NEW ROUTES

### Blue Line

After careful consideration of the options, WATA has chosen to modify the Blue Line in the following manner:

- Eliminate the James City County Human Services Center stop, as well as all stops along Olde Towne Road, including the stop that is on the property of the Premium Outlets. The Blue Line will continue to serve the Premium Outlets, but with the on-street stop (along Richmond Road). The route change is scheduled for implementation in FY17.
- Extend the service hours to 11:00 p.m., Monday through Saturday. The cost of this improvement is estimated to be \$ 38,459 annually, based on 2 additional operating hours per day for 310 service days. This change is scheduled for implementation in FY17/FY18
- Add a second bus to the route to improve capacities on Saturdays from 10:00 a.m. to 5:00 p.m. during the peak season. The cost of this improvement is estimated to be \$6,100 annually, based on 14 Saturdays. This change is scheduled for implementation in FY17/FY18.
- Change the 30-minute (frequency) headways from the current 10:30 a.m. to 5:30 p.m. pattern to one that more closely aligns to work schedules (6:30 – 9:30 a.m. and 3:30 – 6:30 p.m.). This recommendation is cost neutral and is scheduled for FY17.
- The specific timing of the improvements within each fiscal year will depend upon WATA's staffing levels and operating budget. WATA will also need to develop a new driver scheduling pattern to accommodate later hours and potentially some split shifts, depending upon the mix of part-time drivers and WATA's ability to piece blocks of work together in a different pattern than is currently done.
- A revised route map for the Blue Line is provided as Figure ES-1.
- Given these changes, ridership is likely to increase modestly, as removal of the Human Service Center will serve to reduce ridership, but later hours of service and a second vehicle on Saturdays during the peak season will serve to increase ridership.

Figure ES-1: Blue Line Revised



## Gray Line

While a geographic service extension was considered for the Gray Line, no geographic changes were ultimately recommended. The Gray Line is already a long route, providing important corridor service connecting Williamsburg to Newport News via Route 60. In recognition of the route's important role in providing connections, particularly for people who live in the Grove area of James City County, two improvements are planned for the route. These are:

- Extend the service hours to 11:00 p.m., Monday through Saturday. This improvement will increase the annual operating expenses for the route by \$38,450. This improvement is scheduled for implementation in FY17/FY18.
- Change the 30-minute (frequency) headways from the current 10:30 a.m. to 5:30 p.m. pattern to one that more closely aligns to work schedules (6:30 – 9:30 a.m. and 3:30 – 6:30 p.m.). This change is cost neutral and is scheduled for FY17.
- The specific timing of the improvements within each fiscal year will depend upon WATA's staffing levels and operating budget. WATA will also need to develop a new driver scheduling pattern to accommodate later hours and potentially some split shifts, depending upon the mix of part-time drivers and WATA's ability to piece blocks of work together in a different pattern than is currently done.
- Continue to work with the City of Newport News and Hampton Roads Transit to provide a high quality shelter for passengers who transfer at Lee Hall between HRT and WATA.
- Ridership is expected to increase by about 3,000 annual passenger trips.

## Green Line

No changes are planned for the Green Line for the short-term. A recommendation to reverse the direction of the Williamsburg Trolley will address some of the concerns voiced by Green Line riders regarding the need for bi-directional service. WATA will also need to work with William & Mary as the campus implements its Campus Master Plan, which includes significant changes to its properties along Jamestown Road.

There is also a concern about the ridership trend on the Green Line, which dropped considerably between FY13 and FY14, but showed some growth (3.5%) between FY14 and FY15. It is recommended that WATA and William & Mary work together in monitoring productivity during all service periods to ensure that the supply of service is matched to the demand. While there were requests for service earlier in the day on the weekends, past ridership trends have suggested that there is not enough demand to warrant service during this period.

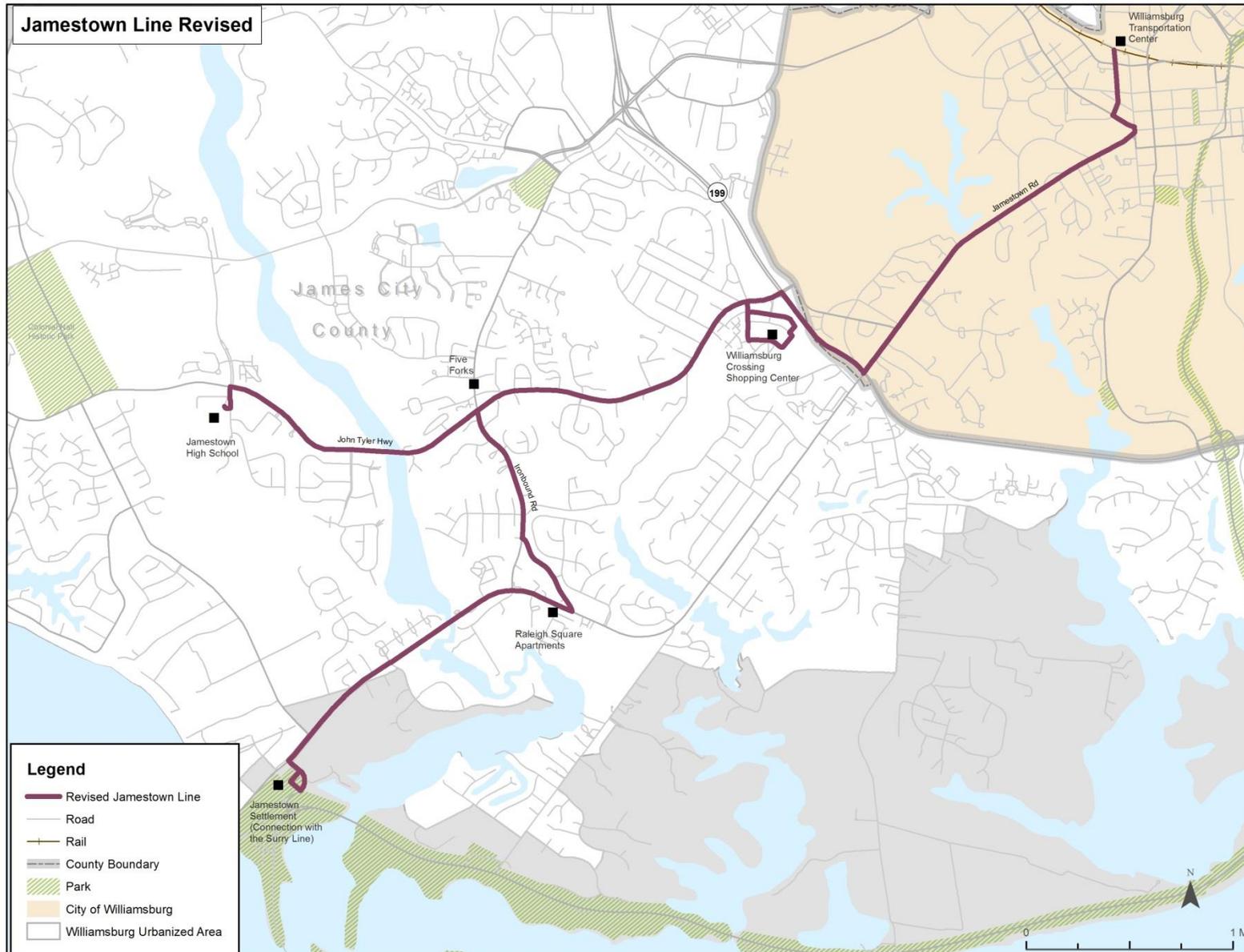
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## Jamestown Line

As discussed in Chapter 6, the Jamestown Line has been experiencing significantly lower ridership and productivity than the other routes in the network. As a new route, it would be expected that productivity will take time to build, but the first year numbers suggest that the current routing may not be a viable alternative for long-term sustainability. In order to improve ridership and long-term sustainability, the following route changes are recommended:

- Change the route alignment to eliminate non-productive segments and bring the route into the Williamsburg Transportation Center. This will result in a 60-minute headway, rather than a 30-minute headway, but will provide riders a direct trip into downtown Williamsburg. The new route alignment eliminates Greensprings Road, as well as a segment of Jamestown Road. The revised route alignment is provided in Figure ES-2.
- A second routing recommendation involves the companion route, the Surry Line. It is recommended that the Jamestown Line serve as a direct link to the Surry Line (and the Jamestown-Scotland Ferry) by meeting the route to provide service from the Jamestown Ferry to the Five-Forks area, the Williamsburg Crossing shopping area, and downtown Williamsburg.
- The timing of the Jamestown route will need to be adjusted so that link to the Surry Line and the Jamestown Ferry is direct. This will also likely mean that the Jamestown Line may not pulse directly with the other routes at the Williamsburg Transportation Center. Given the current Ferry schedule, from 9:15 a.m. to 3:15 p.m., it appears that the Jamestown Line could meet the Surry Line on the: 15 - :20 at the Jamestown Settlement, which would mean it would be at the Williamsburg Transportation Center about: 45 to :50 after the hour. The Ferry schedule shifts between 3:30 p.m. and 7:30 p.m., which will result in a bus schedule shift as well.
- Because the Jamestown Line will be taking on some segments currently operated by the Red Line, as well as its new role as connector for the Surry Line, it will need to operate on Saturdays. This will result in additional annual operating expenses of about \$48,400.
- These improvements are scheduled for FY17. The route will continue to utilize one vehicle and operate from 6:00 a.m. to 9:00 p.m., as is the current pattern.
- Ridership is expected to improve significantly with these changes.

Figure ES-2: Jamestown Line, Revised



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## Orange Line

As one of WATA's core routes, the Orange Line offers 30-minute headways between the hours of 10:30 a.m. and 5:30 p.m. As discussed in Chapter 6, it is recommended that this frequency pattern be adjusted to better coincide with commute times so that 30-minute frequencies are offered between 6:30 a.m. and 9:30 a.m. and again from 3:30 p.m. to 6:30 p.m.

This change is scheduled to occur in FY17. The specific timing of the improvements will depend upon WATA's staffing levels. WATA will also need to develop a new driver scheduling pattern to accommodate later hours and potentially some split shifts, depending upon the mix of part-time drivers and WATA's ability to piece blocks of work together in a different pattern than is currently done. This change is cost-neutral.

## Purple 1 and Purple 2 Lines

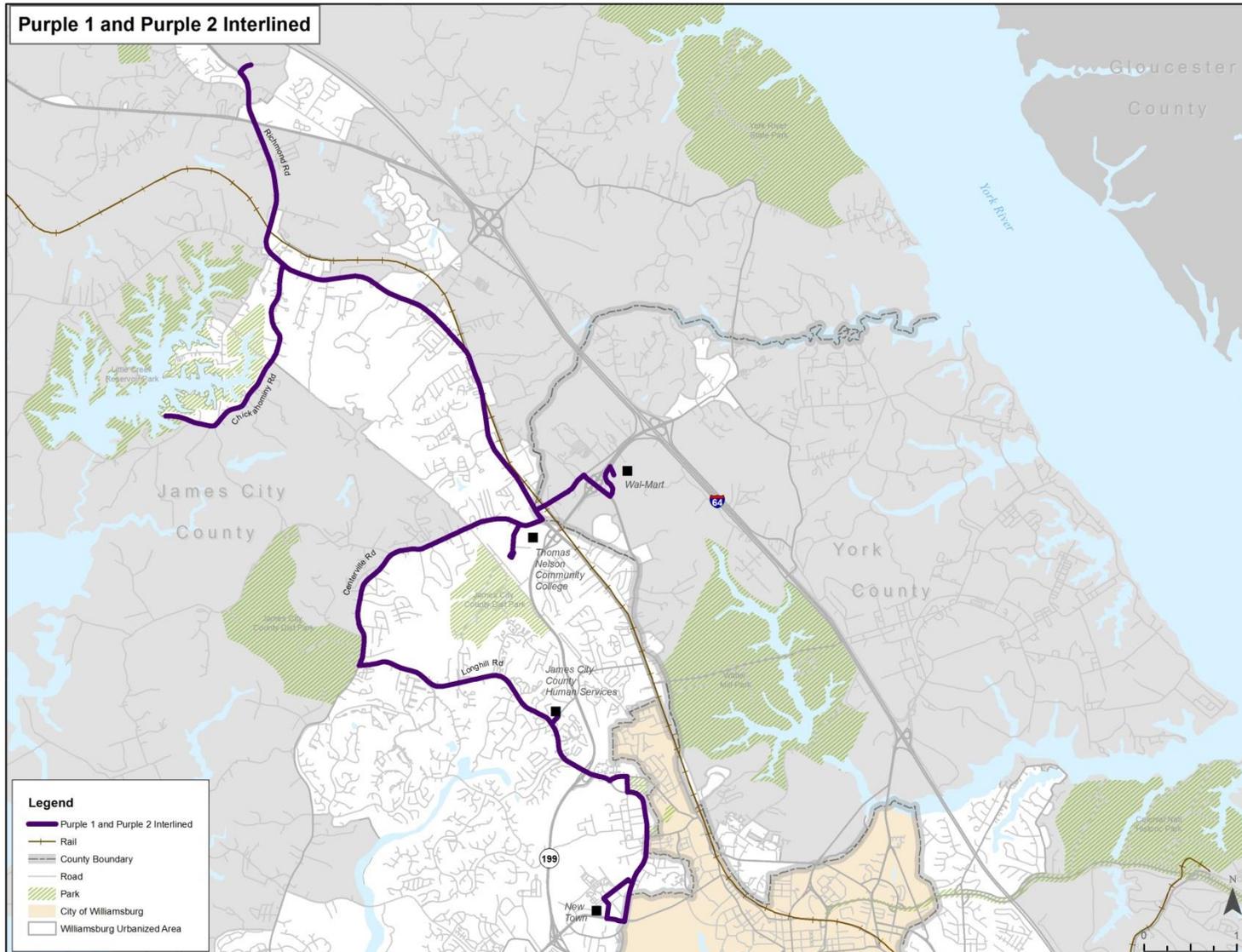
As discussed in Chapters 3 and 6, the Purple 1 Line is too long to complete within one hour, as currently routed. Because there are major destinations, as well as transfer opportunities on both ends of the line, it is not possible to cut the length of the Purple 1 Line. As a way to help the route, it is recommended that it be interlined/combined with a shortened Purple 2 Line. Time savings will be achieved by eliminating the lightly traveled western segment of the current Purple 2 Line, as well as by having just one vehicle at a time, rather than two, travel into and out of the Walmart transfer location. This will also reduce bus traffic at the transfer location.

During the alternatives analysis, there was also a proposal to eliminate the James City County Human Services Center from this route, as it adds a diversion from the main route along Longhill Road. Without developing another route option for the Human Services Center, the stop will need to remain along the Purple Line, in both directions. The Human Services Center stop is scheduled to be eliminated from the Blue Line, which means that the Purple Line will be the only route serving this stop. A future expansion route that incorporates Olde Towne Road should be considered.

The route map for the interlined Purple 1 and Purple 2 Lines is provided in Figure ES-3. This change will be implemented in FY17 and is cost neutral. During the transition period, WATA may wish to retain both the names Purple 1 and Purple 2, changing the head sign of the vehicle at the Walmart transfer center. As riders learn over time how the two interlined routes function, it may be possible to merge them into one route name. This change will result in minor fuel cost savings through the small reduction in mileage.

Ridership will likely increase on the Purple Lines, as all of the human service center ridership will be directed to this route, rather than the Blue Line.

Figure ES-3: Purple 1 and Purple 2 Lines – Interlined



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## Mounts Bay/Quarterpath Line

WATA has funding in place to implement a new route to serve the Mounts Bay/Quarterpath area of Williamsburg, which includes the new Quarterpath development in the City of Williamsburg, the Mounts Bay complex (James City County offices), and the new Riverside Doctor's Hospital. During the development of the TDP and COA, there was significant interest in extending WATA service to the Lackey Free Clinic and Yorktown. A need was also identified to connect the Riverside Doctor's Hospital directly with the Lackey Free Clinic.

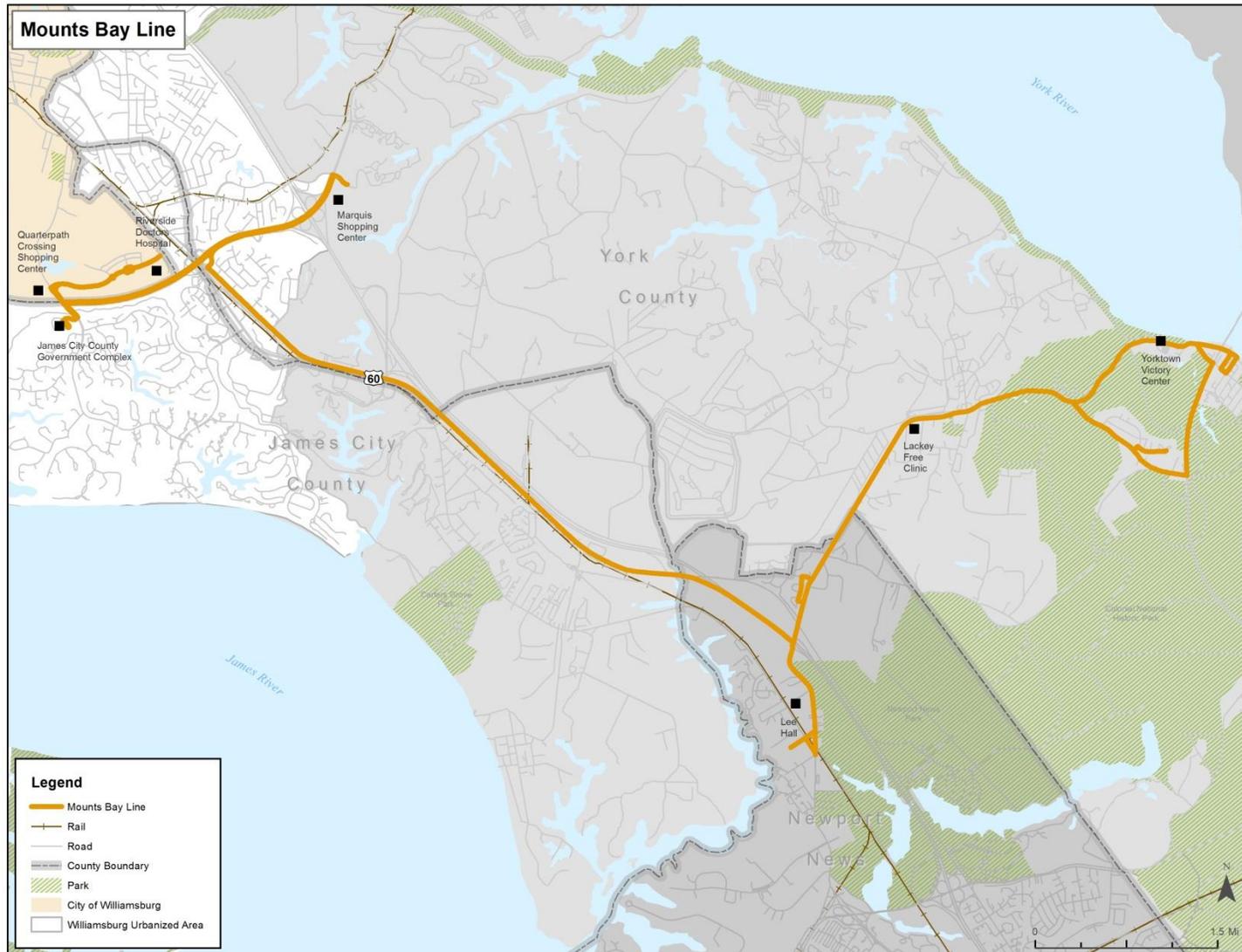
Given these factors, the new Mounts Bay/Quarterpath Line will incorporate the identified needs in the Mounts Bay/Quarterpath area, and provide the link to the Lackey Clinic and to Yorktown. This route will also provide additional direct mobility opportunities for residents in the Grove area of James City County, which has been identified as an area of high transit need.

This route will be the longest in the WATA network; as such it will need to operate either with a two-hour headway, or with two vehicles assigned to the route. During the alternatives analysis, WATA staff further refined the route to develop the proposed routing that is presented in Figure ES-4. The study team feels that it is important that this route be connected to downtown Williamsburg directly, either through a timed connection to the Gray Line or the Orange Line. These connections will allow Quarterpath riders to access Williamsburg as well as the rest of the route network.

This route is scheduled for implementation in FY17 using CMAQ funding. The total annual operating costs for one vehicle will be \$225,800 and for two vehicles will be \$451,600. It is proposed that this route be implemented with a body-on-chassis vehicle, rather than a full heavy-duty transit bus. This type of bus will be better able to navigate the circles along Battery Boulevard, as well as the turnaround at the Mounts Bay Center. As a new route, ridership demands are not likely to warrant a large vehicle. The recommended vehicle for the route is estimated to cost about \$100,000.

Ridership on this route will depend upon whether or not the route is implemented on a one-hour or two-hour headway. For a two-hour headway, with the proposed span of service of 14 hours per day, five days per week, the ridership is expected to be about 30,000 annual passenger trips. If a one-hour headway is provided, the passenger trips are likely to be about 60,000 annually. Note that some of these trips may come from riders who currently use the Gray or Orange Lines.

Figure ES-4: Mounts Bay/Quarterpath Line



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## Red Line

The three primary issues that came to light during the examination of the Red Line were:

- 1) The looped route makes bi-directional travel inconvenient,
- 2) The route is too long to be accomplished in one hour, and
- 3) Traveling through several shopping center parking lots is time consuming and exposes the bus to parking lot traffic hazards.

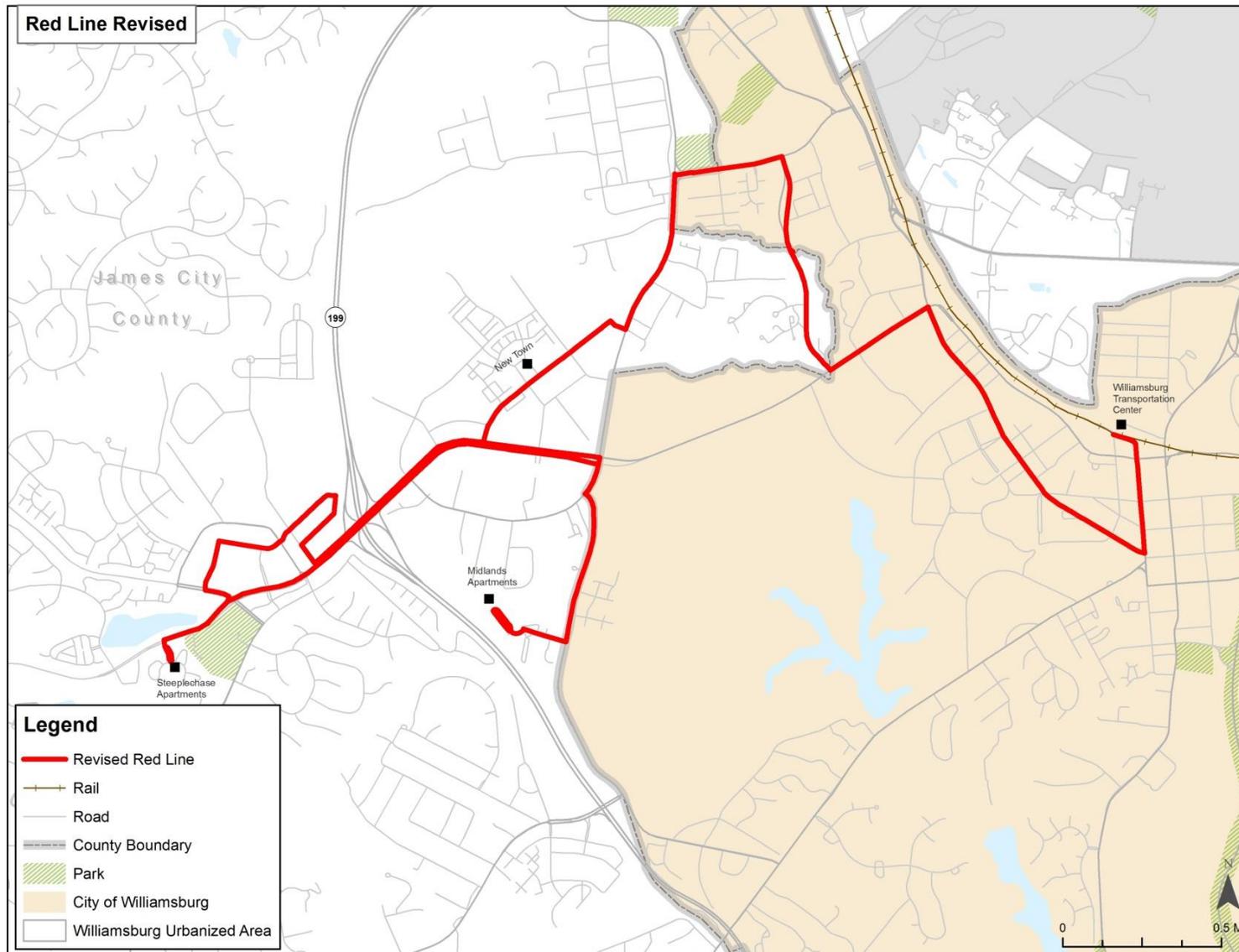
In order to address the first two issues, the route was re-aligned to become more bi-directional in nature, eliminating the portion of the route that serves Williamsburg Crossing and Jamestown Road. This change was possible with the revision of the Jamestown Line that includes this connection. To help reduce the shopping center parking lot hazards, the route has also been recommended to be re-configured around the Monticello Marketplace to use Old News Road, accessing the center with a stop adjacent to Rite Aid, rather than the current stop at Target.

Several route options were considered, with the preferred option displayed as Figure ES-5. This route change will need to coincide with the recommended change for the Jamestown Line in FY17, as some of the current Red segments are being assigned to the Jamestown Line instead.

Similar to the frequency schedule adjustment for WATA's other core routes, it is recommended that the 30-minute (frequency) headways be changed from the current 10:30 a.m. to 5:30 p.m. pattern to one that more closely aligns to work schedules (6:30 – 9:30 a.m. and 3:30 – 6:30 p.m.). This change is also scheduled for FY17.

The route and schedule changes recommended for the Red Line are cost neutral. Ridership on the Red Line should be monitored closely after this route change, as it is expected to make the route more attractive, though the route will be losing some segments that will be picked up by the Jamestown Line. Red Line ridership had been growing each year until FY15, when there was a small dip in ridership. Of the five core routes that currently offer 30-minute frequencies for part of the day, the Red Line produces the fourth highest ridership.

Figure ES-5 Red Line Revised



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## Tan Line

Of WATA's five core routes, the Tan Line currently experiences the lowest ridership. As such, it is recommended that the schedule for the route offer hourly headways throughout the service day, rather than adding 30-minute headways during peak times. This change will improve the productivity of the route by reducing the number of daily service hours and will save \$110,723 in annual operating expenses. There will likely be some reduction in ridership, reflecting the seven fewer daily vehicle trips (Monday-Friday). This change is scheduled for FY17.

## Surry Line

In order to offer increased frequency for the Surry Line without incurring additional operating expenses, it is recommended that the route operate primarily between Jamestown and the Surry County stops, making a timed connection with the Jamestown Line so people can access the Five Forks area, Williamsburg Crossing, and downtown Williamsburg.

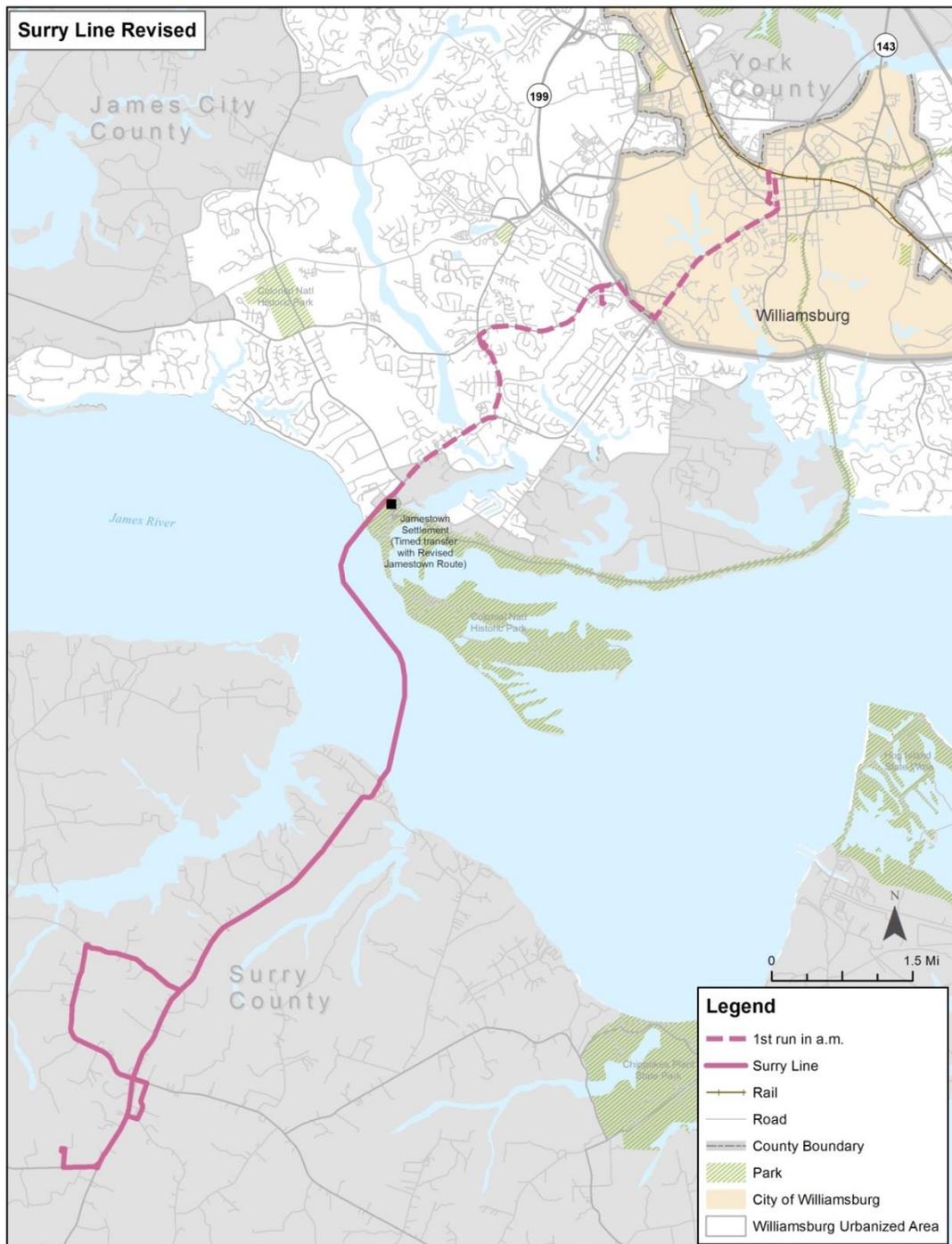
For the first run of the day, it is recommended that the Surry Line complete the full round trip from the Jamestown Ferry Terminal to the Surry County stops, back to the ferry, boarding the ferry to Jamestown, and then making the currently scheduled stops to bring people to the Williamsburg Transportation Center. The second trip of the day will originate at the Williamsburg Transportation Center and travel to the Ferry to access the 8:10 trip across the James River. The route will make the Surry County stops and travel back on the 9:00 a.m. ferry, arriving in Jamestown about 9:15- 9:20. Beginning with this run, passengers coming from the Surry Line and wishing to travel to other parts of the Jamestown-Five Forks area, or Williamsburg, will transfer to the Jamestown Line. As part of the service design, the Jamestown Line vehicle will wait for the Surry Line transfers before traveling north toward Williamsburg.

Given the current Ferry schedule, from 9:15 a.m. to 3:15 p.m., it appears that the Jamestown Line could meet the Surry Line on the :15 - :20 at the Jamestown Settlement, which would mean it would be at the Williamsburg Transportation Center about :45 to :50 after the hour. The Ferry schedule shifts between 3:30 p.m. and 7:30 p.m., which will result in a bus schedule shift as well.

This concept also opens up the opportunity for pedestrian travel from Surry County. For example, if there is an occasion when the Ferry is full for vehicles and the WATA bus does not make it on, riders could travel across the Ferry as pedestrians and then get on the Jamestown Line to complete their trips.

This route change is recommended to coincide with the change in the Jamestown Line (FY17). This change is cost neutral, as the vehicle hours that are currently used to travel on the Surry Line between Jamestown and Williamsburg will be re-directed to provide increased frequency for the Surry County portion of the route. The route map for the revised Surry Line is provided in Figure ES-6. Ridership on the route should increase, given the additional opportunities for travel.

Figure ES-7: Surry Line, Revised



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## SYSTEM WIDE IMPROVEMENTS

There are two improvements that were termed “system wide” improvements in Chapter 6. These were:

- 1) Later hours of service for the core routes, and
- 2) Frequency schedule adjustment.

Both of these improvements have been discussed within the context of each route in the previous section, resulting in the following recommendations:

- Extend the hours of service Monday through Saturday on the Blue and Gray Lines to provide two additional full round trips (9:00 p.m. and 10:00 p.m., with service ending at 11:00 p.m.). These two routes are the highest ridership routes in the system and cover a large geographic area. Additional routes may be considered for later hours in future years. This recommendation is scheduled for FY18.
- Change the hours during which 30-minute service is provided to better coincide with ridership and commute patterns. The recommendation is to provide 30-minute frequency between the hours of 6:30 a.m. and 9:30 a.m. and again between the hours of 3:30 p.m. and 6:30 p.m. This recommendation is scheduled for FY17.

### Frequency Standard

WATA staff members are also interested in developing a service standard to help decide which core routes should be considered for 30-minute frequency. Using current ridership and productivity as benchmarks, the following standards are proposed:

- Route productivity of at least 20 passenger trips per revenue hour, and/or
- Total annual ridership of over 140,000 passenger trips.

This standard would not apply to specialty routes such as the Green Line, the Trolley Line, or the Surry Line.

This standard would result in elimination of 30-minute service on the Red and Tan Lines, using current ridership and productivity numbers. As discussed in the route-by-route analysis, it is recommended that frequency service be maintained along the Red Line for a year or so following the route change to determine if the more attractive route will generate additional ridership.

## ADA PARATRANSIT

ADA paratransit demand has risen significantly over the past several years. This increase will likely continue as the area's population ages. In addition, the TDP includes an expansion route that travels through some areas not currently served by public transportation (Mounts Bay), which will also lead to an increase in ADA paratransit demand. In recognition of the likely growth in paratransit demand, 2,080 hours have been added to the program, starting in FY18, with additional hours added for FY20-FY22. Paratransit vehicles have also been added, beginning in FY2018. There is also a recommendation for WATA to work with the proposed Williamsburg Area One Call Center, which could potentially offer paratransit software, as well as helping WATA with ADA paratransit eligibility certification.

## STAFFING RECOMMENDATIONS

There are a number of staffing recommendations that are included as part of the COA and six-year plan. These are:

- Eliminate the use of on-call drivers
- Fully staff driver positions
- Add a safety and training coordinator
- Participate with the Williamsburg Area One-Call Center

The details for each of these changes are documented in Chapter 7 of the TDP/COA.

## FARE AND PASS RECOMMENDATIONS

Given that WATA's farebox recovery is lower than its peers, and there is a need to improve and expand services, WATA has chosen to increase fares. The base fares are planned to be adjusted as shown in Table ES-1.

**Table ES-1: Fare and Pass Changes**

Fare Category	Current Cost	Proposed Cost	Fare Category	Current Cost	Proposed Cost
One-way bus fare	\$ 1.25	\$ 1.50	30-day Pass	\$ 35.00	\$ 45.00
Discounted one-way bus fare	\$ 0.50	\$ 0.75	30-day Pass - discounted Middle/High School	\$ 17.50	\$ 22.50
All-day pass	\$ 2.00	\$ 3.00	Students	\$ 0.50	\$ 0.75
Discounted all-day pass	\$ 1.00	\$ 1.50	Trolley	\$ 1.00	\$ 1.50
6-ride Pass	\$ 10.00	eliminate	12 and under	\$ -	38" and under free
6-ride Pass - discounted	\$ 5.00	eliminate	ADA Paratransit	\$ 2.00	\$ 3.00
7-day Pass	\$ 10.00	\$ 15.00			
7-day Pass - discounted	\$ 5.00	\$ 7.50			

These changes will likely result in a 37% increase in fare revenue and a 5.3% decrease in fixed route ridership. WATA is also planning to increase the ADA paratransit fare from \$2.00 to \$3.00.

## INFRASTRUCTURE AND COMMUNICATIONS IMPROVEMENTS

A number of facility and communications improvements are included in the six-year plan. These are:

### Facilities

- The planning and development of new maintenance and operations facility.
  - This is an integral project for WATA for the six-year planning period covered by this TDP.
  - The most recent cost estimate is \$8.3 million.
  - This project is programmed for FY17, FY18, FY19, and FY20.
- Bus Stop Improvement Project
  - A full bus stop inventory and analysis that includes the development of system wide guidelines for bus stop placement, amenities, and spacing.
  - Currently there are approximately 300 unique bus stops within WATA's fixed route network.
  - This estimated budget for this project is \$30,000 and it is included in the FY18 budget. Funding for bus stop improvements has been included in the capital budget.
- Northern/Western Hub – Warhill Transfer Center
  - WATA has identified a parcel of land on Opportunity Way and has begun the process of applying for grant funding and inserting the project into regional transportation improvement plans.
  - The real estate acquisition is budgeted to be \$2.5 million over two years.
  - The construction estimate is \$2.4 million.
  - Real estate acquisition is scheduled for FY17 and FY18, with construction to follow.

### Technology

- Driver Scheduling /Runcutting Software for Fixed Route Operations
  - Clever Devices TeleDriver
  - FY17 implementation

- Paratransit Scheduling Software
  - RouteMatch software license through the Williamsburg Area One Call Center or purchase using FY15 software funds
  - FY17 implementation
- Smart Phone Application for BusTime
  - Budget estimate is \$40,000
  - FY18 implementation
- Telephone Upgrade to IP, allowing the use of dispatch headsets. This improvement is being funded through an FY15 hardware/software project and will be implemented in FY17.

## Customer Service Improvements

- Route maps- Web and Printable
  - Currently in process
- Route Names – Transition from Colors to Numbers

## VISION PROJECTS

There are a number of additional potential improvements that WATA can consider, if demand warrants and funding becomes available. These projects are listed below, most of which have been assigned to later years of the TDP (FY20-FY22).

- Human Service Center Route
- Parkway Shuttle
- Frequency Improvements
- Later Hours of Service
- Southern Hub
- New Fareboxes

## FINANCIAL PLAN

WATA's total annual operating budget is expected to increase from about \$7.4 million annually in FY17 to about \$9.1 million in FY22. This increase includes inflation and modest increases in service. The capital budget is expected to fluctuate each year, depending upon the planned projects and the need to replace vehicles. The average capital budget over the six year plan is about \$6 million per year, with the most significant capital investments scheduled for FY18, FY19, and FY20 to include WATA's operations and maintenance facility, the Warhill transfer facility, and bus replacement. A long term projection was also developed for the FY40 planning year. The long range planning estimate for the FY40 operating budget for WATA is \$20.1 million.

# Chapter 1: Overview of Public Transportation in the Region

## INTRODUCTION

A transit development plan (TDP) is a short-range transit plan that outlines the services that a transit system intends to implement during a six-year planning horizon, estimates what resources will be needed, and what funding opportunities are likely to be available. The Virginia Department of Rail and Public Transportation (DRPT) requires that any public transit (bus, rail, ferry) operator receiving state funding prepare, adopt, and submit a TDP at least every six years. DRPT provides a set of TDP requirements that form the basis of the planning effort.

The Williamsburg Area Transit Authority's (WATA) previous TDP was completed in FY2009 and outlined planning years FY2010 through FY2015. This TDP update for WATA highlights the transit program for FY2017-FY2022. In conjunction with the TDP, a comprehensive operational analysis (COA) has also been completed. The COA is a more detailed look at specific areas of operation, including routes, staffing, and the preparation of a passenger profile.

The TDP and COA combined will serve as a management and policy document for WATA, provide DRPT with an up-to-date record of the related transit capital and operating budgets, as well as provide the program with a basis for including capital and operating programs in the Six Year Improvement Program (SYIP), the Statewide Transportation Improvement Program (STIP), and the Long Range Transportation Plan (LRTP). The WATA Board of Directors reached consensus on this combined plan at the June 2016 WATA Board Meeting. The meeting minutes are provided as Appendix A.

This first chapter of the combined plan provides an overview of the transit program and includes background information and data that were used for subsequent data collection, analysis, and the eventual recommendations for the six-year plan and COA.

## BACKGROUND

The Greater Williamsburg region is located on the Virginia Peninsula between the York and James Rivers, adjacent to New Kent and Charles City Counties to the west and the City of Newport News to the east. The WATA service area includes James City County, the City of Williamsburg, and the Bruton District of York County. The major transportation corridor in the region provides east-west travel on the Peninsula and includes I-64, US 60, and the CSX

Railroad. These facilities link the region to Newport News and the greater Virginia Beach Urbanized Area to the east and rural areas of the Virginia Peninsula and Richmond to the west. Prior to the 2010 Census, portions of the Williamsburg region (including the City of Williamsburg) were included as part of the Virginia Beach Urbanized area, with the remaining parts of the service area considered rural. Growth in the region between 2000 and 2010 resulted in the formation of a new urbanized area, the Williamsburg Urbanized Area, which includes all of the City of Williamsburg, significant portions of James City County, and the Bruton District of York County. The new urbanized area includes parts of the service area that were previously considered rural. Given the change in Census designation, approximately 72% of WATA fixed route services currently operate within an urbanized area.<sup>1</sup> Figure 1-1 provides a map of the region with the urbanized areas identified.

Development of the new Williamsburg Urbanized Area is significant for WATA, as it changes the way WATA accesses the Federal Transit Administration's (FTA) Section 5307 urbanized area funding program. Prior to the designation of the Williamsburg UZA, parts of the WATA service area were included as part of the Virginia Beach Urbanized Area. The designated S.5307 recipient for Virginia Beach UZA is Hampton Roads Transit (HRT). As such, WATA previously needed to go through HRT to access Federal S.5307 funds, and the category was "large urban," rather than "small urban." Under the new designation, WATA has its own S.5307 allocation, under the "Governor's apportionment", in the "small urban" category.<sup>23</sup> This category is more flexible for WATA than the "large urban" category, as it includes "operating" as an eligible expense. As signified by the "Governor's apportionment," the Commonwealth of Virginia has the authority to change the amount of the federal allocation. Rural portions of the service area continue to be eligible for federal S.5311 funds, which flow through DRPT.

According to population estimates developed by the Weldon-Cooper Center, the 2014 population of the three jurisdictions was 153,600, a 4.8% increase over the Census 2010 population of 146,531. These estimates show that between 2010 and 2014 growth rate in the region was highest in the City of Williamsburg (7.1%), followed by James City County (6.2%); and York County (2.9%).

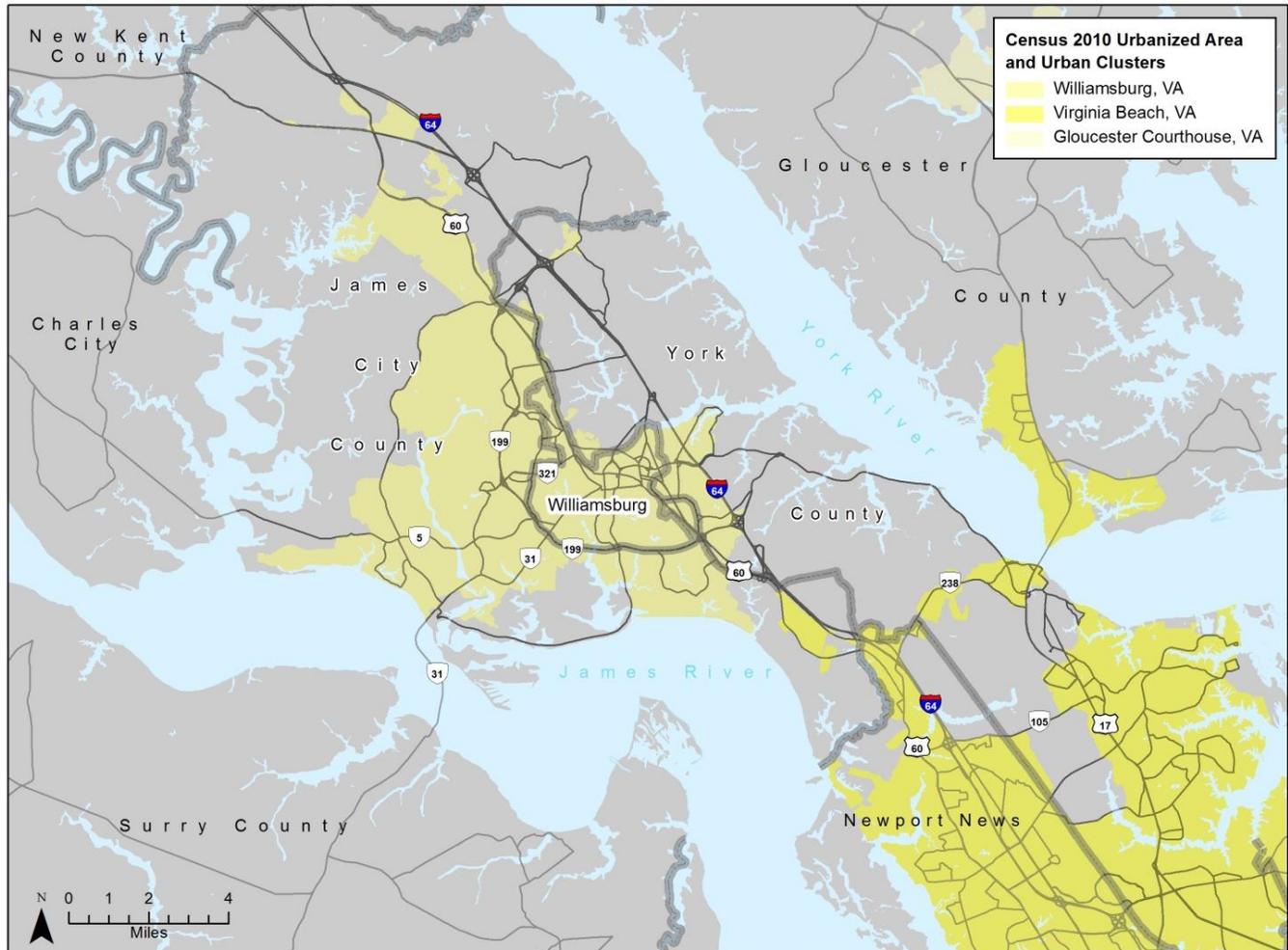
WATA currently provides public transportation services to James City County, the City of Williamsburg, the Bruton District of York County, the College of William & Mary, and the Colonial Williamsburg Foundation. There is also a route that extends to Newport News (Gray Line to Lee Hall) to provide connections with Hampton Roads Transit (HRT) and a route to Surry County via the Jamestown-Scotland Ferry.

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<sup>1</sup> Review of FTA Funding Under the 2010 Census; Technical Memorandum, KFH Group for DRPT, December 2013, page 46.

<sup>2</sup> United States Department of Transportation, Federal Transit Administration, Circular FTA C9030.1E, January 16, 2014.

<sup>3</sup> <https://www.transit.dot.gov/funding/apportionments/table-3-fiscal-year-2016-section-5307-and-5340-urbanized-area-formula>

**Figure 1-1: WATA Service Area and Designated Urbanized Areas**

## HISTORY

The subsidized era of public transportation in the region began with the development of James City County Transit (JCCT), a rural transportation program initiated in 1977 through the James City County Department of Community Services. The early focus of the program was providing public transportation services for transit dependent residents of James City County. As the program grew to include additional funding partners, services evolved to meet the needs of an increasingly diverse customer base. In 2003, in recognition of its more extensive role in the region, the name of the program was changed to Williamsburg Area Transport. Area stakeholders continued to work together toward development of a regional system, gaining permission in 2006 from the Commonwealth's General Assembly to form a regional transit authority to provide service in James City County, York County, and the City of Williamsburg. Williamsburg Area Transit Authority (WATA) was established in 2008, with the following

members: Counties of James City and York; City of Williamsburg; the Colonial Williamsburg Foundation (CWF), and the College of William & Mary. WATA directly operates local fixed route bus service and ADA complementary paratransit services, while CWF operates bus service throughout the historic area of Williamsburg and York County operates trolley services in Yorktown.

The transition from County-operated agency to an Authority has taken several years, with James City County continuing to provide some services on behalf of WATA, serving as fiscal agent, providing procurement services, and managing the human resource function.

Transit demand in the region has historically been seasonal, with a significant increase in summer ridership associated with the tourism industry, most notably by temporary workers who staff the region's many tourist attractions and associated retail operations, as well as by tourists. While overall ridership peaks in the summer, ridership associated with the College of William & Mary decreases between May and August, as fewer students are on campus for the summer session. WATA's Green Line, which primarily serves the needs of the William & Mary community, is not in operation during the summer.

## GOVERNANCE

Williamsburg Area Transit Authority, organized under Chapter 68 of Title 15.2 of the Code of Virginia, is governed by a Board of Directors, as outlined in WATA's Bylaws. The Board consists of representatives of member organizations as follows:

- 2 Directors appointed by James City County
- 1 Director appointed by York County
- 1 Director appointed by the City of Williamsburg
- 1 Director appointed by the Board to represent the Colonial Williamsburg Foundation
- 1 Director appointed by the Board to represent the College of William & Mary (non-voting member)

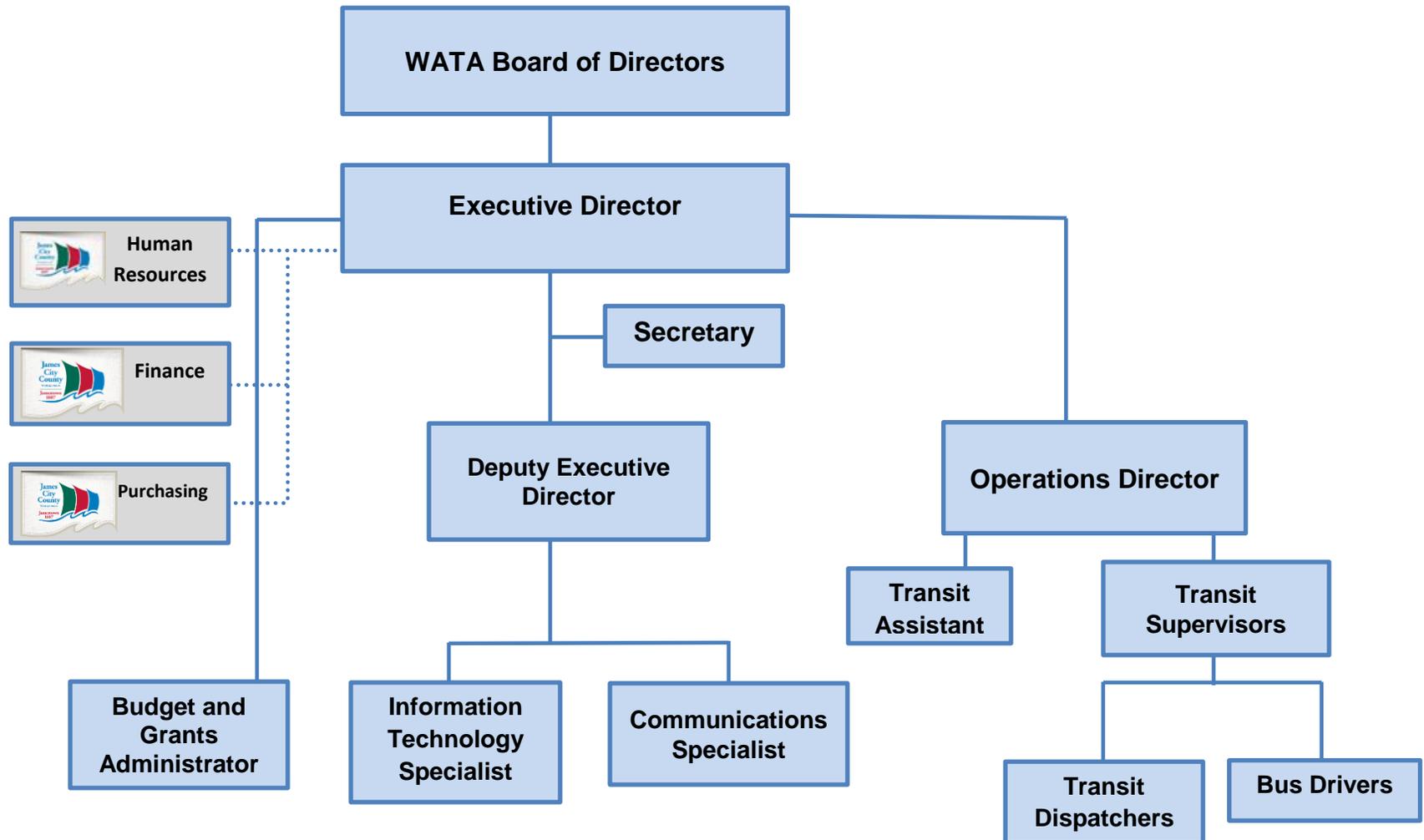
The Bylaws state the Foundation and the College will each provide a recommendation to the Board regarding their representatives. WATA is planning to amend the Bylaws to include Board representation from DRPT. Current WATA Board members are listed in Appendix B.

As the governing body, the Board appoints an Executive Director who manages day-to-day functions of the Authority and supervises all staff. The Executive Director serves as a liaison between the Authority and federal, state, local and regional organizations.

## ORGANIZATIONAL STRUCTURE

WATA employees directly manage and operate transit services for the Authority, with the vehicle maintenance function contracted to First Transit. WATA has a Rider's Advisory Committee (WRAC) that meets periodically. The organizational chart for WATA is provided in Figure 1-2.

Figure 1-2: WATA Organizational Chart



## TRANSIT SERVICES PROVIDED AND AREAS SERVED

This section provides an overview of public transit services operated in the region, including fixed route service; specialty routes; and ADA complementary paratransit services. Each of these services is described below, with an in-depth service analysis provided in Chapter 3.

### Fixed Route Services

There are eight routes that comprise the core year-round fixed route transit network for WATA. These routes, described below, operate Monday through Saturday from 6:00 a.m. to 9:00 p.m., and Sundays from 8:00 a.m. to 6:00 p.m.

#### ***Blue Line- Route 60 West***

WATA's Blue Line provides service through the western portion of one of the region's major commercial corridors (US Route 60, Richmond Road), providing connections between the Williamsburg Transportation Center and Walmart on East Rochambeau Drive. Major time points include the Williamsburg Transportation Center, Olde Towne Medical, Williamsburg Premium Outlets, Patriot Plaza, and Skipwith Farms. This route connects with the Gray, Orange, Red, and Tan Lines at the Williamsburg Transportation Center. Connections are available to the Surry Line twice per day (weekdays only) at the Williamsburg Transportation Center (10:30 a.m. and 1:30 p.m.). The Blue Line connects to the Purple 1 and Purple 2 lines on an hourly basis at Walmart on East Rochambeau Drive. Thirty-minute frequencies are provided Monday through Friday from 10:00 a.m. to 5:00 p.m., with hourly frequencies provided for the remainder of the service periods.

#### ***Gray Line – Route 60 East***

The Gray Line provides services through one of the region's major industrial corridors (US Route 60, Pocahontas Trail), providing connections between the Williamsburg Transportation Center and Lee Hall. Major time points along the route include WATA, Quality Inn at Kingsmill, Busch Gardens, Walmart Distribution Center, and Lee Hall. WATA operations and maintenance facility are also served along this route. This route connects with the Blue, Orange, Red, and Tan Lines at the Williamsburg Transportation Center. Connections are available to the Surry Line twice per weekday at the Williamsburg Transportation Center (10:30 a.m. and 1:30 p.m.). The Lee Hall stop is served by Hampton Roads Transit, with connections available via HRT's Routes 108 and 116, though these connections are not currently timed to directly meet. Thirty-minute frequencies are provided Monday through Friday from 10:00 a.m. to 5:00 p.m., with hourly frequencies provided for the remainder of the service periods.

### ***Jamestown Line***

The Jamestown Line began operations on January 22, 2015, as a three-year demonstration route. Service is provided Monday through Friday only. This route provides a clockwise loop in the Jamestown area, traveling from Williamsburg Crossing Shopping Center to Jamestown via John Tyler Highway, Humelsine Parkway and Jamestown Road. The northbound trip travels along Greensprings Road, and then travels north along John Tyler Highway back to Williamsburg Crossing Shopping Center. Thirty minute frequencies are offered along this route. Connections to the rest of the fixed route network are available via the Red Line at Williamsburg Crossing Shopping Center. The Jamestown Line connects with the Surry Line at Riverside Medical Arts Building.

### ***Orange Line – Route 143/Merrimac Trail***

The Orange Line travels east from the Williamsburg Transportation Center to serve the Colonial Williamsburg Visitor Center, and then travels south along Merrimac Trail, serving the DMV, Penniman Road area, Tam-O-Shanter, and Marquis Shopping Center. The northbound trips include stops at People’s Place and James-York Plaza. This route connects with the Blue, Gray, Red, and Tan Lines at the Williamsburg Transportation Center. Connections are available to the Surry Line twice per day (weekdays only) at the Williamsburg Transportation Center (10:30 a.m. and 1:30 p.m.). Thirty-minute frequencies are provided Monday through Friday from 10:00 a.m. to 5:00 p.m., with hourly frequencies provided for the remainder of the service periods.

### ***Purple 1 Line - Longhill Road***

The Purple 1 Line provides service from New Town north into James City County, providing service to the James City County Community Center, Human Services Center, Lafayette High School, Forest Glen, Walmart on East Rochambeau Drive, Thomas Nelson Community College, and Warhill High School. Riders can transfer to the Blue, Purple 2, and Tan Lines at the Walmart stop. Service along the Purple 1 Line is provided on hourly headways.

### ***Purple 2 Line – Route 60 Far West***

The Purple 2 Line extends west into James City County along Route 60, providing service between Stonehouse Commerce Park in Toano, Chickahominy Road and Lightfoot, connecting with the Blue Line, Purple 1 Route, and Tan Line at Walmart on East Rochambeau Drive. The return trip to Toano includes stops at Williamsburg Pottery, Norge Crossing, and Williamsburg Regional Library. Service along the Purple 2 Line is provided on hourly headways.

### **Red Line- South Williamsburg**

The Red Line is a loop route that travels counter-clockwise connecting the Williamsburg Transportation Center with Monticello Shopping Center, New Town, Monticello Marketplace, Steeplechase Apartments, Midlands Apartments, Williamsburg Crossing, and College of William & Mary. This route connects with the Blue, Gray, Orange, and Tan Lines at the Williamsburg Transportation Center. The Red Line connects with the new Jamestown Route at Williamsburg Crossing Shopping Center. Connections are available to the Surry Line twice per day (weekdays only) at the Williamsburg Transportation Center (10:30 a.m. and 1:30 p.m.).

### **Tan Line – Mooretown Road**

The Tan Line connects destinations north and west of Williamsburg to the Williamsburg Transportation Center, serving Kingsgate Shopping Center, Williamsburg Market Center, Great Wolf Lodge, Walmart on East Rochambeau Drive, Sentara Regional Medical Center, Anvil Campground, and Pirates Cove. This route connects with the Blue, Gray, Red, and Orange Lines at the Williamsburg Transportation Center. Connections are available to the Surry Line twice per day (weekdays only) at the Williamsburg Transportation Center (10:30 a.m. and 1:30 p.m.). Riders can connect at Walmart on East Rochambeau to the Blue or Purple Lines, with the schedule making this connection feasible only in the inbound direction. Thirty-minute frequencies are provided Monday through Friday from 10:00 a.m. to 5:00 p.m., with hourly frequencies provided for the remainder of the service periods.

## **Specialty Routes**

There are three routes within the WATA route network that operate on significantly different schedules than the eight core fixed routes and serve different markets. Because they are somewhat different than the core routes, they have been labeled as specialty routes. These routes are described in the sections below.

### **Green Line**

The Green Line is geared to transportation needs of the College of William & Mary Community, providing service along the perimeter of the campus to academic, housing, recreational, and shopping destinations. Time points along the route include Ludwell Apartments, Morton Hall, Campus Center, Marshall-Wythe School of Law, Merchants Square, Sadler Center, Williamsburg and Monticello Shopping Centers, William & Mary School of Education, William & Mary Hall, Commons Dining Hall, and the parking deck adjacent to Police and Parking Services. Green Line service is provided during the College of William & Mary's fall and spring semesters. Days and hours of service are: Monday through Thursday from 7:00 a.m. to midnight; Friday from 7:00 a.m. to 1:00 a.m.; Saturday from 10:00 a.m. to 1:00 a.m.; and Sunday from 10:00 a.m. to midnight. Thirty minute frequencies are provided.

### **Surry Line**

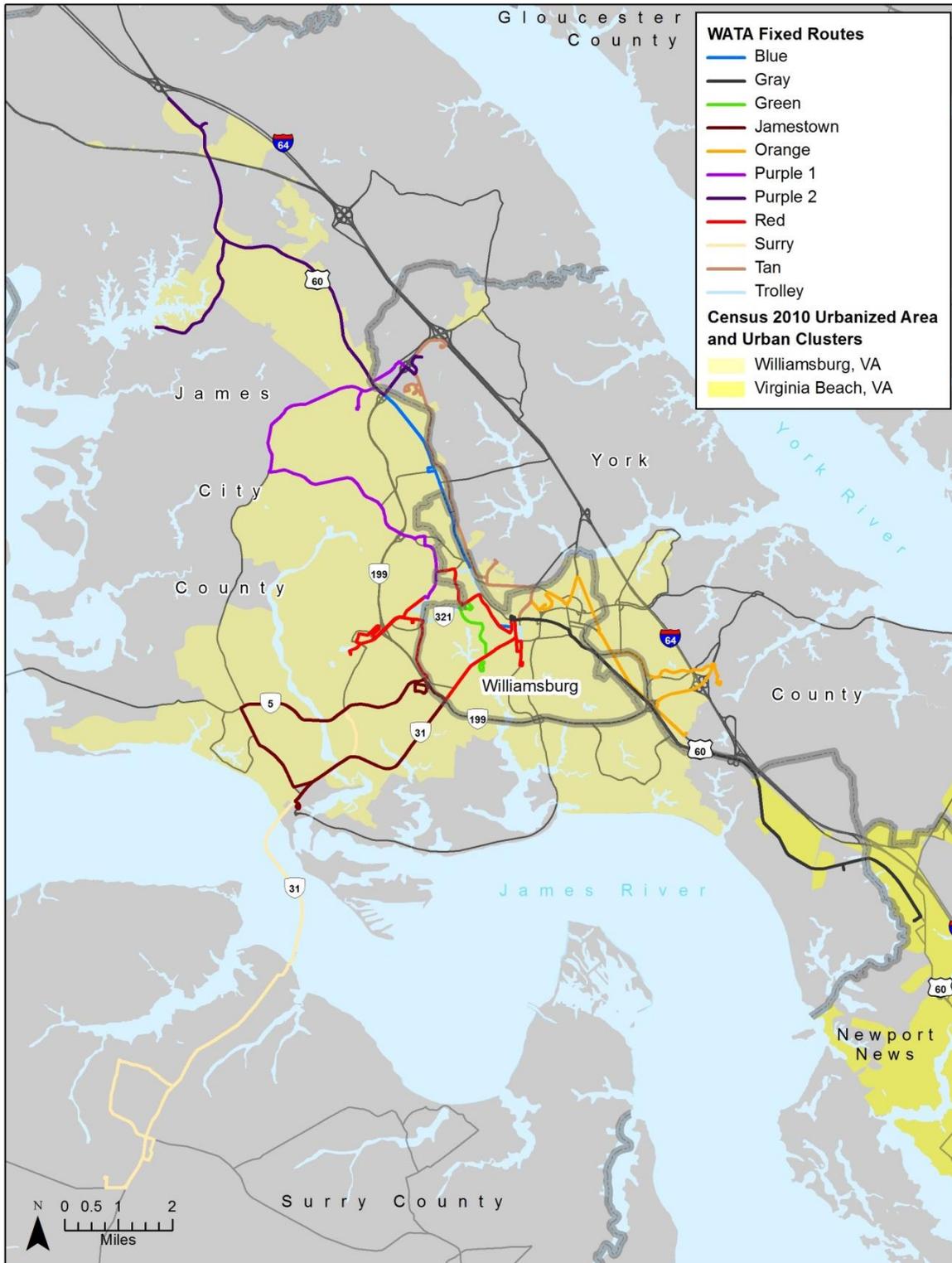
Classified as deviated fixed route, the Surry Line provides service between Surry County and the Williamsburg Transportation Center, via the Scotland/Jamestown Ferry. Five trips are made daily, connecting Surry Village, Lebanon Village, Smith's Park and VDOT Park and Ride (Rt.31 and Rt. 637) to Jamestown, Five Forks, and the Williamsburg Transportation Center. Connections to the Blue, Gray, Orange, Tan, and Red Lines are possible Monday through Friday at 10:30 a.m. and 1:30 p.m. The Surry Line will deviate up to ¾-mile from the prescribed route to provide service for people with disabilities who are unable to reach the fixed route stop. Requests for the route to deviate must be made at least one business day prior to the desired trip.

### **Williamsburg Trolley**

The Williamsburg Trolley provides a 30-minute counter-clockwise loop connects New Town; the College of William & Mary; Merchants Square; Williamsburg Shopping Center; and the High Street development. The Trolley operates Monday through Thursday from noon to 11:00 p.m.; Friday-Saturday from noon to 1:00 a.m.; and Sunday from noon to 8:00 p.m. Connections with other WATA routes are possible at New Town, along Richmond Road, and at the College of William & Mary.

Figure 1-3 provides a map of the fixed route and specialty route services that are currently provided by WATA.

Figure 1-3: WATA Route Network



## ADA Complementary Paratransit Service

WATA provides door-to-door ADA complementary paratransit service for people who are unable to use fixed route buses due to disability. As required by the Americans with Disabilities Act, ADA complementary paratransit service is provided within  $\frac{3}{4}$ -mile of the fixed routes and during the same days and hours.

In order to schedule rides on ADA paratransit service, individuals must complete an eligibility application. WATA's Transit Assistant facilitates this process. WATA categorizes applicants into the following three categories: 1. Fully Qualified, 2. Partially Qualified, or 3. Not Qualified. Eligibility may last up to three years. Once eligibility is determined, customers can schedule trips on the service. All originating trips must be scheduled by close of business the day before the requested trip, with return trips permitted to be scheduled as will-calls.

## FARE STRUCTURE

WATA's fare structure is detailed in Table 1-1. William and Mary students with ID can use the system without paying a fare. Fares for William and Mary students are pre-paid through an agreement with WATA.

**Table 1-1: WATA Fare Structure**

Fare Type	Amount
Standard One-Way Fare	\$ 1.25
Transfers	\$ 0.25
All-Day Pass	\$ 2.00
Reduced One-Way Fare for Persons 60+, Disabled, or Medicare	\$ 0.50
Reduced Fare All-Day Pass	\$ 1.00
William & Mary Students with ID	\$ -
Middle and High School Students with Student ID	\$ 0.50
6 ride or 7-day goWATA pass	\$ 10.00
6 ride or 7-day goWATA pass - Reduced Fare	\$ 5.00
30-day goWATA pass	\$ 35.00
30-day goWATA pass - Reduced Fare	\$ 17.50
ADA Paratransit One-Way Fare	\$ 2.00

## FLEET



**Example of WATA Vehicle**

WATA's fleet includes vehicles that WATA directly operates, as well as vehicles purchased through WATA and operated by WATA partners (Colonial Williamsburg Foundation (CWF) and York County). Directly-operated vehicles include a mixed vehicle fleet of six (6) 30-foot diesel buses; fourteen (14) 35-foot buses; five (5) body on chassis vehicles; three (3) diesel trolley buses; and seven (7) operational support vehicles. All vehicles used in revenue service are wheelchair accessible and equipped with bicycle racks. CWF vehicles that are part of the WATA vehicle fleet are sixteen (16) Orion 40' compressed natural gas (CNG) buses and one support vehicle. York County operates two (2) trolley buses that are

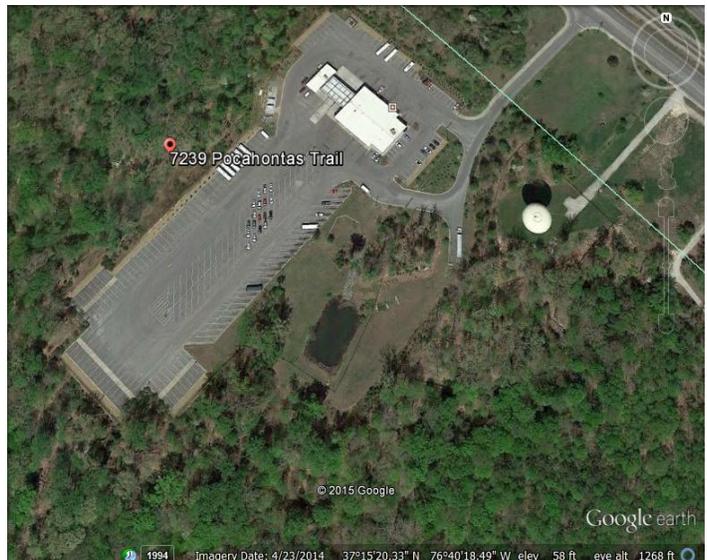
also part of the WATA vehicle fleet. The complete vehicle inventory is provided in Appendix C.

## EXISTING FACILITIES

### Operating and Maintenance Facility

WATA currently leases space for its administrative and operations staff in the regional bus operations and maintenance facility owned by CWF and located at 7239 Pocahontas Trail. Vehicles are also parked at this location, with maintenance performed on-site by First Transit.

Given that WATA does not own the facility, and a number of facility constraints have been identified, WATA has been exploring alternative facility arrangements, as documented in the *Williamsburg Area Transit Authority Transit Operations and Maintenance Facility Feasibility Study*, which was completed by AECOM in April 2010. The feasibility study identified a number of facility inadequacies including:



**Overview of Regional Bus Facility**

- Lack of significant security features
- Lack of a separate dispatch area
- No secure fare retrieval area
- Insufficient employee parking
- No chassis wash to facilitate efficient cleaning of vehicle undercarriage
- Insufficient space for inventory storage
- Inadequate separation of personal and bus vehicle movement
- Poor vehicle movement pattern
- Insufficient administrative space

The office space located on the second floor of the facility is not accessible to people with mobility limitations as there is not an elevator.

The facility study recommended that WATA acquire, retrofit, and further develop the existing site as the lowest cost alternative for its facility needs. WATA is currently updating this study to make an informed decision with regard to the site. WATA has incorporated facility planning and construction expenses into its capital planning process. DRPT's Six-Year Improvement Program shows Regional Surface Transportation Program (RSTP) funds programmed for this project in FY18; FY19; and FY20. This project has been incorporated in the capital and funding plans for this TDP.

## Passenger Facilities



***Williamsburg Transportation Center***

WATA's main transfer hub is the Williamsburg Transportation Center, located at 468 North Boundary Street, in the City of Williamsburg. The Williamsburg Transportation Center, owned by the city, is a multi-modal center, served by Amtrak, Greyhound, HRT, WATA, and taxis. WATA leases space at the center to operate the WATA Customer Service Center and Store. The center is open Monday through Saturday from 10:00 a.m. to 7:00 p.m., with lunch break from 12:30 p.m. to 1:00 p.m. Indoor waiting, restrooms, and vending machines are available at the center.



***Williamsburg Transportation Center***

There are 34 passenger waiting shelters located throughout the service area. WATA has added five waiting shelters since the 2009 TDP, which documented a shelter inventory of 29 shelters. The current shelter locations are listed in Table 1- 2.

**Table 1-2: WATA Shelter Locations**

<b>Location</b>	<b>Address</b>
Anvil Campground	5423 Mooretown Road
Barclay Square Condominiums	376 Merrimac Trail
Burnt Ordinary Apartments	3301 Toano Drive
Colonial Behavioral Health	1657 Merrimac Trail
Colonial Heritage	Richmond Road (across from Pottery)
Colonial Town Apts.	327 Merrimac Trail
Department of Motor Vehicles	952 Capitol Landing Road
Farm Fresh	455 Merrimac Trail
Ferguson	6540 Mooretown Road
Home Depot- Mooretown Road	6700 Mooretown Road
International Village	900 Capitol Landing Road

Location	Address
James York Plaza	601 Merrimac Trail
Jamestown Road at SunTrust Bank	1186 Jamestown Road
James City County Human Services	5249 Olde Towne
Kmart	118 Waller Mill Road
Longhill Grove Apartments	Longhill Road/Longhill Grove
McDonalds- Lightfoot	6473 Richmond Road
Merrill Lynch	Pocahontas Trail
Motel Six	3030 Richmond Road
Norge Post Office	7489 Richmond Road
Richmond Road at High Street	Richmond Road at High Street
Route 60/New Hope	1402 Richmond Road
Scotland/Armistead	Scotland/Armistead
Thomas Nelson Community College	4601 Opportunity Way
William & Mary Law School	613 South Henry Street
Walmart	731 E. Rochambeau
Warhill High School	4615 Opportunity Way
WATA	7239 Pocahontas Trail
Williamsburg Premium Outlets	5715 Richmond Road
Williamsburg Pottery	6692 Richmond Road
Williamsburg Shopping Center	1234 Richmond Road
WJCC Recreation Center	5301 Longhill Road
York Street/Powhatan Street	York Street/Powhatan Street

## TRANSIT SECURITY PROGRAM

WATA's security program is comprised of three major components:

- Safety and security policies and procedures
- Safety and security training
- Infrastructure

An *All Hazards Risk and Resiliency Assessment* was conducted for WATA by Atkins in 2013. This assessment provided a number of recommendations to improve system safety and security, including development of an Emergency Response Plan.

WATA's safety and security procedures are highlighted in the Driver's Handbook and include a protocol for a number of different types of emergencies and potentially hazardous scenarios.

The following infrastructure components are part of the WATA security program:

- Two-way radios are used on vehicles so that drivers can communicate with dispatch in event of an emergency.
- Panic buttons are provided on vehicles for the drivers to use in event of an emergency.
- Surveillance cameras are positioned on-board vehicles to record incidents and accidents.
- Clever Devices ITS System is used on-board vehicles for a number of applications, including a geographic tracking feature that can show dispatch the real-time location of vehicles. This system is described in more detail below, in conjunction with the ITS program.
- The parking lot at the Operations and Maintenance Facility is fenced in and gated with surveillance cameras.

Following through with several of the recommendations that were included in the *Risk and Resiliency Assessment*, WATA is currently in the process of upgrading its security infrastructure. The Authority has published an Invitation to Bid for the following security enhancements for the Pocahontas Trail facility:

- Infrastructure wiring for voice and data systems
- IP (internet protocol) camera system
- Access control system
- Security system / intrusion detection system

These upgrades are intended to enhance the security of WATA assets at the facility. The facility is currently protected through a commercial security alarm service.

## INTELLIGENT TRANSPORTATION SYSTEMS (ITS) PROGRAM

ITS programs in public transportation encompass a broad range of communication-based information and electronics technologies that serve to improve safety, efficiency, and service through the use of real-time information. For WATA, these technologies are provided through Clever Devices, a company that specializes in these devices and applications.

WATA's ITS program uses the following Clever Devices products:

- CleverCAD®- computer-aided dispatch and automatic vehicle location
- BusTime®- provides real-time passenger information

The focus of WATA's ITS program during the past two years has been the implementation of the BusTime® system, which allows passengers to use electronic devices to determine real-time bus schedule information. BusTime® is accessible through desktop computers, cell phones (via text), and smart phones. Users access the program through the web link <http://bustime.gowata.org>

BusTime® can be used by WATA to inform passengers of service interruptions, emergencies, and important events. In addition, the program is used to provide fully automated stop and transfer announcements using GPS technology. WATA staff use the program for operations management.

WATA is exploring the use of GPS technology to help streamline the paratransit scheduling operations.



**BusTime Interface**

## **PUBLIC OUTREACH**

WATA is working to expand outreach in the community and has recently formalized the WATA Riders Advisory Committee (WRAC). The purpose of WRAC is to identify public transportation needs of the Historic Triangle region and act as a forum where citizens can provide comments and insights about WATA fixed route service expansions, reductions or modifications. WRAC meets every other month, with meetings held either at Williamsburg Regional Library or James City County Library.

Formal public hearings are held when major service changes are proposed, as is required by the FTA. WATA is actively involved with Hampton Roads Transportation Planning Organization (HRTPO), which serves as MPO for the region.

## **OTHER AREA PUBLIC TRANSPORTATION PROVIDERS/SERVICES**

There are a number of other transportation service providers in the WATA service area, including two that are associated with WATA Authority members: Colonial Williamsburg Foundation and York County. Some vehicles for both of these operations were purchased through the Authority and are included in WATA's fleet inventory.

### **The Colonial Williamsburg Foundation Shuttle**

The CWF operates a shuttle system to transport visitors between the Colonial Williamsburg Visitor Center and the Revolutionary City and circle the town. Service is provided daily from 9:00 a.m. to 10:00 p.m. Shuttle service is free to ticket-holders.

## Yorktown Trolley

York County operates the Yorktown Trolley, which provides circulator service throughout historic Yorktown, connecting National Park Service Battlefield Visitor Center with Yorktown Victory Center, located on the waterfront. The Yorktown Trolley is operated seasonally, using three trolleys. Service is provided daily on the following schedule:

- March 27- May 22: 11:00 a.m. to 5:00 p.m.
- May 23- September 7: 10:00 a.m. to 5:30 p.m.
- September 8- November 1: 11:00 a.m. to 5:00 p.m.

There is no fare charged to ride the trolley. Service frequencies are between twenty and twenty-five minutes.

## Hampton Roads Transit

Hampton Roads Transit (HRT), governed by Transportation District Commission of Hampton Roads, provides public transportation for the cities of Chesapeake, Hampton, Newport News, Norfolk, Portsmouth and Virginia Beach. HRT operates three routes that serve to connect the Williamsburg region to Hampton Roads. These are:

- Route 108 – Provides service between Patrick Henry Mall in Newport News and Lee Hall via Warwick Boulevard. Connects with WATA’s Gray line, but does not currently offer a timed connection.
- Route 116- Provides service between Patrick Henry Mall in Newport News and Lee Hall via Jefferson Avenue. Connects with WATA’s Gray line, but does not currently offer a timed connection.
- Route 121- Offers one morning round-trip and one afternoon round-trip between the Williamsburg Transportation Center, Patrick Henry Mall and the Newport News Transportation Center.

## INTERCITY SERVICES

### Greyhound

Intercity bus service is provided for the Williamsburg region with a stop at the Williamsburg Transportation Center. The following schedule is currently offered:

- Westbound toward Richmond: two trips daily; 1:30 p.m. and 7:55 p.m.
- Eastbound toward Hampton: two trips daily; 10:30 a.m. and 5:15 p.m.

Greyhound no longer offers a ticket office at the Williamsburg Transportation Center.

## Amtrak

Amtrak service is offered from the Williamsburg Transportation Center on the following schedule:

- Westbound toward Richmond: two trips M-F; 9:37 a.m. and 5:41 p.m.; two trips Sat-Sun: 8:52 a.m. and 5:41 p.m.
- Eastbound toward Newport News: two trips M-F; 11:14 a.m. and 6:21 p.m.; Sat-Sun: 10:38 a.m. and 8:31 p.m.

## HUMAN SERVICE TRANSPORTATION PROGRAMS

There are a number of human service agency transportation programs in the region, each of which typically focuses on a particular client type or transportation need. The programs identified in the Hampton Roads Coordinated Plan as providing service in the WATA service area are as follows:

- Colonial Behavioral Health- provides transportation for its clients to attend day programs.
- Logisticare- provides Medicaid transportation statewide through a transportation brokerage.
- Peninsula Agency on Aging (PAA) – Provides transportation for seniors and people with disabilities for a number of trip purposes and programs, including providing access to the senior center and medical appointments.
- Williamsburg Faith in Action – Provides transportation for seniors, adults with disabilities, and those who are chronically ill. Drivers are volunteers.

## Williamsburg Area One-Call System

Several local human service agencies, along with WATA, recently participated in a study to determine the feasibility of developing a mobility management center for the Williamsburg Area. The focus of the project was to look at ways in which paratransit trip scheduling in the Williamsburg area could potentially be coordinated. This project was conducted under direction of Williamsburg Health Foundation, which is a private, non-profit grant making foundation focused on “promoting health and wellness, ensuring availability of accessible,

quality health-related services, and strengthening our grantees' organizational effectiveness and capacity.”<sup>4</sup>

The study recommended development of a One-Call Center, which may provide WATA with a number of benefits, including paratransit scheduling software, tablets for paratransit vehicles, and assistance with ADA paratransit eligibility screening. A copy of the draft final report for this study is provided as Appendix D.

## PRIVATE TRANSPORTATION PROVIDERS

The following private transportation providers operate passenger transportation in the WATA service area.

- Best Taxi of Williamsburg: local taxi service
- Colonial Capital Cabs: local taxi service
- Curbside Services: non-emergency medical transportation
- Distinguished Executive Transportation: airport shuttle and charter services
- Historic Taxi: local taxi service
- Livi Transportation: non-emergency medical transportation
- Oleta Coach Lines: airport shuttle and charter services
- Triangle Taxi: local taxi service
- Yellow Cab: local taxi service
- Williamsburg Taxi: local taxi service

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<sup>4</sup> Williamsburg Health Foundation website.

# Chapter 2: Goals, Objectives, and Standards

## TASKS AND ISSUES FOR THE TRANSIT DEVELOPMENT PLAN

An important first step in development of the TDP was to learn from committee members and WATA staff what community transportation issues were most important to explore within the TDP and COA, as well as what goals stakeholders had for the study. A discussion of goals and issues was held during the TDP kick-off meeting on February 25, 2015. Committee members and staff articulated both issues and goals in a number of different topic areas. These are summarized by topic area below and are not prioritized.

### Specific Service Gaps and Issues

- Improved frequency of service is desired, especially within the core service area.
- Later hours of service are needed, particularly for people who work retail hours.
- Buses are full in the mornings when the frequency is sixty minutes. There is a need for more frequent service during the early morning service period.
- Specific locations needing service are:
  - Lackey Free Clinic in Yorktown – about three miles from the closest transit stop
  - Outlying areas of James City County
  - James City Government Center - Mounts Bay Road
- There are some areas of the City of Williamsburg where growth is occurring, but transit service is not currently available.

### Infrastructure

- Improved bus stop amenities are needed:
  - Additional shelters -the Grove neighborhood was specified
  - Improved lighting – the stop at Rolling Meadows was specifically mentioned
  - Improved bus stop maintenance - cleaning and trash removal
  - Better ADA accessibility for fixed route stops
- First mile/last mile – Riders need safe pedestrian and bicycle options to get to/from bus stops

- Text alerts sent to riders who subscribe to the service could be displayed on the interior vehicle information screens. WATA staff indicated that they are working on this issue, but there is currently a conflict with the audio component of the screen.
- Bus pull-off areas for drivers to get the bus out of traffic when stopped should be considered when new developments are being reviewed.
- Consider smaller vehicles for the William and Mary route as roadways are constrained. There needs to be a balance between vehicle size and passenger capacity.

### Visitor Issues

- WATA ends service at 9:00 p.m., with the last transfer opportunities occurring at the Williamsburg Transportation Center at 8:00 p.m. This may not be late enough for visitors to get back to lodging destinations if they choose to use WATA to access restaurants and retail opportunities.
- WATA is convenient for visitors who arrive via Amtrak and are staying at hotels that are served. This coordination should continue.
- There are no public transportation options for visitors who arrive via any of the regional airports (Richmond, Newport News, and Norfolk). These visitors typically use a rental car to get to the Williamsburg area from the airport.
- Some of the area's resorts are not served by transit. These areas include Water Country and a number of timeshares. It should be noted that there is a stop adjacent to Water Country at the Marquis Center.
- There may be better ways to coordinate WATA and Colonial Williamsburg (CW) transportation services after major events in the historic area. CW buses are typically stuck within a gridlocked area after major events, whereas WATA vehicles could potentially be staged at perimeter locations to help effectively move people after major events.

### Information and Communication Issues

- There are riders that do not know how to access bus schedules. People at bus stops will sometimes just wait without knowledge of when the bus is coming. There was a discussion of the new WATA service, BusTime®, which provides real-time bus schedule information. Wider distribution of information concerning this service is needed.

- The need for a smartphone app was mentioned. While WATA does not currently offer the service as an app (it does exist), WATA's bus schedule information can be accessed on smartphones via BusTime®, using a web browser.
- Additional advertising efforts targeting William and Mary students should be considered.
- Bus route maps are not currently available.
- The perception among students is that service is unreliable, but that is not the case. There is a need to better market the service and improve communication.

## Regional Connectivity

- There are connection points between WATA and HRT but they are limited. HRT's Route 121 travels from Newport News to the Williamsburg Transportation Center, with one morning round trip and one afternoon round trip. These two trips connect in a timely manner with WATA's timed transfer hub. There is also a connection between HRT and WATA at Lee Hall. This connection option is offered through two routes –Route 108 and Route 116. Both of these routes operate on seventy-minute headways, which makes it difficult to plan a timed transfer with WATA's Gray Line at Lee Hall.
- There are no public transit connections available to travel from Williamsburg to the region's airports.

## Routing

- The hub system needs to be evaluated. If one route is operating late, it causes all of the routes to be late. A scheduling buffer to make the routes more reliable should be evaluated.
- A southern hub should be considered – maybe near the new hospital/Quarterpath Road area. This would allow for transfers between the Orange and Gray lines closer to their terminus locations and would improve travel time for people using WATA to get from the Grove area to Marquis Shopping Center. A southern hub may provide for improved schedule reliability.

## Paratransit

- Capacity problems due to significant growth in demand have resulted in tight schedules, lack of reliability and long wait times.

- William and Mary reported that students with disabilities need better paratransit services. This comment was further explored through stakeholder outreach, as WATA records did not indicate that there have been service denials for William and Mary students. The issue appears to be that students do not attempt to access WATA’s paratransit service. William and Mary arranges private paratransit services for students that have short-term disabilities, paying for services through student’s fees.
- Paratransit demand has increased substantially. If fixed route bus stop accessibility were to be improved, it may be possible to shift some riders from the paratransit program to fixed route services.
- Other paratransit resources include the RIDES program for seniors.

### **Additional Comments**

- Committee members who are WATA users generally have high regard for drivers and the system.
- There is an issue with behavior and inappropriate language among some bus riders. Committee members indicated a desire for policies and enforcement with regard to rider behavior. WATA has recently implemented a rider code of conduct to help improve this issue.
- A coordinated transportation system across modes is important to the City of Williamsburg.
- The Surry County Route began as a demonstration grant-funded route. The county is now contributing a portion of the cost. The route is very important for employment transportation but, given the low density area served, the cost per trip is relatively high. There are questions among elected officials concerning the cost-effectiveness of the service.
- Baby-boomers will need additional transit options as they age in place in the region. The subject of aging in the community is a topic that the City of Williamsburg, James City County, and York County are addressing in their comprehensive plans.

### **Other Resources**

- As documented in Chapter 3, the study team looked at the James City County Comprehensive Plan; the York County Comprehensive Plan the City of Williamsburg’s Comprehensive Plan; and Hampton Roads Transportation Planning Organization’s Plan.

- The study process should include discussions with HRT, Williamsburg-James City County School District, local resorts, and the Chamber and Tourist Alliance.

These issues were explored to the extent feasible during the TDP process.

## WATA VISION AND MISSION

As part of WATA's 2010 Strategic Plan, the following vision and mission statements were developed.

### Vision

"Williamsburg Area Transit Authority will become the transportation option of choice for people who live, work, and visit in the Williamsburg Area."

### Mission

"To provide safe, efficient, and accessible public transit to residents and visitors in the Williamsburg Area."

These statements were included in the 2009 TDP. Both were reviewed and discussed by transit stakeholders during this current TDP planning process.

There was some discussion during stakeholder interviews to revise the vision statement, as there are several stakeholders who felt it may not be realistic for WATA to become the transportation option of choice for all residents. WATA's new Executive Director mentioned a desire to modify the vision to reflect this and will be working with the Board to modify the vision statement.

## TRANSIT PROGRAM GOALS AND OBJECTIVES

WATA's 2010 Strategic Plan, together with the 2009 TDP, developed goals and strategies/objectives in support of the vision and mission of the Authority. An important task for this TDP was to refine these goals, update them to reflect growth and development of the system and develop updated objectives based on the TDP/COA recommendations.

Some of the goals from 2009 and 2010 are very specific and more characteristic of objectives. The goals are presented below, followed by a discussion of how each goal may be updated, deleted, edited, or broadened where applicable. Two additional draft goals have been added in the areas

of financial sustainability and workforce development. Specific objectives have also been attached to the proposed goals.

### **Previous Goal 1 - Expand WATA transit service to meet customer and community needs.**

#### *Draft Updated Goal 1: Improve WATA transit service to meet customer and community needs.*

The updated goal replaces “expand” with “improve,” in recognition that transit system improvements may not necessarily be expansions.

### **Previous Goal 2 - Complete transition of the regional transit system into the Williamsburg Area Transit Authority to provide effective and efficient public transit service in the Williamsburg area.**

This goal is very specific, time-sensitive, and more similar to an objective. It is proposed that this goal be transitioned to an objective, and tied to a goal that addresses efficiency and effectiveness.

*Note: WATA has made significant progress with the transition from a county-operated system to a regional authority. This transition has taken several years, with James City County continuing to provide some services on behalf of WATA, serving as the fiscal agent, providing procurement services, and managing the human resource function.*

### **Previous Goal 3 - Promote and implement green practices that reduce greenhouse emissions and mitigate traffic congestion.**

#### *Draft Updated Goal 3: Engage in practices that are environmentally responsible.*

The draft updated goal is a little broader than the original one, encompassing a wider range of “green” activities. Objectives could include using “greener” vehicles, adopting green building practices when the proposed facility is constructed, and reaching out to discretionary transit riders so that they choose to use transit rather than driving.

During the Steering Committee discussion, it was mentioned that WATA has received several grants through the Congestion Mitigation and Air Quality Program (CMAQ), so it may be important to keep language regarding traffic mitigation. The concept of reducing traffic congestion could be addressed as an objective.

**Previous Goal 4 - Improve the customer’s transit experience, integrating technology where applicable.**

*Draft Updated Goal 4: Provide quality passenger amenities to enhance the customer’s transit experience.*

The current Goal 4 mentioned technology as part of the goal, but one of the previous objectives discussed bus shelters. It is proposed that this goal be broadened to reflect a full range of “passenger amenities.”

**Previous Goal 5 - Develop and maintain an on-going performance monitoring program.**

This goal is very specific. It is suggested that this goal be eliminated in favor of something broader that speaks to efficiency and effectiveness. Developing and maintaining an on-going performance monitoring program could be an objective under the broader goal of efficiency/effectiveness.

*Draft Updated Goal 5: Promote system efficiency and effectiveness.*

**Goal 6 - Improve coordination between transportation, land use, and economic development activities.**

No changes are proposed for this goal.

**Goal 7 - Continue to provide a safe and secure transit system.**

*Draft Updated Goal 7: Provide a safe and secure transit system.*

**Proposed New Goals**

In addition to the above goals, it is suggested that WATA add goals in the areas of financial sustainability and workforce development. These proposed new goals are:

*Draft Proposed Financial Goal: Exercise sound fiscal practices that work to build WATA’s long-term financial sustainability.*

*Draft Proposed Workforce Goal: Develop an effective and efficient WATA workforce.*

Incorporating the proposed changes, the first proposal for an updated set of goals was:

Goal 1: Improve transit service to meet customer and community needs.

Goal 2: Engage in practices that are environmentally responsible.

Goal 3: Provide quality passenger amenities to enhance the customer's transit experience.

Goal 4: Promote system efficiency and effectiveness.

Goal 5: Improve coordination between transportation, land use, and economic development activities.

Goal 6: Provide a safe and secure transit system.

Goal 7: Exercise sound fiscal practices that work to build WATA's long-term financial sustainability.

Goal 8: Develop an effective and efficient WATA workforce.

One of the comments received from a Steering Committee member suggested that these might be too many individual goals and that some are closely related and could be tied together with objectives. The Committee member's suggestion, together with input provided on the draft plan, was to simplify these eight goals into the following three goals:

Goal 1: Improve and strengthen WATA's long-term sustainability.  
(This goal would incorporate goals #2; #4, and #5 above)

Goal 2: Provide a safe and secure transit system that meets customer and community needs.  
(This goal incorporates #1 and #3 above)

Goal 3: Build and sustain WATA's workforce.

The following objectives have been drafted to help accomplish these goals:

**Goal 1: Improve and strengthen WATA's long-term sustainability**

- Objective 1: Complete the planning, design, and construction of an administrative and maintenance facility that will meet current and future needs of the Authority.
- Objective 2: Continue to work with community and regional partners to build community support and maximize funding opportunities.
- Objective 3: Monitor implementation of fare increase to assess the effects on fare revenue and farebox recovery.
- Objective 4: To the extent feasible, implement environmentally friendly practices in the development and management of facilities and in future vehicle purchases.
- Objective 5: Participate in land use planning processes of member jurisdictions to maximize transit feasibility.

- Objective 6: Monitor performance of WATA's routes and services and make adjustments if warranted to ensure maximum benefit for resources expended.

**Goal 2: Provide a safe and secure transit system that meets customer and community needs.**

- Objective 1: Hire a Safety Training Coordinator and work to build WATA's driver training program.
- Objective 2: Continue to engage with WATA riders via WATA Riders Advisory Committee
- Objective 3: Conduct a bus stop inventory and evaluation process and begin a program of bus stop improvements.
- Objective 4: Complete the re-branding process to include website and public information improvements.
- Objective 5: Implement BusTime application for smart phones.
- Objective 6: Monitor customer complaints, compliments, and suggestions and follow through with management response.
- Objective 7: Work to improve on-time performance of routes.

**Goal 3: Build and sustain WATA's workforce.**

- Objective 1: Fill all open positions.
- Objective 2: Continue to monitor employment opportunities in the community to ensure that WATA is providing wages and benefits competitive in the local job market.
- Objective 3: Develop specific strategies to improve employee morale.
- Objective 4: Monitor the fixed route network to ensure that drivers have adequate recovery time in between runs.
- Objective 5: Provide training opportunities to build the skill and knowledge base of WATA's workforce.

These objectives should be reviewed by WATA staff, and updated as needed throughout the TDP period.

## PERFORMANCE, SAFETY, AND SERVICE STANDARDS

Performance, safety, and service standards are benchmarks by which a system can be evaluated. These standards are typically developed in several categories, such as performance (productivity, fiscal condition); safety; and service (service coverage, passenger convenience, and passenger comfort). The most effective standards are straightforward and relatively easy to calculate and understand. Service standards are used as a measure of compliance with Title VI of the Civil Rights Act of 1964, to ensure that services are provided equitably to all persons in the service area, regardless of race, color, or national origin.

### Performance Standards – 2009 TDP and FY2014 Data

The 2009 TDP used 2008 data to develop several standards, each of which is a measure of system performance. Two productivity standards were developed (passengers per revenue hour and passengers per revenue mile), and two cost effectiveness measures were developed (farebox recovery ratio and cost per trip). Different standards were developed for the peak (late spring-summer) and non-peak (fall, winter, early spring) tourism seasons to reflect the significant ridership differences. The standards for the 2009 TDP, followed by the FY14 values, are provided in Table 2-1.

The FY14 values indicate that all of the measures associated with expenses need to be re-evaluated, given the increase in operating expenses over the five-year period. In addition, it appears that current peak season productivity is not as high as it was in 2009, while off-peak productivity is higher. These differences, as well as the significant differences in paratransit cost per trip were analyzed in Task Four TDP/COA efforts and are included in Chapter 3.

**Table 2-1: WATA Performance Standards, 2009 TDP and FY14 Actual**

Measure	2009 TDP Standard	FY14 Actual
Directly Operated Fixed Route Passengers per Revenue Hour:		
Peak Season (April-Sept)	23	19.7
Off-Peak Season (Oct-March)	14	15.8
Directly Operated Fixed Route Passengers Per Revenue Mile:		
Peak Season (April-Sept)	1.3	1.2
Off-Peak Season (Oct-March)	0.9	0.95
Directly Operated Fixed Route Farebox Recovery (1):		
Peak Season (April-Sept)	13%	n.a.
Off-Peak Season (Oct-March)	11%	10%
(1) Fares by month not available for FY14		
Directly Operated Expenses Per Trip:		
Fixed Route – Peak (April-September)	\$ 2.82	\$ 3.14
Fixed Route – Off Peak (October- March)	\$ 3.70	\$ 3.91
ADA Paratransit	36.00	\$ 54.02

WATA reports these measures on a blended basis to the Board (i.e., overall passengers per revenue hour; passengers per revenue mile; farebox revenue; and cost per trip.

The most recent full-year performance measures, by route category, are provided in Table 2-2.

**Table 2-2: FY15 Performance Measures**

Measure	Fixed Route	Demand Response
Customers Per Revenue Mile	1.00	0.13
Customers Per Revenue Hour	16.6	2.3
Cost Per Trip	\$ 4.97	\$ 41.93

To use these measures effectively, it is recommended that routes with performance measures that are 20% or greater lower than the standard be evaluated. For example, based on the FY15 performance data, if a fixed route exhibits performance of 13.2 trips per hour or lower it should be evaluated. It may be that the level of performance experienced is appropriate for the route

(i.e., the service area is less densely populated than the average or it is a new route), or it could mean that the route needs to be changed.

## Safety Standard

WATA currently has the following safety standard:

- Preventable accidents per 100,000 revenue miles. The current goal is less than one per 100,000 miles. The rates for the past three calendar years have been:
  - 2012 – 1.07 preventable accidents per 100,000 revenue miles
  - 2013 – 1.24 preventable accidents per 100,000 revenue miles
  - 2014 – 1.06 preventable accidents per 100,000 revenue miles

## Title VI Service Standards

WATA's Title VI Plan included a set of service standards developed to prevent service design or operations decisions from having disparate impacts within the community. These standards are documented below.

- **Vehicle Load**- Vehicle load is expressed as the ratio of passengers to total number of seats on a vehicle at its maximum load point. The standard for maximum vehicle load is between 1.0 (off-peak) and 1.2 (peak), depending on fleet design. WATA's Title VI Plan indicated that all of WATA's services meet these standards.
- **Vehicle Headway** – Vehicle headway refers to the amount of time between two vehicles traveling in the same direction on a given route. A shorter headway corresponds to more frequent service. The standard for vehicle headways is a maximum of sixty minutes. WATA's Title VI Plan indicated that all of WATA's fixed route services meet this standard (the Surry Route is considered a deviated fixed route, which falls under the broad category of demand response).
- **On-Time Performance** – On-time performance is a measure of runs completed as scheduled. On-time is generally considered to be 0-5 minutes late, and never early. The service standard for WATA for on-time performance is 90%. Data collected and analyzed in Chapter 3 indicates that WATA is not currently meeting this performance standard. Improving on-time performance has been included as an objective.
- **Service Availability** – Service availability is a general measure of the distribution of routes within a transit provider's service area or span of service. The standard for span of service availability is Monday through Saturday from 6:00 a.m. to 9:00 p.m. and Sunday from 8:00 a.m. to 6:00 p.m. WATA's core fixed routes meet this standard, but the Trolley and Green Line have different hours, and the Jamestown Route (currently a demonstration route) does not operate on the weekends.

## PROCESS FOR UPDATING GOALS, OBJECTIVES, AND STANDARDS

It is recommended that the annual review of goals, objectives, and service standards take place as part of the grant preparation cycle. Any changes for these measurement tools can be included in the annual TDP update.

# Chapter 3: Service and System Evaluation and Transit Needs Analysis

## INTRODUCTION

The Service and System Evaluation and Transit Needs Analysis provides a comprehensive review of WATA, including a trend analysis, snapshot in time of WATA's fixed route ridership volume and patterns, paratransit review, and review of WATA's expenses and revenues, peers, demographics, and previous planning efforts. The purposes of this chapter are to:

- Document the trends and current conditions for each service to discover if there are opportunities for service improvements.
- Detail how WATA compares to peer systems with regard to service characteristics, efficiencies, and costs.
- Consider how demographics, land uses, and future trends may affect the need for WATA services in the future.
- Consider how local and regional land use and transportation plans may affect the need for WATA services, both currently and in the future.

Data and information collected and analyzed in this chapter was considered along with results of the organizational and staffing assessment (Chapter 4), and the survey and stakeholder results (Chapter 5), to develop service and organizational alternatives for the TDP and the COA (Chapter 6).

This chapter has the following major components:

- System Evaluation
- Peer Analysis
- Financial Analysis
- Analysis of Fares and Pass Programs
- Recent Compliance Results
- Demographics and Land Use
- Review of Previous Plans and Studies

## SYSTEM EVALUATION

### Trend Data

As displayed in Table 3-1, WATA's total revenue service hours have fluctuated over the period, from a low in FY11 of 55,763, to the FY15 high of 60,299, for an overall service increase of 8.1%. During this same time period, revenue service miles increased at a much higher rate (26%), reflecting additional mileage that has been added to the routes over time, as well as additional ADA demand. The total system wide miles per hour (MPH) has increased from an average of 14.9 to 17.3. The fixed route MPH rose from 15 to 17.3 and the ADA MPH rose from 12.6 to 18. While every transit program's operating environments are different, these MPH figures are higher than is typical for these modes in a mixed urban-rural setting and would suggest that services are operating too many miles for time allotted.

Fixed route ridership has decreased by 7.5% from the FY12 high of 1,076,758 to the preliminary FY15 count of 995,793. A significant percentage of total ridership loss was experienced along the Blue Line (45.5% of the total loss), which may be partially attributed to changing land use patterns in the region, with additional retail opportunities available in other parts of the service area (i.e., the New Town area). Ridership on the Purple 1 and the Red Lines, both of which serve New Town, was up, but not as significantly as ridership on the Blue Line was down. Twenty-two percent of total system ridership loss (13,107 trips) over the period can be attributed to discontinuation of the Yellow Line.

ADA ridership fluctuated from FY11 through FY14, with ridership ranging from a low of 3,485 (FY12) to a high of 4,302 in FY14. In FY15, ADA ridership increased substantially, with 7,383 trips provided. This increase required additional hours and miles of service to accommodate demand.

Annual operating expenses for the system have fluctuated over the 5-year period, with the highest annual operating expenses recorded for FY14, at \$5,055,733. Preliminary FY15 operating expenses are lower than this at \$4,985,680, which is lower than the FY15 budgeted amount of \$5,043,815. ADA expenses were significantly higher in FY15 as would be expected with the increase in demand and associated hours and miles of service required.

Productivity, as defined by the number of passenger trips per revenue hour, has declined over the 5 year period on fixed routes, from a high of 20.1 passenger trips per revenue hour (FY11) to a low of 17.4 passenger trips per revenue hour (FY15). During this same service period, ADA productivity has increased substantially, from a low of 1.2 passenger trips per revenue hour (FY12), to a high of 2.3 passenger trips per revenue hour. WATA changed the way ADA revenue service hours are calculated in FY14, which has resulted in fewer revenue service hours as compared to non-revenue service hours.

Table 3-1: WATA Trend Data FY11-FY15

Measure	FY11			FY12		
	Fixed Route	ADA	Total	Fixed Route	ADA	Total
Trips	1,056,158	4,030	1,060,188	1,076,758	3,485	1,080,243
Revenue Hours	52,643	3,120	55,763	56,957	2,906	59,863
Miles	792,051	39,452	831,503	947,013	33,811	980,824
Operating Expenses	\$ 4,375,425	\$ 200,191	\$ 4,575,616	\$ 4,809,984	\$ 226,592	\$ 5,036,576
Trips/Hour	20.1	1.3	19	18.9	1.2	18
Trips/Mile	1.33	0.1	1.28	1.14	0.1	1.1
Miles/Hour	15	12.6	14.9	16.6	11.6	16.4
Cost/Hour	\$ 83.12	\$ 64.16	\$ 82.05	\$ 84.45	\$ 77.97	\$ 84.14
Cost/Trip	\$ 4.14	\$ 49.68	\$ 4.32	\$ 4.47	\$ 65.02	\$ 4.66
Measure	FY13			FY14		
	Fixed Route	ADA	Total	Fixed Route	ADA	Total
Trips	1,010,092	3,809	1,013,901	996,725	4,302	1,001,027
Revenue Hours	54,298	2,866	57,164	56,230	2,300	58,530
Miles	877,100	36,971	914,071	940,642	36,750	977,392
Operating Expenses	\$ 4,428,322	\$ 245,224	\$ 4,673,546	\$ 4,823,336	\$ 232,397	\$ 5,055,733
Trips/Hour	18.6	1.3	17.7	17.7	1.9	17.1
Trips/Mile	1.15	0.1	1.11	1.06	0.12	1.02
Miles/Hour	16.2	12.9	16	16.7	16	16.7
Cost/Hour	\$ 81.56	\$ 85.56	\$ 81.76	\$ 85.78	\$ 101.04	\$ 86.38
Cost/Trip	\$ 4.38	\$ 64.38	\$ 4.61	\$ 4.84	\$ 54.02	\$ 5.05
Measure	FY15			Notes: (1) The Yellow line was discontinued in FY 12 (2) The Jamestown Route began in mid-FY15 (3) FY15 data are preliminary Source: WATA		
	Fixed Route	ADA	Total			
Trips	995,793	7,383	1,003,176			
Revenue Hours	57,151	3,148	60,299			
Miles	988,901	56,758	1,045,659			
Operating Expenses	\$ 4,676,085	\$ 309,595	\$ 4,985,680			
Trips/Hour	17.4	2.3	16.6			
Trips/Mile	1.0	0.13	1.0			
Miles/Hour	17.3	18.0	17.3			
Cost/Hour	\$ 81.82	\$ 98.35	\$ 82.68			
Cost/Trip	\$ 4.70	\$ 41.93	\$ 4.97			

The fixed route cost per passenger trip has risen from \$4.14 (FY11) to \$4.70 (FY15), an increase of 13.4%. This equates to approximately 3.3% per year over the 5-year period. This increase in per-trip cost is due in part to the dip in ridership. By contrast, fixed route cost per revenue hour has actually decreased from FY11 to FY15, as service hours have increased at a greater rate than total operating costs.

Interestingly, cost per passenger trip for ADA paratransit has actually decreased over the study period, due to significant increase in ridership, and associated increase in productivity (from \$49.68 per passenger trip in FY11 to \$41.93 per passenger trip in FY15). While operating costs for ADA paratransit have increased, the number of passenger trips has increased in greater proportion.

### ***Ridership Trends by Route and Service***

While overall ridership declined by 5.4% between FY11 and FY15, each route and service experienced a somewhat different trend. The following services saw significant ridership increases during the period:

- ADA paratransit, 83.2% ridership increase
- Surry route, 41% ridership increase

Modest ridership gains were experienced on the following routes:

- Red Line, 7.8% ridership increase
- Purple 1 Line, 5% ridership increase
- Gray Line, 4.6% ridership increase

Several other WATA services experienced a decline in ridership during the period, including:

- W & M Green Line, -21.4%
- Trolley Line, -11.5%
- Tan Line, -11.1%
- Blue Line, -10.7%

The decline in Blue Line ridership may be due to changing land use patterns, with major retail activities increasing in the New Town area rather than in the Route 60 West corridor. The increase in ridership on the Red and Purple Lines would support this theory. There is not an obvious explanation for the decline in ridership on the Green Line and the Trolley, though survey comments indicated a desire for bi-directional service to improve travel times. Ridership trends by route and service are provided in Table 3-2. The Jamestown Line was not included in the trend analysis as it did not begin operating until January 2015.

**Table 3-2: Trend Data by Route and Service FY11-FY15**

Route	Ridership						
	FY11	FY12	FY13	FY14	FY15	FY11-FY15 Change %	FY11-FY15 Change #
Gray	147,559	149,991	144,104	151,985	154,414	4.6%	6,855
Blue	252,692	251,819	241,805	236,278	225,646	-10.7%	(27,046)
Orange	161,393	164,061	153,884	147,485	152,892	-5.3%	(8,501)
Purple 1	135,749	138,932	73,758	81,007	77,712	2.9%	3,954
Purple 2			58,791	53,974	55,730		(3,061)
Red	111,554	117,932	117,905	122,609	120,241	7.8%	8,687
Yellow	13,107	8,037	-	-	0		(13,107)
Tan	128,127	133,424	119,446	118,280	115,322	-10.0%	(12,805)
Green	61,929	70,139	70,281	47,008	48,658	-21.4%	(13,271)
Surry	5,714	5,928	6,152	6,755	8,054	41.0%	2,340
Trolley	38,334	37,293	23,966	31,343	33,925	-11.5%	(4,409)
Jamestown	0	0	0	0	3,199		3,199
ADA	4,030	3,485	3,809	4,340	7,383	83.2%	3,353
<b>Totals</b>	<b>1,060,188</b>	<b>1,067,076</b>	<b>1,013,901</b>	<b>1,001,064</b>	<b>1,003,176</b>	<b>-5.4%</b>	<b>(57,012)</b>

Notes: Purple 1 and Purple 2 were operated as one route prior to FY13. The change in ridership for Purple 1 and Purple 2 is FY13 to FY15. The Yellow Line was discontinued in FY12.

Source: WATA

### FY14 Route Productivity

Among true fixed route services (i.e., not including the Surry Line, which is operated as a deviated fixed route), the Blue Line carried the most passengers and exhibited the highest productivity and lowest cost per trip. At 33.6 passenger trips per revenue hour, the route's productivity was 79% higher than the fixed route mean productivity of 18.8 passenger trips per revenue hour. Productivity data for the Gray and Orange Lines were above the system mean, at 21.6 and 21.0 passenger trips per revenue hour, respectively. The Trolley Line exhibited the lowest productivity among fixed routes (8.3 passenger trips per revenue hour), followed by the Purple 2 Line (10.3 passenger trips per revenue hour).

These data suggest that service changes may be warranted for the Trolley and Green Line, as they operate within the more densely population portion of the service area, where higher route productivity would be expected. Productivity is expected to be lower for routes that serve lower density portions of the service area, such as Purple 1, Purple 2, Surry, and Jamestown Routes.

**Table 3-3 FY14 Route Productivity**

Route	Passenger Trips	Revenue Hours	Operating Expenses	Passenger Trips/Hour	Cost/Passenger Trip
Blue	236,278	7,023	\$ 602,433	33.6	\$ 2.55
Gray	151,985	7,024	\$ 602,519	21.6	\$ 3.96
Orange	147,485	7,024	\$ 602,519	21.0	\$ 4.09
Red	122,609	7,023	\$ 602,433	17.5	\$ 4.91
Tan	118,280	7,023	\$ 602,433	16.8	\$ 5.09
Purple 1	81,007	5,216	\$ 447,428	15.5	\$ 5.52
Green	47,008	3,044	\$ 261,114	15.4	\$ 5.55
Purple 2	53,974	5,216	\$ 447,428	10.3	\$ 8.29
Trolley	33,925	4,075	\$ 349,554	8.3	\$ 10.30
<b>Totals</b>	<b>992,551</b>	<b>52,668</b>	<b>\$ 4,517,861</b>	<b>18.8</b>	<b>\$ 4.55</b>
Surry (deviated)	6,755	3,044	\$ 261,114	2.22	\$ 38.65

Source: WATA

## Boarding/ Alighting Counts

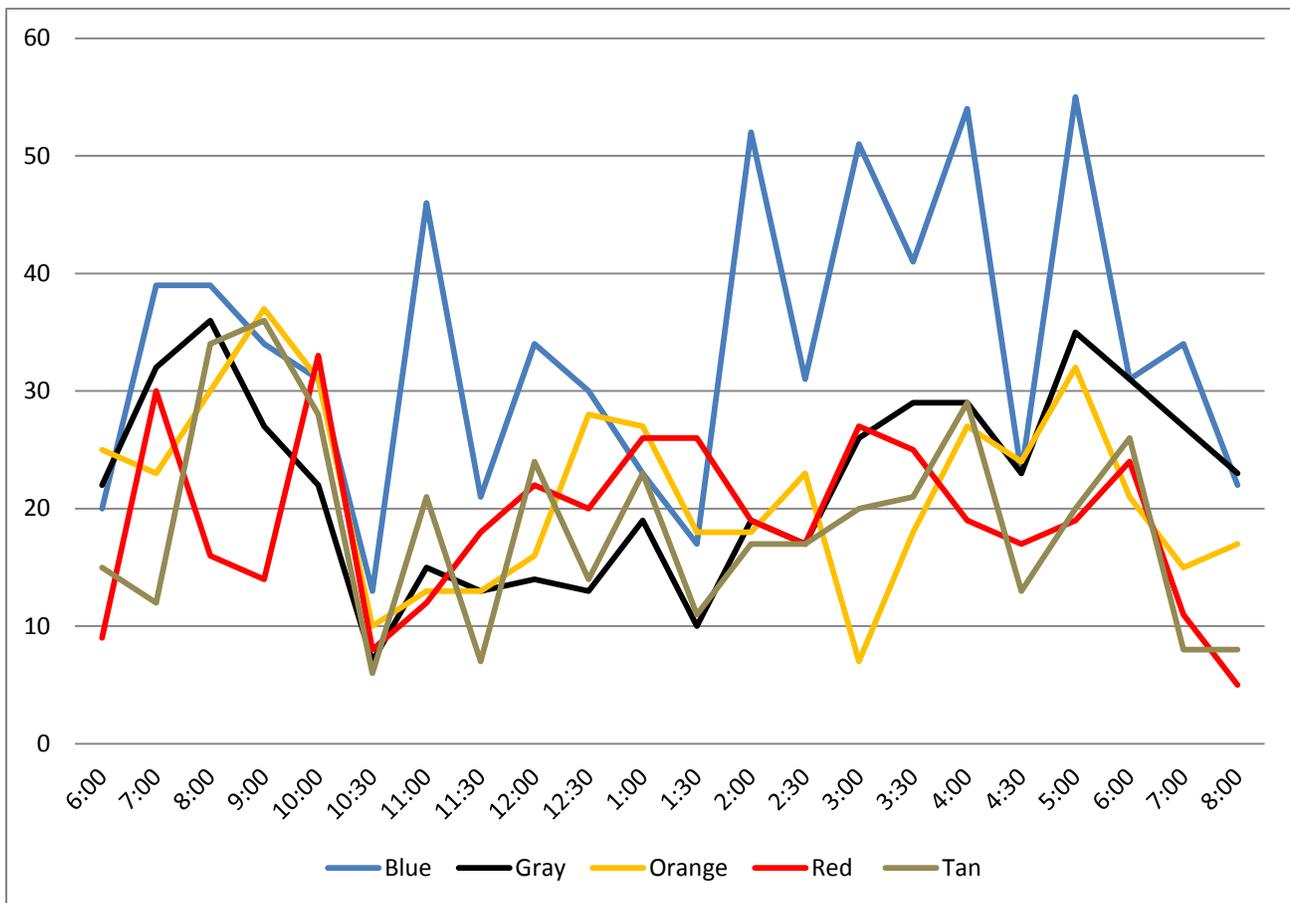
In order to develop a solid understanding of current ridership patterns on the WATA fixed route network, full boarding/alighting counts were conducted on Thursday, April 16, 2015 and Saturday, April 18, 2015. These dates were chosen to capture ridership that reflected both the beginning of tourism season in the region as well as the William & Mary academic calendar. KFH Group staff supervised temporary workers who rode each vehicle trip of each fixed route from the first trip through the last trip of the day. Temporary workers used paper run sheets that listed each stop along each route to record the number of passengers who boarded and alighted at each stop throughout the service day. The temporary workers conducted time checks, recording the time the vehicle left each time point, and distributed/collected passenger surveys. The passenger survey data are presented in Chapter 5.

Data recorded during the two-day counts have been compiled by route, time of day, and stop for both the Thursday and Saturday samples. These data are presented in this section.

### Ridership by Route and Time of Day

The Thursday ridership patterns by route and time of day for the 5 core routes that have “frequency” service (i.e., those routes that add a second bus on the half-hour from 10:30 a.m. to 4:30 p.m.) are shown in Figure 3- 1. As these data show, the Blue Line is consistently the most used throughout the day, with peaks at 11:00 a.m., 2:00 p.m., 3:00 p.m., 4:00 p.m., and 5:00 p.m. For all of the 5 routes that offer 30-minute service, the 10:30 a.m. trip is lightly used in comparison to the rest of the service day. Trips that operate on the half-hour (:30) show consistently lower ridership than trips that operate at the top of the hour. With the exception of the Red Line, there is generally a ridership peak between 8:00 a.m. and 9:00 a.m., a mid-day dip, and then an afternoon ridership increase.

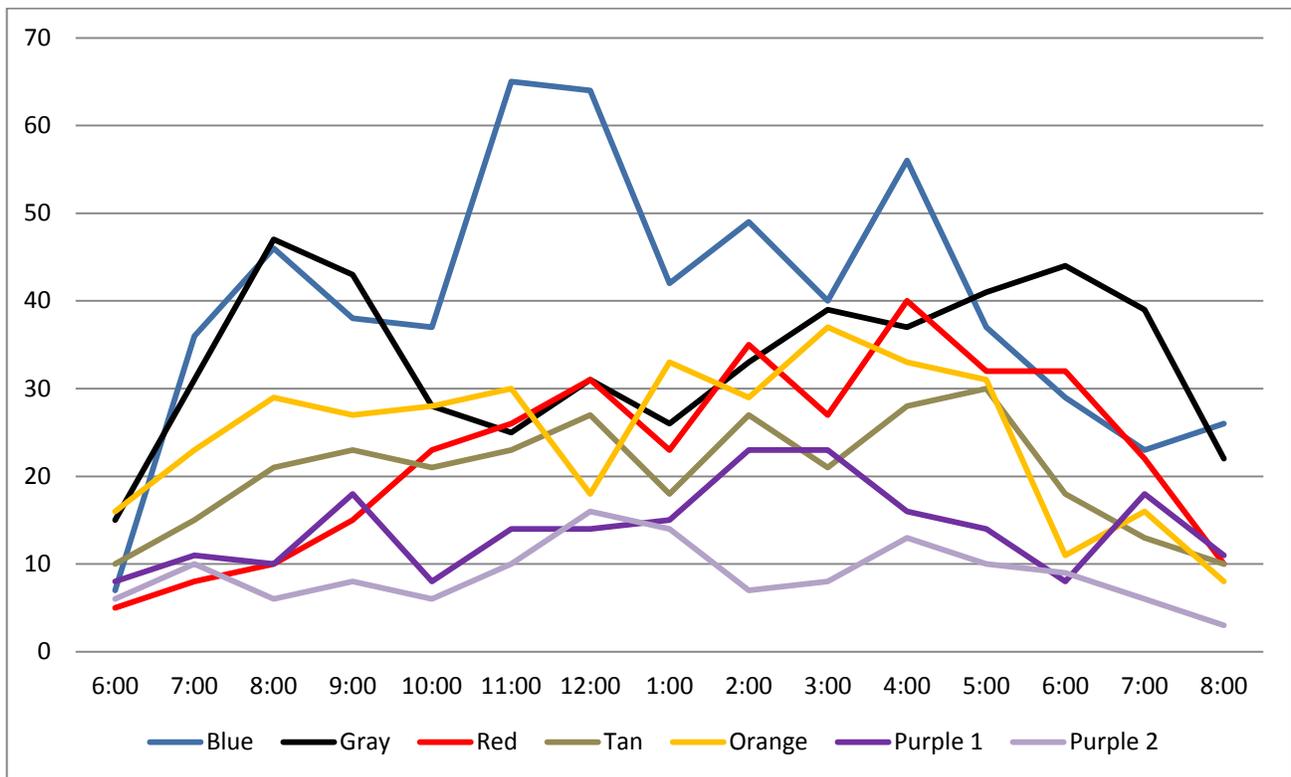
**Figure 3-1: Thursday Ridership by Route and Time of Day for Core Routes with Frequency Schedules**



Source: KFH Group Boarding/Alighting Counts, April, 2015

On Saturday, the Blue Line was the most consistently used throughout the day, with some significant loads at 11:00 a.m. and 12:00 p.m. (over 60 passengers per vehicle trip). The Blue and the Gray Lines displayed a morning peak at 8:00 a.m. Ridership on the Red, Orange, and Tan Lines generally trended upward throughout the day on Saturday to a peak at 4:00 p.m. The Purple 1 and Purple 2 Lines were relatively stable throughout the day. These data are shown in Figure 3-2.

**Figure 3-2: Saturday Ridership by Route and Time of Day for Core Routes**

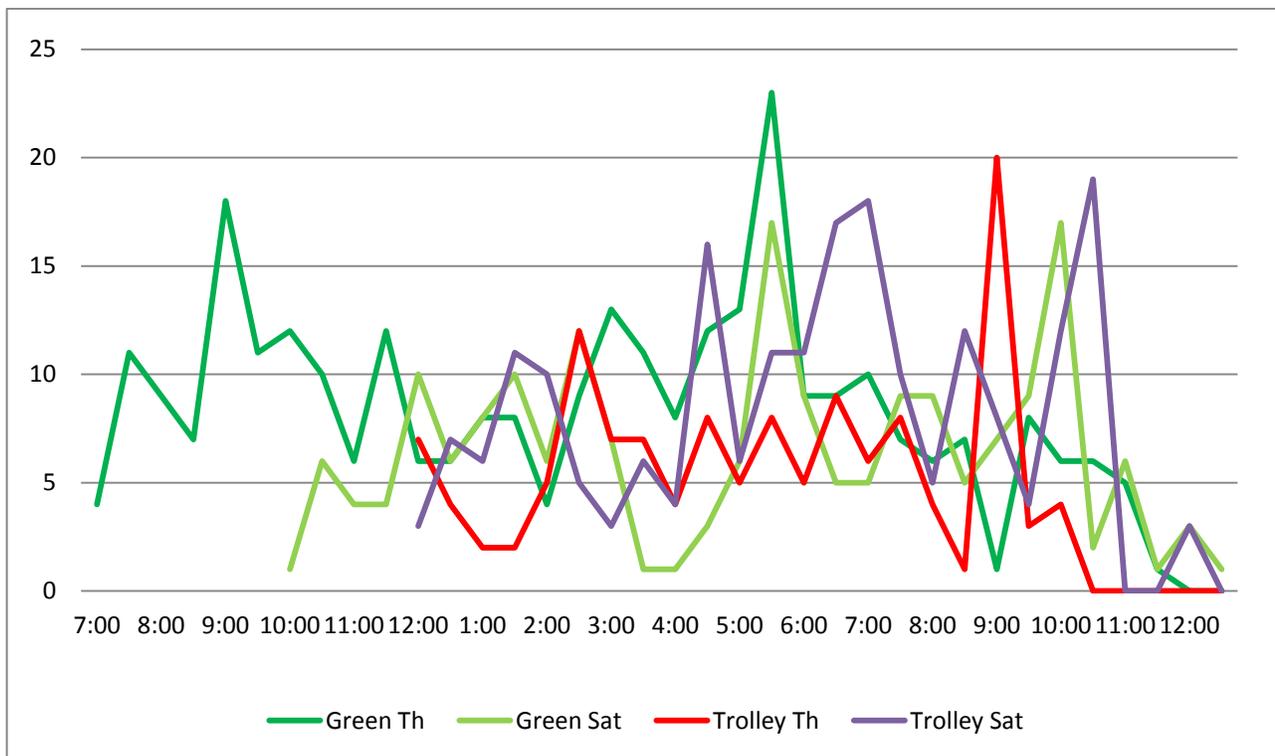


Source: KFH Group Boarding/Alighting Counts, April, 2015

The Green Line and the Trolley each have 30-minute frequencies and serve similar markets. As such, ridership by time of day for these routes is displayed together on Figure 3-3. As the ridership graph indicates, Green Line ridership for Thursday counts showed peaks at 9:00 a.m. and again at 5:30 p.m., with low mid-day usage (12:00 p.m. to 2:00 p.m.), and a decline in ridership after 7:00 p.m. On Saturday, Green Line ridership was generally between 5 and 10 passengers per vehicle trip during the daytime with a dip at 4:00 p.m. and 4:30 p.m., followed by a peak at 5:30 p.m., and again at 10:00 p.m. Ridership after 10:00 p.m. was very low.

Thursday Trolley ridership averaged between 5 and 10 passengers per vehicle trip, with lower values during the early afternoon and after 9:00 p.m. The highest ridership trips for the Thursday Trolley were on the 2:30 p.m. trip and the 9:00 p.m. trip.

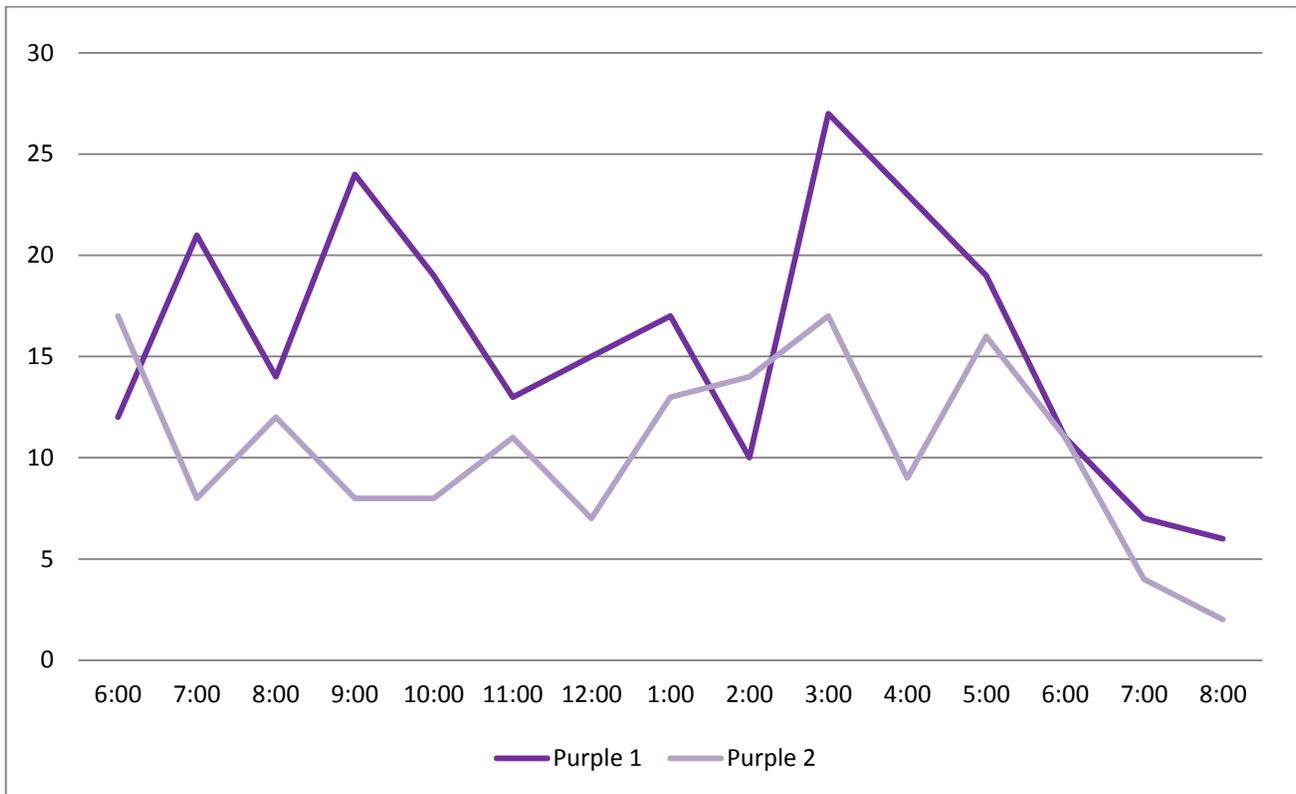
**Figure 3-3: Green Line and Trolley Ridership by Time of Day – Thursday and Saturday**



Source: KFH Group Boarding/Alighting Counts, April, 2015

Thursday ridership patterns for Purple 1 and Purple 2 Lines are displayed together, as they follow a similar schedule, offering hourly service. As these data show, Purple 1 ridership peaked at 7:00 a.m., 9:00 a.m., and 3:00 p.m., falling gradually each hour after 4:00 p.m. Purple 2 ridership peaked at 6:00 a.m., 3:00 p.m., and 5:00 p.m., with ridership falling each hour after 5:00 p.m. These data are shown in Figure 3-4.

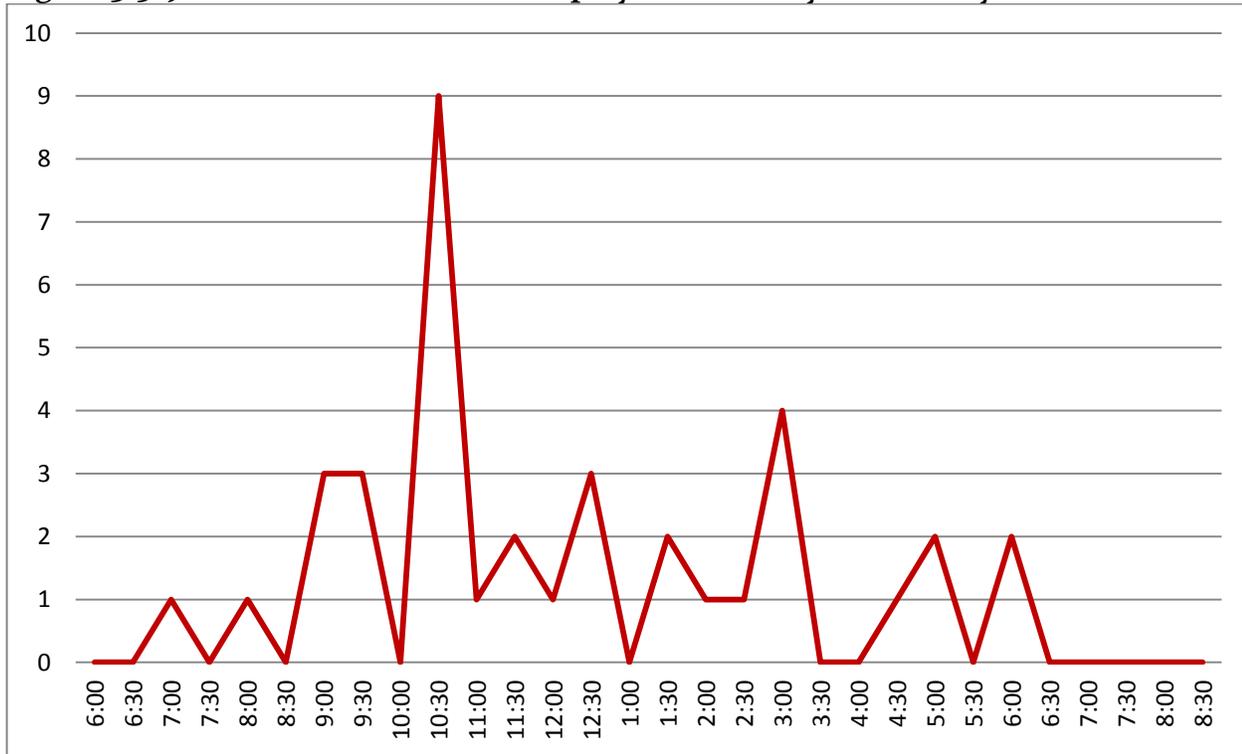
**Figure 3-4: Purple 1 and Purple 2 Ridership by Time of Day – Thursday**



Source: KFH Group Boarding/Alighting Counts, April, 2015

The Jamestown Line is a relatively new demonstration route that began service in January 2015. Ridership on the route is still quite low by fixed route standards. During boarding/alighting counts, ridership peaked at 10:30 a.m., with 9 passengers riding the route during that run. Thursday ridership pattern for the route is shown in Figure 3-5. Saturday service on the route is not currently offered.

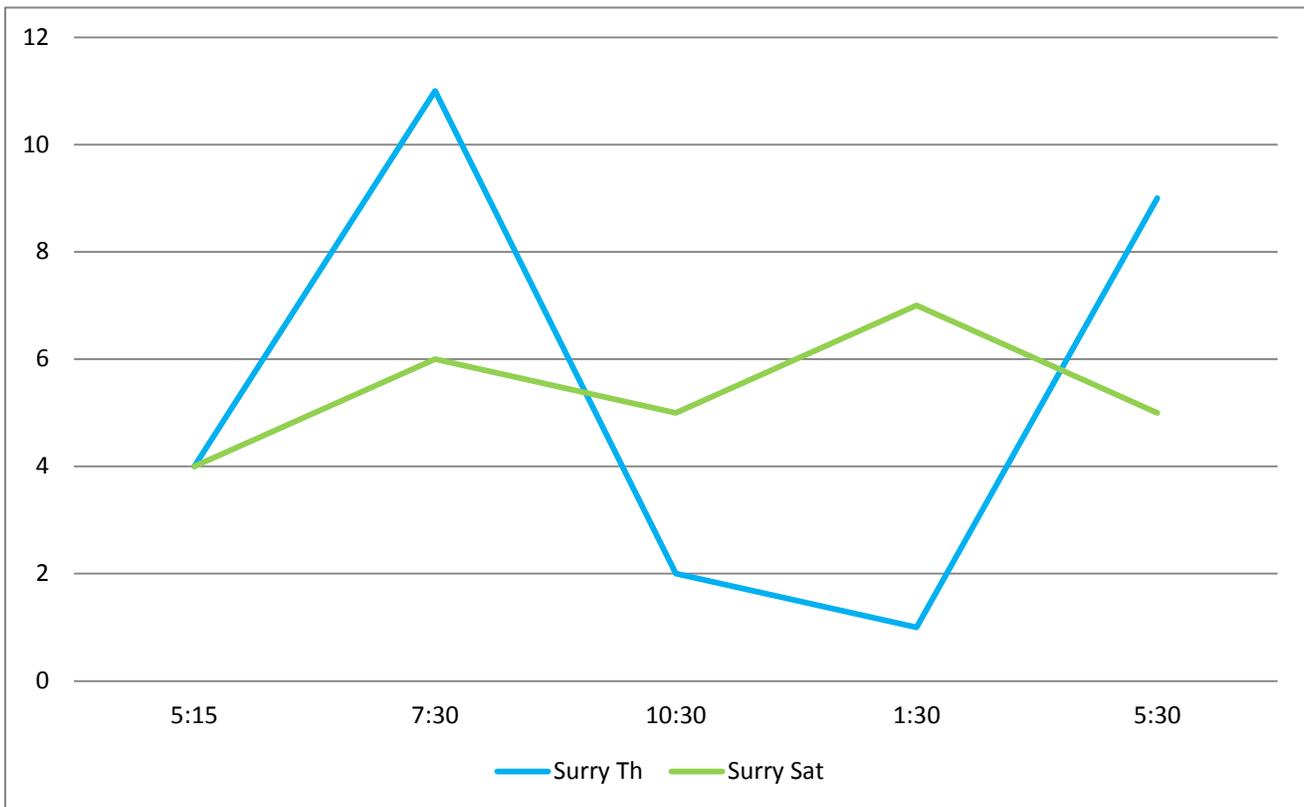
**Figure 3-5: Jamestown Route Ridership by Time of Day - Thursday**



Source: KFH Group Boarding/Alighting Counts, April, 2015

Thursday ridership on the Surry Line was the highest on the 7:30 a.m. trip, followed by the 5:30 p.m. trip. There were very few riders (two or fewer) on the 10:30 a.m. trip and on the 1:30 p.m. trip. Saturday service for the Surry Line showed more consistent ridership throughout the day, with each vehicle trip carrying between four and seven passengers, with the 1:30 p.m. trip experiencing the highest ridership. These data are shown in Figure 3-6.

**Figure 3-6: Surry Route Ridership by Time of Day – Thursday and Saturday**



Source: KFH Group Boarding/Alighting Counts, April, 2015

### Route Profiles

Data collected from passenger counts was combined with trend data and land use data to construct a route profile for each route in the system. These profiles are depicted on maps that show route, total stop activity, trip generators, and FY14 operating data. Figures 3-7 through 3- 27 provide these maps, with the analysis discussed below.

### Blue Line

Blue Line ridership has exhibited the highest ridership among the routes historically, and this was true for the boarding/alighting count days as well. There are several Blue Line stops that exhibited total passenger activity of greater than 50 combined boarding/alightings. For the

Thursday counts, these stops were the Williamsburg Transportation Center, Williamsburg Shopping Center, Richmond Road at McDonalds, Ewell Station Shopping Center, Richmond Road and Old Towne Road, Human Services Center, and Walmart. Saturday ridership patterns showed similar patterns but with lower total activity counts. For both count days, passenger activity was recorded along the entire length of the route, with the exception of the portion of the route that uses Route 199 to access Walmart. Thursday and Saturday route profiles for the Blue Line are shown in Figures 3-7 and 3-8.

### **Gray Line**

The highest activity stops along the Gray Line for both the Thursday and Saturday count days were the Williamsburg Transportation Center and Lee Hall. This finding confirms the significance of the linkage to Newport News via the Gray Line. While no other stops recorded activity of more than 50 boardings/alightings, there were stops both on Thursday and Saturday that exhibited between 26 and 50 boardings/alightings. On Thursday, these were: the Windy Hill Market, the stop across from the Howard Johnson, and the Heritage Mobile Park. On Saturday, these were Busch Gardens, Windy Hill Market, Carters Grove, and the Heritage Mobile Park. The Thursday and Saturday route profiles for the Gray Line are presented in Figures 3-9 and 3-10.

### **Green Line**

There were three stops along the Green Line on Thursday that exhibited total activity of more than 50 boardings/alightings. These were Sadler Center; Jamestown Road/Campus Center; and the W & M Law School. The stops on Thursday that exhibited between 26 and 50 boardings/alightings included Ludwell Apartments; the stop at the parking garage on Ukrop Way, and the stops adjacent to the Williamsburg Shopping Center. Stop activity was lower on Saturday, with no stops exhibiting activity of greater than 50 boardings/alightings. Stops with between 26 and 50 Saturday boarding/alightings included the W & M Law School, Ludwell Apartments, Sadler Center, the Williamsburg Shopping Center (both Richmond Road and Monticello Ave.), and the Commons Dining Hall. Figures 3-11 and 3-12 show the Thursday and Saturday route profiles for the Green Line.

Figure 3-7: Blue Line Activity, Thursday

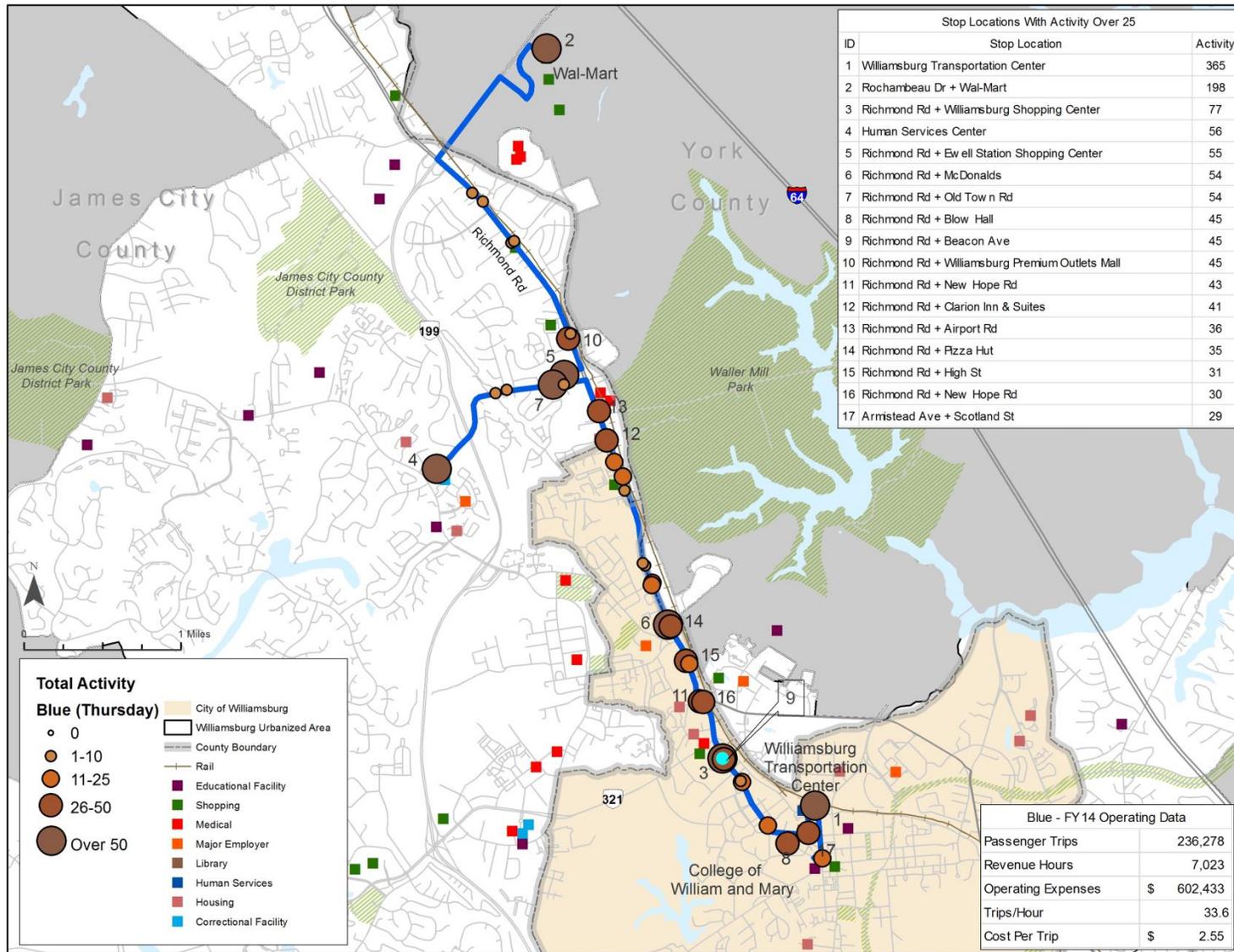


Figure 3-8: Blue Line Activity, Saturday

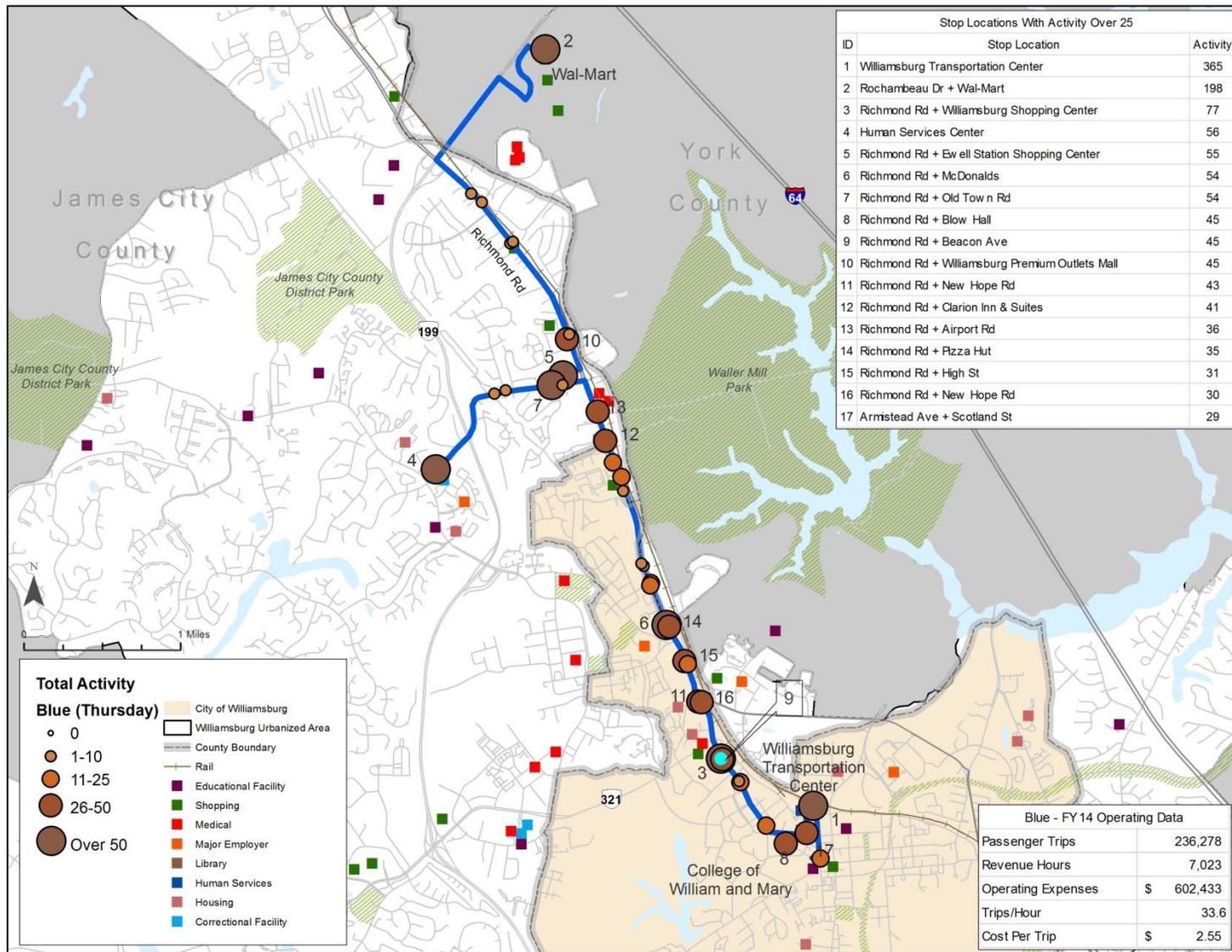


Figure 3-9: Gray Line Activity, Thursday

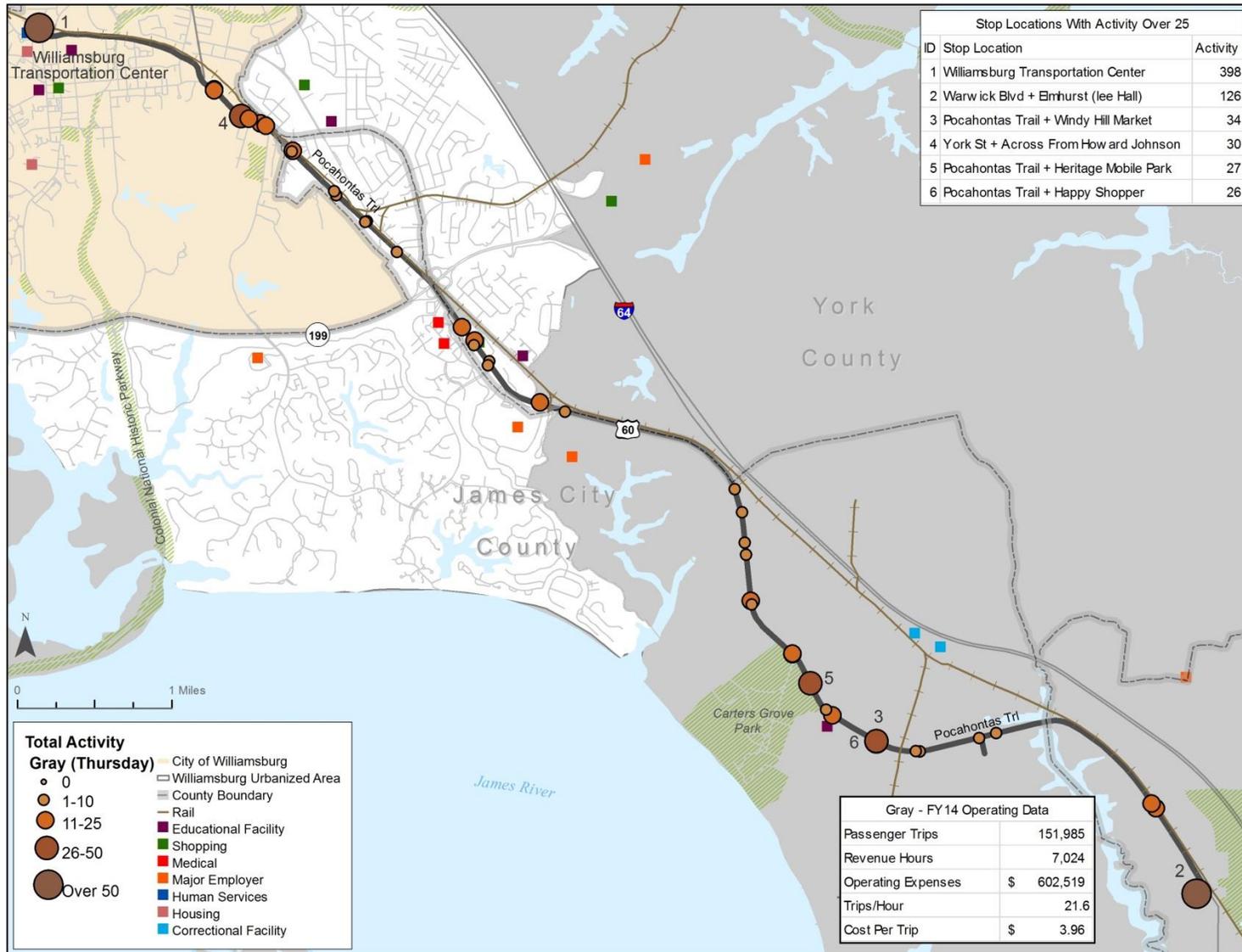


Figure 3-10: Gray Line Activity, Saturday

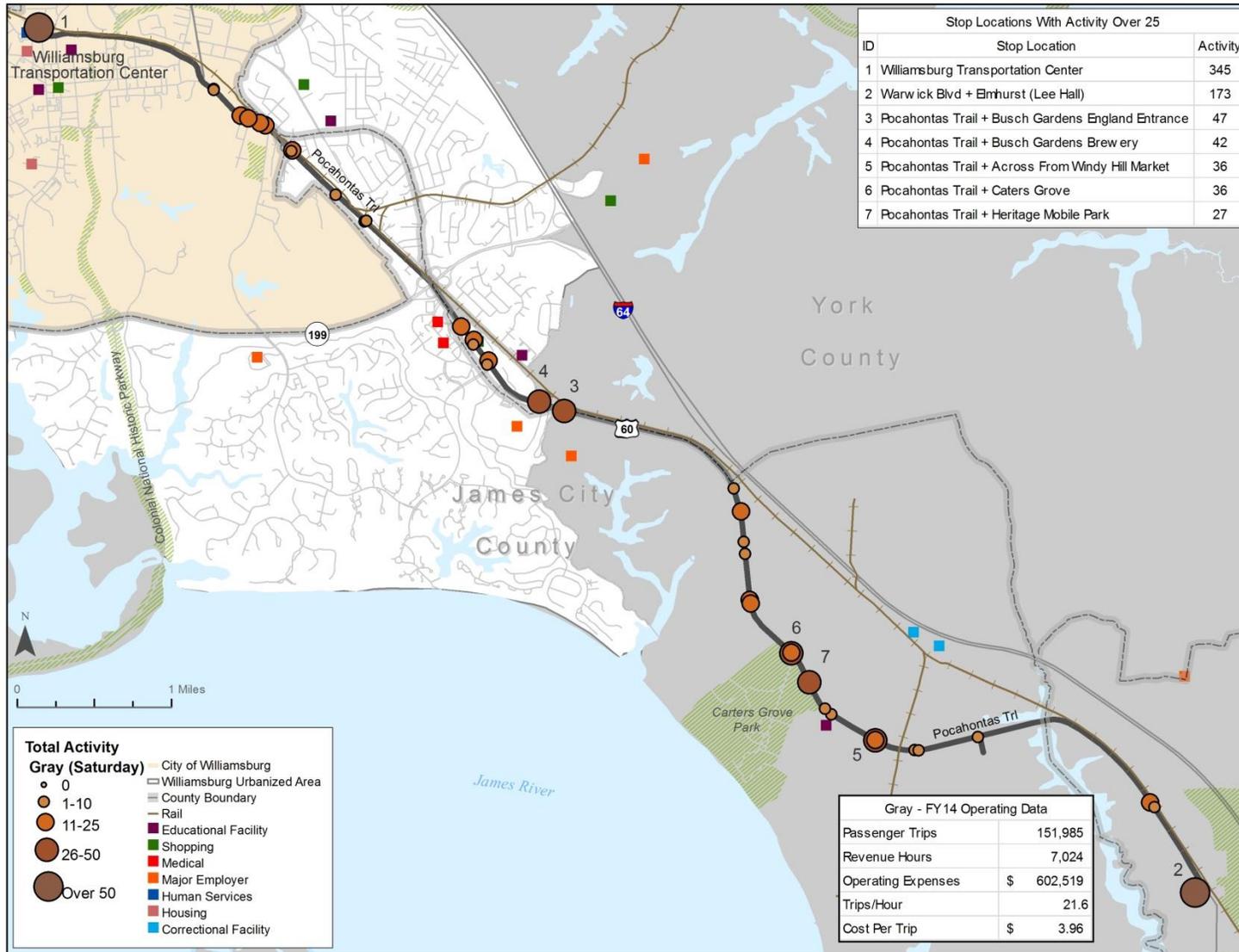
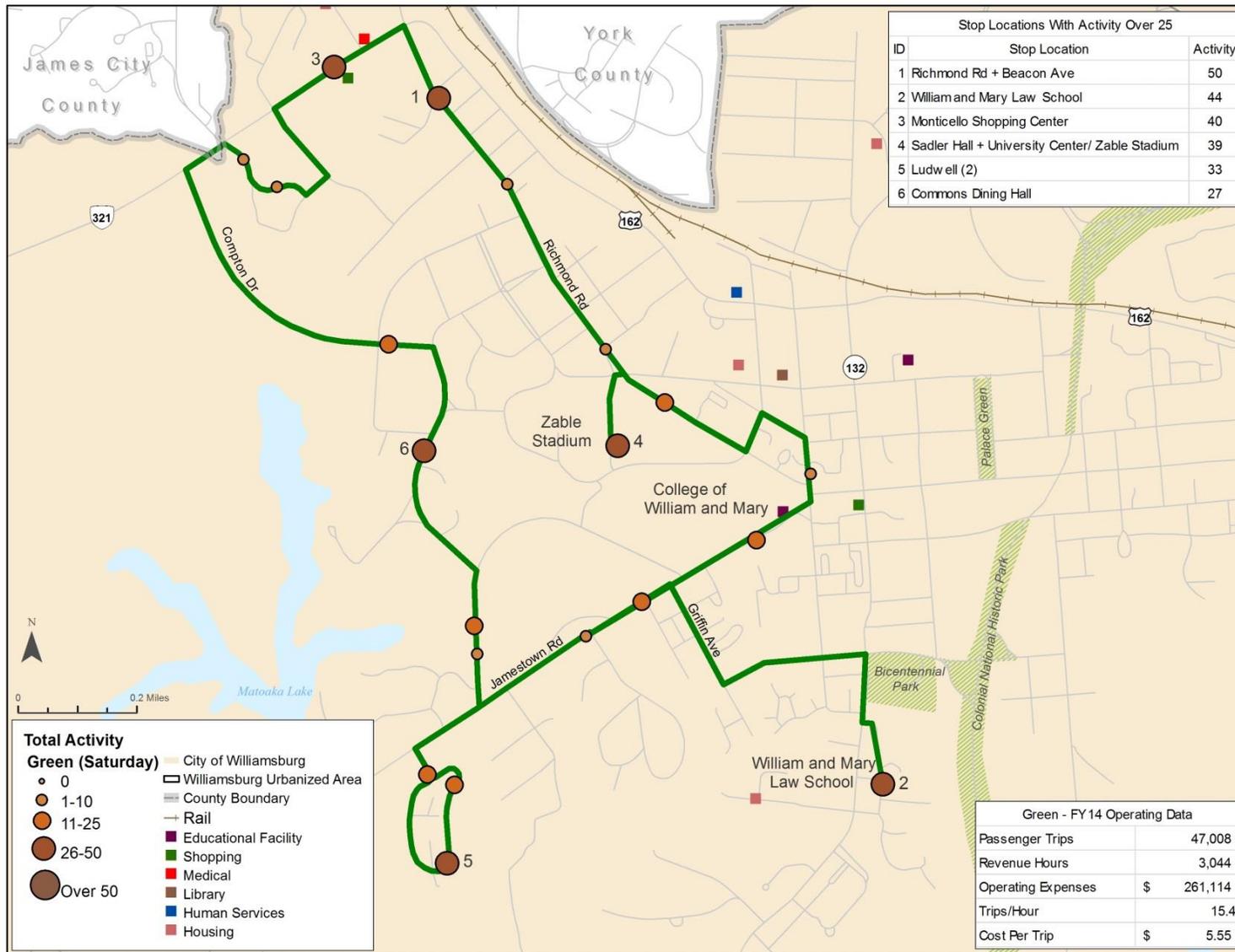


Figure 3-11: Green Line Activity, Thursday



Figure 3-12: Green Line Activity, Saturday



## **Jamestown Line**

The boarding/alighting data collected on the Jamestown Line indicated that ridership is still relatively low on the route (as compared with other routes in system); with only one stop exhibiting activity levels between 26 and 50 boardings/alightings. This stop is the Williamsburg Crossing Shopping Center. Figure 3-13 provides the Thursday boarding/alighting activity along the route. As a new route, FY 14 data was not available. The Jamestown Line does not operate on Saturday or Sunday.

## **Orange Line**

While only one stop along the Orange Line exhibited total activity of greater than 50 boardings/alightings (the Williamsburg Transportation Center), the Thursday activity showed a concentration of ridership among several stops including the CVS on Route 143, the Rochambeau Motel, James York Plaza, Hardees, Colonial Towne Apartments, and the DMV. This pattern was similar on Saturday, with fewer stops exhibiting activity between 26 and 50 boardings/alightings. Figures 3-14 and 3-15 show the Thursday and Saturday route profiles for the Orange Line.

## **Purple 1 Line**

The activity patterns for both Thursday and Saturday along the Purple 1 Line show only one stop with activity greater than 50 boardings/alightings (the Lightfoot Walmart, which serves as a WATA hub). Ridership activity patterns were generally dispersed along the rest of the route on Thursday. On Saturday, there was one stop that exhibited total activity of between 26 and 50 boardings/alightings (Lightfoot Road and the Antique Mall). Figures 3-16 and 3-17 show the Thursday and Saturday route profiles for the Purple 1 Line.

## **Purple 2 Line**

Thursday and Saturday ridership patterns on the Purple 2 Line were similar, with the Lightfoot Walmart the only stop to exhibit total activity of greater than 50 boardings/alightings throughout the day. For both days, the stop at Burnt Ordinary Apartments exhibited total activity of between 26 and 50 boardings/alightings. Ridership activity patterns were dispersed throughout the remainder of the route. Figures 3-18 and 3-19 show the Thursday and Saturday route profiles for the Purple 2 Line.

Figure 3-13: Jamestown Line Activity, Thursday

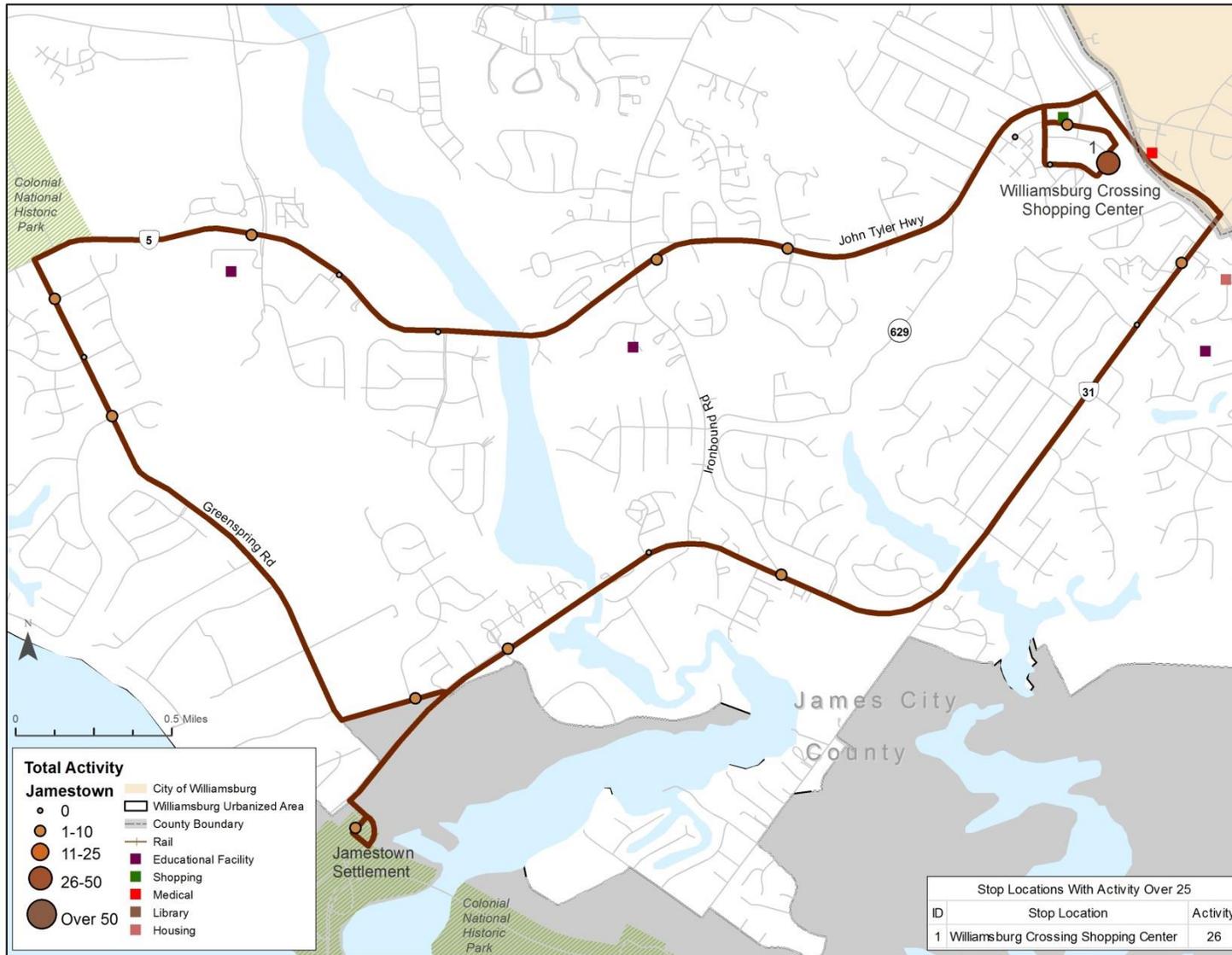


Figure 3-14: Orange Line Activity, Thursday

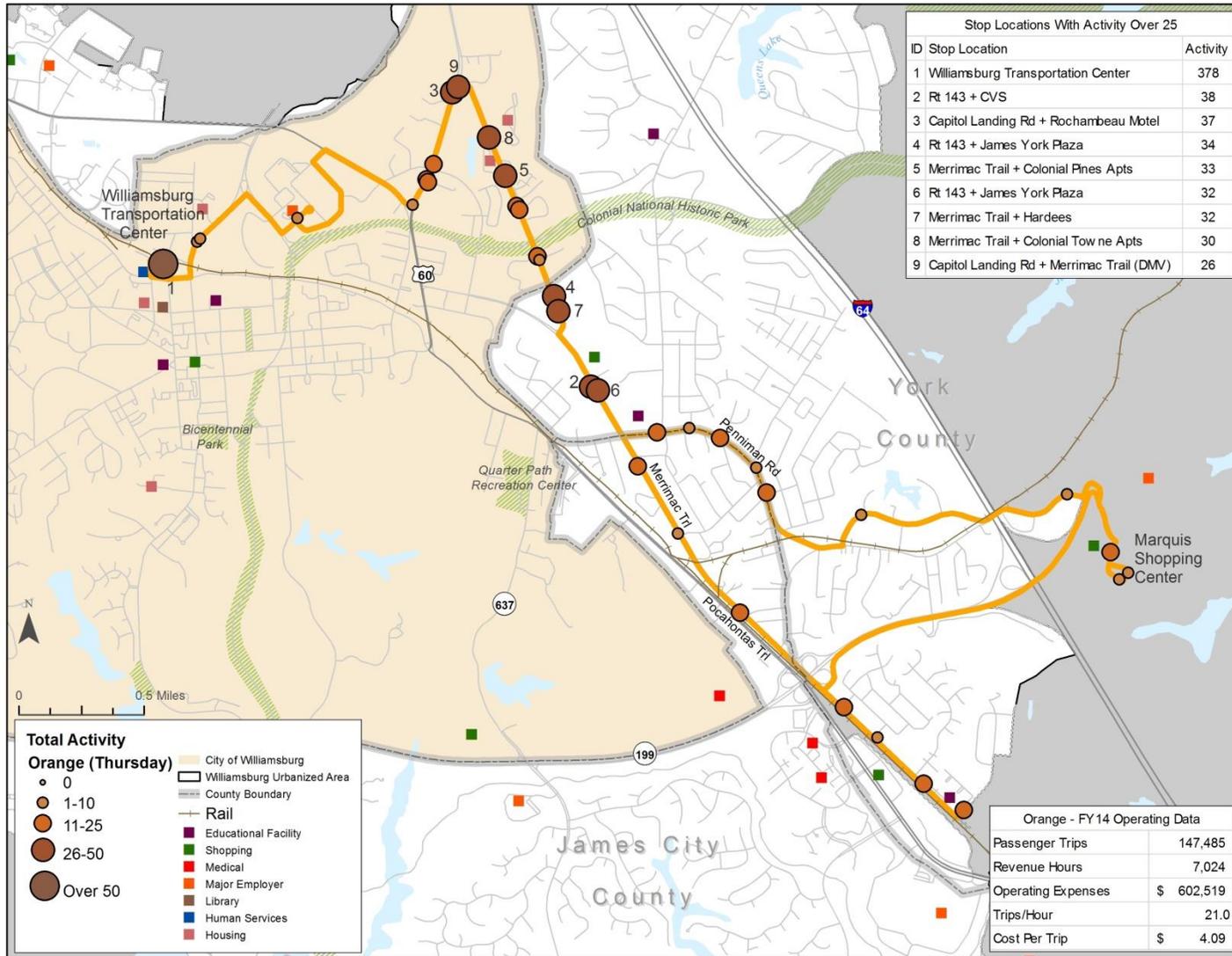


Figure 3-15: Orange Line Activity, Saturday

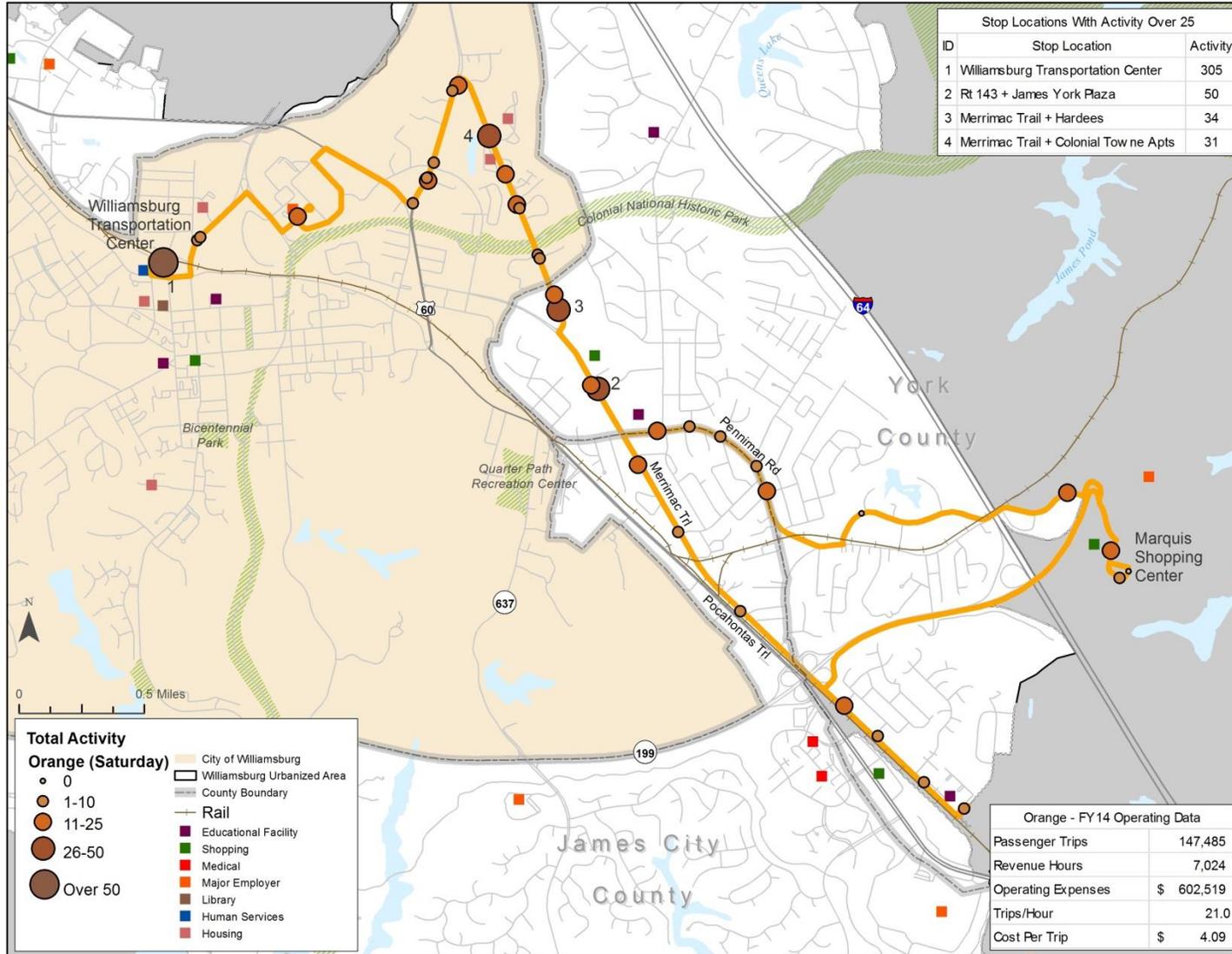


Figure 3-16: Purple 1 Line Activity, Thursday

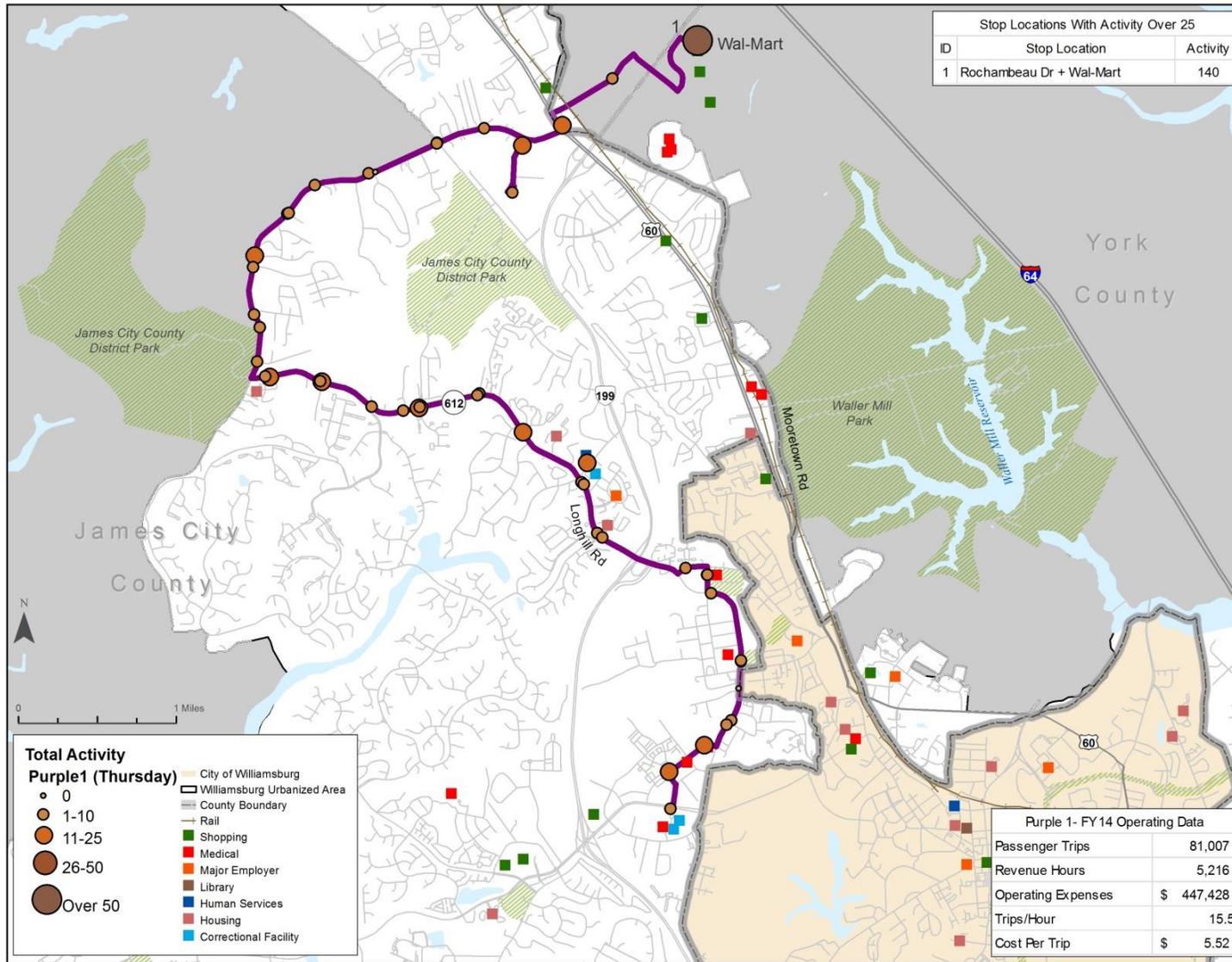


Figure 3-18: Purple 1 Line Activity, Saturday

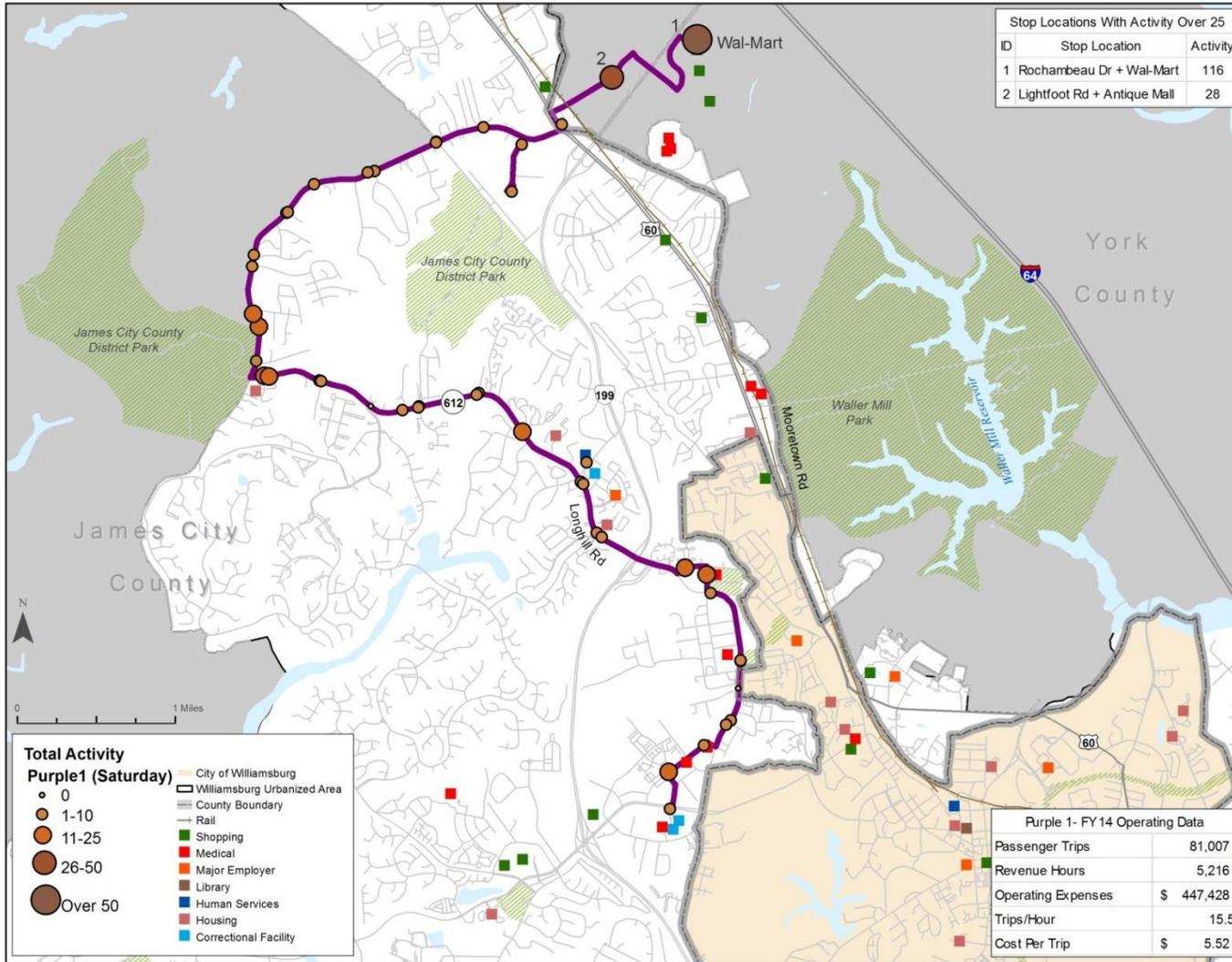


Figure 3-19: Purple 2 Line Activity, Thursday

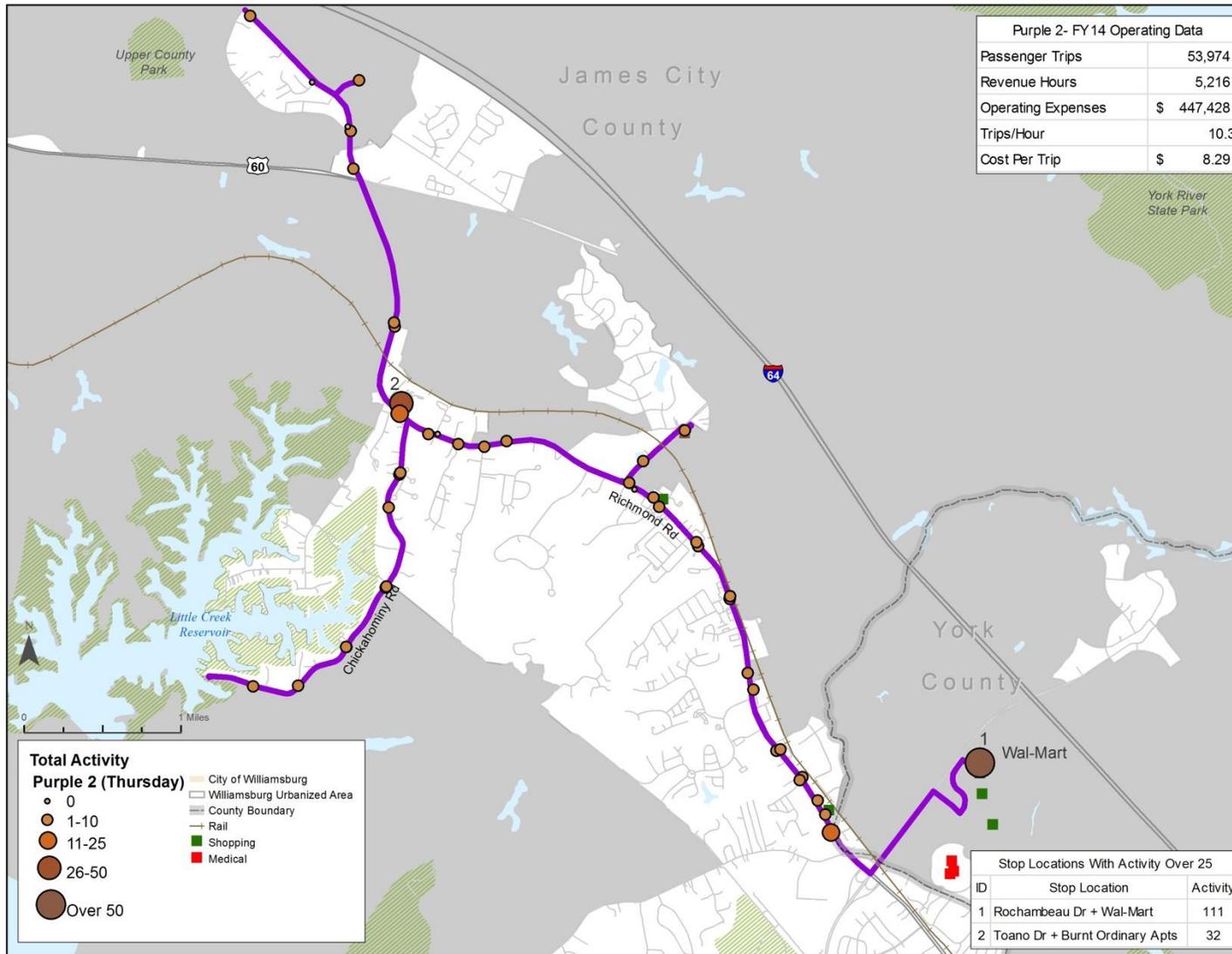
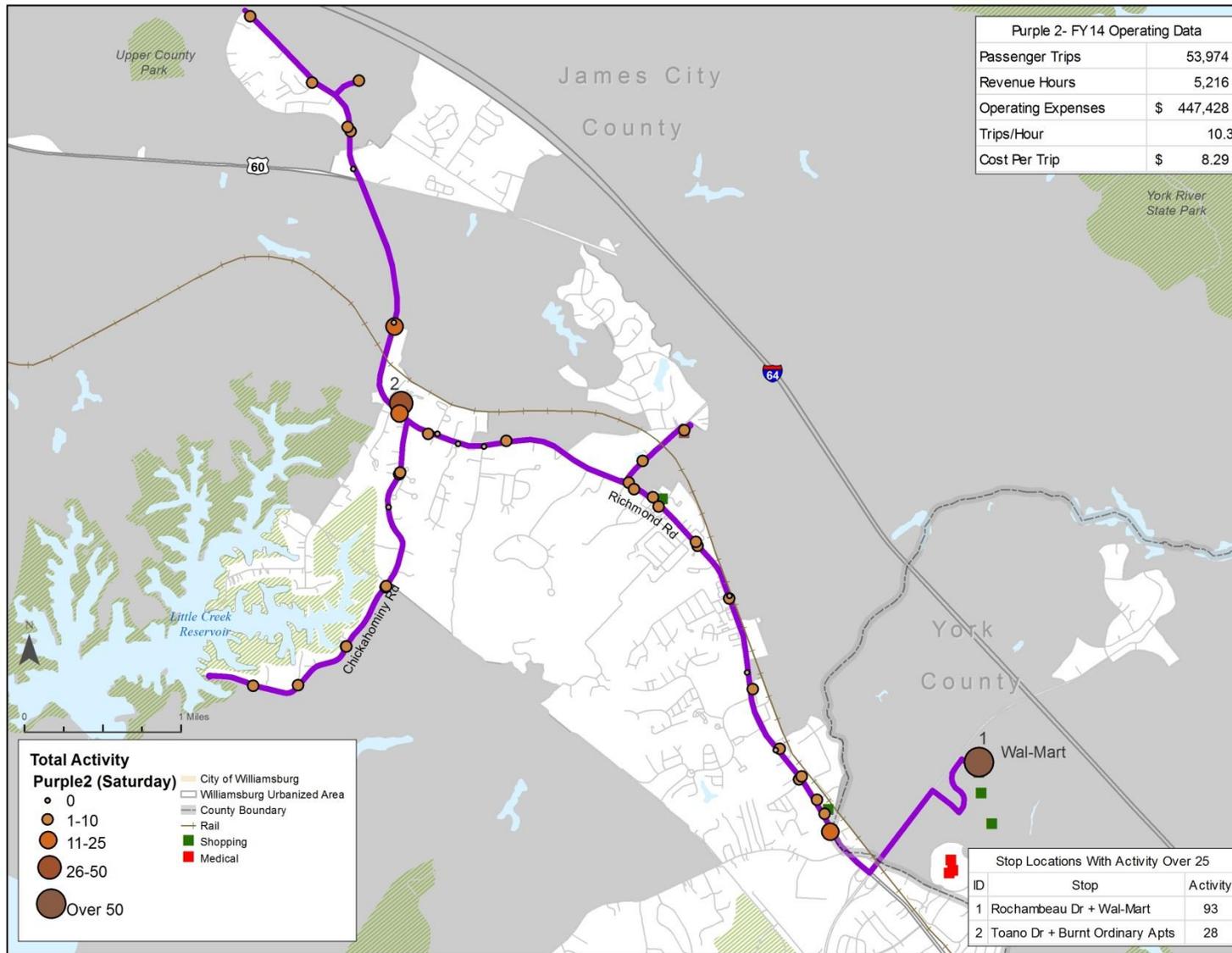


Figure 3-19: Purple 2 Line Activity, Saturday



## **Red Line**

Ridership activity on the Red Line, both Thursday and Saturday, included 2 major activity points exhibiting passenger activity of greater than 50 boardings/alightings (the Williamsburg Transportation Center and Monticello Marketplace), and several other activity points with between 26 and 50 boardings/alightings for the day. On Thursday, these activity points included the Williamsburg Shopping Center, New Town, Monticello Shopping Center, Trader Joe's, Williamsburg Crossing, and Jamestown Road/199. On Saturday, these secondary activity points included New Town and Trader Joe's. For both Thursday and Saturday, there was ridership activity all along the route, with the exception of the portion of Jamestown Road between 199 and the William & Mary campus, a segment that includes very few stop opportunities. The Red Line route profiles are provided in Figure 3-20 and 3-21.

## **Surry Line**

For both the Thursday and the Saturday ridership counts, the Surry Line's major activity stop was the Williamsburg Transportation Center, with between 11 and 25 boardings/alightings. The remaining stops along the route exhibited passenger activity of fewer than ten boardings/alightings. These activity patterns are shown in Figure 3-22 and 3-23.

## **Tan Line**

The Thursday ridership pattern on the Tan Line showed several activity points with greater than 50 boardings/alightings, including the Williamsburg Transportation Center, Mooretown Road/Sentara Circle, the Lightfoot Walmart, and Great Wolf Lodge. There were also a number of stops exhibiting between 26 and 50 boarding/alightings. Two of these were along the Bypass Road – Cracker Barrel and Comfort Inn. The other stops were: the Historic Triangle Community Service Center on Waller Mill Road, the K-mart, and Mooretown Road/Ewell Road. The Saturday patterns were generally lighter, with only the Williamsburg Transportation Center and the Walmart experiencing ridership activity of greater than 50 boardings/alightings. Figures 3-24 and 3-25 show these patterns.

## **Trolley**

None of the stops along the Trolley Route on Thursday exhibited greater than 50 boardings/alightings. There were 2 stops that exhibited activity levels between 26 and 50 boardings/alightings. These were New Town and the William & Mary School of Business. On Saturday, the Commons Dining Hall stop exhibited activity levels of greater than 50 boardings/alightings. Other relatively active stops included New Town, High Street, Merchant's Square, the William & Mary School of Business, the William & Mary Recreation Center, and Richmond Road/Scotland Street. Figures 3-26 and 3-27 provide the activity maps for the Trolley Route.

Figure 3-20: Red Line Activity, Thursday

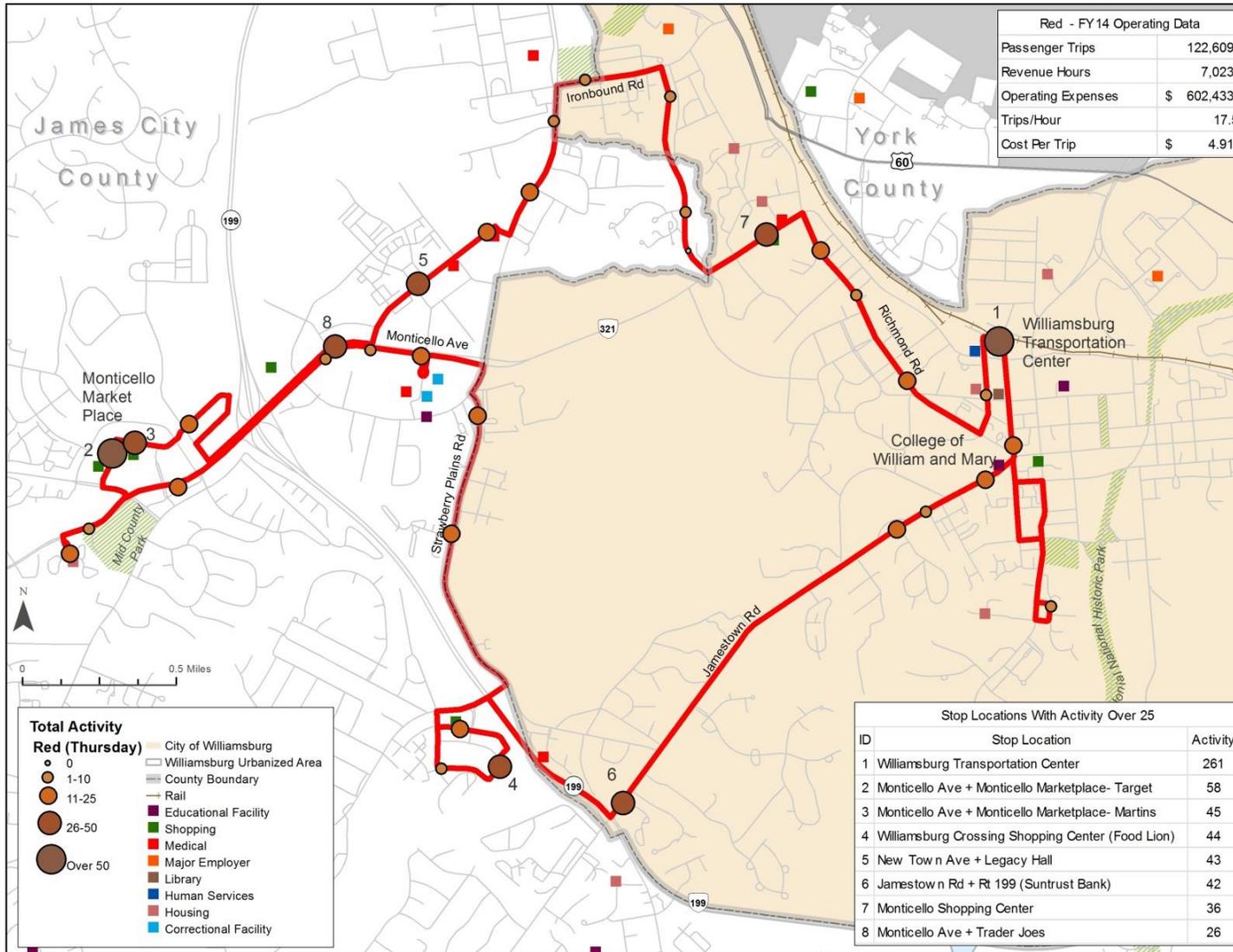


Figure 3-21: Red Line Activity, Saturday

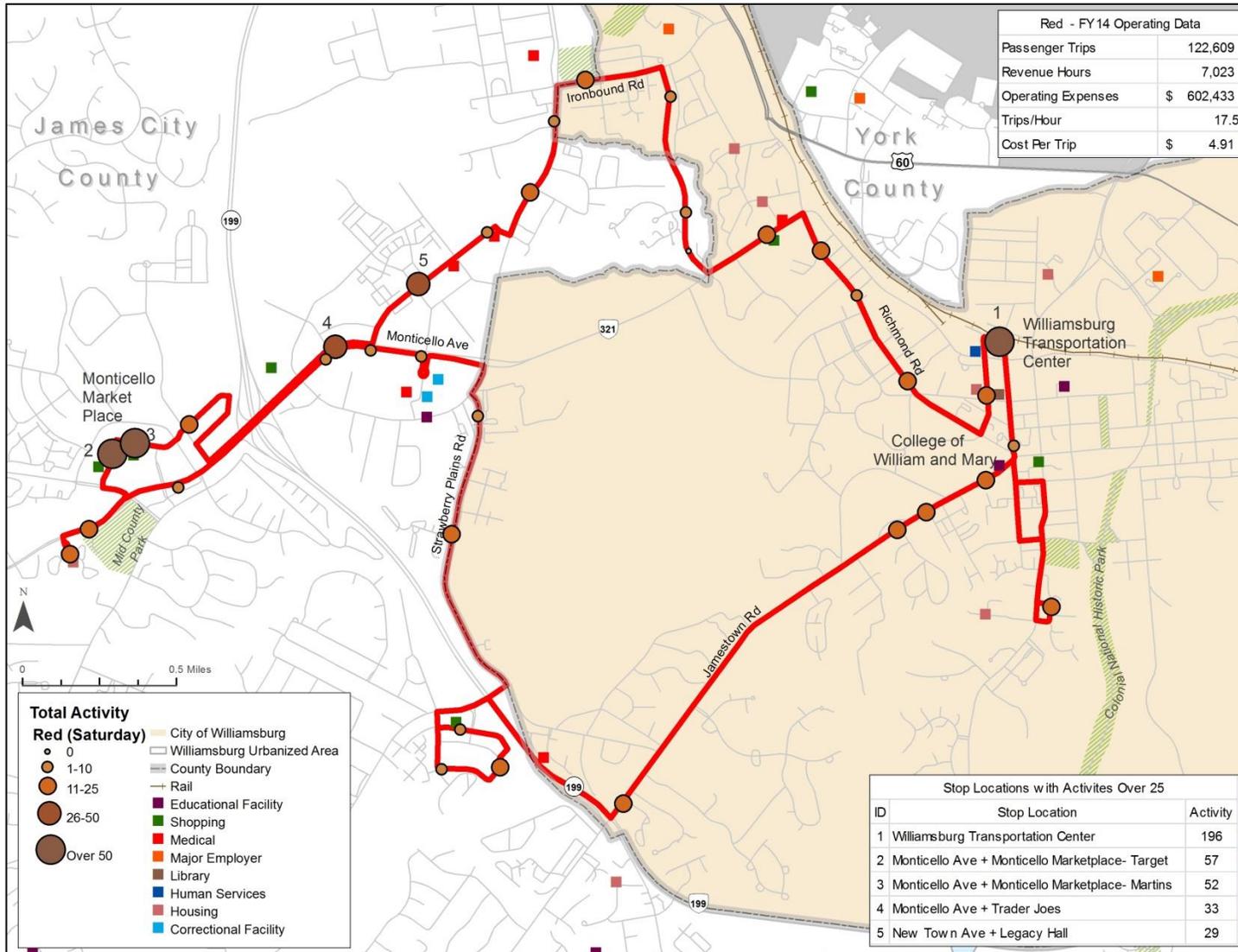


Figure 3-22: Surry Line Activity, Thursday

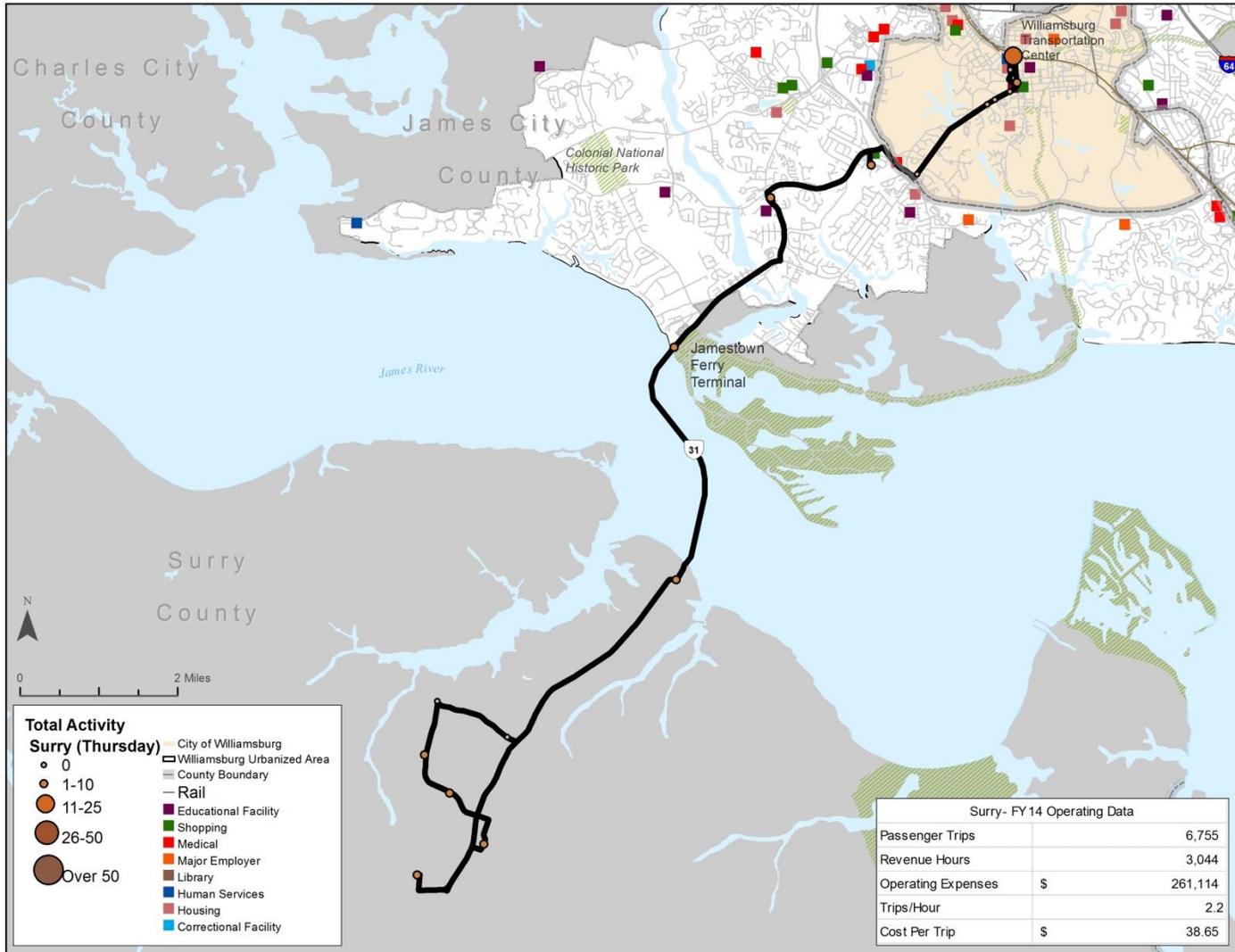


Figure 3-23: Surry Line Activity, Saturday

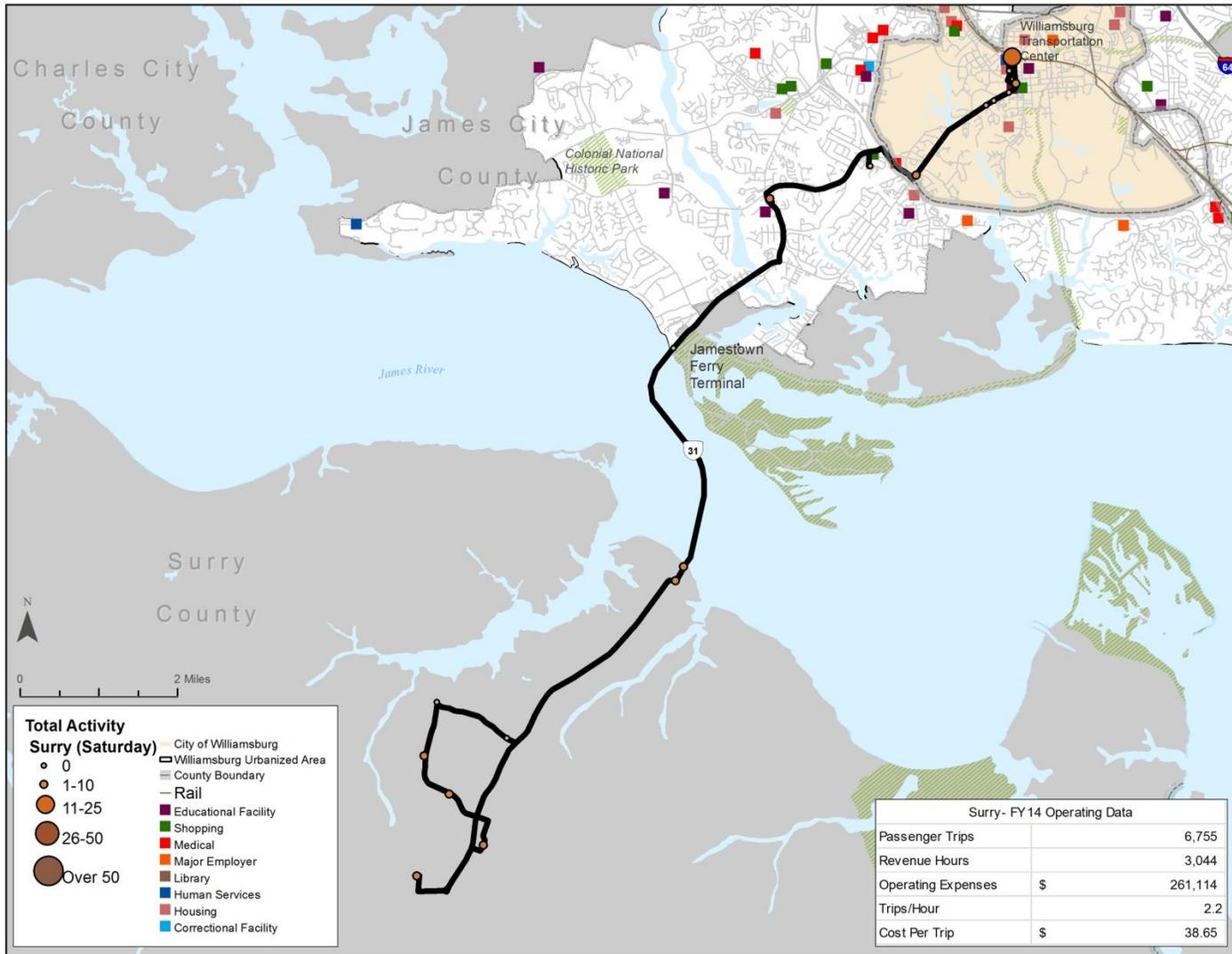


Figure 3-24: Tan Line Activity, Thursday

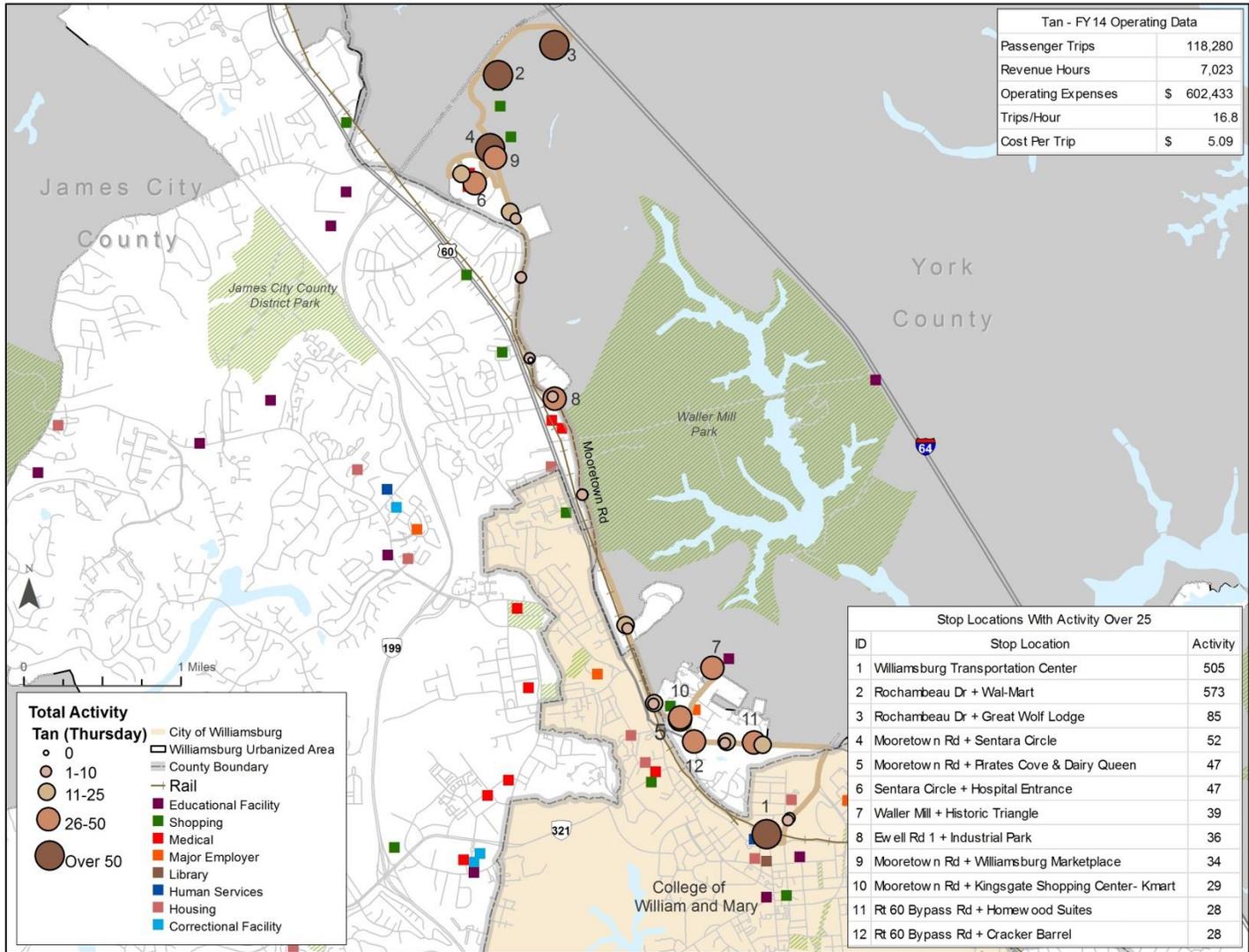


Figure 3-25: Tan Line Activity, Saturday

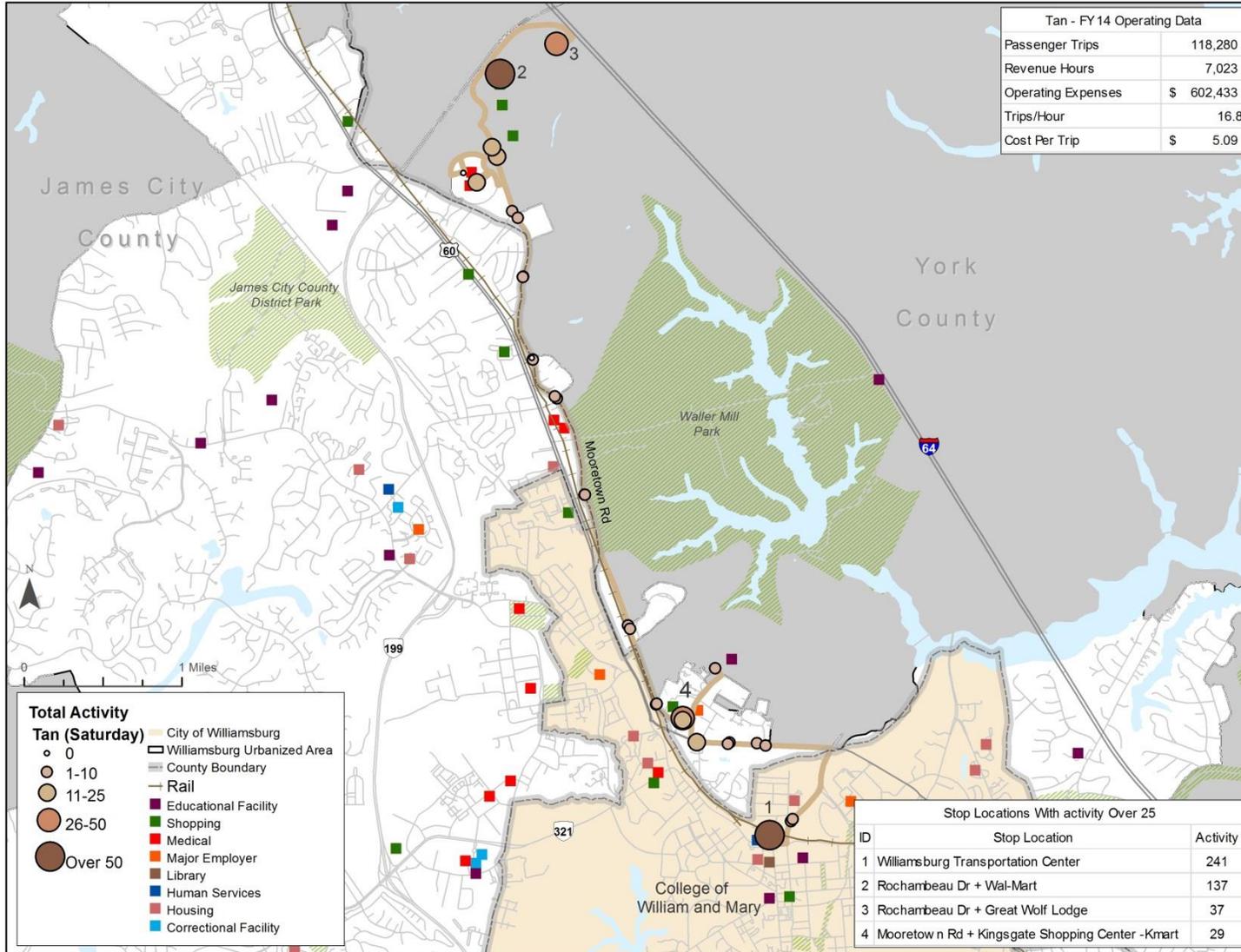


Figure 3-26: Trolley Line Activity Thursday

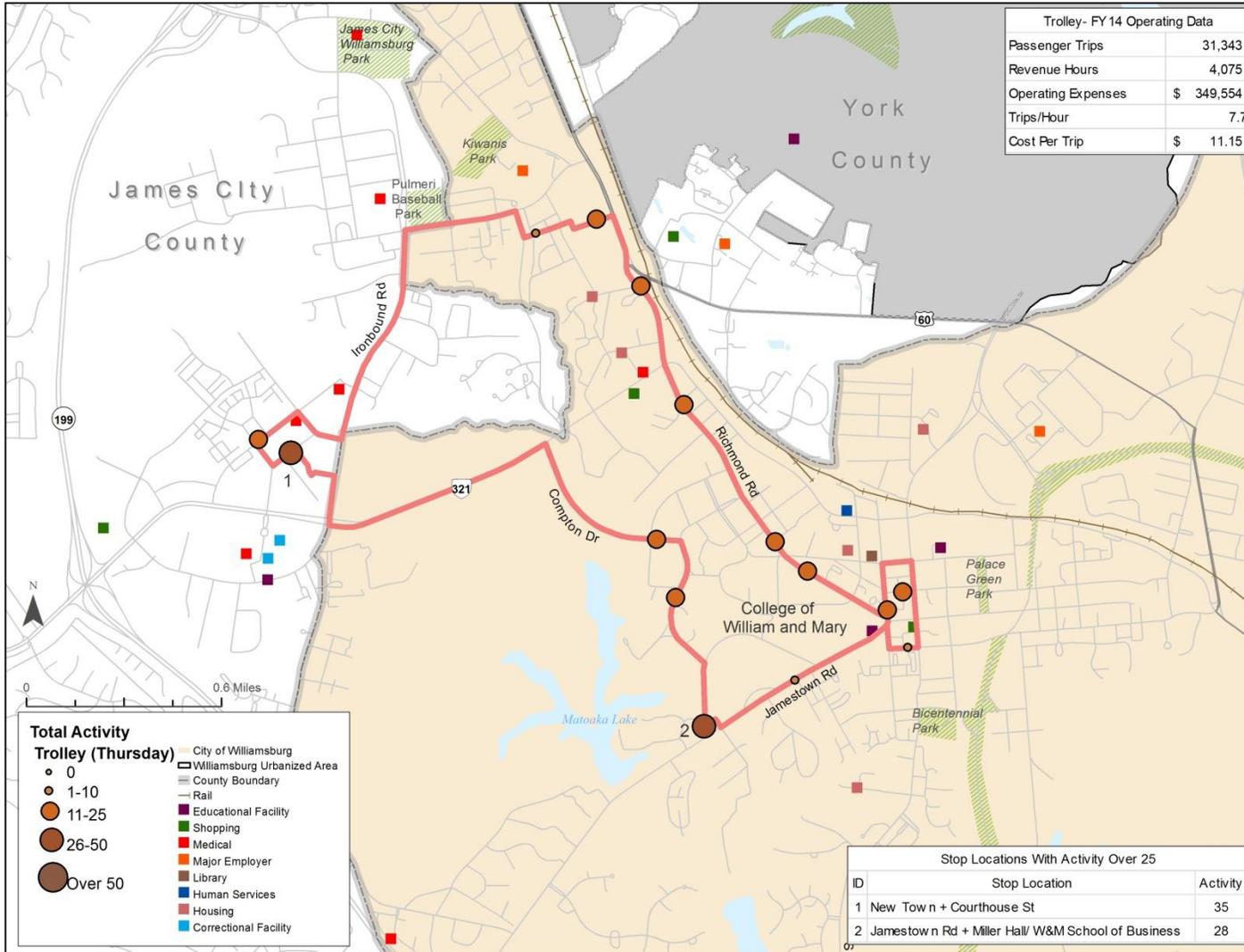
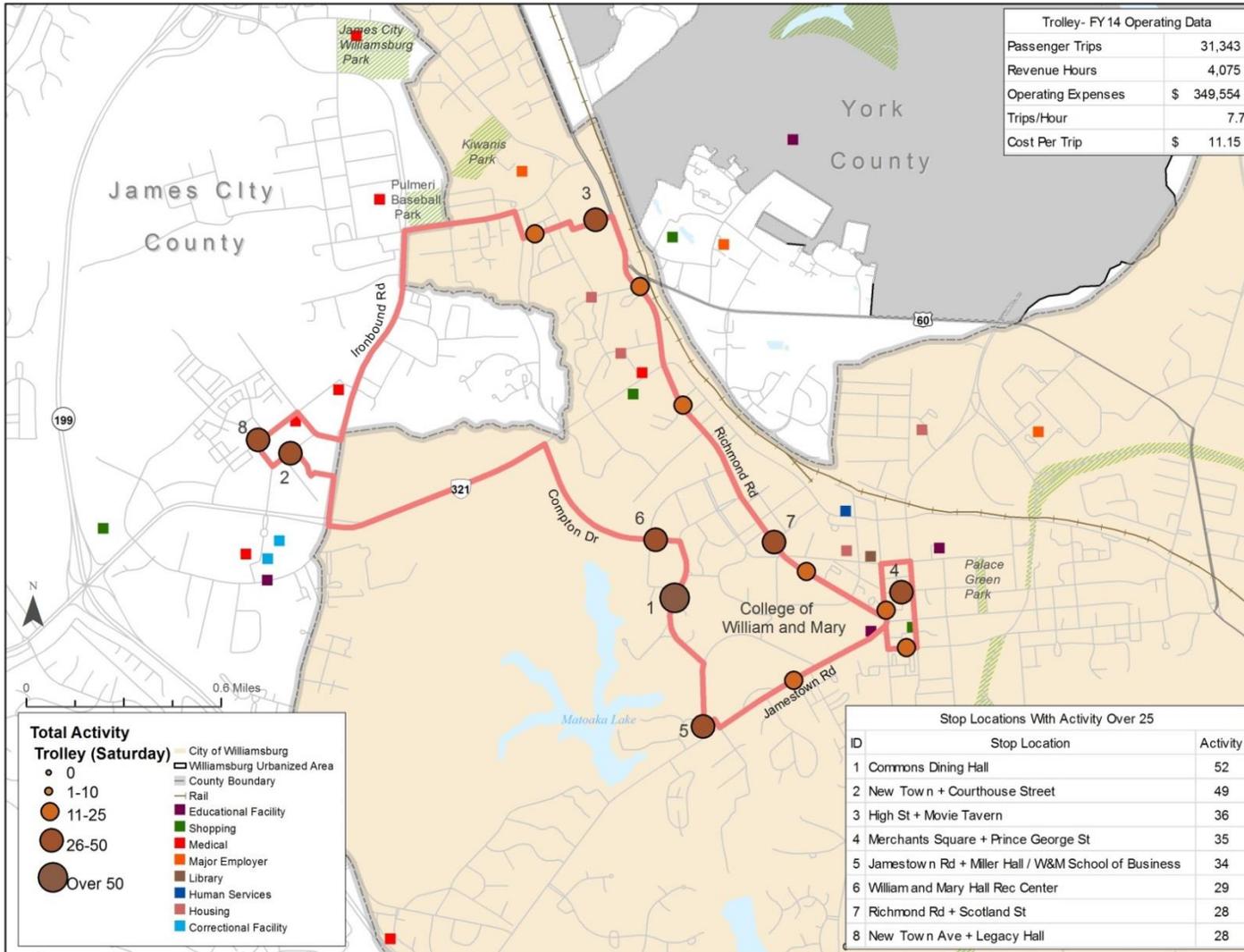


Figure 3-27: Trolley Line Activity, Saturday



### **On-Time Performance**

Another service metric sampled during the Thursday and Saturday count periods was on-time performance. For each time point listed on WATA's published schedule for each route, surveyors recorded the actual time the bus departed from the stop. These actual time checks were compared with published time points to calculate the percentage of stops along each route that were served either on time (defined as 0-5 minutes late); early (prior to the scheduled time); or late (more than 5 minutes after the scheduled departure time).

These data indicate that overall on-time performance during the count period was 61.4% on-time (0-5 minutes late). Time check data show that 12.4% vehicle trips were 1 to 2 minutes early; 10.4% were 6 to 9 minutes late; and 6.5% were 3 to 4 minutes early. The service standard for on-time performance from WATA's Title VI Plan is 90%. These data suggest that COA recommendations will need to address route timing.

The route level on-time performance data show that the Orange Line has the highest level of on-time performance (75%), followed by the Red Line (74%). The Surry Line showed the lowest level of on-time performance (41%). The Surry Line tended to run about ten minutes late getting to Farm Fresh in Five Forks in the morning. It appears that there is not enough time in the schedule to get from Williamsburg to Five Forks. In addition, there was a problem with the last trip of the day on Saturday, as the ferry was full and the bus had to wait until the next ferry trip, which resulted in the route running late for the remainder of the last run. The Blue Line exhibited the lowest level of on-time performance among the core routes (44%), followed by the Purple 2 Line (45%). The Blue Line was more frequently late than any other core route (39%), while the Gray Line was more frequently early (40%). These results are shown in Table 3-4.

**Table 3-4: On-Time Performance by Route**

Route	Number of Time Checks	Early				On-Time	Late	
		10+ Minutes	5 - 9 Minutes	3 - 4 Minutes	1 - 2 Minutes	Up to 5 Minutes after Scheduled Time	6 - 9 Minutes	10+ Minutes
Blue Line - Rt 60 West	331	0	14	18	26	145	80	48
Gray Line - Rt 60 East, Newport News	359	4	44	35	59	199	14	4
Green Line- W&M College	559	0	6	28	85	374	56	10
Orange Line Rt 143	289	0	15	6	34	217	16	0
Purple Line 1 - Longhill Road	264	0	4	10	28	153	49	20
Purple Line 2 - Rt 60 Far West	233	0	31	25	27	105	29	16
Red Line - South Williamsburg	367	0	1	23	54	273	15	1
Tan Line - Mooretown Road	325	9	17	28	39	216	16	0
Surry Line - Surry Deviated Route	87	0	2	2	3	36	16	28
Jamestown - Jamestown/ John Tyler	116	0	3	6	11	78	16	2
Williamsburg Trolley	162	1	13	20	11	101	14	2
<b>Systemwide</b>	<b>3,092</b>	<b>14</b>	<b>150</b>	<b>201</b>	<b>377</b>	<b>1,897</b>	<b>321</b>	<b>131</b>
Blue Line-Rt 60 West	100%	0%	4%	5%	8%	44%	24%	15%
Gray Line- Rt 60 East, Newport News	100%	1%	12%	10%	16%	55%	4%	1%
Green Line- W&M College	100%	0%	1%	5%	15%	67%	10%	2%
Orange Line Rt 143	100%	0%	5%	2%	12%	75%	6%	0%
Purple Line 1-Longhill Road	100%	0%	2%	4%	11%	58%	19%	8%
Purple Line 2- Rt 60 Far West	100%	0%	13%	11%	12%	45%	12%	7%
Red Line- South Williamsburg	100%	0%	0%	6%	15%	74%	4%	0%
Tan Line- Mooretown Road	100%	3%	5%	9%	12%	66%	5%	0%
Surry Line- Surry Deviated Route	100%	0%	2%	2%	3%	41%	18%	32%
Jamestown- Jamestown/ John Tyler	100%	0%	3%	5%	9%	67%	14%	2%
Williamsburg Trolley	100%	1%	8%	12%	7%	62%	9%	1%
<b>Systemwide</b>	<b>100%</b>	<b>0.5%</b>	<b>4.9%</b>	<b>6.5%</b>	<b>12.2%</b>	<b>61.4%</b>	<b>10.4%</b>	<b>4.2%</b>

Source: KFH Group Boarding/Alighting Counts, April, 2015

## Paratransit Analysis

WATA provides door-to-door ADA complementary paratransit services within  $\frac{3}{4}$ -mile of the fixed routes, during the same days and hours as the fixed routes, for people who are unable to use the fixed route transit services due to disability. WATA publishes a *Paratransit Riders Guide*, which outlines how to use the service and describes important service policies.

## **Eligibility**

The eligibility process begins with the completion of an ADA paratransit application. This process is handled by the Transit Assistant, with assistance from a volunteer nurse practitioner. The application asks potential paratransit users the following:

- The nature of their disability
- How long the disability/health condition is expected to prevent the use of the fixed route buses
- The applicant's use of mobility aids and personal care attendants
- The applicant's ability to use fixed route buses
- If they have had training on how to use the fixed route buses, as well as if they wish to have training on how to use the fixed route buses
- The nature of their current travel habits

The application also asks for the applicant to provide the name and contact information for a professional who is familiar with the applicant's health condition and functional abilities. Once the application is received, it is reviewed by the Transit Assistant. If there are questions regarding the applicant's need for ADA paratransit, an in-person interview and assessment is scheduled with a volunteer nurse practitioner, who conducts the assessment to determine if the applicant is able to use the fixed route service, or if they should be deemed eligible for ADA paratransit.

There are three types of eligibility determinations made by WATA:

- 1) Unconditionally eligible, meaning that the applicant's disability prevents them from using the fixed route buses under normal conditions;
- 2) Conditionally eligible, meaning that the applicant can use the fixed route buses some of the time; and
- 3) Temporary eligibility, meaning that the applicant requires the service on a temporary basis.

Applicants are notified in writing concerning their eligibility status within 21 days after the interview. If the applicant is rejected, he/she can appeal the decision. Riders are certified for a three-year period.

## **Scheduling**

Once deemed eligible, riders can schedule trips between one and fourteen days in advance of their requested trip dates. When customers call to schedule a trip, they are given a 30-minute pick-up window which means that the vehicle could arrive up to 10 minutes before the pick-up time, and up to 20 minutes after the pick-up time.

When a call comes in to WATA to schedule a trip, the dispatcher handles the call and places the trip on the schedule, if possible. If the requested time slot is full, the dispatcher will work with the customer to see if they can be picked-up earlier, later, or on a different day.

Subscription service is offered to riders who need to go to the same place at the same time at least once a week, on an ongoing basis. Subscription trips are placed on the schedule by the WATA paratransit scheduler (one of the supervisors) at the beginning of each month. At the time of the review, there were about 20 riders who were scheduled on a subscription basis.

WATA uses block scheduling, based on an Excel spreadsheet, to schedule paratransit trips. Each available paratransit driving shift is divided into fifteen-minute increments on a Microsoft Excel spreadsheet. This spreadsheet is available to the supervisor who handles ADA scheduling, as well as the dispatcher. The dispatcher typically will access the schedule while on the phone with the ADA customer and place the trip on the schedule where it will fit. The Excel file used for ADA scheduling is also used to calculate the hours, miles, cancellations and no-show statistics.

Riders can cancel their trips up to one hour before the scheduled pick-up time before the trip is considered a late cancellation. If the vehicle is already on the way to pick up the passenger, the trip is considered a no-show.

### **Staffing**

Monday-Friday, there are three primary ADA paratransit driving shifts. The first ADA paratransit driver works from 5:30 a.m. to 2:00 p.m.; the second works from approximately 8:00 a.m. to 5:00 p.m.; and the third works from approximately 11:00 a.m. to 9:00 p.m. The first two ADA slots are full-time driver positions, and the third is filled with an on-call driver. On the weekends, there is one 12-hour shift each day. The weekend shifts are currently filled with on-call drivers. Trips are also provided by the break drivers, lead drivers, and supervisors when needed. An analysis of the payroll hours indicated that both of the full-time drivers experienced overtime hours in FY15, for a total of 235 hours, or 5.1%. As previously mentioned, the Transit Assistant handles eligibility and a Supervisor handles oversight of the scheduling.

### **Data Analysis**

As discussed in the trend analysis section of this chapter, ADA paratransit demand increased significantly between FY14 and FY15, from an average of just under 4,000 annual passenger trips (FY11-FY14) to over 7,000 annual passenger trips. Monthly data indicates that demand fluctuates considerably from one month to the next, with FY15 data showing a ridership low of 486 trips in August and a high of 820 trips in April. The increase in demand has improved the per-unit costs and efficiency of the program, with the cost per trip dropping from \$54.02 in FY14 to \$41.93 in FY15.

Monthly statistics for ADA complementary paratransit for FY14 and FY15 were collected and are summarized in Table 3-5. As these data show, a significant increase in the percentage of non-revenue hours occurred beginning in January 2014 as the method of calculating revenue versus non-revenue hours was corrected to be compatible with the data collection methodology required for National Transit Database reporting. The percentage of non-revenue hours for FY15 (49%) is significantly higher than the industry rule of thumb, which is generally considered to be no more than 20%. A high percentage of non-revenue hours could be due to a number of factors, including: long distances from the garage to the pick-up points (which would also result in a high percentage of non-revenue miles); a significant number of one-on-one trips that are not located close to one another; a high percentage of no-shows and late cancellations; different methodologies for counting revenue versus non-revenue, or inefficient scheduling. The percentage of non-revenue miles is high as well, but not as high as the hours, at 33% for FY15.

Between March 2015 and June 2015, there were 2,939 passenger trips provided on WATA's ADA paratransit service. According to WATA's paratransit schedule database, during this same time period there were 533 cancellations/no-shows, of which only thirteen were considered to be no-shows. This level of no-show activity should not dramatically affect productivity; however there is likely to be some loss of productivity through the overall cancellation rate depending upon whether or not the cancelled trips were able to be replaced with new trips.

### ***Geospatial Analysis***

In addition to examining ridership and productivity data for the paratransit program, KFH Group also conducted a geospatial analysis of the paratransit trips provided during the month of April 2015. Each of the paratransit origins and destinations for the month was mapped, along with the fixed route network, and the  $\frac{3}{4}$ -mile buffer. This map is provided as Figure 3-28. As this map shows, WATA is currently providing true ADA complementary paratransit service, with all but one of the origins and destinations located within the  $\frac{3}{4}$ -mile buffer of the fixed routes. This location is the Harris Teeter in the new Quarterpath development of Williamsburg.

This map also shows the level of activity experienced in April from each of the origins/destinations, showing concentrations at major medical facilities, employers, human service agencies, and housing areas.

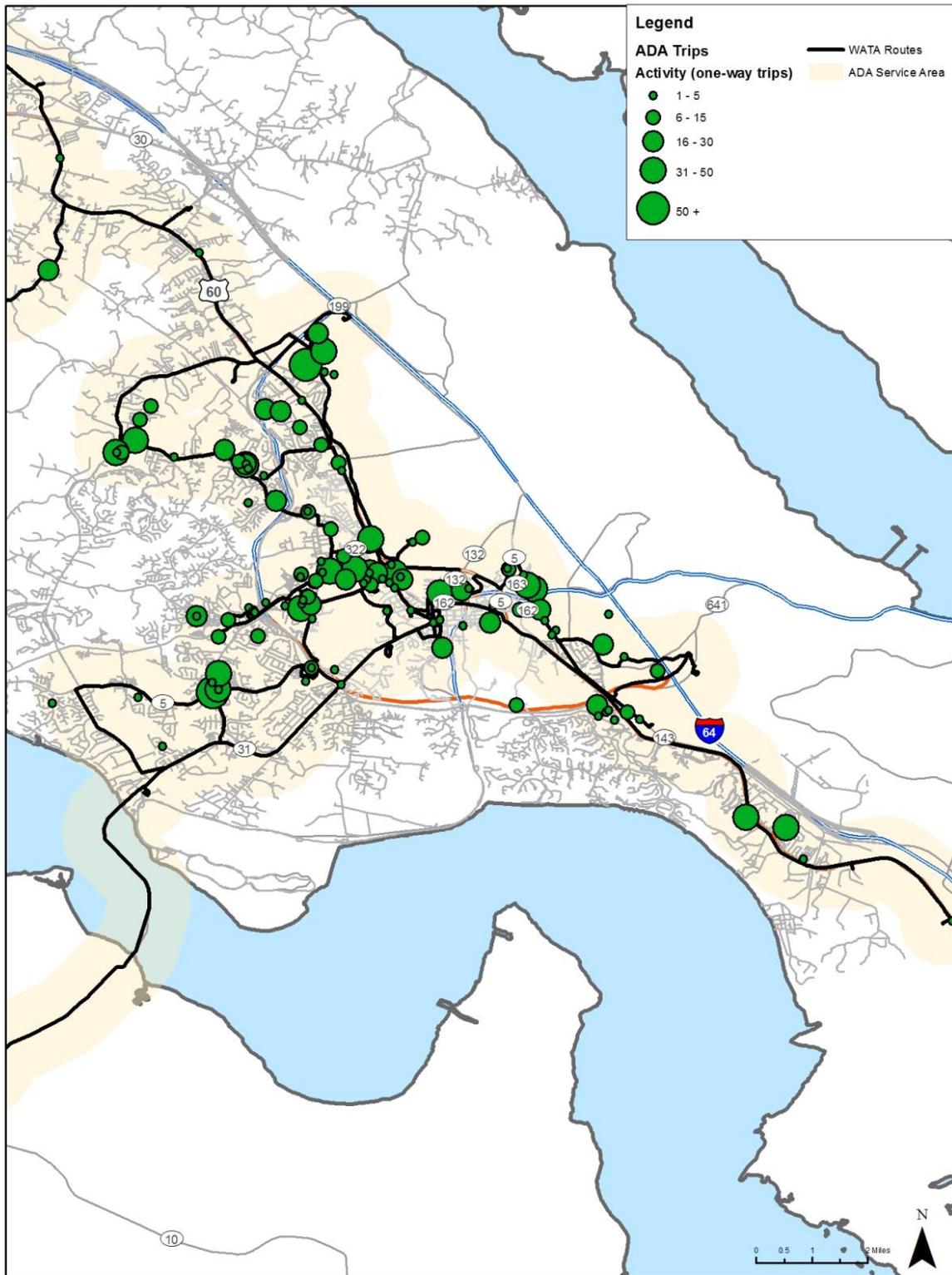
Table 3-5: WATA Monthly Paratransit Data, FY15 and FY14

FY 15	Trips	Revenue Hours	Non-Revenue Hours	Total Hours	% Non-Revenue	Revenue Miles	Non-Revenue Miles	Total Miles	% Non-Revenue	Trips/Rev Hour
July	507	196	264	460	57%	3,434	2,271	5,705	40%	2.59
August	486	182	290	472	61%	3,549	2,522	6,071	42%	2.67
Sept	556	217	228	445	51%	4,215	1,850	6,065	31%	2.56
Oct	627	363	108	471	23%	4,607	2,621	7,228	36%	1.73
Nov	575	211	239	450	53%	4,122	1,680	5,802	29%	2.73
Dec	579	226	283	509	56%	4,112	2,264	6,376	36%	2.56
Jan	608	240	272	512	53%	6,762	4,795	11,557	41%	2.53
Feb	554	226	218	444	49%	4,135	1,793	5,928	30%	2.45
Mar	735	309	264	573	46%	5,662	2,118	7,780	27%	2.38
April	820	326	217	543	40%	6,572	1,858	8,430	22%	2.52
May	655	276	272	548	50%	6,218	1,395	7,613	18%	2.37
June	729	325	272	597	46%	5,346	3,514	8,860	40%	2.24
<b>Totals</b>	<b>7,431</b>	<b>3,097</b>	<b>2,927</b>	<b>6,024</b>	<b>49%</b>	<b>58,734</b>	<b>28,681</b>	<b>87,415</b>	<b>33%</b>	<b>2.40</b>

FY14	Trips	Revenue Hours	Non-Revenue Hours	Total Hours	% Non-Revenue	Revenue Miles	Non-Revenue Miles	Total Miles	% Non-Revenue	Trips/Rev Hour
July	273	204	47	251	19%	2,708	1,267	3,975	32%	1.34
August	331	245	48	293	16%	3,455	1,136	4,591	25%	1.35
Sept	316	248	48	296	16%	3,405	1,107	4,512	25%	1.27
Oct	344	222	48	270	18%	3,320	1,040	4,360	24%	1.55
Nov	340	227	45	272	17%	3,429	1,011	4,440	23%	1.50
Dec	332	220	42	262	16%	3,232	987	4,219	23%	1.51
Jan	299	132	167	299	56%	2,117	1,731	3,848	45%	2.27
Feb	312	134	149	283	53%	2,645	1,216	3,861	31%	2.33
Mar	383	147	212	359	59%	2,767	1,821	4,588	40%	2.61
April	446	163	201	364	55%	2,955	2,238	5,193	43%	2.74
May	423	172	201	373	54%	2,935	2,036	4,971	41%	2.46
June	503	189	246	435	57%	3,782	1,955	5,737	34%	2.66
<b>Totals</b>	<b>4,302</b>	<b>2,303</b>	<b>1,454</b>	<b>3,757</b>	<b>39%</b>	<b>36,750</b>	<b>17,545</b>	<b>54,295</b>	<b>32%</b>	<b>1.87</b>

Source: WATA ADA paratransit database.

Figure 3-28: WATA Paratransit Origins and Destinations- April 2015



Source: WATA ADA paratransit database.

### **Staff Suggestions**

In addition to collecting quantitative paratransit data, KFH Group staff also interviewed the staff members with primary ADA paratransit responsibilities. These staff members had some specific suggestions regarding ways in which the ADA paratransit program could be improved. These suggestions are:

- Provide additional staff training concerning ADA complementary paratransit eligibility.
- Examine whether WATA's ADA paratransit service should be door-to-door or curb to curb.
- Enforce the pick-up window.
- Consider the use of smaller vehicles that could maneuver more easily in and out of constrained driveways and parking lots.
- Schedule a third full-time driver to handle the afternoon and evening paratransit shift, rather than having to schedule an on-call driver for this shift.
- Schedule permanent weekend ADA staff rather than relying on on-call drivers for these shifts.

### **One-Call Center**

Concurrent to the TDP/COA effort, several Williamsburg area stakeholders are participating in a Williamsburg Health Foundation effort to develop a one-call center to help coordinate paratransit information sharing and scheduling among three area paratransit providers (WATA, Peninsula Agency on Aging, and Faith in Action). If a one-call center is implemented, customers from any of the participating agencies could call the center to get information on any of the transit services that they may be able to use. Customers could also schedule a trip on the appropriate provider through the one-call center. Under this arrangement, the participating providers would each have access to the same paratransit scheduling software. Currently the Peninsula Agency on Aging uses RouteMatch software. Additional licenses could be purchased from RouteMatch for use by WATA and Faith in Action.

If the one-call center is implemented, it could offer WATA access to paratransit scheduling software, as well as additional paratransit scheduling staff. These resources could reduce the need for WATA to independently upgrade scheduling software and may mitigate the need for WATA to add scheduling staff capacity to handle future growth. The preliminary concept would not change the actual provision of paratransit services.

## PEER ANALYSIS

In order to better understand how WATA's operating and performance characteristics compare to peers within the transit industry, data on seven peer systems were collected from the FY13 NTD database. Data were collected in a number of different areas, including basic operating and financial characteristics, employment hours, and maintenance costs.

The study team primarily chose peers that were required to submit full NTD reporting data, so that the detailed data regarding staff hours and maintenance costs would be available, both of which are of interest for the COA. The peers were chosen based on relative geographic proximity (Virginia, Maryland, North Carolina, and South Carolina), the number of fixed route service hours, and the fixed route fleet size. It was difficult to choose peers based on the organizational structure as many of the regional systems are either too spread out and rural (such as Bay Transit) or too large (Hampton Roads Transit) to be useful as peers. WATA's service area is significantly lower in population density than the peer group, which affects transit productivity. The study team looked at some potential peers in areas with densities more similar to the WATA service area but either the system sizes or the operating characteristics were significantly different.

The following programs were used as peers:

- Asheville Redefines Transit (ART), Asheville, North Carolina
- Fayetteville Area System of Transit (FAST), Fayetteville, North Carolina
- Frederick County TransIT, Frederick, Maryland
- Fredericksburg Regional Transit (FRED), Fredericksburg, Virginia
- Greater Lynchburg Transit Company (GLTC), Lynchburg, Virginia
- Greenville Transit Authority (GTA), Greenville, South Carolina
- Harrisonburg Department of Public Transportation (HDPT), Harrisonburg, Virginia
- Harford Transit, Maryland (for some characteristics where data were not available for FRED, Harford Transit was used as a substitute)

### Basic Operating and Financial Characteristics

As compared with the peer group, WATA's fixed route system operates about 5,000 fewer fixed route service hours than the mean, and over 10,000 fewer demand-response hours than the mean. WATA's total operating expenses for the fixed route program are within 2% of the mean, while the demand-response operating expenses are significantly lower, reflecting WATA's relatively small paratransit program. The mean total number of vehicles operated in maximum service is thirty, with 21 associated with fixed route service and nine associated with demand-response service. WATA operates more fixed route vehicles in maximum service (23) than the mean and fewer demand response vehicles (4) than the mean.

WATA's operating cost per revenue hour is higher than the mean for both fixed route and demand-response service, as is the cost per trip. WATA's demand-response cost per trip was the highest among the peer systems in FY13, but has dropped significantly over the past 2 years as demand has increased more than the associated operating expenses.

WATA's fixed route and demand response service productivity is lower than the mean, which would be expected given that the population density of WATA's service area is significantly lower than the mean (396 people per square mile as compared to the mean of 1,085 people per square mile).

The level of transit service supplied to the community, in terms of total revenue service hours per capita, was also calculated. This calculation shows that WATA provides a higher level of service than the mean level, at 1.0 revenue service hours per capita versus the mean of 0.83 revenue service hours per capita.

As a follow-up, the level of community usage was also calculated. For this measure, the study team used total system ridership per capita. WATA's ridership per capita was 17.79, which was slightly below the mean level of 18.82. For this measure, there were some very low, as well as some very high, levels among the peers. If the lowest and highest are discarded, the mean level is 15.54 trips per capita which is below WATA's average of 17.79.

The level of local funding provided to help support public transportation is an interesting data point to analyze as the amount of local financial support often dictates the level of service that is possible for a transit program. For this analysis, the study team looked at the sum of the local funding and the fares per capita. These data show that WATA's combined \$33.23 per capita is higher than the mean of \$28.18 per capita. For WATA, the financial data does not include CWF on either the expense or revenue side.

These basic data indicate that WATA is providing a higher level of service within its service area than the peer group as a whole and experiencing a corresponding higher level of ridership per capita, as would be expected given the higher level of service.

The farebox recovery ratio, defined as the farebox revenue divided by the total operating expenses, is lower for WATA than all but one of the peers (FRED, in Fredericksburg, VA), at 12.7% for the fixed routes. The range of values was 9.7% to 22.6%, not including the values for HDPT, which includes the James Madison pre-paid fares as fare revenue.

These data are provided in Table 3-6.

Table 3-6: Peer System Basic Operating and Financial Characteristics

Feature	Mode	WATA	Mean	Asheville Redefines Transit (ART) (NC)	Fayetteville Area System of Transit (NC)	Frederick Transit (MD)	Greater Lynchburg Transit Company (VA)	Greenville Transit Authority (SC)	FRED (VA)	Harrisonburg Department of Public Transp.
Number of Vehicles	MB	23	21	16	17	16	28	14	20	30
	DR	4	9	-	13	18	9	3	-	7
Vehicle Revenue Hours	MB	54,298	59,298	62,976	73,739	52,246	78,547	48,543	52,053	56,035
	DR	2,864	13,429	-	22,209	21,030	16,760	6,755	-	10,957
Vehicle Revenue Miles	MB	877,100	782,742	888,930	927,516	648,500	858,907	715,191	777,237	568,559
	DR	36,971	192,563	-	347,326	413,456	183,124	77,109	-	97,394
Passenger Trips	MB	1,010,092	1,418,049	1,437,104	1,699,422	790,557	2,296,309	855,310	530,690	2,724,912
	DR	3,809	31,180	-	53,319	73,429	26,518	9,494	-	24,323
Operating Expenses	MB	\$ 4,428,322	\$ 4,343,572	\$ 5,347,924	\$ 4,900,557	\$ 3,897,071	\$ 5,582,429	\$3,859,870	\$ 3,555,020	\$ 3,177,384
	DR	\$ 245,224	\$ 885,213	\$ -	\$ 1,686,929	\$ 1,576,318	\$ 697,193	\$ 576,762	\$ -	\$ 528,853
Fare Revenue	MB	\$ 562,060	\$ 848,493	\$ 800,146	\$ 1,031,083	\$ 631,445	\$ 994,655	\$ 871,764	\$ 344,624	\$ 1,552,174
	DR	\$ 5,064	\$ 111,302	\$ -	\$ 72,865	\$ 372,897	\$ 88,804	\$ 28,771	\$ -	\$ 99,408
Base FR Fare		\$ 1.25	\$ 1.31	\$ 1.00	\$ 1.25	\$ 1.50	\$ 2.00	\$ 1.50	\$ 1.00	\$ 1.00
Trips/Hour	MB	18.6	23.9	22.8	23.0	15.1	29.2	17.6	10.2	48.6
	DR	1.3	2.3		2.4	3.5	1.6	1.4	-	2.2
Trips/Mile	MB	1.2	1.8	1.6	1.8	1.2	2.7	1.2	0.7	4.8
	DR	0.10	0.16		0.15	0.18	0.14	0.12	-	0.25
Miles/Hour	MB	16.2	13.2	14.1	12.6	12.4	10.9	14.7	14.9	10.1
	DR	12.9	14.3		15.6	19.7	10.9	11.4	-	8.9
Cost/Trip	MB	\$ 4.38	\$ 3.06	\$ 3.72	\$ 2.88	\$ 4.93	\$ 2.43	\$ 4.51	\$ 6.70	\$ 1.17
	DR	\$ 64.38	\$ 28.39		\$ 31.64	\$ 21.47	\$ 26.29	\$ 60.75	\$ -	\$ 21.74
Cost/Hour	MB	\$ 81.56	\$ 73.25	\$ 84.92	\$ 66.46	\$ 74.59	\$ 71.07	\$ 79.51	\$ 68.30	\$ 56.70
	DR	\$ 85.62	\$ 65.92		\$ 75.96	\$ 74.96	\$ 41.60	\$ 85.38	\$ -	\$ 48.27
Farebox Recovery	MB	12.7%	19.5%	15.0%	21.0%	16.2%	17.8%	22.6%	9.7%	48.9%
	DR	2.1%	12.6%		4.3%	23.7%	12.7%	5.0%	0.0%	18.8%
Service Area Size (sq.mi)		144	98	45	95	18	72	148	242	17
Service Area Population		57,000	106,359	83,393	150,131	65,787	80,846	248,173	113,716	51,828
Population Density		396	1,085	1,853	1,580	3,655	1,123	1,677	470	3,049

Source: FY13 National Transit Database

Definitions: MB= motorbus, fixed route; DR= demand response

Service area is defined as the area within ¾ mile of a route

Table 3-6: Peer System Basic Characteristics, continued

	WATA (1)	Mean	Asheville Redefines Transit (ART) (NC)	Fayetteville Area System of Transit (NC)	Frederick Transit (MD)	Greater Lynchburg Transit Company (VA)	Greenville Transit Authority (SC)	FRED (VA)	Harrisonburg Department of Public Transp. (2)
Local Funding (1)	\$ 1,326,814	\$ 1,490,341	\$ 2,262,932	\$ 3,008,070	\$ 1,144,256	\$ 1,848,097	\$ 624,303	\$ 1,410,352	\$ 297,908
% Local Funding	28%	29%	42%	46%	21%	29%	14%	40%	8%
Local Funding/ Capita	\$ 23.28	\$ 14.01	\$ 27.14	\$ 20.04	\$ 17.39	\$ 22.86	\$ 2.52	\$ 12.40	\$ 5.75
FR Rev. Service Hours/Capita	0.95	0.56	0.76	0.49	0.79	0.97	0.20	0.46	1.08
Total Rev. Hours/Capita	1.00	0.83	0.76	0.64	1.11	1.18	0.22	0.46	1.29
Total Ridership/ Capita	17.79	18.72	17.23	11.67	13.13	28.73	3.48	4.67	53.05
Local Funding + Fares/Capita	33.23	28.18	36.73	27.39	32.66	36.26	6.14	15.43	37.61

(1) Neither the CWF expenses or local revenues were included for WATA, as it is a direct pass through

(2) HDPT considers the JMU pre-paid fares as fare revenue and not local revenue

Source: FY 13 National Transit Database

## Non-Revenue/Revenue Hours

Another measure of scheduling efficiency within a transit program is the percentage of the total vehicle hours that are non-revenue, meaning that the vehicle is being operated, but is not available for carrying passengers (i.e., deadhead, maintenance testing). Generally speaking, the lower the percentage of non-revenue hours, the greater the efficiency. This metric is highly dependent upon the location of a system's operating facility and the geographic size of the service area, as the time it takes to travel from the vehicle storage facility to the first stop is considered non-revenue. WATA's percentage of non-revenue hours is the highest among the peer systems at 11%. The mean among the peer systems is 6%. Given the large service area, it would be expected that WATA's percentage of non-revenue hours would be higher than systems with a smaller geographic service area, but this bears further investigation. These data are provided in Table 3-7.

## Maintenance Data

The study team collected basic maintenance data for peer systems. These data include the number of mechanical failures and the vehicle maintenance expenses. The common metric used for analysis is the number of revenue vehicle miles between mechanical failures. For this analysis, the study team used six peers, rather than seven, as one of the peer systems reported a number that was significantly higher than the rest. These data show that in FY13 WATA services traveled 10,045 revenue vehicle miles between mechanical failures. This is a higher level of performance than the mean of 9,031.

WATA's maintenance cost per revenue mile was \$1.31 per mile which is significantly higher than the mean maintenance cost per mile of \$0.93. The age of the fleet is a significant factor contributing to these high maintenance expenses. These data are shown in Table 3-8.

**Table 3-7: Peer Comparison of Revenue and Non-Revenue Hours**

		WATA	Mean	Asheville Redefines Transit (ART) (NC)	Fayetteville Area System of Transit (NC)	Frederick Transit (MD)	Greater Lynchburg Transit Company (VA)	Greenville Transit Authority (SC)	Harford Transit (MD)	Harrisonburg Department of Public Transp.
Revenue Vehicle Hours	MB	54,600	56,963	63,000	73,700	56,200	78,500	48,500	25,200	56,000
	DR	2,900	14,243	-	22,200	21,000	16,800	6,800	19,000	11,000
Total Revenue Vehicle Hours		57,500	69,425	63,000	95,900	77,200	95,300	55,300	44,200	67,000
Total Vehicle Hours	MB	61,500	59,663	65,300	75,400	58,300	82,500	49,300	27,200	57,800
	DR	3,400	16,257	-	27,600	24,600	18,400	7,200	21,100	11,500
<b>Total Hours</b>		<b>64,900</b>	<b>73,888</b>	<b>65,300</b>	<b>103,000</b>	<b>82,900</b>	<b>100,900</b>	<b>56,500</b>	<b>48,300</b>	<b>69,300</b>
<b>% Revenue Hours</b>	<b>MB</b>	<b>89%</b>	<b>93%</b>	<b>96%</b>	<b>77%</b>	<b>96%</b>	<b>95%</b>	<b>98%</b>	<b>93%</b>	<b>97%</b>
	<b>DR</b>	<b>85%</b>	<b>89%</b>	<b>0%</b>	<b>80%</b>	<b>85%</b>	<b>91%</b>	<b>94%</b>	<b>90%</b>	<b>96%</b>

Source: FY13 National Transit Database

Table 3-8: Peer Comparison of Maintenance Data

	WATA	Mean	Asheville Redefines Transit (ART) (NC)	Fayetteville Area System of Transit (NC)	Frederick Transit (MD)	Greater Lynchburg Transit Company (VA)	Greenville Transit Authority (SC)	Harford Transit (MD)	Harrisonburg Department of Public Transp.
# Vehicles	27	28.1	16	30	34	37	17	27	37
Total Revenue Vehicle Hours	57,500	69,425	63,000	95,900	77,200	95,300	55,300	44,200	67,000
Total Revenue Vehicle Miles	914,100	928,241	888,930	1,274,800	1,062,000	1,042,000	792,300	785,800	666,000
Total Mechanical Failures	91	156	470	81	98	16	356	54	84
<b>Rev. Miles b/t Mech. Failures</b>	<b>10,045</b>	<b>9,031.06</b>	<b>1,891</b>	<b>15,738</b>	<b>10,837</b>		<b>2,226</b>	<b>14,552</b>	<b>7,929</b>
Vehicle Maintenance Expenses	\$1,193,100	\$ 833,788	\$ 803,400	\$ 904,000	\$ 655,600	\$ 825,600	\$1,134,000	\$ 370,100	\$ 784,500
<b>Maintenance Cost/Mile</b>	<b>\$ 1.31</b>	<b>\$ 0.93</b>	<b>\$ 0.90</b>	<b>\$ 0.71</b>	<b>\$ 0.62</b>	<b>\$ 0.79</b>	<b>\$ 1.43</b>	<b>\$ 0.47</b>	<b>\$ 1.18</b>
<b>Maintenance Cost/Vehicle</b>	<b>\$ 44,189</b>	<b>\$ 33,468</b>	<b>\$ 50,213</b>	<b>\$ 30,133</b>	<b>\$ 19,282</b>	<b>\$ 22,314</b>	<b>\$ 66,706</b>	<b>\$ 13,707</b>	<b>\$ 21,203</b>

Source: FY13 National Transit Database

## FINANCIAL ANALYSIS

### Operating Expenses

WATA's annual operating expenses have risen incrementally over the past four years from about \$4.8 million (not including CWF or the facility leases) in FY12 to just under \$5 million in FY15. The FY16 operating budget is \$5,772,343. The largest cost center for the operating budget is labor and fringe, which comprised 57% of the FY15 operating budget. Vehicle maintenance is the second largest expenditure, comprising 22% of the annual operating budget. Fuel is the third largest operating expense for WATA, comprising about 15% of the annual operating budget. Table 3-9 provides the detailed operating expenses incurred by WATA from FY12 through FY15, presented by category. WATA assigns costs to particular services and routes based on the number of service hours for each.

As these data show, the fixed route services have seen the largest increases in expenses, rising 64% over the four-year period. These data include the rural and urban fixed routes, as well as the new Jamestown route. The ADA paratransit expenses grew 36% over the same time period.

### ***Farebox Recovery***

WATA's farebox recovery ratio (all services combined) for the past three years has been 11%, up from 9% in FY12. As discussed in the peer section, this farebox recovery ratio is lower than all but one of the peer systems.

### Capital Expenses

WATA's capital expenses have fluctuated over the four-year period, from a low of \$369,830 in FY12, to a high of \$2,689,150 in FY15. The FY16 capital budget is \$4.9 million, with \$2.8 million of this budgeted for the replacement of CWF vehicles. For FY16, WATA is planning to continue its fleet replacement program, with \$1.6 million budgeted for vehicle replacement. The Hampton Roads Transportation Planning Organization's Transportation Improvement Program (TIP) 2015-2018 includes WATA's vehicle replacement, with CMAQ and State matching funds shown for FY15 and FY16. WATA is also scheduled for 8 additional replacement vehicles between FY18 and FY21. WATA's facility project is also included in the TIP, with RSTP and State match funds identified for FY18. The FY12-FY15 capital expenses are presented in Table 3-10.

### Funding Sources

The funding sources for WATA are comprised of federal, state, and local funds, as well as fare revenue. For FY15, the largest funding sources for both operating and capital were federal

funds, followed by state, and local. WATA's funding sources for both operating and capital for the four year period are shown in Table 3-11.

**Table 3-9: WATA Operating Costs, FY12-FY15**

Cost Center	FY12	FY13	FY14	FY15
<b>Administration:</b>				
Salaries	\$ 362,156	\$ 337,508	\$ 381,584	\$ 396,053
Fringe Benefits	\$ 117,327	\$ 122,459	\$ 150,219	\$ 154,880
Advertising	\$ 21,010	\$ 13,651	\$ 4,908	\$ 14,587
Professional Services	\$ 23,667	\$ 23,988	\$ 16,814	\$ 21,005
Dues, Membership	\$ 7,126	\$ 1,878	\$ 7,566	\$ 9,112
Vehicle Insurance	\$ 45,574	\$ 36,741	\$ 38,679	\$ 37,345
Contract Repairs, Maintenance	\$ 5,023	\$ 7,351	\$ 9,033	\$ 13,547
Postage	\$ 458	\$ 165	\$ 446	\$ 372
Telephone	\$ 20,064	\$ 26,607	\$ 22,896	\$ 23,712
Travel and Conferences	\$ 6,231	\$ 3,923	\$ 15,070	\$ 13,488
Annual Audit/Accounting Service	\$ 15,879	\$ 16,307	\$ 16,800	\$ 17,119
Communication Equipment/Radio Maintenance	\$ 18,954	\$ 35,546	\$ 45,324	\$ 44,741
Recognition	\$ 1,717	\$ 4,407	\$ 796	\$ 3,174
Motor Fuel	\$ 4,869	\$ 4,202	\$ 5,361	\$ 5,306
Parts	\$ 2,799	\$ 4,116	\$ 2,976	\$ 4,437
Supplies and Materials	\$ 17,691	\$ 13,290	\$ 14,636	\$ 13,073
Data Processing	\$ 2,536	\$ 2,535	\$ 2,535	\$ 2,536
Legal Counsel	\$ 10,000	\$ 9,999	\$ 10,000	\$ 12,000
Fiscal Agent Fee (1)	\$ 61,893	\$ 59,809	\$ 64,805	\$ 66,553
Interest Expense	\$ 1,000	\$ -	\$ 500	
Utilities		\$ 2,275	\$ 2,259	
Intern	\$ 102	\$ 1,981		
Projects: COA				\$ 78,335
Projects: Rebranding				\$ 13,776
<b>Subtotal Administration</b>	<b>\$ 746,076</b>	<b>\$ 728,738</b>	<b>\$ 813,207</b>	<b>\$ 945,151</b>

(1) WATA pays this fee to James City County for fiscal services.

Source: WATA

Table 3-9: WATA Operating Costs, FY12-FY15 (continued)

Cost Center	FY12	FY13	FY14	FY15
<b>Fixed Route Operations (urban and rural combined):</b>				
Salaries	\$ 1,007,158	\$ 1,112,532	\$ 1,279,407	\$ 1,359,051
Fringe Benefits	\$ 316,073	\$ 371,464	\$ 497,275	\$ 513,087
Cleaning Contract	\$ 119,281	\$ 67,057	\$ 119,670	\$ 66,316
Contract Repairs, Maintenance	\$ 477,044	\$ 386,860	\$ 689,110	\$ 641,939
Building Maintenance	\$ 1,908	\$ 1,476	\$ 1,310	\$ 229
Motor Fuel	\$ 372,449	\$ 522,015	\$ 679,453	\$ 508,217
Parts	\$ 77,259	\$ 176,977	\$ 277,613	\$ 294,409
Clothing	\$ 10,521	\$ 12,786	\$ 12,416	\$ 8,176
Travel and Training	\$ 4,481			
<b>Subtotal Motor Bus (Fixed Route)</b>	<b>\$ 2,386,174</b>	<b>\$ 2,651,167</b>	<b>\$ 3,556,254</b>	<b>\$ 3,391,424</b>
<b>ADA Paratransit:</b>				
Salaries	\$ 100,728	\$ 115,263	\$ 97,996	\$ 145,104
Fringe Benefits	\$ 48,710	\$ 52,796	\$ 52,941	\$ 76,500
Contract Repairs	\$ 25,198	\$ 32,157	\$ 35,528	\$ 43,249
Fuel	\$ 29,763	\$ 23,664	\$ 28,227	\$ 29,630
Paratransit Contract	\$ 20,631	\$ 16,679	\$ 13,481	\$ 7,072
Parts	\$ 1,559	\$ 4,663	\$ 4,223	\$ 8,039
<b>Subtotal ADA</b>	<b>\$ 226,589</b>	<b>\$ 245,222</b>	<b>\$ 232,396</b>	<b>\$ 309,594</b>
<b>William &amp; Mary (Green):</b>				
Salaries	\$ 80,068	\$ 91,014	\$ 100,666	\$ 82,473
Fringe Benefits	\$ 32,839	\$ 31,732	\$ 46,554	\$ 45,622
Contract Repairs, Maintenance	\$ 33,076	\$ 44,833	\$ 46,012	\$ 41,619
Communication Equipment/Radio Maintenance			\$ 5,036	\$ 5,330
Fuel	\$ 30,528	\$ 29,684	\$ 38,485	\$ 46,552
Uniforms	\$ 3,024	\$ 3,056	\$ 2,006	\$ 2,275
Parts	\$ 15,386	\$ 21,718	\$ 27,456	\$ 12,463
<b>Subtotal William &amp; Mary</b>	<b>\$ 194,921</b>	<b>\$ 222,037</b>	<b>\$ 266,215</b>	<b>\$ 236,334</b>

Source: WATA

**Table 3-9: WATA Operating Costs, FY12-FY15 (continued)**

Cost Center	FY12	FY13	FY14	FY15 (2)
<b>Demonstration Routes</b>				
Salaries	\$ 411,750	\$ 209,034		\$ 47,408
Fringe	\$ 171,950	\$ 77,109		\$ 19,296
Cleaning Contract				\$ 1,997
Equipment Maintenance	\$ 222,500	\$ 133,861		\$ 13,237
Motor fuels	\$ 302,976	\$ 158,434		\$ 14,614
Operating supplies/materials	\$ 95,000	\$ 61,699		\$ 5,322
Uniforms	\$ 6,630	\$ 4,434		\$ 548
Advertising	\$ 4,652			\$ 750
Insurance	\$ 3,357			
Demo Grant	\$ 7,050		\$ 14,844	
<b>Subtotal, Demonstration Routes</b>	<b>\$ 1,225,865</b>	<b>\$ 644,571</b>	<b>\$ 14,844</b>	<b>\$ 103,172</b>
Staff Development	\$ 35,464			
ARRA Operations	\$ 8,405			
Regional Garage Lease (1)	\$ 76,667	\$ 75,087	\$ 77,340	
Hub Fees (1)	\$ 75,000	\$ 75,000	\$ 75,000	
Customer Service Lease (1)	\$ 61,400	\$ 31,798	\$ 20,460	
<b>TOTAL WATA Operations</b>	<b>\$ 5,036,561</b>	<b>\$ 4,673,620</b>	<b>\$ 5,055,716</b>	<b>\$ 4,985,675</b>

(1) Capitalized in FY15, and included in the Capital Budget. Hub fees are paid to the City of Williamsburg for use of the Williamsburg Transportation Center.

(2) The Jamestown Route is a demonstration route and operated for part of FY15.

Note: Does not include Colonial Williamsburg Foundation expenses.

Source: WATA

**Table 3-10: WATA Capital Expenses FY12-FY15**

<b>Capital</b>	<b>FY12</b>	<b>FY13</b>	<b>FY14</b>	<b>FY15</b>
Associated Capital (parts)	\$ 175,213	\$ 16,159		\$ 85,527
A and E Facility				\$ 6,427
AVL/GPS Equipment		\$ 350,000	\$ 182,719	\$ 21,416
Bike Racks		\$ 11,292		
BOC Vehicle Replacement		\$ 134,546	\$ 6,187	
Bus Replacement				\$ 2,265,480
Bus Stop Shelters/Signs	\$ 1,420	\$ 9,975	\$ 22,024	\$ 55,763
CNG Generators	\$ 98,468	\$ 286,383	\$ 168,967	
Computer Hardware and Software	\$ 26,754	\$ 215,657	\$ 29,358	\$ 46,419
Customer Service Facility Lease				
Enhancements- bus stop maintenance		\$ 8,750	\$ 755	\$ 25,419
Expansion Bus				
Fare Collection Equipment	\$ 4,742	\$ 88,621	\$ 8,837	
Furniture and Equipment	\$ 16,013	\$ 6,143	\$ 18,742	
HUB Lease (1)				\$ 87,180
Radios	\$ 10,008			
Regional Garage Lease (1)				\$ 80,895
Route Identification Units		\$ 7,931	\$ 9,541	
Security Equipment			\$ 57,953	
Support Vehicles	\$ 37,212			
Wheel Chair Lift Replacement Yorktown Trolley				\$ 14,624
York Bus Trolley			\$ 300,376	
<b>Total Capital</b>	<b>\$ 369,830</b>	<b>\$ 1,135,457</b>	<b>\$ 805,459</b>	<b>\$ 2,689,150</b>

- (1) These expenses were previously listed with the operating budget. Lease expenses are eligible for reimbursement at the higher capital match rate for federal and state grants, so these expenses are now categorized as capital. Hub fees are paid to the City of Williamsburg for use of the Williamsburg Transportation Center.

Source: WATA

**Table 3-11: WATA Funding Sources and Revenue, FY12-FY15**

Funding Source- Operating	FY12 Operating	FY13 Operating	FY14 Operating	FY15 Operating
Federal	\$ 1,693,775	\$ 1,437,768	\$ 1,382,945	\$ 1,873,160
ARRA- Preventive Maintenance	\$ 249,625			
State	\$ 1,186,743	\$ 1,230,208	\$ 1,613,722	\$ 1,513,313
Local	\$ 1,023,609	\$ 1,127,814	\$ 1,274,887	\$ 1,271,083
Farebox and Pre-Paid Fares	\$ 452,866	\$ 484,407	\$ 556,155	\$ 557,238
College Contract	\$ 202,310	\$ 200,498	\$ 208,975	\$ 204,631
Advertising	\$ 671	\$ 3,050	\$ 3,022	\$ 1,950
Misc.	\$ 15,906	\$ 5,935	\$ 4,109	\$ 3,439
<b>Total</b>	<b>\$ 4,825,505</b>	<b>\$ 4,489,680</b>	<b>\$ 5,043,815</b>	<b>\$ 5,424,814</b>

	FY12 Capital	FY13 Capital	FY14 Capital	FY15 Capital
Federal	\$ 352,216	\$ 791,386	\$ 571,559	\$ 1,812,384
CW Earmark	\$ 98,468	\$ 259,513	\$ 145,039	
CWF				\$ 407,203
State	\$ 78,555	\$ 143,074	\$ 177,825	\$ 452,631
Local	\$ 36,935	\$ 69,790	\$ 76,343	\$ 37,989
Sale of Vehicles/Property	\$ 22	\$ 128	\$ 7,495	
Misc.		\$ 408		
<b>Total</b>	<b>\$ 566,196</b>	<b>\$ 1,264,299</b>	<b>\$ 978,261</b>	<b>\$ 2,710,207</b>

Source: WATA

## Cost Allocation

As an urban-rural, multi-jurisdictional authority, it is necessary for WATA to allocate its expenses in a variety of ways. Parts of the WATA service area are not in either the Williamsburg Urbanized Area or the Virginia Beach Urbanized area. These parts of the region are eligible to receive transit funding under the federal S.5311 Rural Area Program that is administered through DRPT, rather than the federal S.5307 Urbanized Area Program. WATA currently allocates 11% of its direct operating expenses to the rural program to support service in the rural parts of the service area. As documented in Table 3-12, portions of several routes serve the non-urbanized portions of the region. These calculations show that the estimated annual revenue miles are 88.4% urban and 11.6% rural; assuming that the mileage that is on the urban/rural boundary is assigned to the urban category. These are consistent with WATA's current urban/rural cost split.

**Table 3-12: WATA Fixed Route and Deviated Fixed Route Revenue Service Miles by Route and Category**

Route	Round Trip Route Mileage (1)	Urban Route Mileage	Rural Route Mileage	Est. Urban Rev. Service Miles Per Year	Est. Rural Rev. Service Miles Per Year	Total Estimated Annual Revenue Service Miles	Notes
Blue Route	14.84	13.34	1.5	92,766	10,431	103,197	
Gray Route	21.94	17.82	4.12	123,920	28,650	152,571	3.22 miles on border (counted as urban)
Green Route	5.68	5.68	0	41,805	-	41,805	Based on 31 weeks of service
Jamestown Route	11.97	10.98	0.99	84,656	7,633	92,289	0.70 miles on border (counted as urban)
Orange Route	16.96	15.55	1.41	108,135	9,805	117,940	2.38 miles on border (counted as urban)
Purple 1 Route	20.9	18.06	2.84	93,099	1,988	95,087	4.5 miles on border (counted as urban)
Purple 2 Route	28.98	24.56	4.42	126,607	3,094	129,701	5.86 miles on border (counted as urban)
Red Route	14.03	14.03	0	97,565	-	97,565	
Surry Route	35.07	14.11	20.96	23,193	35,557	58,751	0.46 miles on border (counted as urban)
Tan Route	17.13	13.31	3.82	92,558	26,564	119,122	7.26 miles on border (counted as urban)
Trolley Route	7.14	7.14	0	57,448	-	57,448	
<b>Total</b>	<b>194.64</b>	<b>154.58</b>	<b>40.06</b>	941,752	123,723	1,065,475	24.38 total miles on border
<b>Percentage</b>	<b>100.0%</b>	<b>79.4%</b>	<b>20.6%</b>	<b>88.4%</b>	<b>11.6%</b>		12.5% of total miles

(1) Based on GIS calculations

(2) All route segments that directly bordered the urbanized area were classified as urban

In addition to allocating between urban and rural services for federal transit funding assistance, WATA also allocates the local share needed to match federal and state grants among the funding partners. The current ratios among the local funding partners are as follows:

- James City County – 48%
- York County – 27%
- City of Williamsburg – 25%

In addition, Surry County contributed \$36,750 in FY15 and the City of Newport News contributed \$35,000 in FY15. These amounts are negotiated annually.

This funding arrangement has been in place for several years. There was an in-depth cost allocation project conducted in 2008-2009 to help set specific cost allocation parameters based on a combination of service and population factors, but consensus to move forward with a specific formula was not reached.<sup>1</sup>

## Colonial Williamsburg Foundation Partnership

CWF has leased publicly-owned vehicles from James City County, and then from WATA, since 2003. These vehicles are maintained by First Transit, under the WATA contract, to ensure that all federal contracting requirements are met. CWF has a separate contract with First Transit for the maintenance of its privately-owned fleet.

There are currently 17 CWF vehicles that are publicly owned, as well as support items for the operation of compressed natural gas (CNG) vehicles. In addition to the vehicle partnership, WATA and CWF entered into a bus service agreement in 2008, which is in effect until December 31, 2017. This bus service agreement outlines the following relationship:<sup>2</sup>

- WATA applies for federal and state grants for reimbursements of transportation costs and services to supplement funding for the operation of the regional transportation system.
- CWF provides transportation services on defined routes to, from and around the historic area of Williamsburg, and on defined routes to and from Jamestown and Yorktown.<sup>3</sup>

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<sup>1</sup>Williamsburg Area Transport Cost Allocation Methodology: Revised Report on Alternatives, KFH Group, October, 2009.

<sup>2</sup> Williamsburg Area Transit Authority, Colonial Williamsburg Foundation Bus Service Agreement, October 16<sup>th</sup>, 2008.

<sup>3</sup> The study team has asked for clarification with regard to this statement in the agreement.

The specific details of the agreement are as follows:

- Each year WATA shall apply for federal transit funding to reimburse the actual costs of preventive maintenance of WATA's federally-funded buses and the federally funded buses operated by CWF, and for state transit funding to reimburse WATA and CWF for the actual costs of repairs, labor, parts, fuel, tires, and administrative costs to provide public transportation.
- WATA shall pay a percentage of the federal funds to CWF to offset the costs of preventive maintenance of the federal buses operated by CWF. The percentage of the federal funds is determined by dividing the number of federal buses solely operated by CWF and used to provide service by the total number of WATA federal buses.
- WATA shall calculate the amount of state funds that are solely attributed to CWF's operating costs and shall pay to CWF 35% of the attributable funds to offset CWF's costs to provide services.
- CWF is to provide documentation to WATA with regard to ridership, vehicle hours, vehicle miles, and other such information that may be required.

If FY15, the total federal and state funding that passed through WATA for CWF were \$407,204.

The partnership between WATA and CWF has allowed for coordinated vehicle purchasing, as well as coordinated facility and maintenance contracting and operation in the region.

This agreement also allows WATA to include CWF operating statistics as part of the WATA system in its data reporting to the National Transit Database (NTD) and to DRPT, which results in about \$100,000 in additional state transit funding for WATA annually.<sup>4</sup>

## ANALYSIS OF FARES AND PASSES

WATA's base one-way adult fare is \$1.25, with a reduced fare of \$0.50 for senior citizens, people with disabilities, and Medicare recipients. Students, faculty and staff from the College of William & Mary do not pay a fare, as the College contributes financially to the system, both through a contract for service and through an agreement for pre-paid fares. Discounts are also offered for middle and high school students. Transfers are \$0.25. The base trolley fare is \$1.00 per round-trip (same day) with a discounted fare of \$0.50 for senior citizens, people with disabilities, and Medicare recipients. ADA complementary paratransit trips are \$2.00 per one-way trip.

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<sup>4</sup> Discussion with WATA Budget and Grants Administrator, November 2015.

WATA also offers a number of passes, which are listed in Table 3-13, along with the complete fare schedule.

**Table 3 -13 WATA Fares and Passes**

<b>Bus Fares</b>	
One Way Fare-Bus	\$1.25
One Way- Reduced Fare (Reduced fare ID or Certified Seniors, Disabled and Medicare Individuals)	\$0.50
Children 12 or Under with Adult Passenger	Free
Middle & High School Historic Triangle Students with valid ID	\$0.50
College of William & Mary Students, Faculty with valid ID (College of William and Mary Students pre-pay for their trips)	Free
Transfer- good for one trip within 2 hours, with one-way fare	\$0.25
<b>Trolley Fares</b>	
Trolley Round Trip Fare-two 1 way Trolley trips on same day	\$1.00
Trolley Round Trip Reduced Fare (Reduced fare ID or Certified Seniors, Disabled and Medicare (individuals))	\$0.50
<b>Passes-Fixed Routes &amp; Trolley</b>	
All Day Pass- Unlimited use all day	\$2.00
All Day Pass- Reduced Fare	\$1.00
6 Ride All Day Bundled Pass- Expires 1 year after purchase	\$10.00
6 Ride All Day Bundled Pass- Reduced Fare	\$5.00
7 Day Pass- Unlimited use for seven consecutive days	\$10.00
7 Day Pass- Unlimited use for seven consecutive days- Reduced Fare	\$5.00
30 Day goWATA Pass- Unlimited Use for 30 consecutive days	\$35.00
30 Day goWATA Pass- Reduced Fare	\$17.50
<b>ADA Paratransit</b>	
One Way Trip- Certified Customers only, each one way trip	\$2.00
One Way Trip- Companion with Customer, each one way trip	\$2.00
One Way Trip- personal Care Attendant with Certified Customer	Free
Book of 10 Tickets	\$20.00

Source: <http://gowata.org/Pages/Fares.html>

## Analysis of Pass Usage

As part of the COA analysis, WATA is interested in learning if the current fare and pass structure make sense. Farebox data from FY14 were used to construct a breakdown of the passengers' use of the various fare and pass options, as well as the associated value of the trips they took and the estimated actual single fare paid. These data are provided in Table 3-14.

**Table 3-14: Types of Fixed Route Fares and Associated Value, FY14**

Fare Category	# Passenger Trips	% of Total Passenger Trips	Value of Trips Based on Applicable Fare	Estimated Actual Single Fare Based on 2 trips/day	Estimated Actual Single Fare Based on 3 trips/day
One-way bus fare	102,775	10%	\$ 128,469	\$ 1.25	\$ 1.25
Discounted one-way bus fare	10,914	1%	\$ 5,457	\$ 0.50	\$ 0.50
All-day pass	541,152	54%	\$ 676,440	\$ 1.00	\$ 0.66
Discounted all-day pass	57,467	6%	\$ 28,734	\$ 0.50	\$ 0.33
William & Mary (pre-paid)	117,970	12%	\$ -	\$ -	\$ -
6-Ride Pass	2,262	0%	\$ 2,828	\$ 0.83	\$ 0.55
6-Ride Pass - discounted	1,417	0%	\$ 709	\$ 0.42	\$ 0.28
7-day Pass	6,069	1%	\$ 7,586	\$ 0.72	\$ 0.48
7-day Pass - discounted	714	0%	\$ 357	\$ 0.36	\$ 0.24
30-day Pass	36,584	4%	\$ 45,730	\$ 0.58	\$ 0.39
30-day Pass -discounted	52,201	5%	\$ 26,101	\$ 0.29	\$ 0.19
Middle/High School Students	6,136	1%	\$ 3,068	\$ 0.50	\$ 0.50
TNCC Students	29,241	3%	\$ 36,551	\$ 1.00	\$ 1.00
12 and under	31,552	3%	\$ -	\$ -	\$ -
<b>Total</b>	<b>996,454</b>		<b>\$ 962,028</b>	<b>\$ 0.92</b>	<b>\$ 0.67</b>

Notes: Breakdown between regular fares and discounted fares for the cash fare and the all-day pass is estimated based on FY14 fare report showing 9.6% senior fare usage across fare payment types. Transfers have not been included with this data.

These data show that the most popular fare option for WATA riders is the all-day pass, with 60% of WATA's riders using this option. This is logical, as this option offers a significant discount, without the risk associated with a longer-term pass. For example, if a rider takes 2 passenger trips in a day, each with a transfer, the full fare would be \$3.00, as compared to the \$2.00 pass. This represents a 33% discount, with more significant discounts for people who take more than 2 trips per day. William & Mary riders comprise the second largest fare category, with 12% of the FY14 riders identified as William and Mary students, faculty, or staff. Just 11% of the riders use the cash fare option. The six and seven day passes are the least used among the fare options.

If WATA had collected the base fare for all of the fixed route passenger trips in FY14 (not including William & Mary riders or riders twelve and under), the total estimated fare revenue would have been \$962,028. This is slightly over-stated, as the trolley fares are not broken out

separately. The actual fixed route fare revenue for FY14 was \$475,815, which means that riders who use the passes are likely making more than 2 trips per day. These data suggest that the actual average per-trip fare paid by WATA riders is about \$0.67. As discussed in the financial section, WATA's farebox recovery is 11% (FY13, FY14, and FY15).

## Adjacent Transit Program Fare and Pass Policies

KFH Group collected fare policy information from WATA's neighboring transit systems, as well as from the peer group systems. This information is presented below.

### **Hampton Roads Transit (HRT)**

Hampton Roads Transit (HRT) provided over 17.9 million passenger trips in FY14 to people in Chesapeake, Hampton, Norfolk, Newport News, Portsmouth and Virginia Beach. HRT fareboxes accept cash, coins, and HRT farecards. Discounted transfers are not offered.

In comparison to WATA, HRT fares are more expensive. An adult one-trip ticket on HRT is priced at \$1.75. The reduced fare, which is for seniors, individuals age seventeen and under, individuals with disabilities, and Medicare cardholders, is \$0.75. HRT also offers the GoPass for \$4.00 (\$2.00 reduced fare) which allows unlimited access to all HRT services except for the Metro Area Express services. The GoPass is offered in a five-day bundle. Table 3-15 provides the full fare options for HRT.

**Table 3-15 HRT Fares and Passes**

(1 TRIP)	Bus	Light Rail	Ferry	MAX	Shuttle
Adult	\$1.75	\$1.75	\$1.75	\$3.50	\$2.00
Half Fare	\$.75	\$.75	\$.75	\$1.75	\$1.00
Children	Free	Free	Free	Free	Free
<b>HRT GoPass</b>					
1 Day	\$4.00	\$4.00	\$4.00	\$6.50	\$4.00
1 Day Half Fare	\$2.00	\$2.00	\$2.00	None	\$2.00
1 Day Bundles (5)	\$19.00	\$19.00	\$19.00	\$30.00	None
3 Day	None	None	None	None	\$8.00
3 Day Half Fare	None	None	None	None	\$4.00
7 Day	\$20.00	\$20.00	\$20.00	None	None
30 Day	\$60.00	\$60.00	\$60.00	\$110.00	None
30 Day Half Fare	\$35.00	\$35.00	\$35.00	None	None

Source: <http://gohrt.com/fares/>

### Greater Richmond Transit Company (GRTC)

GRTC provides approximately 8.9 million annual passenger trips in the Greater Richmond area. The base fare on GRTC is \$1.50 which is higher than WATA's base fare. Reduced fares are offered at \$0.75 for seniors, persons with disabilities, and Medicare Card holders. Transfers are \$0.25, or free for reduced fare riders. Children age five and under ride free. GRTC also offers a Go Card which is an electronic fare card that can be pre-loaded with fares in \$5.00 increments. The card is swiped each time the passenger boards with the appropriate fare deducted. Go Cards are available at over one-hundred (100) retail outlets in the Greater Richmond area.

CARE is GRTC's ADA complementary paratransit service. For Care ID holders there is no fare charged for local fixed routes. Paratransit riders also have the option of purchasing a book of 6 tickets for \$18.00 and a book of 10 tickets for \$30.00. The complete fare schedule is provided in Table 3-16, below.

**Table 3-16: GRTC Fares and Passes**

<b>Local Routes</b>	
Adults and Children 5 & over	\$1.50
Reduced Fare (Seniors 65+, Persons with Disabilities, & Medicare Card holders.)	\$0.75
Transfers	\$0.25
Senior 65+, Persons with Disabilities & Medicare Card holders Transfers are free. (Local Routes Only)	Free Transfer - Local Routes Only
One Child under 5 years of age	Free when accompanied with fare-paying passenger
CARE ID holders	Free - Local Routes Only
Route 19 Pemberton (Reduced Fare not available on this Route)	\$2.00
<b>Express Routes</b>	
Transfers (see details below) (No transfers available for Route 102x)	\$0.25
Reduce Fare Not Available on Express Routes	Not Available
Routes 23x, 26x, 27x, 28x, 29x, 64x, 66x	\$2.00

Route 95x	\$3.50
Route 81x, 82x	\$6.00
Route 102x	\$5.00
One Child under 5 years of age	Free when accompanied with a fare-paying passenger
<b>Paratransit Fare</b>	
CARE ticket for one-way trip (City of Richmond & Henrico County residents)	\$3.00
CARE Plus ticket for one-way trip (City of Richmond residents)	\$6.00
CARE Plus ticket for one-way trip (Henrico County residents)	\$3.00
Book of 6 tickets (requires pre-certification and ID card)	\$18.00
Book of 10 tickets (requires pre-certification and ID card)	\$30.00

Source: <http://www.ridegrtc.com/fares/fares-rates/>

## Peer Group Fare Policies

Fare policies for each of the peer systems (discussed in the Peer Analysis section), were collected and summarized. The base one-way fares for the peer systems range from \$1.00 to \$2.00, with a mean value of \$1.36. GLTC charges the highest base fare (\$2.00), while ART, HDPT, and most of FRED's routes charge the lowest base fares (\$1.00). The discounted fares for seniors, people with disabilities, and Medicare card holders show a similar pattern, with a mean fare of \$0.63.

Four of the five peer systems that provide ADA complementary paratransit charge twice the fixed route fare, while one (Fayetteville) has a similar fare schedule to WATA, charging a base fare of \$1.25 and a paratransit fare of \$2.00. Paratransit service in Asheville is provided by Mountain Mobility, rather than by ART. FRED operates on a deviated fixed route basis and is not required to provide ADA complementary paratransit.

The qualifications for children to ride for free are different among the peer systems, with some systems choosing an age (ages three to 5 and up through high school for HDPT) or a height (36", 45"), as compared to WATA's age twelve. The general industry standard is to charge a fare

if the child is large enough to displace a fare-paying customer unless the system has a specific mission to help provide the service within the community (HDPT).

Peer systems have a multitude of pass arrangements in place ranging from a one-day pass up through an annual pass. WATA has the least expensive one-day pass among the peer systems, at \$2.00. For the three other systems that offer day passes, the prices are \$3.00, \$4.00, and \$5.00. Fayetteville, with a similar base fare to WATA, has a day pass of \$3.00 and charges full fares for transferring. Five of the peer systems offer a monthly pass, with prices ranging from a low of \$20 (Asheville) to a high of \$50 (GLTC and FRED's VRE feeder monthly pass).

Of the 5 systems that offer multi-trip tickets or coupon books, all feature a per-trip discount from the base fare, ranging from a low of 10% (GLTC and Greenville) to a high of 20% (HDPT).

The peer group does not generally offer as many fare options as WATA, with the group ranging from a low of seven different fare types (FRED and HDPT) to a high of thirteen (Fayetteville), as compared with sixteen for WATA.

Complete fare policies for the peer systems are provided in Table 3-17.

**Table 3-17: Peer System Fare Policies**

Fare Type	WATA	Fare Type	Asheville Redefines Transit (ART) (NC) (1)	Fare Type	Fayetteville Area System of Transit (NC)
Base Fare	\$ 1.25	Base Fare	\$ 1.00	Base Fare	\$ 1.25
Discounted Fare	\$ 0.50	Discounted Fare	\$ 0.50	Discounted Fare	\$ 0.50
ADA Paratransit Fare	\$ 2.00	ADA Paratransit Fare	n.a.	ADA Paratransit Fare	\$ 2.00
Children	Free (ages 12 and under)	Children	Free (ages 5 and under)	Children	Free (36" or shorter)
Middle/High School Students	\$ 0.50	Transfers	Free	Transfers	Free
Trolley Fare-Round Trip	\$ 1.00	Ticket Book - 11 rides	\$ 9.00	1-day Pass	\$ 3.00
Discounted Trolley Fare- Round Trip	\$ 0.50	Discounted Ticket Book - 11 rides	\$ 4.50	Discounted 1-day Pass	\$ 1.50
Transfers	\$ 0.25	Monthly Pass	\$ 20.00	Rolling 8-day Pass	\$ 17.00
1-day Pass	\$ 2.00	Discounted Monthly Pass	\$ 10.00	Discounted Rolling 8-day Pass	\$ 8.00
Discounted 1-day Pass	\$ 1.00	Annual Pass	\$ 220.00	Rolling 30-day Pass	\$ 40.00
6-Ride Pass	\$ 10.00	Discounted Annual Pass	\$ 110.00	Discounted Rolling 30-day Pass	\$ 17.00
Discounted 6-Ride Pass	\$ 5.00			Student Rolling 30-day Pass	\$ 30.00
7-day Pass	\$ 10.00			ADA 20-Ride	\$ 35.00
7-day Pass Discounted	\$ 5.00			ADA 10-Ride	\$ 17.00
30-day goWATA Pass	\$ 35.00				
Discounted 30-day goWATA Pass	\$ 17.50				
Book of 10 Tickets - Paratransit	\$ 20.00				

(1) ART does not provide ADA paratransit. The service in Asheville is provided by Mountain Mobility.

Table 3-17: Peer System Fare Policies (continued)

Fare Type	WATA	Fare Type	Frederick Transit (MD)	Fare Type	Greater Lynchburg Transit Company (VA)
Base Fare	\$ 1.25	Base Fare	\$ 1.50	Base Fare	\$ 2.00
Discounted Fare	\$ 0.50	Discounted Fare	\$ 0.75	Discounted Fare	\$ 1.00
ADA Paratransit Fare	\$ 2.00	ADA Paratransit Fare	\$ 3.00	ADA Paratransit Fare	\$ 4.00
Children	Free (ages 12 and under)	Children	Free (ages 3 and under)	Children	Free (shorter than 45")
Middle/High School Students	\$ 0.50	Transfers	Free	Transfers	Free
Trolley Fare-Round Trip	\$ 1.00	Mobile App 1-day Pass	\$ 4.00	1-day Pass	\$ 4.00
Discounted Trolley Fare- Round Trip	\$ 0.50	10-trip ticket	\$ 13.00	5-day Pass	\$ 16.00
Transfers	\$ 0.25	Discounted 10-trip ticket	\$ 7.00	10-ride Ticket	\$ 18.00
1-day Pass	\$ 2.00	20-trip ticket	\$ 25.00	EZ Pass Debit Card 10 rides for half-fare riders	\$ 10.00
Discounted 1-day Pass	\$ 1.00	Discounted 20-trip ticket	\$ 13.00	15-day Pass	\$ 25.00
6-Ride Pass	\$ 10.00	Monthly Pass	\$ 50.00	Monthly Pass	\$ 50.00
Discounted 6-Ride Pass	\$ 5.00	Discounted Monthly Pass	\$ 30.00	10 Ride Debit Card for Paratransit	\$ 40.00
7-day Pass	\$ 10.00	Youth 10-ride	\$ 10.00		
7-day Pass Discounted	\$ 5.00	Youth Monthly Pass	\$ 30.00		
30-day goWATA Pass	\$ 35.00				
Discounted 30-day goWATA Pass	\$ 17.50				
Book of 10 Tickets - Paratransit	\$ 20.00				

Table 3-17: Peer System Fare Policies (continued)

Fare Type	WATA	Fare Type	Greenville Transit Authority (SC)	Fare Type	FRED (VA) (2)
Base Fare	\$ 1.25	Base Fare	\$ 1.50	Base Fare	\$1.00 / \$1.50 VRE feeder
Discounted Fare	\$ 0.50	Discounted Fare	\$ 0.75	Discounted Fare	\$ 0.50
ADA Paratransit Fare	\$ 2.00	ADA Paratransit Fare	\$ 3.00	ADA Paratransit Fare	n.a.
Children	Free (ages 12 and under)	Children	Free (ages 5 and under)	Children	Free (ages 3 and under)
Middle/High School Students	\$ 0.50	Ages 6-17	\$ 1.25	Transfers	Full fare
Trolley Fare-Round Trip	\$ 1.00	Transfers	\$0.50 regular fare \$0.25 discounted	Monthly Pass	\$ 40.00
Discounted Trolley Fare- Round Trip	\$ 0.50	1-day Pass	\$ 5.00	Monthly Pass - VRE feeder	\$ 50.00
Transfers	\$ 0.25	20-ride Pass	\$ 27.00	Yearly Pass	\$ 225.00
1-day Pass	\$ 2.00	Discounted 20-ride Pass	\$ 13.50		
Discounted 1-day Pass	\$ 1.00	Book of 10 paratransit trips	\$ 30.00		
6-Ride Pass	\$ 10.00				
Discounted 6-Ride Pass	\$ 5.00				
7-day Pass	\$ 10.00				
7-day Pass Discounted	\$ 5.00				
30-day goWATA Pass	\$ 35.00				
Discounted 30-day goWATA Pass	\$ 17.50				
Book of 10 Tickets - Paratransit	\$ 20.00				

(2) FRED operates on a deviated fixed route basis and does not provide ADA paratransit.

**Table 3-17: Peer System Fare Policies (continued)**

Fare Type	WATA	Fare Type	Harrisonburg Department of Public Transp.	Mean
Base Fare	\$ 1.25	Base Fare	\$ 1.00	\$ 1.36
Discounted Fare	\$ 0.50	Discounted Fare	\$ 0.50	\$ 0.63
ADA Paratransit Fare	\$ 2.00	ADA Paratransit Fare	\$ 2.00	\$ 2.67
Children	Free (ages 12 and under)	Children	City students free through grade 12	
Middle/High School Students	\$ 0.50		JMU & BRCC students free	
Trolley Fare-Round Trip	\$ 1.00	Transfers	Free	
Discounted Trolley Fare- Round Trip	\$ 0.50	Coupon Book - 25	\$ 20.00	
Transfers	\$ 0.25	Discounted Coupon Book - 25	\$ 10.00	
1-day Pass	\$ 2.00			
Discounted 1-day Pass	\$ 1.00			
6-Ride Pass	\$ 10.00			
Discounted 6-Ride Pass	\$ 5.00			
7-day Pass	\$ 10.00			
7-day Pass Discounted	\$ 5.00			
30-day goWATA Pass	\$ 35.00			
Discounted 30-day goWATA Pass	\$ 17.50			
Book of 10 Tickets - Paratransit	\$ 20.00			

## RECENT COMPLIANCE RESULTS

The FTA completed a Triennial Review of WATA in 2014. Triennial Reviews are required for agencies that receive grant funding from the Federal S.5307 grant funding program. The reviews are not audits, but serve to determine if grantees are in compliance with federal requirements in seventeen different areas. The results of the 2014 Triennial Review found one deficiency in the area of Technical Capacity. This finding was that WATA had inactive grants and untimely grant closeouts. At the time of the review (2014), WATA had twelve open grants, three of which had no activity in the previous six months, and 2 with no activity in the prior year. WATA was required to submit a grant close-out plan for the grants that had been awarded and executed prior to 2012.

## DEMOGRAPHICS AND LAND USE

This section provides a thorough examination of future population trends, demographics, transit dependent populations, and limited English proficiency. The section then develops a land-use profile based on the area's major trip generators and commuting patterns.

### Population Trends

As of 2010, the United States Census Bureau reported that the City of Williamsburg's population was 14,068 (Table 3-18). This represents an increase from both 1990 and 2000, though growth during the 2000's has been much more dramatic than that of the 1990's. The neighboring Counties of James City and York experienced significant population growth from 1990 to 2010 with 92% and 54% respectively. When compared to Virginia's growth rate, the City of Williamsburg grew at a slightly slower rate than the state average but the surrounding counties (James City and York) outpaced the state's growth rate significantly.

**Table 3-18: Historical Populations, WATA Study Area**

Place	1990 Pop.	2000 Pop.	2010 Pop.	1990-2000 % Change	2000-2010 % Change	1990-2010 % Change
City of Williamsburg	11,530	11,998	14,068	4%	17%	22%
James City County	34,859	48,102	67,009	38%	39%	92%
York County	42,422	56,297	65,464	33%	16%	54%
Virginia	6,187,358	7,078,515	8,001,024	14%	13%	29%

Source: United States Census Bureau

Future population projections developed by the Weldon Cooper Center for Public Service, shown in Table 3-19, estimate that Williamsburg's population will increase by 15% from 2020 to 2040 with the age of the population remaining consistent with current proportions. The dramatic population growth in James City County is projected to continue until 2040 largely fueled by an aging population. York County's population growth will continue, though growth

is expected to slow from the brisk rate of the 1990’s and 2000’s. Again, the population growth in James City and York Counties is projected to surpass the state average.

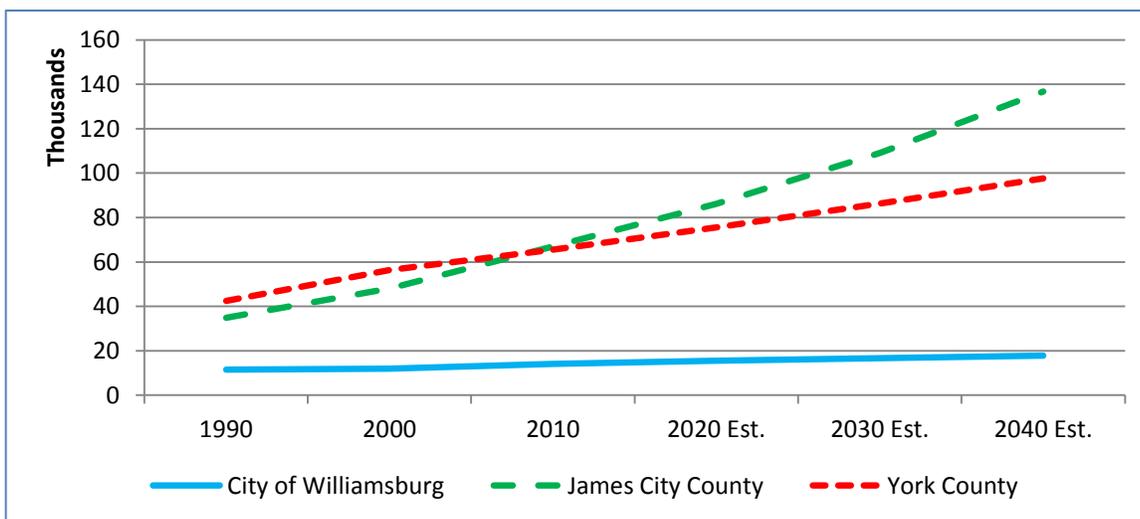
**Table 3-19: Future Population Projections, WATA Study Area**

Place	2020 Pop. Projection		2030 Pop. Projection		2040 Pop. Projection		2020-2030 % Change	2030-2040 % Change	2020-2040 % Change
City of Williamsburg	15,510		16,729		17,820		8%	7%	15%
0-19 years	3,875	25%	3,978	24%	4,493	25%	3%	13%	16%
20-64 years	9,235	60%	10,014	60%	10,531	59%	8%	5%	14%
65+ years	2,401	15%	2,737	16%	2,796	16%	14%	2%	16%
James City County	86,142		109,030		136,735		27%	25%	59%
0-19 years	17,886	21%	21,511	20%	27,084	20%	20%	26%	51%
20-64 years	44,850	52%	51,389	47%	63,071	46%	15%	23%	41%
65+ years	23,406	27%	36,130	33%	46,581	34%	54%	29%	99%
York County	75,590		86,321		97,627		14%	13%	29%
0-19 years	20,837	28%	23,711	27%	27,152	28%	14%	15%	30%
20-64 years	42,847	57%	45,749	53%	52,694	54%	7%	15%	23%
65+ years	11,907	16%	16,861	20%	17,781	18%	42%	5%	49%
Virginia	8,811,512		9,645,281		10,530,228		9%	9%	20%

Source: Weldon Cooper Center for Public Service

Figure 3-29 provides a visual representation of the growth from the historical and projected population numbers for Williamsburg and James City and York Counties. If current projections hold true, Williamsburg will experience a 55% population growth rate over the fifty year period while James City County will see growth of 292% and York County will see 130%.

**Figure 3-29: Overview of Population Trends in the WATA Study Area**



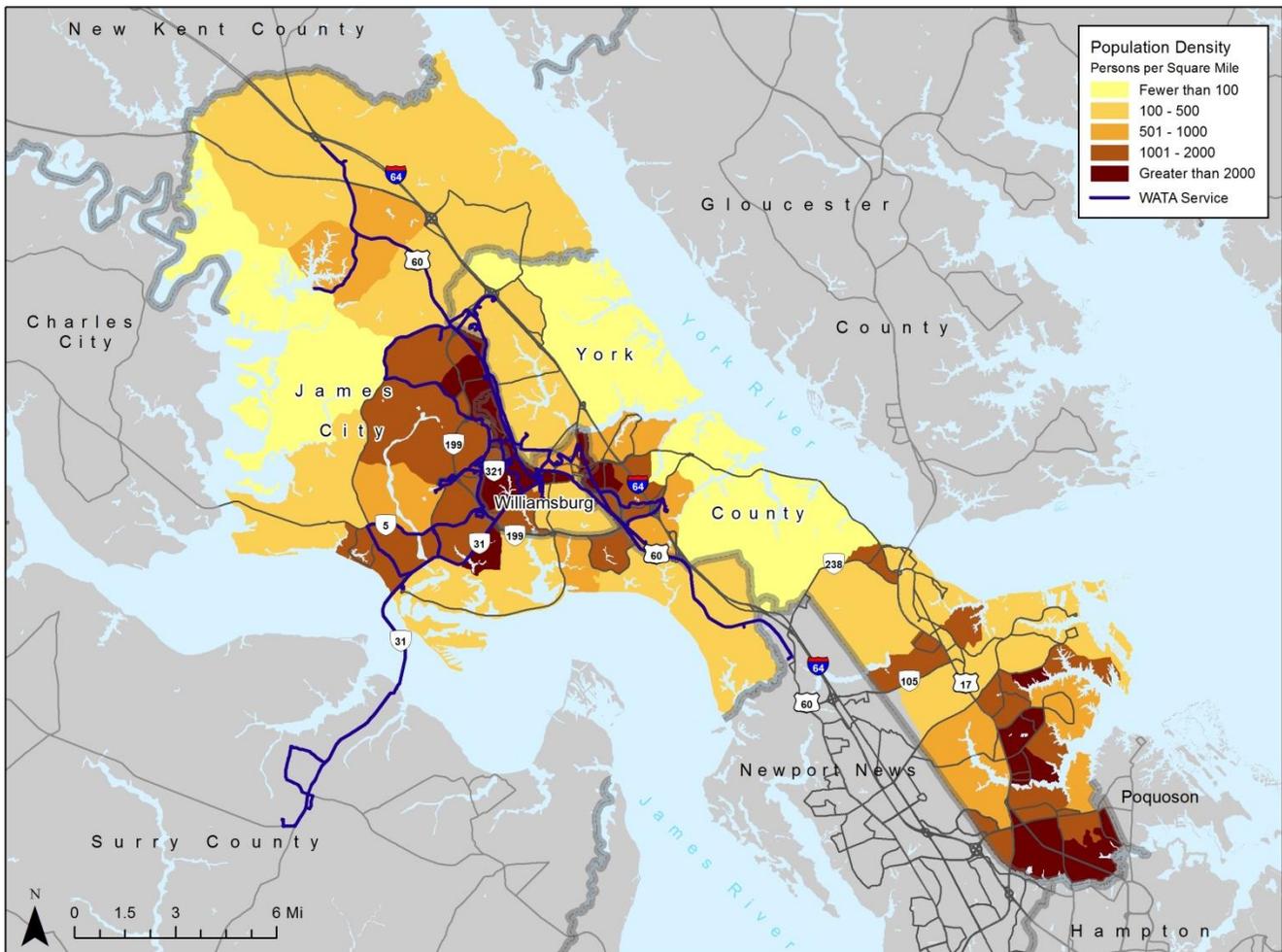
Source: Weldon Cooper Center for Public Service

## Population Density

Population density is a key factor in determining how rural or urban an area is, which in turn affects the type of public transportation that may be most viable. For instance, while exceptions will always exist, an area with a density above 2,000 persons per square mile will generally be able to sustain a frequent, daily fixed route bus service. Conversely, an area with a population density below 2,000 persons per square mile may be better suited for a deviated fixed route, flex schedule or dial-a-ride service.

The population density for the Williamsburg area can be seen in Figure 3-30. As the figure shows, areas with population density above 2,000 persons per square mile are found in downtown Williamsburg, around the College of William and Mary, the Merrimac Trail area, and along the U.S. Route 60 corridor, north and east of Williamsburg. These areas are served by WATA and are some of the highest ridership areas.

**Figure 3-30: Census 2010 Population Density in the Region**



Source: US Census, 2010

## Transit Dependent Populations

Public transportation needs are defined in part by identifying the relative size and location of those segments within the general population that are most likely to depend on transit services. These transit dependent populations include individuals who may not have access to a personal vehicle or are unable to drive themselves due to age or income status. Determining the location of transit dependent populations assisted the evaluation of current transit services and the extent to which they meet community needs.

For the purpose of developing a transit dependence index, block groups are classified relative to the study area as a whole using a 5-tiered scale of “very low” to “very high.” A block group classified as “very low” can still have a significant number of potentially transit dependent persons; as “very low” means below the study area’s average. At the other end of the spectrum, “very high” means greater than twice the study area’s average. The exact specifications for each score are summarized in the Table 3-20 below.

**Table 3-20: Transit Dependent Scoring**

Number/Percentage of Vulnerable Persons or Households	Score Based on Potential Transit Dependence
<= the study area average	1 (Very Low)
> average and <= 1.33 times the average	2 (Low)
> 1.33 times the average and <= 1.67 times the average	3 (Moderate)
> 1.67 times the average and <=2 times the average	4 (High)
> 2 times the study area average	5 (Very High)

### ***Transit Dependent Index***

The Transit Dependence Index (TDI) is an aggregate measure that utilizes recent data from the American Community Survey (ACS) 5-year estimates and the United States Decennial Census to display relative concentrations of transit dependent populations. Five factors make up the TDI calculation, as shown in the following formula:

$$\text{TDI} = \text{PD} \times (\text{AVNV} + \text{AVE} + \text{AVY} + \text{AVBP})$$

Where:

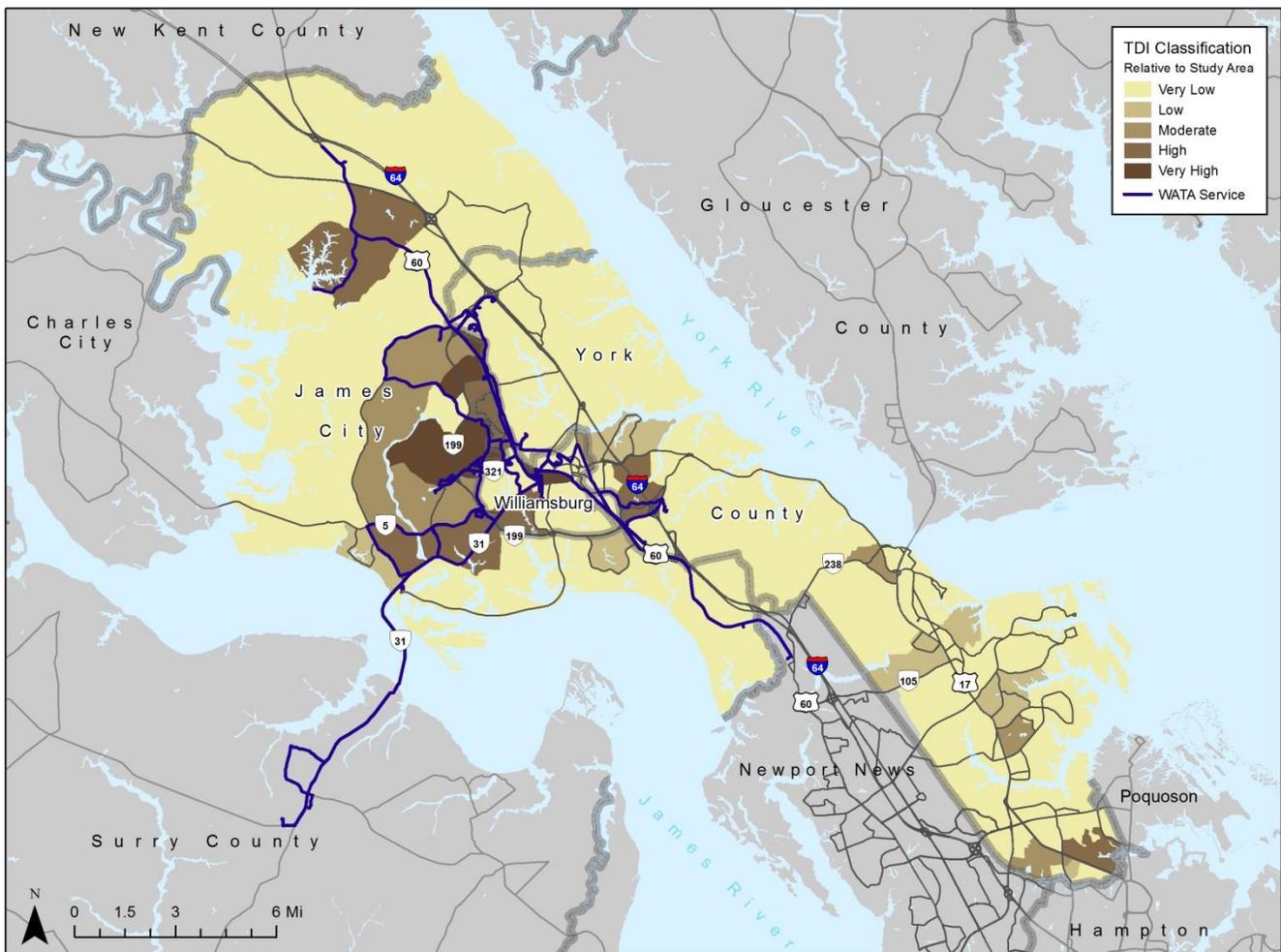
- PD = population density per square mile
- AVNV = amount of vulnerability based on no vehicle households
- AVE = amount of vulnerability based on elderly populations
- AVY = amount of vulnerability based on youth populations
- AVBP = amount of vulnerability based on below poverty populations

In addition to population density (PD), the factors above represent specific socioeconomic characteristics of the population in this region. For each factor, individual block groups were classified according to the prevalence of the vulnerable population relative to the service area average. The factors were then plugged into the TDI equation to determine the relative transit dependence of each block group (very low, low, moderate, high, or very high).

From a transit perspective, the TDI illustrates the areas of greatest overall need. It should be kept in mind that while some of the block groups show low need, they may in fact include major destinations that should be served by transit.

Figure 3-31 provides the results of the TDI analysis. As seen in the map, areas with very high transit needs are located along State Route 199 to the west of Williamsburg and an area in downtown Williamsburg outlined by Lafayette Street, Francis Street, and Richmond Road. WATA currently serves each of the areas deemed to have a very high transit need.

**Figure 3-31: Transit Dependence Index for the Region**



Source: Data compiled from the American Community Survey, 5-year estimates, 2009-2013

### **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 for each block group in the study area was calculated with the following formula:

$$\text{TDIP} = \text{DVNV} + \text{DVE} + \text{DVY} + \text{DVBP}$$

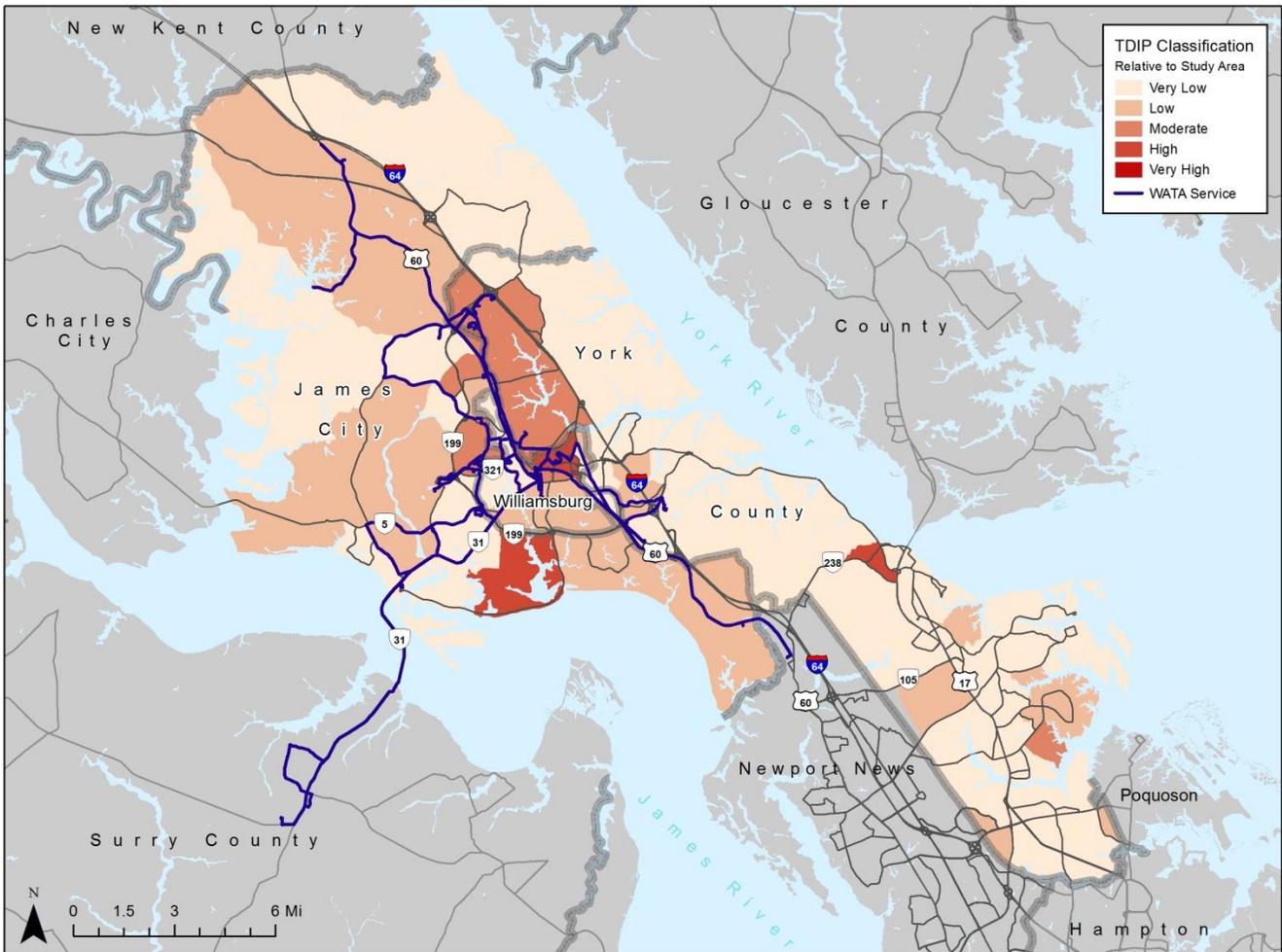
Where:

- DVNV = degree of vulnerability based on autoless households
- DVE = degree of vulnerability based on elderly populations
- DVY = degree of vulnerability based on youth populations
- DVBP = degree of vulnerability based on below poverty populations

By removing the population per square mile factor the TDIP measures the degree rather than the amount of vulnerability. The TDIP represents the percentage of the population within the block group with the above socioeconomic characteristics, and it follows the TDI's 5-tiered categorization of very low to very high. It differs in that it does not highlight the block groups that are likely to have higher concentrations of vulnerable populations only because of their population density.

As seen in Figure 3-32, without the population density metric, the level of need shifts to the more outlying areas. However, certain areas have been classified as having a high transit need. These areas are located just to the south of State Route 199 around the Williamsburg-Jamestown Airport, in the northern section of the downtown Williamsburg area centered near the U.S. Route 60 and State Route 132 intersection, and a rural portion of York County along State Route 238 (Lackey). With the exception of James City County south of Route 199 and Lackey (York County), these areas are served by WATA.

Figure 3-32: Transit Dependence Index Percentage for the Region

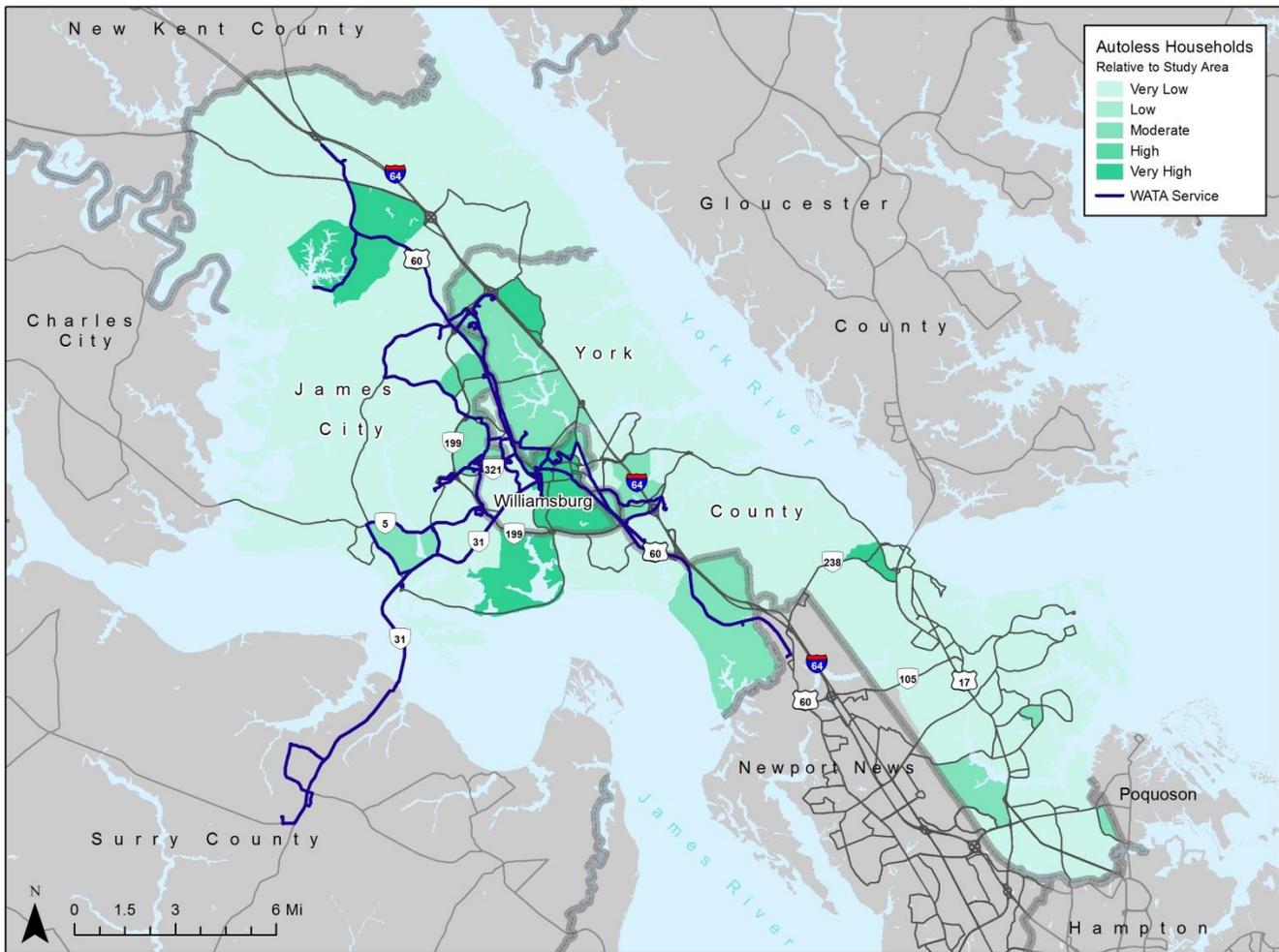


Source: Data compiled from the American Community Survey, 5-year estimates, 2009-2013

### Autoless Households

Households without at least one personal vehicle are more likely to depend upon the mobility offered by public transit than those households with access to a car. Displaying this segment of the population is important because many land uses in the region are at distances too far for non-motorized travel. As seen in Figure 3-33, the block groups with the greatest density of autoless households are predominately found in downtown Williamsburg, which could be an indicator of the large student population in the City. Other areas with large autoless populations include the Norge and Toano areas of northern James City County and a rural portion of York County along State Route 238, which was also identified in the TDIP analysis.

**Figure 3-33: Autoless Households in the Region**

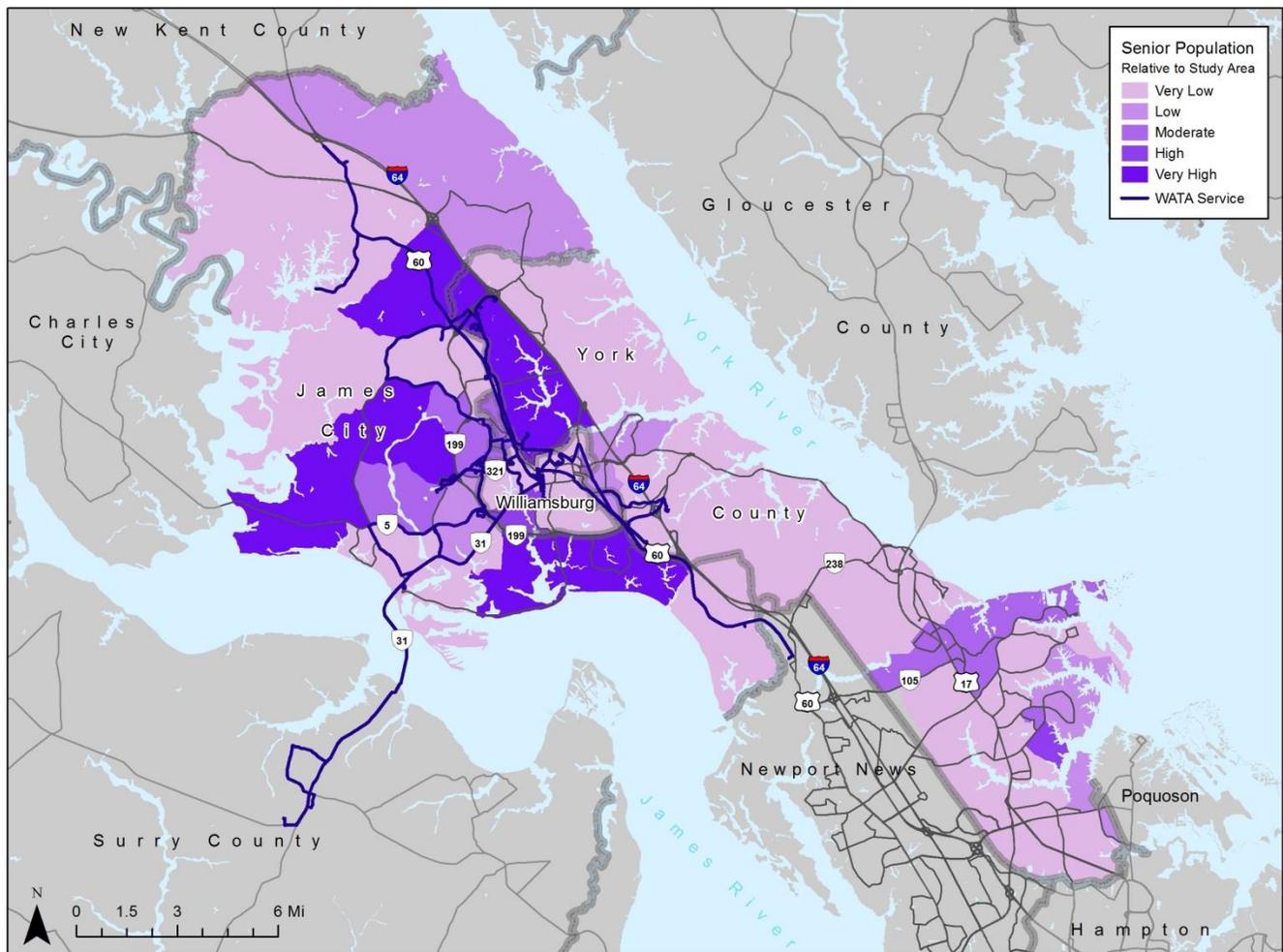


Source: Data compiled from the US Census, 2010

### Senior Adult Population

Individuals 65 years and older may scale back their use of personal vehicles as they age, leading to a greater reliance on public transportation compared to those in other age brackets. Illustrated in Figure 3-34, the block groups with the greatest densities of older adults are concentrated in James City and York Counties surrounding the City of Williamsburg. The current WATA fixed routes provide service coverage to a majority of the areas identified in this analysis, with the exception of the area west of Route 5 and north of Jamestown, and the area south of Route 199, to the east of Jamestown.

**Figure 3-34: Senior Adult Population in the Region**

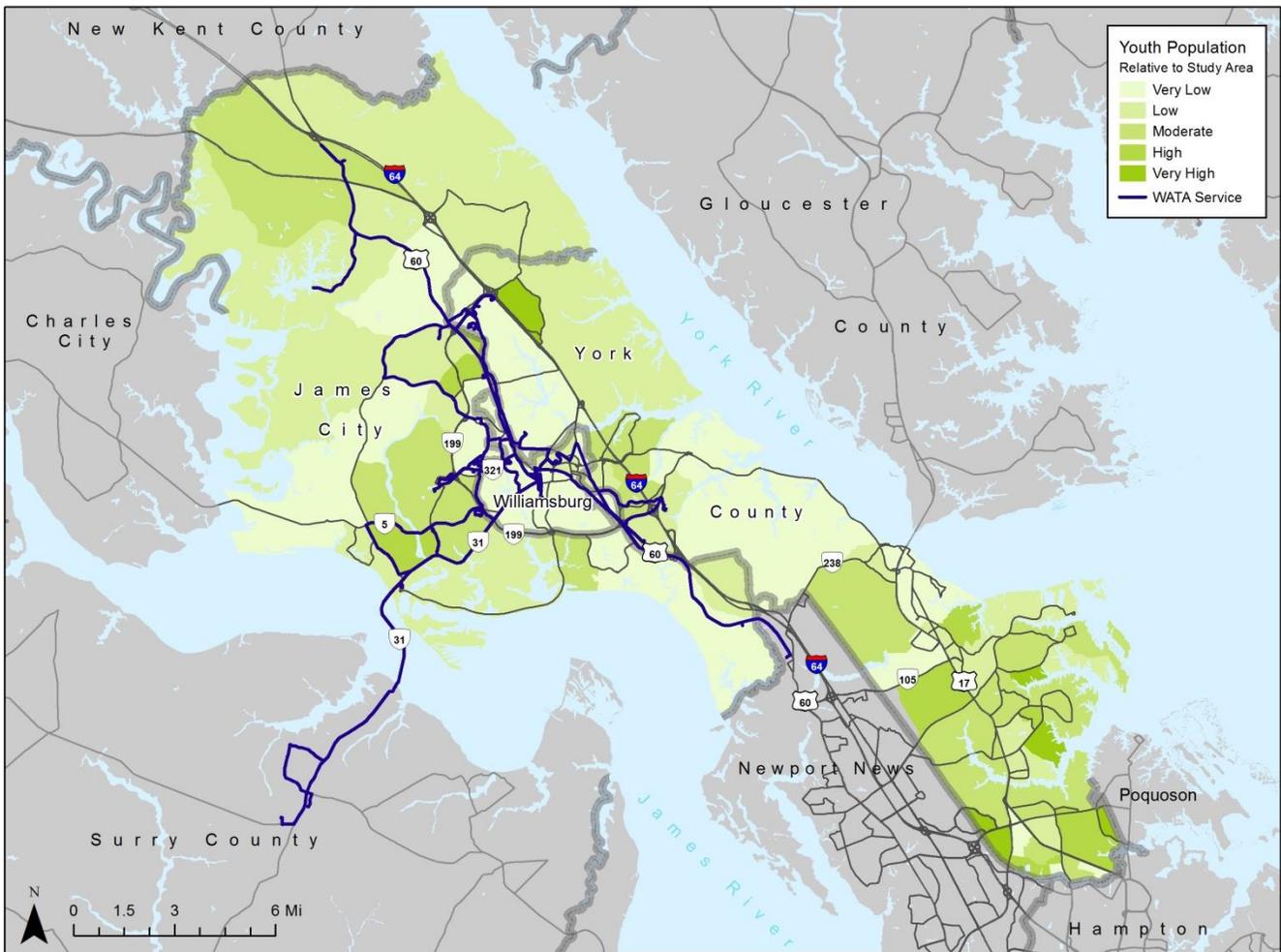


Source: Data compiled from the US Census, 2010

### Youth Population

Youths and teenagers, aged 10 to 17 years, who cannot drive or are just starting to drive but do not have an automobile available, appreciate the continued mobility from public transportation. As Figure 3-35 shows, areas with high concentrations of youth population are very sparse throughout the area. Out of the three jurisdictions shown in the figure, only York County exhibits very high classifications of youth populations. These areas can be found in the northern portion of the County surrounded by Interstate 64, Newman Road, and State Route 604, and in a handful of areas in the far southern portion of the County near Poquoson.

**Figure 3-35: Youth Population in the Region**



Source: Data compiled from the US Census, 2010

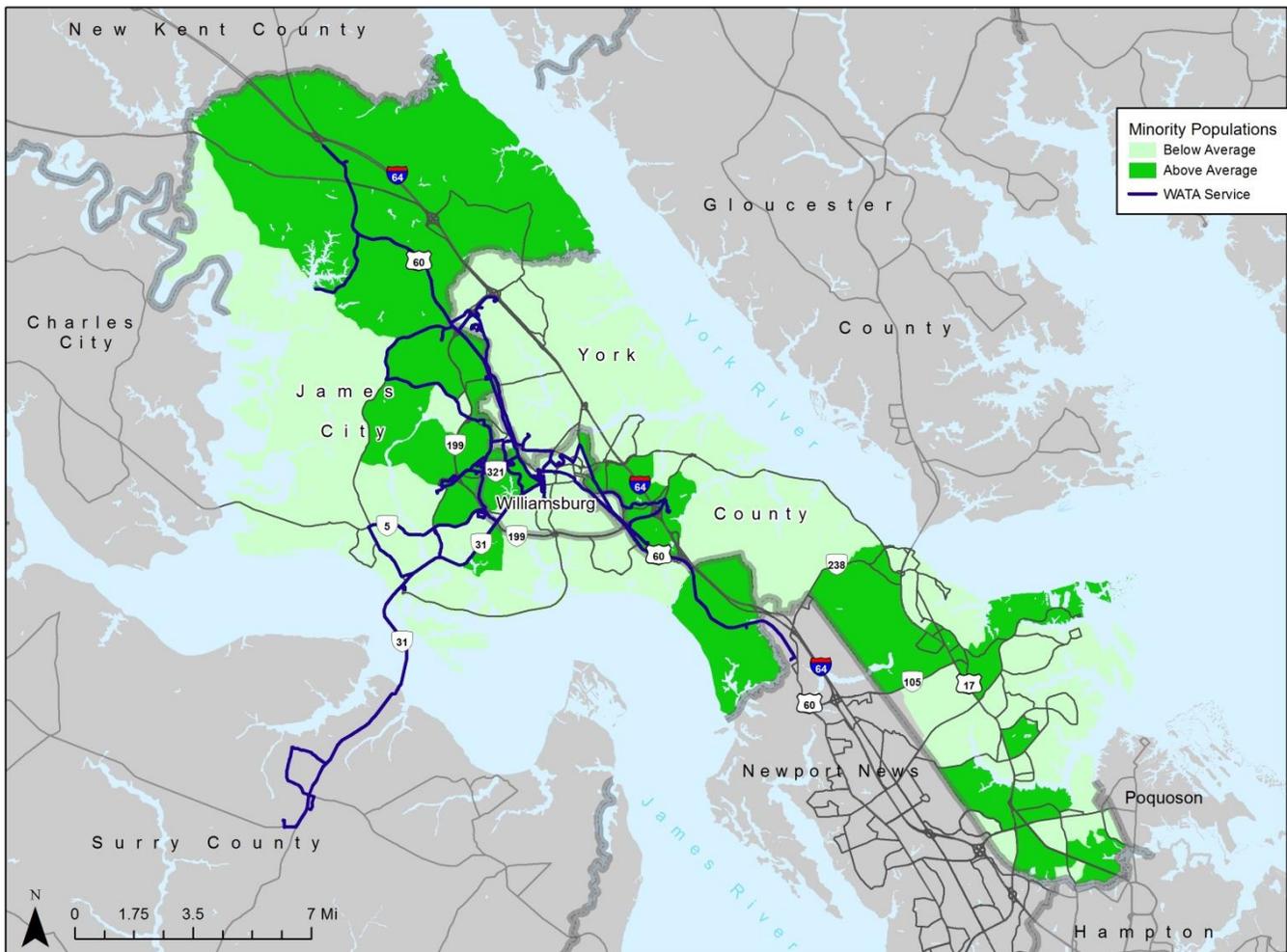
## **Title VI Analysis**

As part of the Civil Rights Act of 1964, Title VI prohibits discrimination on the basis of race, color, or national origin in programs and activities receiving federal subsidies. This includes agencies providing federally-funded public transportation. In accordance with Title VI, the following section examines the minority and below poverty populations in the service area. This section also summarizes the prevalence of residents with Limited-English Proficiency (LEP) in the service area.

### Minority Population

In accordance with Title VI of the Civil Rights Act of 1964, it is important to ensure that areas in the service area with a relative concentration of racial and/or ethnic minorities are not negatively impacted by any proposed alterations to existing public transportation services. To determine whether an alteration would have an adverse impact upon the region's minority population, it is necessary to first understand where these concentrations of individuals reside. Figure 3-36 provides a geographical representation of the minority composition. Areas with above average populations encompass the majority of northern James City County and stretch to the western portion of the Williamsburg. Other areas include a section of York County to the immediate east of Williamsburg, the Grove area in Southern James City County, and the area of York County between Routes 238 and 105.

**Figure 3-36: Minority Population in the Region**

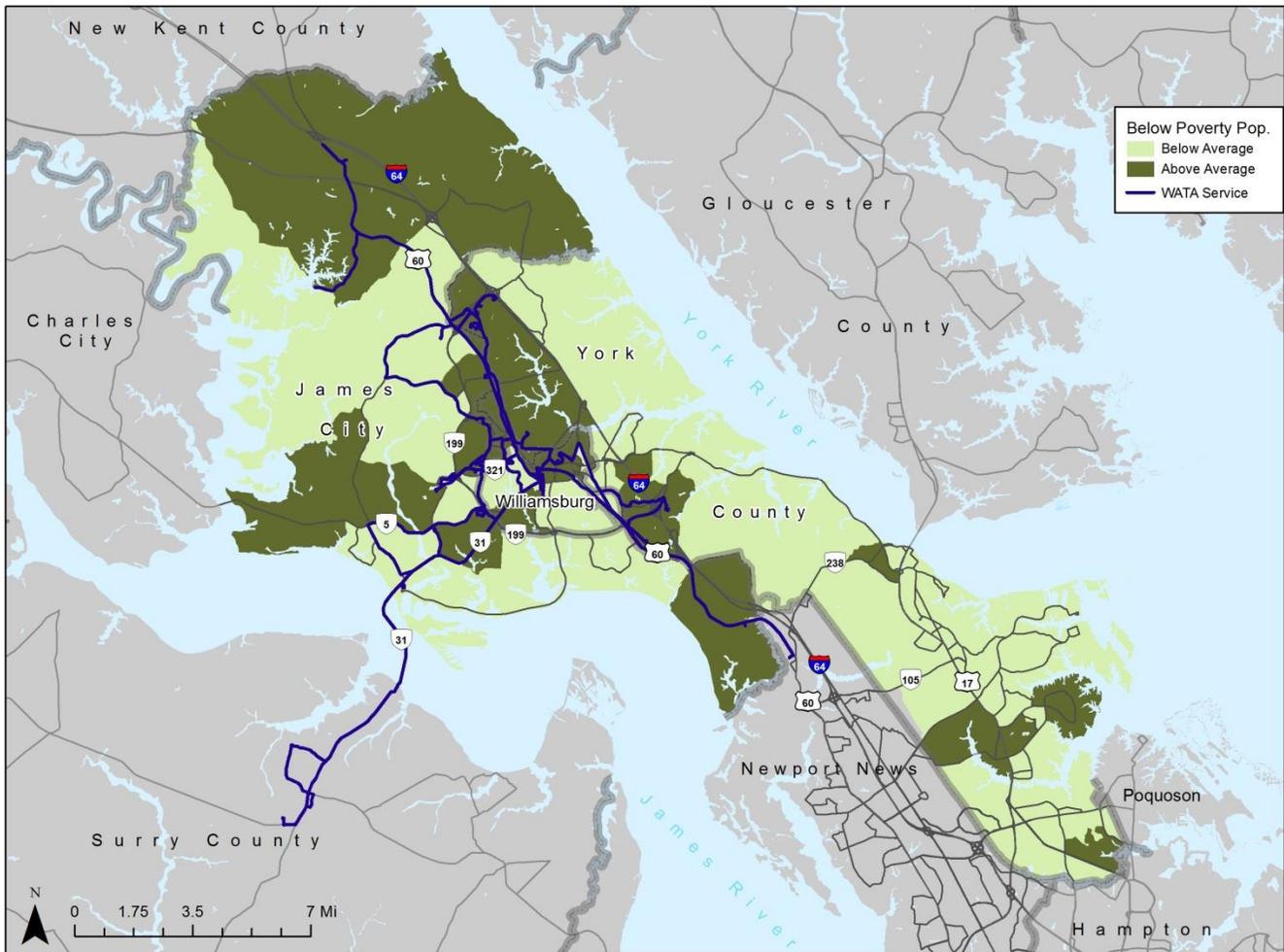


Source: Data compiled from the US Census, 2010

### Low-Income Population

This socioeconomic group represents those individuals who earn less than the federal poverty level. These individuals face financial hardships that make the ownership and maintenance of a personal vehicle difficult, and thus they may be more inclined to depend upon public transportation. As seen in Figure 3-37, concentrations of below poverty populations are heavily scattered across the region. The northern area of James City County makes up the largest geographical concentration, while a scattered concentration also exists around Williamsburg and in the northern and southwestern areas of the City. The southern areas of James City and York Counties also have above average population concentrations, including the Grove area.

**Figure 3-37: Below Poverty Population in the Region**



Source: Data compiled from the US Census, 2010

### Limited-English Proficiency (LEP)

In addition to equitably providing public transportation to individuals of diverse socioeconomic backgrounds, it is also important to realize the variety of languages spoken by area residents. According to the American Community Survey's 5-year estimates for 2009-2013, English is the most predominately spoken language in Williamsburg, representing about 90% of the population. In James City and York County, English is also the predominate language.

As seen in Table 3-21, amongst the other languages spoken by residents, Spanish represents the second most prevalent language in Williamsburg and James City County while Asian/Pacific Island languages make up the second most prevalent language group in York County. Of those households where a non-English language is spoken, most are also able to speak English "very well."

**Table 3-21: Limited-English Proficiency**

Place of Residence	City of Williamsburg		James City County		York County	
	Count	Percent	Count	Percent	Count	Percent
Population Five Years and Older	14,213		64,678		62,109	
Language Spoken at Home	Count	Percent	Count	Percent	Count	Percent
English	12,744	89.7%	60,004	92.8%	56,624	91.2%
Speak Non-English at Home:	1,469	10.3%	4,674	7.2%	5,485	8.8%
Spanish	581	4.1%	2,187	3.4%	1,523	2.5%
Other Indo-European languages	542	3.8%	1,204	1.9%	1,629	2.6%
Asian/Pacific Island languages	241	1.7%	982	1.5%	2,100	3.4%
Other languages	105	0.7%	301	0.5%	233	0.4%
Ability to Speak English	Count	Percent	Count	Percent	Count	Percent
"Very Well"	1,013	7.1%	3,299	5.1%	3,981	6.4%
Less than "Very Well"	456	3.2%	1,375	2.1%	1,504	2.4%

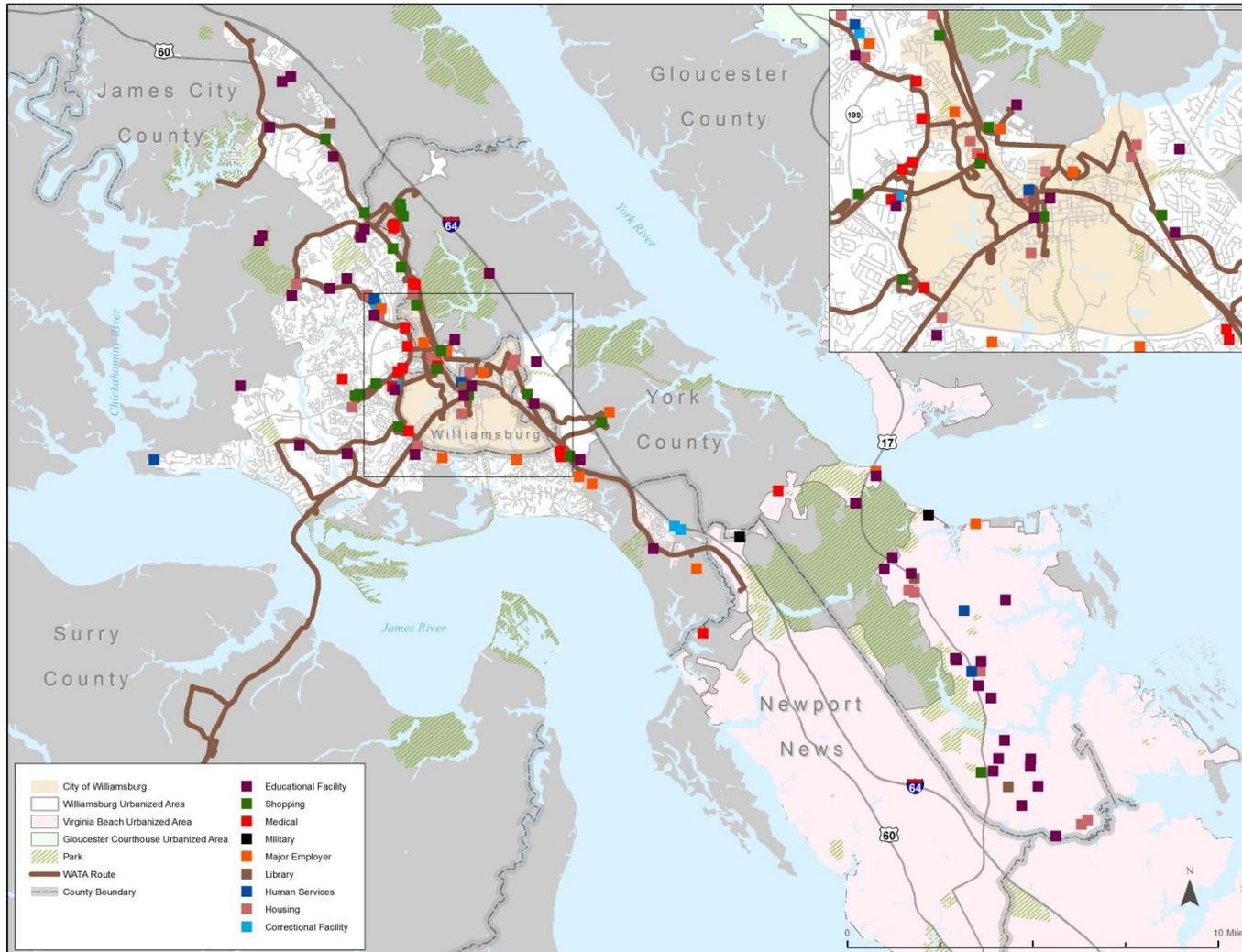
Source: American Community Survey, 2009-2013 5-Year Estimates, Table B16004

### Land-Use Profile

Major land-uses are identified as origins, from which a concentrated transit demand is generated, and as destinations, to which both transit dependent persons and choice riders are attracted. These include educational facilities, major employers, human service agencies, high-density housing complexes, major shopping destinations, medical facilities, and other destinations. Major trip generators throughout the service area are shown in Figure 3-38.

All major land-uses in the City of Williamsburg are located along WATA's fixed route network. In addition, WATA also provides service to nearly every major land-use in the Williamsburg Urbanized Area, with the exception of the James City County Office Complex.

Figure 3-38: Major Trip Generators in the Region



Source: Compiled by KFH Group.

## Travel Patterns

In addition to considering the region's major employers, it is also important to take into account the commuting patterns of residents and workers. According to the American Community Survey's five-year estimates for 2009-2013, approximately 50% of Williamsburg's workers work in the City itself. Whereas, in James City County 42% of workers are employed within the County and in York County only 27% workers are employed within the County. As Table 3-22 illustrates, the most prevalent mode of the transportation to work is driving alone. Public transportation garnered 5% of the mode share in Williamsburg, but in the surrounding counties it represented 1% or less of work trips.

**Table 3-22: Employee Commuting Patterns**

Place of Residence	City of Williamsburg		James City County		York County	
	#	%	#	%	#	%
Workers 16 Years and Older	5,919		30,148		32,359	
Location of Employment	#	%	#	%	#	%
In State of Residence	5,878	99%	29,799	99%	31,931	99%
In County of Residence	2,975	50%	12,749	42%	8,755	27%
Outside County of Residence	2,903	49%	17,050	57%	23,176	72%
Outside State of Residence	41	1%	349	1%	428	1%
Means of Transportation to Work	#	%	#	%	#	%
Car, Truck, or Van - drove alone	3,686	62%	25,236	84%	27,230	84%
Car, Truck, or Van - carpooled	642	11%	2,277	8%	2,428	8%
Public Transportation	267	5%	279	1%	119	0%
Walked	896	15%	315	1%	973	3%
Taxicab, Motorcycle, Bicycle, Other	149	3%	383	1%	293	1%
Worked at Home	279	5%	1,658	5%	1,316	4%

Source: American Community Survey, 2009-2013 5-Year Estimates, Table B08130

Another source of data that provides an understanding of employee travel patterns is the United States Census Bureau's Longitudinal Employer-Household Dynamics (LEHD) 2013 dataset. LEHD draws on federal and state administrative data from the Census, surveys, and administrative records. Table 3-23 shows that either Williamsburg or Newport News are the common top employment destinations for area residents. And Newport News is the top origin for workers commuting into the area.

**Table 3-23: Top 5 Origins and Destinations by Percentage of Workers**

City of Williamsburg			James City County			York County		
Residents Commute To			Residents Commute To			Residents Commute To		
Place	#	%	Place	#	%	Place	#	%
Williamsburg	1,086	21.7%	Williamsburg	4,294	17.8%	Newport News	3,539	18.8%
Newport News	362	7.2%	Newport News	3,298	13.7%	Hampton	1,494	8.0%
Richmond	169	3.4%	Hampton	1,349	5.6%	Virginia Beach	513	2.7%
Virginia Beach	154	3.1%	Virginia Beach	859	3.6%	Poquoson	386	2.1%
Hampton	146	2.9%	Norfolk	836	3.5%	Portsmouth	314	1.7%
All Others	3,089	61.7%	All Others	13,503	55.9%	All Others	12,543	66.8%
Workers Commute From			Workers Commute From			Workers Commute From		
Place	#	%	Place	#	%	Place	#	%
Newport News	1,343	10.7%	Newport News	4,684	16.7%	Newport News	7,216	24.4%
Williamsburg	1,086	8.7%	Hampton	1,119	4.0%	Hampton	3,581	12.1%
Hampton	318	2.5%	Williamsburg	769	2.7%	Williamsburg	1,260	4.3%
Virginia Beach	227	1.8%	Virginia Beach	643	2.3%	Norfolk	968	3.3%
Gloucester Point	190	1.5%	Suffolk	357	1.3%	Virginia Beach	882	3.0%
All Others	9,388	74.8%	All Others	20,514	73.0%	All Others	15,713	53.0%

Source: United States Census Bureau's Longitudinal Employer-Household Dynamics, 2013 Dataset

## Demographic Summary

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

- Current projections indicate that the City of Williamsburg will experience moderate population growth (15%) by 2040, the furthest projected year by the Weldon Cooper Center for Population Studies. However, this growth will pale in comparison to the growth rate expected in the surrounding counties. By 2040, James City County is projected to grow by 59% and York County is projected to grow by 29%.
- In addition to general population growth, those aged 65 years and above are projected to grow at a much faster rate than their younger counterparts in James City and York

Counties. The age of Williamsburg’s population is anticipated to remain proportionate with current percentages.

- WATA service currently provides geographic coverage to regional population centers and those areas identified as having high proportions of transit needy persons, with the exception of the Lackey area of York County.
- WATA service also provides geographic coverage to most identified major trip generator in the City of Williamsburg and to a large number of trip generators in James City and York Counties. There are some exceptions, most notably the James City County complex on Mounts Bay Road, the new Quarterpath area, the Lackey Free Clinic, and Yorktown.
- According to trip origin and destination data, the majority of workers from each of the three jurisdictions profiled within this section commute to either Williamsburg or Newport News for employment. The majority of workers commuting into the region originate from Newport News.

## REVIEW OF PREVIOUS PLANS AND STUDIES

### James City County Comprehensive Plan – Toward 2035: Leading the Way

In June 2015, James City County adopted a new comprehensive plan, *Toward 2035: Leading the Way*. This plan serves as a guide to landowners, developers, businesses, citizens, and County officials about future land use decisions. The overall Vision Statement for the Comprehensive Plan is summarized as follows:

*“We will sustain the quality of life in James City County while preserving our special natural and cultural heritage. We will accomplish this by promoting smart growth principles, adopting supporting strategies, providing a variety of housing options, supporting economic development, and providing diverse recreational, cultural, and education opportunities for all ages”<sup>5</sup>*

#### **Land Use**

The land use map that is associated with the plan indicates that new growth is likely to occur in the northern half of the County, with economic opportunities identified along an extended Mooretown Road, to be located to the west of US64, between exits 231 and 234; and to the west of I-64 near exit 227.

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<sup>5</sup> James City County Comprehensive Plan, Toward 2035, Leading the Way, Executive Summary, 2015.

## **Transportation**

There are specific goals for each section of the plan, including the following goal with regard to transportation:

*“To provide citizens, businesses, and visitors of James City County with an efficient, safe, and attractive multimodal transportation system that reinforces or is consistent with the goals and land use patterns of the Comprehensive Plan.”*

While the focus of the transportation section is on roadways, there is a discussion of complete streets, as well as pedestrian facilities, bikeways, greenways, transit, park and ride lots, rail travel, air travel, and water travel. The transit section discusses WATA services, but does not discuss the future growth of the system.

The transportation goals are multi-modal, including the following specific goals that either mention public transportation, or are supportive of public transportation:<sup>6</sup>

- T 1.2.5 – Implementing strategies that encourage shorter automobile trips and accommodate walking, bicycling, and the use of public transit.
- T 1.3.5 – Designing and implementing transit, pedestrian, and/or cycling alternatives along the corridor, including multi-use paths and paved shoulders (this goal is listed within the context of mitigating congestion).
- T2 – Plan and coordinate transportation improvements at the regional and local levels for all modes of travel to ensure efficient transitions from other jurisdictions without congestion or hazard.
- T3 – Continue to develop and maintain a transportation system that facilitates a variety of transportation modes in order to reduce congestion, pollution, and energy consumption, and to increase accessibility, modal choice, and quality of life.

## **City of Williamsburg Comprehensive Plan**

The City of Williamsburg’s Comprehensive Plan was updated in 2013. The focus of the City’s plan is to “preserve its historic center while at the same time encouraging new development of compatible scale and character.”<sup>7</sup>

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<sup>6</sup> James City County Comprehensive Plan, Toward 2035, Leading the Way.

<sup>7</sup> City of Williamsburg 2013 Comprehensive Plan, Introduction.

## **Land Use**

The land use map that is incorporated into the plan indicates that the largest area of new development within the City will likely occur in the far southeastern portion of the City, in the Quarterpath area. Other pockets of new development are expected in the High Street area, at Ironbound Road and Monticello Road, and along a segment of Strawberry Plains Road.

## **Transportation**

The transportation section of the Plan included the following goal:

*“Provide an effective transportation system which is compatible with the future land use plan, serving pedestrians, bicyclists and motorists, and promoting the expanded use of transit and rail.”*

Several of the objectives are specifically targeted to transit, including:

- Improve and expand bicycle and pedestrian facilities as an important part of the transportation system with special emphasis on filling in gaps to create a safe and interconnected system with connections to transit services.
- Support the Williamsburg Area Transit Authority’s provision of an acceptable level of transit service for the Williamsburg area, including the continuation of the Williamsburg Trolley service, an improved system of bus shelters, and maintaining a regional multimodal hub at the Williamsburg Transportation Center.
- Support the development and implementation of improved high-speed rail down the Virginia Peninsula, with at least one additional train per day both ways, as well as future light-rail service, with the Williamsburg Transportation Center serving as the regional multimodal hub.”<sup>8</sup>

## **York County Comprehensive Plan: “Charting the Course to 2035”**

York County’s most recent Comprehensive Plan was adopted in 2013. The land use map for the County indicates that major new development is most likely to occur in the upper county areas of Lightfoot and Skimino, as well as adjacent to the I-64 interchanges at Camp Peary and State Route 143 and at Route 199/Water Country. The remaining portions of the county can support in-fill development, but there are not major land areas still available for new development.<sup>9</sup>

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<sup>8</sup> City of Williamsburg Comprehensive Plan, 2013.

<sup>9</sup> York County Comprehensive Plan, Charting the Course to 2035, 2013.

## **Transportation**

The transportation section of the plan addresses all modes, including airports, bikeways, rail, roadways, transit, walkways, and waterways. The transit section of the plan documents the services currently provided in the county. Future improvements mentioned in the plan include recommendations that were made in the Transit Vision Plan for Hampton Roads and include the establishment of express bus service along Route 17 between Gloucester and Oyster Point in Newport News and enhanced bus service along Victory Boulevard and Route 17 between the City of Poquoson and Oyster Point. Neither of these improvements are within the WATA service area.

## **Williamsburg Area Transit Authority Transit Development Plan: FY2010-2015**

WATA's previous TDP, adopted in 2009, included the following service recommendations:

- New Williamsburg Trolley Route (implemented)
- New Jamestown Route (implemented)
- New Quarterpath Route (not yet implemented)
- Expanded Regional Service to Newport News, including the Lackey Clinic (not implemented)
- Regional Service to New Kent County (not implemented)
- Later Evening Service on Select Routes (not implemented)
- Frequency Improvements on Select Routes (not implemented)
- Completion of a Comprehensive Operations Analysis (currently under development)<sup>10</sup>

The capital plan to support these projects included the following:

- Replacement vehicles (32 total- partially implemented)
- Expansion vehicles (24 total- partially implemented)
- Continuation of facility leases
- Facility design and construction (Feasibility Study completed in 2010)
- Passenger amenities (implemented)
- GPS/AVL/automated fare collection software/surveillance equipment (implemented)

From this plan, WATA has implemented the Williamsburg Trolley and the Jamestown Route, and is planning to implement the Quarterpath Route in FY16, with input from the TDP/COA data. The remaining service projects will be evaluated as part of the current TDP process.

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<sup>10</sup> WATA TDP, FY10-15, p. 5-1.

WATA completed a Transit Operations and Maintenance Feasibility Study in 2010, and is planning to update this study so that it can move forward with the construction of a new facility.

### **Williamsburg Area Transit Authority Transit Operations and Maintenance Facility Study, 2010**

In 2009, AECOM was hired by WATA to conduct a maintenance and operations facility feasibility study. The purpose of the study was to address 1) whether WATA should own its own facility or continue to lease a facility; 2) what options are available to WATA to meet its future space needs; and 3) how to fund and phase any potential facility project.<sup>11</sup>

The study found that the total cost of re-developing the existing site is the lowest cost option that allows WATA to meet its facility needs. The study also indicated that the existing site has the opportunity to phase construction as funding becomes available.

### **College of William & Mary Campus Master Plan**

The College of William & Mary recently updated its Campus Master Plan, with the final plan approved in 2015. The plan conserves most of the existing buildings on campus by re-configuring them to accommodate current needs, and replacing them only where necessary. Throughout the plan, there is a focus on maintaining the pedestrian character of the campus, maintain the human scale, and preserving green space. One of the most significant recommendations for the community is the development of a new mixed use neighborhood along Jamestown Road near Merchant's Square.<sup>12</sup>

The plan indicates that the parking supply is in general equilibrium with the demand, though there is significant demand for parking close to the core of campus. The Plan recommends a focus on parking management, rather than parking expansion. Recommended transportation improvements include the addition of a bike lane or shared road signage for the north side of Jamestown Road, west of Landrum Road, as well as bike lanes on Monticello Avenue and Compton Drive. A bike share program and a bike repair station are also planned.

The transit section of the plan discusses a 2013 study of the Green Line that recommended improvements to provide better accessibility to remote lots. The Plan indicates that additional thought and planning are needed to determine a viable course of action to improve the use of transit among students, which is currently relatively low.

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<sup>11</sup> WATA Transit Operations and Maintenance Facility Feasibility Study, Final Report, April, 2010, AECOMM, p. iii.

<sup>12</sup> College of William & Mary, Campus Master Plan, 2015.

## Hampton Roads Regional Transit Vision Plan – 2011

This Plan provides a concept for a regional rapid transit network that connects major employment and population centers in Hampton Roads.<sup>13</sup> The purpose of the plan was to provide a long-term framework for transit development, rather than a list of approved projects. The regional vision articulated in the plan is as follows:

*“An integrated public transit network will provide Hampton Roads with transportation choices, thereby ensuring greater mobility, economic development, environmental protection, energy independence, and quality of life.”*

The following recommendations were included in the plan for the Williamsburg region:

Long-Term (by 2035)

- Commuter rail from downtown Newport News to Williamsburg

Extended Term (after 2035)

- Extension of commuter rail from Williamsburg to Lightfoot and Toano

## Hampton Roads Transportation Planning Organization – Transportation Project Priorities

The HRTPO’s 2034 Long Range Transportation Program includes a prioritized list of regionally funded construction projects, including bridge and tunnel projects, highway projects, intermodal projects, transit projects, and passenger rail projects. The WATA administrative and operations center is the only transit project included among the constrained list. Among the vision projects, the high-speed and intercity passenger rail service from Richmond to Hampton Roads is listed. No other transit projects include the Williamsburg area.

## Senior Transportation Subcommittee Recommendations Report, May 2013

This report documented a series of targeted discussions held by the Senior Transportation Subcommittee of the Senior Services Coalition’s Transportation Taskforce. These meetings were held between September 2012 and May 2013. The Subcommittee was comprised of area service providers and funders, including Williamsburg Faith in Action, the Historic Triangle Senior Center, Peninsula Agency on Aging, WATA, the United Way of Greater Williamsburg, Williamsburg Community Health Foundation, and the Senior Services Coalition.

The report includes an operations matrix of current transportation resources in the region, projections of future service needs, a SWOT analysis, and a review of best practices. It also

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<sup>13</sup> Hampton Roads Regional Transit Vision Plan, Final Report, February 2011, p. ES-1.

provides a list of prioritized recommendations developed by the group broken into three broad areas:

- **Operating Efficiencies**
  - Apply for funding together
  - Single point of entry
  - Share technical assistance
  - Purchase/share software
  - Share other resources
  - Negotiate special rates
  - Single scheduling system
  
- **Volunteer Coordination and Utilization**
  - Share training
  - Coordinate volunteer drivers
  - Coordinate volunteer recruitment
  
- **Rider Training/Communications/Awareness**
  - Provide resources for user to be aware of all services
  - Assessment center for needs
  - Conduct traveler training
  - Communicate to government funders together
  - Message – contact the correct agency for transportation<sup>14</sup>

These recommendations led to the current effort to develop a One Call Center in the region.

## FOCUS TOPICS FOR THE DEVELOPMENT OF ALTERNATIVES

The data analysis for this chapter revealed the following areas that will serve as a beginning for the discussion regarding system recommendations.

- **Fixed Route Service Adjustments**
  - **Blue Line**
    - The mileage for this route needs to be trimmed. This is the strongest route in the network, but its ridership has declined and the on-time performance is the lowest among the fixed routes.
    - Additional service may be needed to relieve crowding on the route on Saturdays.

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<sup>14</sup> Senior Transportation Subcommittee Recommendations Report, May 2013.

- **Green Line and Trolley**- These routes have both lost ridership over the study period, they have a similar route, and serve a similar market. Routing work will focus on how these two routes can work together better to serve the College, downtown, New Town and High Street markets.
  - **Red Line/Jamestown/Surry** – These routes serve the corridor between Williamsburg and Jamestown. The transfer between the Red Line and the Jamestown Route is at the Williamsburg Crossing Shopping Center, but it is not a timed transfer, making the trip from Williamsburg to Jamestown long. The Surry Line serves the Riverside Medical Arts, but not the Williamsburg Crossing Shopping Center. Routing work will focus on how these three routes can work together better to serve this corridor, as well as to better serve the riders who use the Surry Line from the ferry. There is also very low ridership currently on the Jamestown Line, which may be related to its disconnection from the rest of the route network. The Surry Line also experiences low ridership, as well as low productivity.
  - **Purple 1 and Purple 2** – The on-time performance for these routes varied considerably between early and late. The reasons for this variable on-time performance will be explored. It may be a function of the timed transfer at the Wal-Mart.
- **Transfer Locations**
    - The alternatives will include an exploration of an alternative northern transfer location, with the goal of reducing the route mileage for the routes that make the northern transfer. The idea of a southern transfer location will be introduced, in conjunction with the new Mounts Bay - Quarterpath route. The Jamestown/Surry/Red transfer location will also be addressed.
  - **Frequency Schedule**
    - The ridership by time of day for the core routes suggests that the frequency schedule is generally not needed between 10:30 a.m. and 1:30 p.m. The alternatives will explore re-deploying these hours to the morning and afternoon peak periods.
  - **Hours of Service**
    - Late night service on the Trolley when William & Mary is not in session needs to be further explored.

- Sunday patterns of ridership need to be further explored.
- **Fares and Passes**
  - The alternatives will look at streamlining the 6 and 7 day pass options, as they are not well-used.
  - There should be a discussion about the cost of the all-day pass, it provides a generous discount.
  - Financial data regarding transfers needs to be collected. It may not be worth charging for transfers, given the high number of riders who use the all-day pass.
- **Paratransit**
  - The alternatives will look at how WATA can adjust to the growth in this program, as the demographic projections suggest that the senior population will increase significantly in James City and York Counties.
- **Maintenance Expenses**
  - There needs to be additional research conducted to help understand the reasons for the relatively high maintenance expenses.
- **Geographic Areas of Future Growth**
  - The land use plans for the three jurisdictions suggest that additional development is likely to occur on the north/west end of WATA's service area, as well as in the Quarterpath area, and the area adjacent to Route 199/US 64 (Water Country area).

This list of focus areas was combined with the results of Chapter 4 (staffing) and Chapter 5 (surveys and stakeholders) to form the full range of alternatives for the TDP/COA.

# Chapter 4: WATA Organizational and Staffing Assessment

## INTRODUCTION

The focus of Chapter 4 is to document the current staffing arrangements, summarize the opinions of staff members with regard to staffing and organizational functions and issues, further examine functional areas where concerns have been expressed, and make preliminary organizational recommendations.

## CURRENT WATA ORGANIZATION AND STAFFING

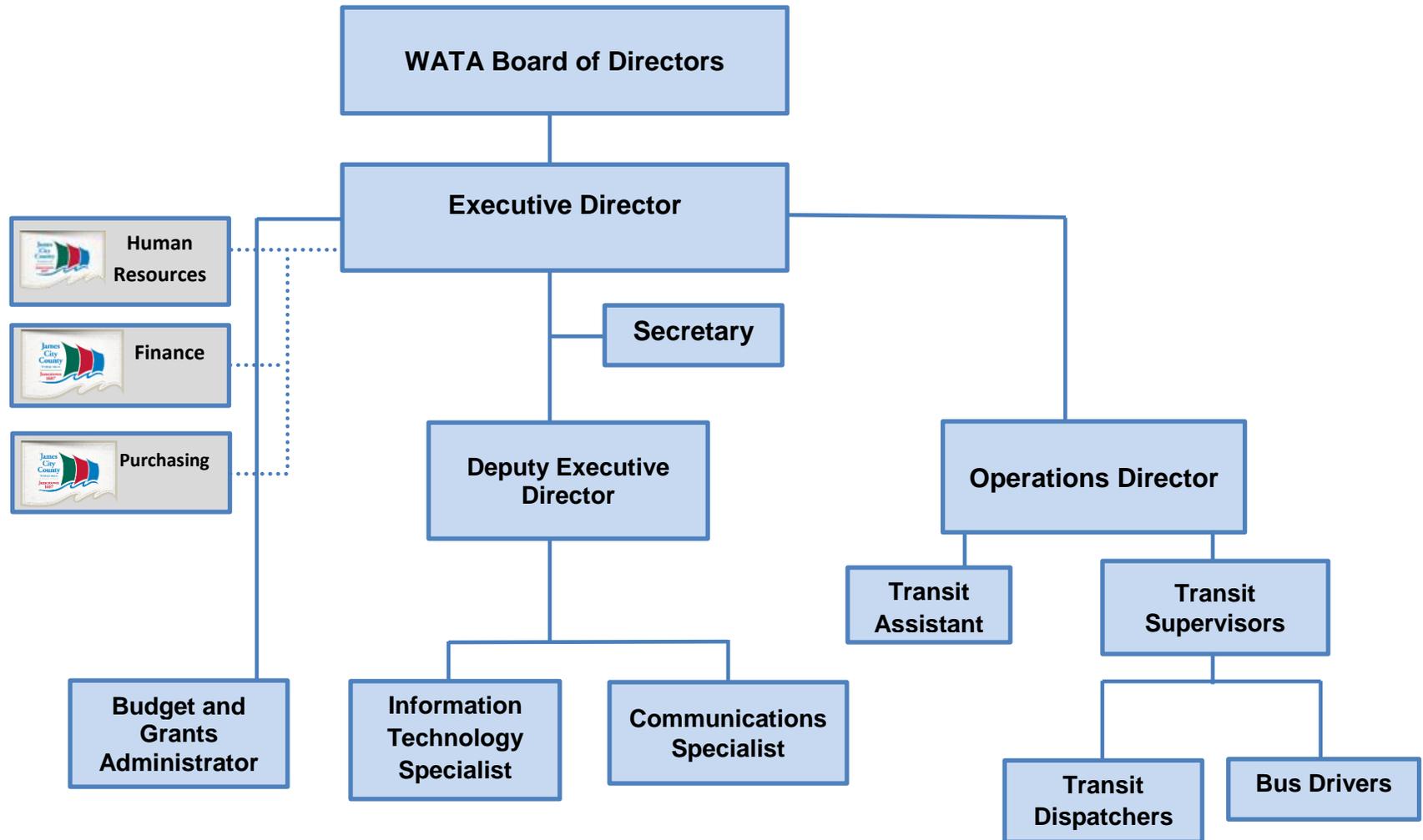
As described in Chapter 1 of the draft TDP/COA, WATA employees directly manage and operate public transit services for the Authority, with the vehicle maintenance function contracted to First Transit. James City County previously provided the organizational structure for transit in the region, and continues to manage the human resources and procurement functions, and is the fiscal agent for the Authority. The organizational chart for WATA is provided as Figure 4-1.

WATA recently hired a new Executive Director, who started working for WATA in February 2016. The previous Executive Director resigned in March 2015, which left WATA without an Executive Director for almost a year. WATA was also without an Operations Director for several months after the retirement of the previous Operations Director. While these two critical vacancies increased the work load of the remaining management and administrative staff, these vacancies also provided an opportunity to evaluate WATA staffing and develop recommendations for improvement where warranted.



*Entrance to WATA's Operations Office*

Figure 4-1: WATA Organizational Chart



Job descriptions for each of these positions are provided at the following link:  
<http://www.jamescitycountyva.gov/hr/job-descriptions/transit.html>

## Direct Operations Staff

The direct operations staff during FY15 for WATA included four (4) supervisors; three (3) lead drivers; three (3) dispatchers; 31 full-time drivers; 10,408 part-time driver hours (12 drivers); and 15,600 on-call driver hours. The supervisors are salaried employees with full benefits and are not eligible for overtime wages. The lead drivers, full-time drivers and part-time drivers are paid on an hourly basis and are paid overtime wages for the hours that they work over 40 hours per week. The overtime rate is one and one-half times the regular hourly wage. All of the operating staff, with the exception of the on-call drivers, is eligible for employee benefits.

## STAFF OPINION REGARDING WATA STAFFING AND FUNCTIONAL AREAS

In order to understand more about WATA's staffing and organizational functions, KFH Group staff interviewed the following staff members

- Interim Executive Director
- Deputy Executive Director
- Budget and Grants Administrator
- Information Technology Specialist
- Senior Communications Specialist
- Transit Assistant
- Three of the four supervisors
- Two dispatchers
- Three bus drivers

Staff members were asked questions regarding the following:

- WATA successes
- Functional areas where WATA needs improvement
- Suggestions for improvements
- Route and schedule issues
- Unmet transit needs

These staff interviews took place in May and June of 2015. A number of common topic areas were singled out by several staff members during these interviews with similar observations found among management, support and operations personnel. These topic areas are discussed below.

## **WATA Successes**

When asked to indicate the ways in which WATA succeeds, management and operating staff were in agreement that WATA does a good job getting people where they need to go on a consistent basis. The drivers are viewed as being helpful and caring, with a genuinely warm rapport with their customers. Staff indicated that WATA does a good job serving the busiest core areas of the region. Many staff members also indicated that WATA is a great place to work.

## **Organizational and Functional Areas Needing Improvement**

While staff members were proud of their ability to keep service on the street, they had several opinions and suggestions regarding the need to improve a number of organizational and functional areas within the organization. These are discussed in the following paragraphs.

### ***Leadership***

The need for stronger, more stable, and consistent leadership was mentioned by the majority of the staff members who were interviewed. The staff sentiment that there is a lack of organizational leadership is understandable given the turnover in the Executive Director position and the vacancy in the Operations Director position. Staff members indicated that stronger leadership is needed for a number of areas, most notably in the application of fair and predictable employee supervision, scheduling, and progressive disciplinary practices. Employees noted that there has been a perception of favoritism and a lack of disciplinary follow-through for employee infractions (such as repeated call-outs). It should be noted that WATA follows James City County's personnel policies. Staff indicated that the issues surrounding employee treatment were not necessarily with the personnel policies, but with the supervisory follow-through both at WATA and through the county's human resources department.

Other areas where staff felt that more effective leadership is needed include: community awareness of WATA, management/driver relations, training and operations supervision.

### ***Supervisor Functions***

At the time of the staff interviews, three of the four supervisors had significant additional administrative duties that interfered with their ability to provide road supervision and driver support. These duties interfere with the ability of WATA to provide supervisory coverage during all service periods (specifically evening and weekend hours) as the administrative

functions typically need to take place during normal business hours. These additional duties include:

- Driver and lead driver scheduling
- Americans with Disabilities Act (ADA) complementary paratransit scheduling
- Maintenance coordination
- Driver hiring
- Driver training

This situation likely resulted from the absence of an Operations Director who would typically be conducting some of these functions, as well as from the structural lack of dedicated positions to oversee the ADA and safety/training functions.

Drivers indicated that the supervisors are not in the field often enough to understand the issues that the drivers contend with on a daily basis. This issue has negatively affected driver morale. The lack of road supervision impacts safety, as drivers are not routinely monitored with regard to safe driving habits and supervisors may not be directly aware of hazardous conditions encountered on the routes.

### ***Driver Staffing***

One of the more stressful issues that was discussed by operating staff was a continuing sense of being stretched too thin. Supervisors indicated that it was difficult to cover shifts and that on many occasions the evening drivers are not able to take a meal break because relief drivers are not available.

### ***Safety and Training***

Operations staff noted that there is currently a lack of consistency concerning staff training, as well as limited refresher training opportunities. Staff indicated that they would like to see ongoing refresher training in a number of areas including:

- ADA
- Customer service
- Handling disruptive passengers
- Security
- Dispatch training
- Maintenance training
- Supervisory training
- Accident response training for supervisors and lead drivers

## **Communication**

The need for improved communication, both internally as well as with the public, was cited by staff members. An example given concerning the need for improved communication with the public was the lack of public notice provided for the seasonal termination of the Green Line. Several staff members mentioned that notices should have been placed on the buses a few weeks prior to the service change to let passengers know of this seasonal change.

The need to improve WATA's website was mentioned. This issue is moving forward as WATA has recently contracted with a marketing and advertising firm for a number of re-branding tasks, including the development of an improved website.

Staff felt that management needs to communicate better with regard to the Executive Director hiring process. Staff members were keenly interested in learning more about the hiring process and schedule.

## **Route Planning and Scheduling**

Operations staff members shared a number of concerns about the current routes. The primary theme of their concerns is that several of the current routes are stretched too far – the routes are longer than can be accomplished within the scheduled time. The routes that were most frequently mentioned are:

- Blue Line
- Purple 1 Line
- Red Line, when it has to go to the William & Mary School of Law

Staff reported that the time constraints faced on these routes is a major operational problem affecting the on-time performance of the entire timed-transfer system, as well as making it very difficult for the drivers to get a quick restroom or stretch break. This issue negatively impacts driver morale. There were also some very specific stop suggestions that were considered for the development of route alternatives.

Staff members discussed the following additional routing/scheduling concerns:

- It is time-consuming and unsafe to travel through shopping centers. The Monticello Marketplace was specifically mentioned. Addressing this concern will require a careful and balanced consideration of the pedestrian safety concerns that are associated with moving operations from shopping centers to on-street stops.

- The routes need to be examined using a more systematic, synergistic approach. For example, there should be an analysis of the relationship among the Red, Surry and Jamestown routes, with the goal of maximizing service in the corridor between Williamsburg and the Ferry. The need for additional service to Surry was mentioned. These concepts were considered as part of the route alternatives.
- Are the current thirty-minute frequencies appropriate during the hours this higher level of service is provided? Is there a need to shift the time frames to perhaps change the current pattern? There is a demand earlier in the day for more frequent service (for work trips), as well as a demand for frequent service in the late afternoon (the work trip return). Do all of the routes that have the thirty minute frequency need it?

### **Facilities**

There were several issues brought up by staff members concerning the need for facility improvements. These issues are:

- There is not a dedicated driver break room.
- The current driver break area is co-located with dispatch which can compromise the dispatcher's ability to concentrate, as well as limiting the drivers to quiet conversation.
- There is not a private conference room.
- The upstairs administrative offices are accessible only via stairs making them inaccessible to people with mobility impairments.
- The money room is not a single purpose room.
- The parking lot lighting is too dim.
- The restroom at the Williamsburg Transportation Center does not open until 8:00 a.m.
- The Walmart hub in Lightfoot is inconvenient for the Purple and Blue routes. Management staff members are concerned about this hub as there is not an agreement in place for ongoing use. A dedicated WATA hub that is convenient for WATA's route network for the western/northern part of the service area is needed.

### **Security**

Among the staff members interviewed, there were some concerns with regard to security. These are:

- There is not an ongoing security training program.
- The buses are left running and unattended during driver breaks at the Williamsburg Transportation Center.

- There is not an established, ongoing institutional relationship between WATA and the local police departments.
- The money room is not a dedicated room.

### ***Procurement***

WATA management staff indicated that the procurement function is something that may be better handled by James City County on behalf of WATA rather than with WATA staff. WATA has had significant staff turnover associated with the procurement position, which has made it difficult for the organization to effectively manage the procurement function. As an organization with local, state, and federal funding streams, WATA's procurement processes can be complicated and cumbersome to manage. Meeting federal and state procurement regulations is a major focus of the periodic compliance reviews and it is important to have staff that know the regulations and maintain the appropriate documentation. In recognition of these issues, WATA and James City County came to an agreement to have James City County serve as the purchasing agent for WATA, effective 9/17/2015.

### ***Maintenance***

WATA contracts with First Transit for vehicle maintenance, cleaning and fueling. First Transit also maintains the Colonial Williamsburg Foundation bus fleet under a separate contract. One of the areas of concern among WATA staff is the current oversight of the maintenance activities. The need for more oversight concerning the repairs done on the WATA fleet, as well as the associated expenses, was discussed. The quality of the maintenance provided was of concern for some staff members. The concept of bringing the maintenance function in-house was mentioned although this is not likely to be feasible until WATA has its own facility.

### ***Other Issues Affecting System Performance***

#### **Dispatch Head Sets**

The dispatchers indicated that they would be able to work more effectively with headsets, rather than hand-held phone receivers.

#### **Computer Program for Scheduling ADA Paratransit**

The scheduling of ADA complementary paratransit trips is currently done by the dispatchers, with oversight from one of the supervisors. A customized Excel spreadsheet is used to enter the trip requests and build the daily schedules. This is currently done using "block scheduling," whereby fifteen-minute blocks are set aside for each pick-up. Dispatchers use their knowledge of the service area to estimate pick-up times. This method works well for a low volume of trips,

but will not be able to handle significantly more trips. The demand for ADA paratransit has increased significantly over the last year (72% increase) and this trend will likely continue as the senior population in the region continues to increase.

While a more sophisticated program will be needed in the future, it may be prudent to postpone this decision pending the development of the Williamsburg Area One Call Center, which may impact the way in which ADA paratransit is provided in the service area.

### **New Fare Boxes**

The operating staff, as well as the Transit Information Technology Specialist, indicated that there is a need to replace the current fareboxes. The primary issue with the fareboxes (which interrupts service) involves the use of paper fare media, which is difficult to use when it gets wet or crumpled.

### **Unmet Transit Needs**

Each staff member who was interviewed was asked if they had opinions with regard to unmet transit needs in the region. The following geographic areas were mentioned:

- Yorktown
- Powhatan Plantation
- Lackey Free Clinic
- Virginia Peninsula Regional Jail
- The Quarterpath area

The potential strategies to provide transit service to these locations were fully explored during the alternatives analysis phase of the TDP/COA (Chapter 6).

## **STAFFING AND ORGANIZATIONAL DATA ANALYSIS**

The staff opinions articulated in the previous section provided a starting point for the study team to further investigate these areas in a more quantitative manner.

### **Operating Staff Availability**

The first area of analysis examines the perceived shortage of operating staff members. In order to make an objective assessment of this issue, the study team collected payroll records for FY15 for the supervisors, dispatchers, lead drivers and drivers, and compared total pay hours with the hours actually worked and the scheduled hours. These hours were also compared with the

budgeted pay hours. The scheduled hours were compiled from the driving shift schedule (collected May, 2015) and the new supervisor/lead/dispatcher schedule (collected July 2015). These data are shown in Table 4-1 and Table 4-2.

**Table 4-1: WATA Operating Staff – Pay Hours and Hours Worked, FY2015**

Pay Categories	Pay Hours FY15	% of Total	Actual Hours Worked or WATA Closed	% Worked to Total	Budget FY15
Admin Leave	12	0.0%			
Closed	580	0.5%	580		
Comp used	271	0.2%			
Funeral	75	0.1%			
Holiday (1)	2,340	2.2%	2,340		
Hourly	19,754	18.2%	19,754		26,008
Leave w/o pay	908	0.8%			
Overtime 1 and 2	7,583	7.0%	7,583		
Regular	69,993	64.4%	69,993		85,280
Sick	2,649	2.4%			
Vacation	4,437	4.1%			
School	8	0.0%			
<b>Totals</b>	<b>108,609</b>		<b>100,250</b>	<b>92.3%</b>	<b>111,288</b>

(1) Refers to hours worked on a holiday. Source: WATA

**Table 4-2: WATA Operating Staff – Scheduled Hours**

Category	Schedule	Budget	Difference	Revenue Service Hours
Driving Shift Hours	75,789			60,299
Breaks/Counter/Store	11,180			
Subtotal	86,969	90,488	3,519	
Supervisor Hours	8,376	8,320	(56)	
Lead Hours	6,296	6,240	(56)	
Dispatch Hours	6,240	6,240	-	
<b>Total</b>	<b>107,881</b>	<b>111,288</b>	<b>3,407</b>	<b>60,299</b>

Source: WATA - Driving Shifts (May, 2015); Supervisor/Lead/Disp. (July 2015)

This analysis revealed the following findings:

- Of the 108,609 total pay hours for the operating staff recorded in FY15, 100,250 pay hours were for hours actually worked or for hours when employees were paid to work, but WATA was closed due to inclement weather. The remaining pay hours were for categories of hours when staff were paid, but were not actually worked, such as sick leave and vacation, where a replacement worker was needed to cover the shift.
- The current operating schedule calls for 107,881 labor hours, which includes both revenue and non-revenue time, among these four operating staff categories. This suggests that in FY15 WATA was short by 7,631 labor hours for operating staff, or about 3.7 full time equivalents (FTE). This suggests lead drivers likely covered driver shifts so that service was not disrupted. The labor hour difference likely influenced the need for employees to receive overtime pay.
- If the scheduled hours and positions remain constant, these data would suggest that to ensure all current shifts are covered, the total pay hours for operating staff needs to be increased to account for the benefits that the staff receive, such as vacation and sick pay. To cover the current schedule of 107,881 pay hours with the current level of vacation, sick pay, and leave without pay, the budgeted pay hours would need to be 116,835.
- The current number of hours budgeted for these positions is 111,288 pay hours. These data suggest that the budgeted pay hours for operating staff should be increased by 5,547 hours, or 2.7 FTE, if the current staffing assignments are continued.
- It should be noted that there is not a pay category for training which means that some of the 100,250 hours recorded as work/holiday were likely not used for scheduled service, but for training. The level of training hours needed will need to be calculated to estimate the total number of operating staff hours needed.

For FY16, WATA has increased the budget for driver hours by three FTE to allow for the planned Quarterpath route to be implemented. The analysis above suggests that these driver hours are needed currently and that additional positions will be required for system expansion, assuming the level of lead drivers and supervisors remains constant.

### ***Driver Categories and Scheduling***

WATA's current driving schedule includes four categories of drivers: lead drivers (three full-time positions); full-time drivers (31 positions- to be 34 when the new Quarterpath route is implemented); part-time drivers (10,408 hours or 12 positions); and on-call bus drivers (15,600 hours). The total number of hours for all non-lead drivers on the current schedule is 86,969. Of

these hours, 17.9 percent are covered by on-call drivers. This means that for almost eighteen percent of the scheduled driving hours, WATA has to actively recruit on-call drivers to cover the shifts. This takes a significant amount of supervisory staff time. In addition, the “on-call” drivers are not necessarily available to take a shift when asked. The use of “on-call” drivers appears to be a stress on the operating staff.

WATA develops a driver schedule either weekly or bi-weekly. This is unusual for the transit industry where typically a driver’s regular schedule is set for a few months at a time, with adjustments made only for scheduled vacations and sick time. This practice results in a significant amount of extra work for the supervisor who does the scheduling.

If WATA were to convert the on-call hours to part-time hours, a longer-term schedule could be developed. It was mentioned by staff that a longer-term schedule was not desired by some drivers because some of the routes are easier to drive than others. However, the exact route assignments could change within the schedule (i.e. Driver 1 drives a particular route on Monday, then a different route Tuesday, and a different route Wednesday, with this pattern followed for the schedule period of a few months).

### ***Lead Drivers***

WATA implemented the use of Lead Drivers in 2013 to allow the supervisors to focus on administrative duties, maintenance oversight, safety and training. WATA Board minutes from December 2013 indicate that the implementation of lead drivers has been positive for WATA, serving to improve customer service, safety and efficiency.

While the use of Lead Drivers is helpful from an operations perspective and frees up the supervisors, it results in an additional layer of operating staff hours. With the recent hiring of the new Operations Director, some administrative tasks have transitioned from the supervisors to the Operations Director, allowing the supervisors time to work in the field.

If WATA’s driving shifts are fully staffed (including break drivers) without the need to rely on on-call drivers, it may be possible to reduce the use of lead drivers such that at any one time there is one lead and one supervisor on duty.

### ***Driver Turnover***

The driver turnover rate for WATA for the past three years has ranged from fifteen percent in FY2013 to 16.3 percent in FY15, which means that between six and seven full or part-time drivers leave each year and need to be replaced. This turnover rate is higher than the mean turnover rate found in a 2008 survey of 283 rural and small urban transit agencies, which was eleven

percent, though the range was very large, from no turnover to 65 percent.<sup>1</sup> WATA's driver turnover rate was close to the mean found in a 2010 study of ADA paratransit drivers which found a mean turnover rate of sixteen percent among public entity employees and thirty percent among contracted paratransit drivers.<sup>2</sup> Bureau of Labor Statistics data (BLS) for April 2015 through July 2015 showed a state and local employee turnover rate of 17.4 percent which is higher than WATA's driver turnover rates over the past three years.<sup>3</sup>

The data concerning driver turnover only includes the part-time and full-time drivers, and excludes on-call drivers, which currently cover approximately eighteen percent of the hours. This means that WATA typically needs to train between seven and eight new drivers each year.

## Safety

In order to examine the staff opinion that additional attention was needed for safety and training, an analysis of the safety reports from calendar years 2012, 2013, and 2014 was conducted and compared to WATA's adopted safety standard of one preventable accident per 100,000 revenue miles. These data show the following:

- 2012 – 1 preventable accident per 92,870 revenue miles
- 2013 – 1 preventable accident per 80,740 revenue miles
- 2014 – 1 preventable accident per 93,854 revenue miles

These data show that WATA did not meet its adopted safety standard for the past three years. This finding would suggest that additional attention to safety and training is warranted.

## Training

Driver training is conducted by one of the supervisors, who has other job duties. Assuming that WATA needs to train eight new drivers per year and each driver is trained for 100 hours; new driver training can take up to 800 hours per year of the supervisor's time, depending upon WATA's ability to group the new drivers into training classes. WATA also provides periodic refresher training which takes additional supervisory time. In addition, staff members indicated that they would like additional refresher training beyond what is currently provided.

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<sup>1</sup> Transportation Research Board, TCRP Report 127: Employee Compensation Guidelines for Transit Providers in Rural and Small Urban Areas, 2008.

<sup>2</sup> Transportation Research Board, TCRP Report 142: Vehicle Operator Recruitment, Retention, and Performance in ADA Paratransit, 2010.

<sup>3</sup> Bureau of Labor Statistics website.

## Maintenance

In order to better understand WATA's maintenance costs and quality, the Authority's maintenance expenses and the rate of mechanical failures were compared with peer transit agencies. National Transit Database (NTD) data from FY13 were used for this analysis. These data show that WATA's costs in FY13 were \$1.31 per mile, which was significantly higher than the mean cost of \$0.93 per mile. The data also show that WATA services traveled 10,045 revenue vehicle miles between mechanical failures, which is higher than the mean of the peer systems, which was 9,031 miles between mechanical failures. These data suggest that the quality of WATA's maintenance is keeping the fleet from experiencing excessive breakdowns, but the costs are high.

## PRELIMINARY STAFFING RECOMMENDATIONS

The information learned through the staff interviews coupled with the current organizational chart, job descriptions and data analysis have led to the development of some preliminary staffing recommendations. These recommendations are further refined in Chapters 6 and 7.

### Operations Director and Supervisor Functions

There are two important functions that the supervisors have been handling that may be better addressed by the Operations Director. These functions are:

- Hiring and scheduling of operations employees
- Vehicle maintenance coordination and tracking of repairs and expenses

Transferring these functions to the Operations Director will allow the supervisors to spend more time in the field providing supervision and will move these important functions from the front line operations staff to management level.

### Safety and Training Coordinator

The need for a more organized and robust safety and training program was mentioned by the majority of the staff members interviewed. Given the number of operating staff members that need to be trained each year, it is appropriate that safety and training functions be given a higher level of attention than a partial staff position.

In order to further develop the safety and training functions for WATA, it is recommended that a “Safety and Training Coordinator” position be created. The proposed primary job duties of this new position will be to:

- Coordinate, develop, and monitor safety and training programs for WATA.
- Identify appropriate training resources and materials, and develop and prepare lesson plans and materials.
- Conduct safety classes and train, demonstrate, and test transit employees in the operation of transit vehicles, machinery, and defensive driving techniques.
- Enforce safety procedures and report safety violations.
- Develop and administer a training evaluation process, evaluate training effectiveness, document progress of participants, and make recommendations for improvement.
- Coordinate with in-house and outside sources to provide/conduct training.
- Inspect transit facilities and equipment, report safety hazards, and ensure correction of hazards.
- Develop and recommend policies and procedures concerning the department’s safe operation of vehicles and facilities.
- Review Workers’ Compensation claim forms for accuracy and determine if further investigation is required.
- Serve as the Safety Officer for WATA.
- Investigate WATA- related accidents and incidents.
- Administer WATA’s Drug and Alcohol Program in accordance with U.S. DOT guidelines and regulations.
- Inspect transit facilities and equipment for potential hazards.
- Prepare and submit required safety and security reports to FTA and the National Transit Database (NTD).

The development of this position will help to improve the safety and training functions, as well as taking additional administrative tasks from the supervisors, freeing them up to provide on-road supervision and driver support. In addition, moving the Safety Officer function from the Budget and Grants Administrator will allow the Safety Officer to have more complete focus on the program.

## **Bus Driver Staffing**

The analysis of the pay hours, actual hours worked, and budgeted hours for the operating staff indicated two major findings:

- 1) The total number of hours actually worked in FY15 (100,250) was significantly lower (7.1%) than the scheduled hours (107,881), meaning that WATA was short-staffed much of the time. This validates the staff's sentiment that they are stretched too thin, compromising the ability of WATA to provide driver breaks, increasing the need for overtime, and increasing the need to have more than one lead driver on at a time.
- 2) The budgeted operating staff hours are not enough to cover all of the operating shifts, when the 7.7 % vacation/leave rate is considered.

These findings indicate a need to either increase the number of driving staff hours or reduce the number of scheduled hours. The use of on-call drivers makes it difficult and time-consuming to construct a schedule and necessitates short-term schedules. A preliminary recommendation is to eliminate the on-call drivers, replacing the category with part-time drivers and move to a longer-term driver schedule. There will need to be a discussion as to whether it is possible to develop a category of part-time, non-benefited drivers to replace the on-call driver title without incurring additional expenses.

## **ADA Coordinator/Williamsburg Area One Call System**

Currently the duties involved with the management and provision of ADA complementary paratransit are split between several staff positions, none of which focuses solely on ADA. The Transit Assistant handles the distribution and processing of ADA eligibility applications from potential riders and the scheduling function is coordinated by one of the supervisors. Trip requests are taken by the dispatchers as well as by the supervisor. All of the staff members involved with the ADA function indicated that they would like to have additional training with regard to the proper interpretation of the Americans with Disabilities Act as it pertains to eligibility as well as the provision of ADA complementary paratransit services. The current ADA complementary paratransit service is operating near capacity on certain days of the week, with continued growth likely.

A preliminary recommendation to help streamline the ADA complementary paratransit function is to create a new position to pull all of the ADA functions under the guidance of an ADA Coordinator. Given the ongoing dialogue with regard to the potential to create a Williamsburg Area One Call System to manage paratransit scheduling for several agencies in the region, it may be prudent to let the planning process for the call center be completed prior to making decisions regarding ADA staffing at WATA.

## CHAPTER SUMMARY

This chapter has examined the staff positions and functions currently in place at WATA through the process of interviewing a number of staff members; reviewing current job descriptions; conducting data analysis of payroll records, shift schedules and industry data; and determining functional areas that may need additional staff resources. Preliminary recommendations for staffing adjustments have been included. This information was combined with the information provided in Chapters 3 and 5 to develop the TDP/COA recommendations.

# Chapter 5: Surveys and Stakeholders

The Transit Development Plan/Comprehensive Operational Analysis (TDP/COA) effort has incorporated a significant outreach effort, including a passenger survey, a community survey, and a series of stakeholder interviews. The information and opinions gathered from these efforts are presented in this chapter. These results, coupled with the data and analyses presented in Chapters 1-4 were used as the basis for the development of TDP/COA alternatives and the subsequent plan.

## WATA PASSENGER SURVEY

An important task for the TDP/COA was to gather opinions from system users concerning WATA's current fixed route services, as well as to develop a passenger profile. With input from WATA staff, an onboard survey was prepared for these purposes. The survey was administered onboard the WATA vehicles on April 16 and April 18, 2015, in conjunction with the boarding/alighting



counts. The April date was chosen as a compromise between WATA's peak (July/August) and the need to include a date that included service on the Green Line (College of William & Mary). Temporary workers, supervised by KFH Group staff, distributed and collected the surveys from riders. A copy of the onboard survey instrument is provided in Appendix E.

## Results

The survey effort resulted in 861 completed surveys. Using standard statistical tables for determining sample size requirements for finite populations, this level of survey participation indicates that we can be 95% confident (+/- 3%) that the survey responses reflect the views of WATA riders. This level of confidence required a sample size of at least 787. The finite population of WATA riders was estimated to be 3,000.

### **Responses by Route**

As shown in Table 5-1, completed surveys were received from all of the routes in the system. The distribution of the surveys received was generally in proportion to the ridership on the network.

**Table 5-1: Survey Responses by Route**

Route	Count	
	#	%
Blue	184	21%
Gray	181	21%
Red	89	10%
Tan	82	10%
Green	73	8%
Orange	72	8%
Purple 1	67	8%
Trolley	46	5%
Purple 2	39	5%
Jamestown	14	2%
Surry	10	1%
No response	4	0%
<b>Total</b>	<b>861</b>	

### **Boarding/Alighting Locations and Transfers**

Survey respondents were asked to indicate the location where they boarded the bus, where they were going, and if they had to make a transfer to complete trip. The thirty most frequently indicated boarding locations are listed in Table 5-2. As these data show, Lee Hall was the most frequently listed trip origin, followed by the Williamsburg Transportation Center, and Ludwell Apartments. These data also show the significant variety of trip origins, with 345 locations listed by fewer than four survey respondents.



***Williamsburg Transportation Center***

**Table 5- 2: Top 30 Boarding Locations**

<b>Boarding Location</b>	<b>#</b>	<b>Boarding Location</b>	<b>#</b>
Lee Hall	50	Quality Inn	6
Williamsburg Transportation Center	39	Motel 6	6
Ludwell Apartments	25	Steeplechase Apartments	6
Walmart	24	Williamsburg Shopping Center	6
Food Lion	15	Forest Glen	5
Longhill	14	Quarterpath	5
One Tribe Place	13	W&M School of Education	5
Merrimac Trail	13	Highland Park	4
Monticello Ave	12	Handy Ice	4
W&M Law School	10	Airport Rd	4
Merchant Square	10	Jamestown Rd @ 199	4
Wawa	8	Magruder Ave	4
Merrimac Crossing	8	Centerville Rd	4
W&M Commons	8	York Plaza	4
Richmond Rd	7	All other locations	345
New Town	7	No Response	186

Walmart was the most frequently listed destination, followed by Busch Gardens, and the Williamsburg Transportation Center. It should be noted that both Walmart and the Williamsburg Transportation Center serve as system hubs. As with the boarding data, these data also show a significant variety of trip destinations, with 356 locations listed by fewer than four survey respondents.

**Table 5-3: Top 30 Alighting Destinations**

Destination	#	Destination	#
Walmart	40	Longhill	9
Busch Gardens	27	TNCC	8
Transit Center	27	1317 Jamestown Road	7
Richmond Rd	20	Grove	7
Great Wolf Lodge	19	Lee Hall	7
New Town	19	Wawa	7
Premium Outlets	18	Martin's	6
Campus Center	14	New Hope Road	6
W&M	14	Old Town Medical	6
Target	12	Toano	6
Merchant Square	11	Williamsburg Shopping Center	6
Sadler Center	11	Kmart	5
Sentara Hospital	10	W&M Law	4
W&M Police Dept.	10	Merrimac Trail	4
Food Lion	9	All other locations	346
Legacy Hall	9	No response	161

There were a significant number of riders who did not provide answers for the boarding/alighting questions, with 186 riders neglecting to answer the boarding question, and 161 riders neglecting to answer the alighting question.

Table 5-4 provides the transfer data, as supplied by the survey respondents. These data show that 57% of the WATA riders transferred from one route to another at least once to complete their trip, with 43% indicating they made one transfer and another 14% indicating that they made two or more transfers. This question had a high response rate, with 844 responses received.

**Table 5-4: Transfers**

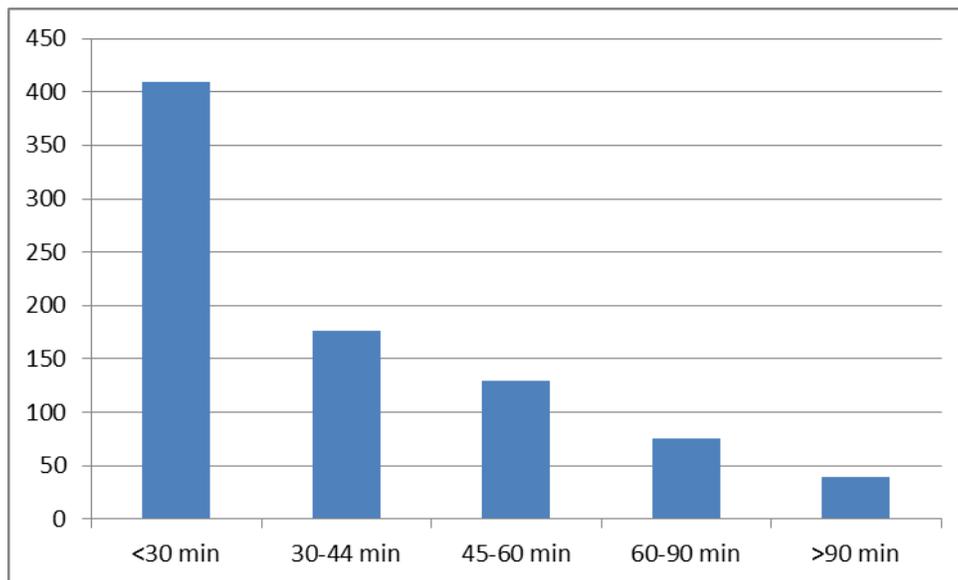
Transfer Experience	#	%
One transfer	362	43%
Two or more transfers	119	14%
No transfers	363	43%
<b>Total Response</b>	<b>844</b>	

Transfers to or from the Blue Line were listed most frequently (113 responses), followed by the Tan (91), Red (79), Orange (75), and Gray (73). Twenty-four survey respondents indicated that they transferred to or from an HRT route (4.3% of the total responding to the question).

### **Trip Length, Purpose, and Frequency of Use**

When asked “How long will this bus trip take, including riding, waiting, and transferring?,” the most common response was less than thirty minutes, followed in order by longer travel times. WATA staff questioned how so many riders could have a thirty-minute travel time, with 57% reporting needing a transfer to complete their trips. This is likely due to the hub-based system, whereby a passenger could board on the Orange Line, for example along Merrimac Trail at ten minutes before the hour, and then transfer to the Blue Line to alight along Richmond Road at ten minutes after the hour. The boarding/alighting data (Chapter 3) show significant transit usage within three miles of the Williamsburg Transportation Center, indicating that it is logical that there are a significant number of short trips within the system. These responses are shown graphically in Figure 5-1.

**Figure 5-1: WATA Travel Times**



The most commonly reported trip purpose among the survey respondents was work, followed by errands, shopping, school, and social purposes. Respondents were instructed that they could check more than one response for the question. These results are shown in Table 5-5.

**Table 5-5: Trip Purposes**

<b>Trip Purpose</b>	<b>#</b>	<b>%</b>
Work	431	50%
Errands/personal	131	15%
Shopping	119	14%
School	115	13%
Social/recreation	114	13%
Other	50	6%
Medical	45	5%
Government service agency	5	1%

WATA riders are frequent users, with 54% of the survey respondents indicating that they ride 5-6 days per week. Other popular responses were 3-4 days per week (21%), followed by 1-2 days per week (13%). These results are shown in Table 5-6.

**Table 5-6: Frequency**

<b>Frequency</b>	<b>#</b>	<b>%</b>
5-6 days/week	453	54%
3-4 days/week	177	21%
1-2 days/week	113	13%
2-3 days/month	49	6%
Once per month	25	3%
Less than once per month	25	3%
No response	19	

### ***Access to Transit Information***

There were several survey questions that asked respondents questions concerning the availability and method of accessing transit information. The first of these questions asked respondents to indicate whether they thought it was easy or hard to find out information concerning bus routes and schedules. Of the 816 people who answered this question, 88% indicated that it is easy to find out information concerning the bus routes and schedules.

## BusTime®

Riders were also asked whether or not they use WATA’s BusTime to access transit schedule information. BusTime is WATA’s real-time bus schedule information system, whereby passengers can see the actual time a bus is predicted to arrive at each stop rather than the printed schedule time. Of the 804 people who answered this question, 58% indicated that they do use BusTime. Of the 463 BusTime users, 53% use smartphones to access the program; 29.5% use the text message (SMS) method; and 17.5% access the program through either a laptop or desktop computer. Of the 341 riders who indicated that they do not use BusTime, the most popular responses were “prefer the printed schedule” and “not heard of it.” These responses are listed in Table 5-7. As these data indicate, respondents were instructed that they could check more than one reason for not using the service.

**Table 5-7: Reasons for Not Using BusTime**

Reason	#	%
Prefer printed schedule	162	48%
Not heard of it	157	46%
No computer	35	10%
No phone	20	6%
Other	61	18%

## Methods of Receiving WATA Information

Riders receive broader information about WATA in a number of different ways, including visiting the website, calling WATA, speaking directly with the drivers, the bus stops, and the brochures. Riders were instructed to “check all that apply.” The responses to this question are listed in Table 5-8. These data show very different results with regard to the use of BusTime, as this question concerned the full range of WATA information, and not just the bus schedules.

**Table 5-8: How Do You Receive Transit Information?**

Method	#	%
Website	246	29%
Call WATA	213	25%
Bus drivers	203	24%
Bus stops	188	22%
Brochure	172	20%
Friends/family	157	18%
BusTime	110	13%
Social media	54	6%
Other	23	3%
City/County office	13	2%

### **Requested Service Improvements and Satisfaction**

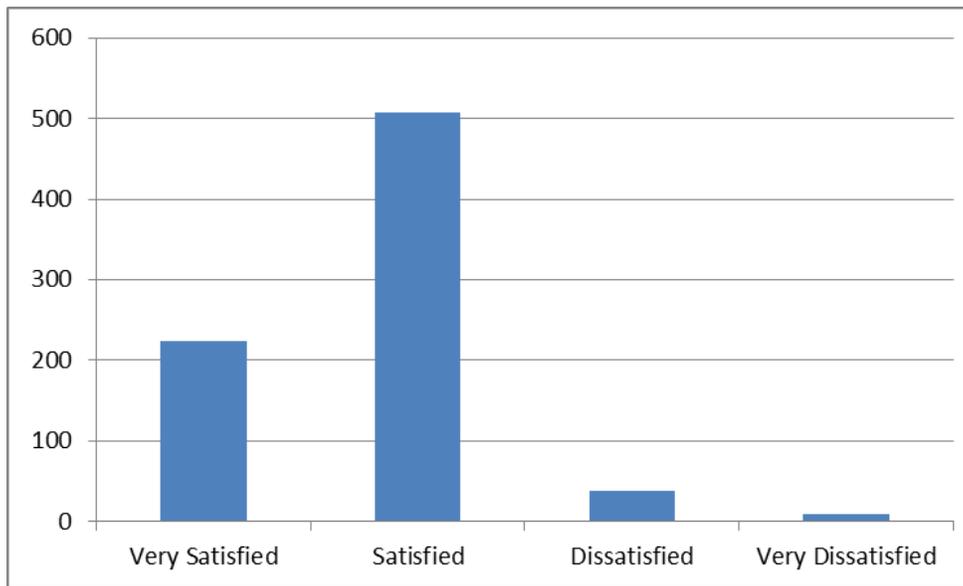
There were several survey questions that asked opinions concerning transit service improvements. These questions included a mix of question methodologies, including those allowing multiple choice responses as well as open-ended responses. When given a list of different types of service improvements and asked to choose up to three, survey respondents chose later evening hours (57%), followed by additional weekend service (29%), and stop improvements (28%). These results are shown in Table 5-9.

**Table 5-9: Service Improvements**

<b>Improvement</b>	<b>#</b>	<b>%</b>
Later evening hours	488	57%
Additional weekend service	250	29%
Stop improvements	242	28%
More frequent evening	175	20%
Earlier morning hours	171	20%
More direct routes	133	15%
More frequent morning	125	15%
Improved HRT connections	107	12%
Shorter travel time	86	10%
More geographic coverage	45	5%
Other	51	6%

When asked if there are geographic locations in the region that need service, most of the respondents indicated that there are not (79%). Of those who did list geographic locations, the following top five places were noted: Yorktown (19 responses); Newport News (8 responses); Jamestown (7 responses); Harris Teeter/Quarterpath (5 responses); and Five Forks (4 responses).

The survey asked riders to indicate their overall satisfaction with WATA, and their answers were grouped into four categories: very satisfied; satisfied; dissatisfied; and very dissatisfied. The responses to this question were overwhelmingly positive, with 94% of the respondents choosing either “very satisfied” or “satisfied.” The full responses are shown graphically in Figure 5-2.

**Figure 5-2: Number of Riders and Levels of Satisfaction**

A follow-up question asked riders to give a numerical score for WATA, on a scale of one to ten, with one being the lowest and ten being the highest. For this question, riders gave WATA an average (mean) score of 7.7.

Riders were also asked to indicate what they like best about WATA service and what they like least about WATA service. This question was the primary open-ended question on the survey. The responses are summarized in Tables 5- 10 and 5-11 below. The responses that were difficult to categorize, had specific service requests or complaints are provided in Appendix F.

**Table 5-10: What do you like BEST About WATA Service?**

Attribute	#	% Answering Question	% of Total Respondents
Drivers	130	24%	15%
On time service	80	15%	9%
Dependability/Availability	62	12%	7%
Price	59	11%	7%
Convenience	38	7%	4%
Frequency (when on 30 minutes)	25	5%	3%
Fast/Quick	18	3%	2%
New Buses	12	2%	1%
Clean	12	2%	1%
All other answers	102	19%	12%
<b>Respondents for Question</b>	<b>538</b>		

**Table 5-11: What do you like LEAST About WATA Service?**

Attribute	#	% Answering Question	% of Total Respondents
Hours	121	30%	14%
Late/early	64	16%	7%
Frequency	45	11%	5%
Drivers	36	9%	4%
Travel time	28	7%	3%
Crowded	13	3%	2%
Stops	10	2%	1%
All other answers	84	21%	10%
<b>Respondents for Question</b>	<b>401</b>		

From these responses, it is evident that there is a diversity of opinion with regard to WATA services. The most frequently indicated “best” attribute was the drivers, though the drivers were also indicated on the list of “least” liked attributes. Rider opinion was also split with regard to on-time service, with 15% of the respondents to this question listing it as a positive attribute and 16% listing it as a negative attribute.

When examining the entire list of responses, there were a number of interesting service suggestions and complaints, including the following:

- There is not a stop for Rolling Meadows on the return trip.
- There is limited service on Jamestown Road after Ludwell Hall.
- There is no bus stop opposite Lafayette Square.
- The Red Line does not have inbound and outbound service.
- The Trolley should go to Target.

### ***Passenger Profile***

There were a number of questions on the survey that asked the riders to provide information about themselves. These responses are summarized below to form the WATA passenger profile.

## Residency

The survey responses indicated that 51% of the riders live in the City of Williamsburg. Another 29% live in James City County, followed by the City of Newport News (10%), York County (3%), and Surry County (2%). These responses are summarized in Table 5-12.

**Table 5-12: Residency**

Where do you live?	#	%
City of Williamsburg	402	51%
James City County	227	29%
City of Newport News	81	10%
York County	27	3%
Surry County	13	2%
Other	32	4%
No response	79	

## College Affiliation

The survey also asked riders to indicate if they are affiliated with either the College of William & Mary (W&M) or with Thomas Nelson Community College (TNCC). These data indicate that 26% of the survey respondents are affiliated with the W&M and 8% are affiliated with TNCC. These responses are summarized in Table 5-13.

**Table 5- 13: College Affiliation**

College Affiliation	#	%
W&M Student	157	18%
W&M Staff	66	8%
TNCC Student	61	7%
TNCC Staff	10	1%

## Driver's License and Car Availability

Just fewer than half of the WATA riders reported that they have a driver's license (45%) and only 15% of the WATA riders reported that they have a car. These responses are summarized in Table 5-14.

**Table 5-14: Driver's License and Car Availability**

Driver's License?	#	%
Yes	347	45%
No	429	55%
No response	85	
Car?	#	%
Yes	112	15%
No	619	85%
No response	130	

## Age

The age distribution of WATA riders is provided in Table 5-15. As these data show, the majority of WATA riders are working age adults.

**Table 5-15: Age Distribution**

Age	#	%
12 to 17	31	4%
18 to 24	247	32%
25 to 44	270	35%
45 to 59	160	21%
60 and older	59	8%
<b>Respondents for Question</b>	<b>767</b>	

## Employment Status

The majority of WATA riders reported that they are employed full-time (43%), followed by part-time (20%). Seventeen percent of WATA riders reported that they are full-time students. These results are provided in Table 5-16. Survey respondents could check more than one response if that best described their employment status.

**Table 5-16: Employment Status**

Employment Status	#	%
Employed full time	367	43%
Employed part time	175	20%
Student full time	150	17%
Student part time	46	5%
Retired	34	4%
Homemaker	11	1%
Unemployed	35	4%
Unemployed- disability	36	4%

## Race

The survey asked respondents to indicate their race using the Census-designated race categories. The plurality of the respondents indicated that they are African American (46%), followed by white (27%), and two or more races (10%). The full results for this question, along with the overall racial composition of the three primary jurisdictions served, are provided in Table 5-17<sup>1</sup>. These data show that non-white riders comprise a significantly higher percentage of bus riders than is seen in the general population of the region.

**Table 5- 17: Race Data**

WATA Rider Survey Responses			2010 Census Race Data by Jurisdiction		
Race	#	%	Williamsburg	James City County	York County
American Indian/Alaskan	17	2%	0.3%	0.4%	0.4%
African American	347	46%	14.0%	13.1%	13.4%
Asian	56	7%	5.7%	2.2%	4.9%
White	202	27%	74.0%	80.3%	76.4%
Pacific Islander	4	1%	0.1%	0.1%	0.2%
Two or more races	73	10%	3.5%	2.6%	3.4%
Other	61	8%			
No response	101				

<sup>1</sup> Racial composition data collected from the 2010 US Census

## Language

Riders were asked if English is the primary language spoken in their households. Ninety-one percent (91%) indicated “Yes” and 9% indicated “No.” These data are similar to the 2009-2013 American Community Survey data that indicated that 89.7% of Williamsburg residents speak English at home; 92.8% of James City County residents speak English at home; and 91.2% of York County residents speak English at home.<sup>2</sup> For those riders who indicated that English is not the primary language spoken at home, Spanish was listed as the primary language for 2.1% of the total respondents, followed by Chinese (1.5%). These results are listed in Table 5-18.

**Table 5-18: Language Other Than English**

Language	#	%
Spanish	18	2.1%
Chinese	13	1.5%
Creole	3	0.3%
Filipino	3	0.3%
French	3	0.3%
Nepali	2	0.2%
Korean	2	0.2%
Urdu	2	0.2%
All other languages	14	1.6%

## Household Income

WATA riders reported relatively low incomes, with 38% reporting a household income of less than \$14,999, and another 28% indicating a household income of between \$15,000 and \$29,999. For reference, the Census-designated poverty threshold in 2014 for a family of four (with two children) was \$24,018.<sup>3</sup> The full results with regard to income are provided in Table 5-19.

**Table 5-19: Household Income**

Reported Income	#	%
\$14,999 or less	229	38%
\$15,000 - \$29,999	173	28%
\$30,000 - \$44,999	101	17%
\$45,000 - \$59,999	35	6%
\$60,000 - \$74,999	21	3%
\$75,000 or higher	51	8%
No response	251	

<sup>2</sup> U.S. Census Bureau, American Community Survey 2009-2013.

<sup>3</sup> US Census Bureau Website, “Poverty Thresholds by Size of Family and Number of Children,” 2014.

## Passenger Survey Summary

The survey results indicate that riders are generally satisfied with WATA services. WATA riders are employed, they use the system to get to work, and they are frequent riders. The majority of the riders do not have cars available (85%). Desired improvements focus on providing a higher level of service in the same geographic area, rather than on geographic expansion. Later hours were the most popular request by far, followed by additional weekend service, stop improvements and frequency improvements. Opinions were mixed with regard to several of the questions that concerned service quality.

## WATA COMMUNITY TRANSPORTATION SURVEY

The second important survey task for the TDP/COA was to gather opinions from the community concerning public transportation options in the region. This survey effort was conducted electronically, using Survey Monkey, with paper back-up surveys located at key community locations to provide a survey participation option for people who do not have computer access.

A press release announcing the availability of the survey was developed by the KFH Group and distributed to key local media outlets by WATA. A link to the survey was also posted on WATA's website. A copy of the community transportation survey is provided in Appendix G.

### Results

The survey effort resulted in 285 completed surveys, with 234 of the participants including their zip code information. As shown in Table 5-20, the majority of the surveys were received from the Williamsburg area.

**Table 5-20: Zip Codes of Survey Participants**

Location	Zip Code	#
City of Williamsburg	23185	106
James City County and York County, north and west of the City of Williamsburg	23188	100
Toano	23168	9
Williamsburg- College of William & Mary	23187	5
Lanexa	23089	2
Ware Neck	23178	2
Richmond	23285	2
Yorktown	23692	2
Chesapeake	23323	1
Norfolk	23503	1
Newport News	23608	1
Yorktown	23690	1
Yorktown	23693	1
Pass Christian, MS	39571	1

## College Affiliation

The survey asked riders to indicate if they are affiliated with either the College of William & Mary or with Thomas Nelson Community College. These data indicate that 58.8% of respondents are not affiliated with either of the schools. Of the respondents that reported a college affiliation, students and staff of the College of William & Mary made up the majority of these respondents. This question was asked so that the study team would know if the results were overly representative of the college community. Table 5-21 provides a summary of the college affiliation of the survey participants.

**Table 5-21: College Affiliation**

Answer Options	Response Percent	Response Count
I am not affiliated with any of these schools	58.8%	141
College of William and Mary Student	17.5%	42
College of William and Mary Staff	15.8%	38
College of William and Mary Faculty	5.4%	13
Thomas Nelson Community College Student	3.8%	9
Thomas Nelson Community College Staff	2.5%	6
Thomas Nelson Community College Faculty	0.0%	0
<b>Answered Question</b>		<b>240</b>
<b>Skipped Question</b>		<b>45</b>

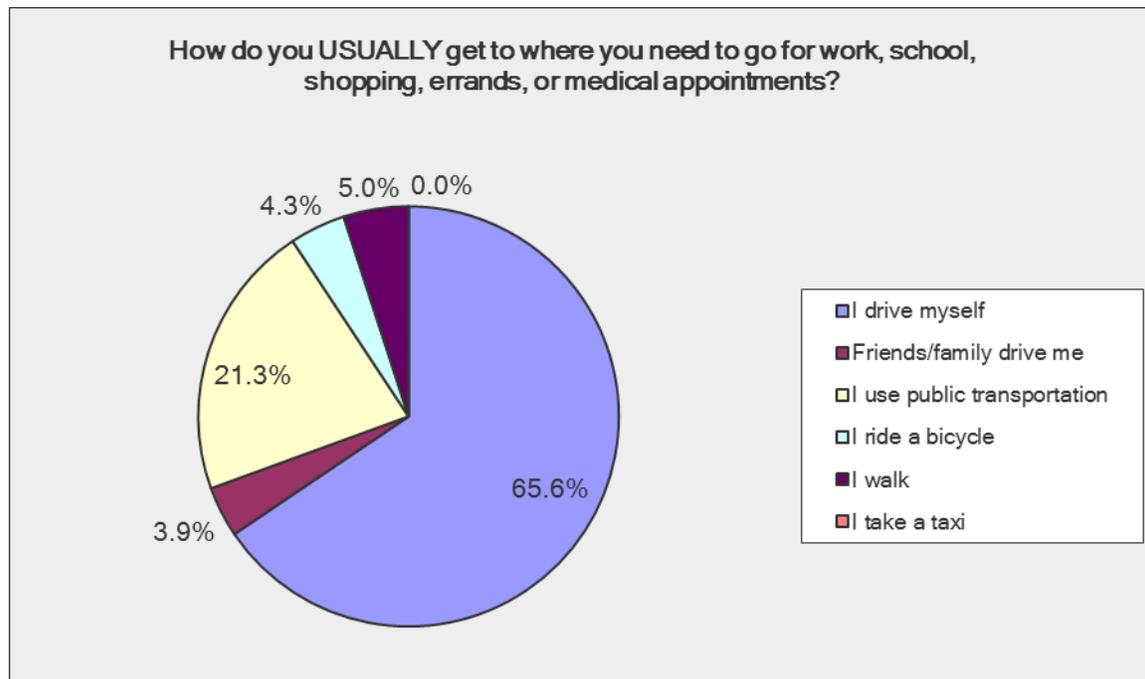
## Survey Participation

The first question on the community survey asked the participant to indicate if they had completed an onboard survey on the bus within the last month. This question was asked to help determine the total number of people providing input for the combined survey efforts. The results indicated that 97.5% of the individuals who participated in the community survey had not completed a survey onboard the bus within the last month.

### Travel Behavior

Survey respondents were asked how they usually get to where they need to go for work, school, shopping, errands, or medical appointments. The majority of the community survey participants indicated that their primary mode of transportation is to drive themselves, followed by public transportation. Figure 5-3 shows these responses.

Figure 5-3: Travel Options



### Familiarity With and Use of Public Transportation

Participants were asked to rate their familiarity with the public transportation services in James City County, York County, and the City of Williamsburg. The responses were based on a scale of 1-10 with 1 being the least familiar and 10 being the most familiar. These data, provided in Table 5-22, show that survey respondents were split concerning their familiarity with transit in the region, with 48% of the respondents indicating a familiarity level of 1-5 and 52% of the respondents indicating 6-10. It should be noted that the highest level of familiarity (10) received the highest number of responses (37).

Table 5-23 details the specific local transportation services used by the survey participants, along with the frequency of use. These data show that of the public transportation options in the region, WATA was reported to be used the most by survey respondents (44%), followed by Taxis (26%), and the Colonial Williamsburg Foundation bus (22%). Respondents also reported using the Yorktown Trolley (12%), Hampton Roads Transit (HRT) (10%), vanpools and carpools (14%), and RIDES (5%). In addition, eleven respondents reported in the “other” category that they used the Williamsburg Trolley or the New Town Trolley, which indicates

that they did not associate the Trolley with WATA. Faith in Action was also mentioned by two respondents.

**Table 5-22: Familiarity with Public Transportation**

Answer Options	Response Percent	Response Count
1	10.4%	29
2	11.8%	33
3	8.9%	25
4	8.2%	23
5	8.6%	24
6	8.6%	24
7	12.5%	35
8	12.1%	34
9	5.7%	16
10	13.2%	37
<b>Answered Question</b>		<b>280</b>
<b>Skipped Question</b>		<b>5</b>

Key: 1 = Lowest level of familiarity; 10 = Highest level of familiarity

**Table 5-23: Services Used and Frequency of Use**

Do you currently use any of the following public transportation services on a weekly basis? Please indicate how often you typically ride per week:										
Answer Options	5 times/ week or more	%	2-4 times/ week	%	1 time/ week or less	%	Total % Using	NA, I do not use	%	Response Count
WATA fixed routes	36	14%	28	11%	46	18%	44%	141	56%	251
WATA paratransit	2	1%	3	1%	7	3%	6%	200	94%	212
Colonial Williamsburg Foundation Bus	4	2%	8	4%	35	16%	22%	169	78%	216
Yorktown Trolley	2	1%	4	2%	21	10%	12%	190	88%	217
Hampton Roads Transit (HRT)	6	3%	5	2%	10	5%	10%	194	90%	215
RIDES- Peninsula Area Agency on Aging	1	0%	1	0%	8	4%	5%	201	95%	211
Taxis	4	2%	6	3%	47	21%	26%	164	74%	221
Vanpools or carpools	3	1%	12	6%	15	7%	14%	182	86%	212
Other	6	4%	5	3%	13	8%	15%	135	85%	159
Please specify:										24
<b>Answered Question</b>										<b>266</b>
<b>Skipped Question</b>										<b>19</b>

For the survey respondents who use public transportation (130 identified as at least occasional users), the survey asked them to indicate why they choose to ride. The respondents were instructed that they could choose more than one response, which is why the total number of choices indicated is greater than the number of respondents who indicated they use public transportation. The most commonly chosen response was lack of access to a vehicle (48%), followed by convenience (33%), expense (32%), environmental reasons (32%), and lack of a driver's license (27%). These responses are shown in Table 5-24.

Additional "other" responses that were noted as reasons why participants use public transportation were: parking issues, the potential to get more exercise, and the need for alternative transportation when personal cars are getting serviced.

**Table 5-24: Reasons for Public Transportation Use**

Reason	%	#
I do not have access to a vehicle	48%	62
The bus is more convenient than driving	33%	43
The bus is less expensive than driving	32%	42
For environmental reasons	32%	42
I do not have a driver's license	27%	35
Other (please specify)	11%	14
It saves me time	10%	13
I am unable to drive due to age or disability	9%	12

## Public Transportation Improvements

The survey asked non-users of public transportation to indicate what improvements would be needed for them to consider using public transportation, and similar to the previous question, respondents could check more than one response. The most commonly reported response indicated that more frequent buses are needed, followed by better service availability near where people live and work, improved regional connectivity, better access to transit information, and shorter travel time. For this question, 154 responses were applicable after removing the responses that indicated that the participant already rides, or is not interested in riding. These responses are provided in Table 5-25.

Some of the “other” improvements listed by respondents were: service to the Newport News Airport; Cheatham Annex; the fire station at Newman Road and Route 199; and Jamestown/Yorktown. Additional benches and shelters were also suggested.

**Table 5-25: Improvements Needed to Attract Non-Riders**

Improvement	%	#
More frequent buses	53.9%	83
Better service availability near my home/work/school	51.9%	80
Improved regional connectivity	41.6%	64
Improved access to transit information	38.3%	59
Shorter travel time	38.3%	59
Longer hours of service	36.4%	56
Guaranteed ride home for emergencies/overtime	19.5%	30
Other (please specify)	16.2%	25
Greater bicycle capacity	13.0%	20
Safer vehicles	4.5%	7
Less crowded vehicles	3.2%	5

### Access to Transit Information

The survey included a series of questions that asked respondents questions concerning the availability and method of accessing transit information. The first question asked about the participants' access to the Internet. Approximately 94% of survey participants reported having access to the Internet. Participants were asked if they visited the WATA website and WATA's BusTime link. The responses to these questions revealed that 69% of the survey respondents had visited WATA's website and 58% had visited the BusTime link.

Survey participants were asked what types of social media they use. The majority of participants use Facebook followed by YouTube then Twitter. Table 5-26 provides the details regarding the types of social media used by survey participants.

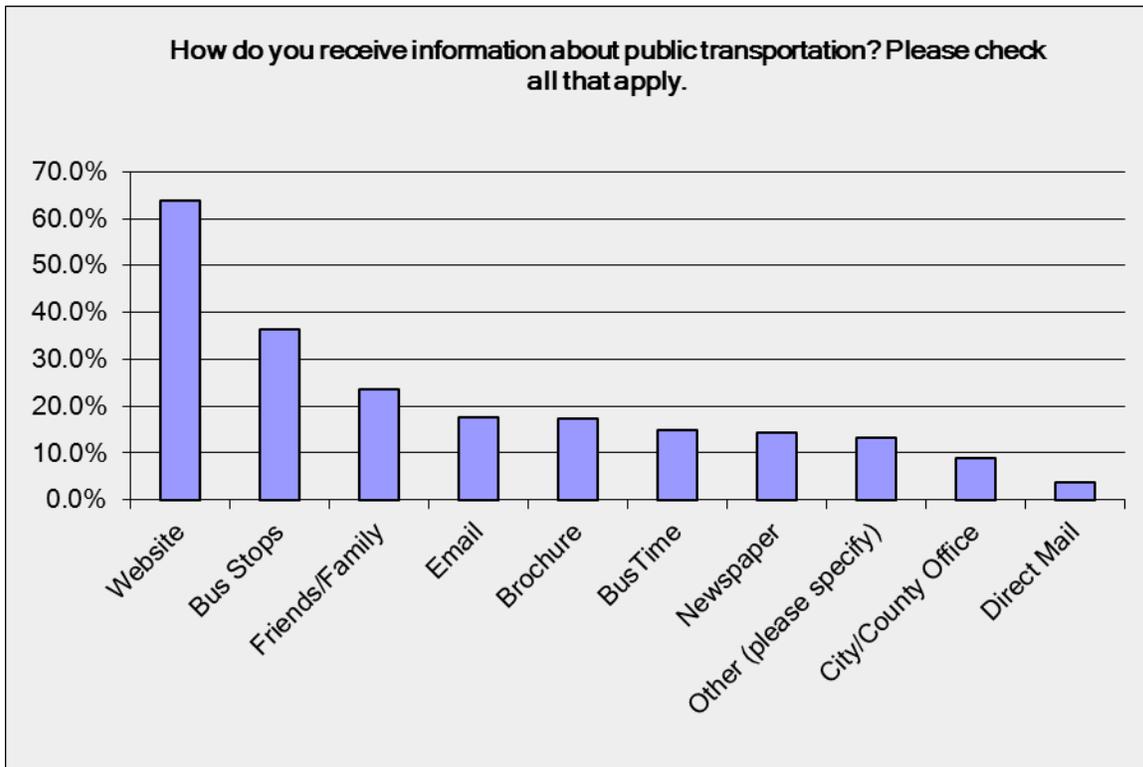
**Table 5-26: Use of Social Media**

Answer Options	Response Percent	Response Count
Facebook	86.2%	193
YouTube	49.1%	110
Twitter	28.1%	63
Instagram	21.4%	48
Local blogs/forums	17.4%	39
Other (please specify)	7.6%	17
<b>Answered Question</b>		<b>224</b>
<b>Skipped Question</b>		<b>61</b>

Seven (7) out of the 17 "other" responses indicated that they did not use any social media. Some of the other responses include LinkedIn, KIK, and Periscope.

The survey went on to ask how survey participants receive information about public transportation services. These results, shown in Figure 5-4, indicate that the majority of the participants find out about services via a website.

**Figure 5-4: Method of Receiving Public Transportation Information**



### **Need for Improved Transportation in the Region**

When asked if there is a need for additional or improved public transportation in the region, 83% of the survey respondents indicated “yes.” This question provided an opportunity for people to make specific, open-ended suggestions, and they did, with 149 comments received. The general list of desired improvements (not necessarily in priority order) taken from the open ended suggestions, is provided in Table 5-27, with the full un-edited list of comments provided in Appendix H.

**Table 5-27: Suggested Improvements**

<b>Suggested Improvements</b>
Provide more frequent service
Improved timeliness of service
Cover more of the region- connect to Richmond, Newport News, Hampton, and Virginia Beach
Provide longer hours of service
Trolley service in the morning
Green Line earlier in the morning on weekends
Service on more holidays
Offer 30 minute frequency on the weekends
Bi-directional service
Green Line in the summer
Better website
More detailed maps
Shelters
<b>Serve other local neighborhoods</b>
Skimino Farms
The east side of I-64
Upper York County
James City County Government Center
Lackey free clinic
Gloucester Point
Rochambeau near Pierce's
<b>Specific connections</b>
Jamestown to JCC Government Center
Seasons Trace to W & M
More connections to Patrick Henry Mall
Direct route - east-west route along Monticello
Direct route - TNCC from Routes 5/199
Jamestown to downtown Williamsburg

### **Additional Comments**

In addition to the input received via Question 6 regarding the need for public transportation improvements, survey participants were also provided an opportunity to add comments concerning public transportation in the region. There were 91 additional comments received most of which echoed the opinions provided for Question 6. The following themes were found among the 91 general comments:

- There is a need for extended evening and weekend hours.
- More service to upper York County is desired.
- Better connections within the service area and to other parts of the region are needed.
- Bus stop and shelter improvements are needed.
- Bus stops closer to public schools are desired.
- There is a need to increase bus frequency.
- WATA's website should be improved.
- Public transit should grow at the same rate as Williamsburg.
- Buses should run on schedule more often than they do currently.

The full un-edited list of the general comments is provided in Appendix I.

## Survey Participant Demographics

### Race

The survey asked respondents to indicate their race, using the Census-designated race categories. The majority of the respondents indicated that they are White/Caucasian (72%), followed by Asian (8%) and African American (7%). The racial composition of the community survey participants is significantly different than that of the rider survey participants, which showed majority non-white race identification. The full results for this question, along with the overall racial composition of the three primary jurisdictions served, are provided in Table 5-28<sup>4</sup>.

**Table 5-28: Race of Survey Participants and Jurisdictional Race Data**

Answer Options			2010 Census Race Data by Jurisdiction		
Race	#	%	Williamsburg	James City County	York County
American Indian/Alaskan	0	0%	0.3%	0.4%	0.4%
African American	18	7%	14.0%	13.1%	13.4%
Asian	19	8%	5.7%	2.2%	4.9%
White	175	72%	74.0%	80.3%	76.4%
Pacific Islander	0	0%	0.1%	0.1%	0.2%
Two or more races	6	2%	3.5%	2.6%	3.4%
Prefer not to say	17	7%			

Source: Community Surveys and 2010 Census

### Language

Survey participants were asked if English is the primary language spoken in their households. The responses indicated that English is the primary language spoken in 93.4% of survey participant households. These data show a slightly higher primary use of English than the 2009-2013 American Community Survey data, which indicated that 89.7% of Williamsburg residents speak English at home; 92.8% of James City County residents speak English at home; and 91.2% of York County residents speak English at home.<sup>5</sup> There were 11 comments associated with this question that listed languages other than English. Chinese was listed as the primary language for six of these comments. Two comments listed Spanish as a primary language, one person listed Taiwanese, and one person listed Bengali.

<sup>4</sup> Racial composition data collected from the 2010 US Census

<sup>5</sup> U.S. Census Bureau, American Community Survey 2009-2013.

## Gender

Of the 245 respondents who answered the question concerning gender, 59% indicated that they are female and 41% indicated that they are male.

## Driver's License and Car Availability

The majority of survey participants indicated that they do have a driver's license and have access to a vehicle. Table 5-29 summarizes these results.

**Table 5-29: Driver's License and Car Availability**

Driver's License?	Percent	Count
Yes	79.7%	196
No	20.3%	50
<b>Total</b>		<b>246</b>
Car?	Percent	Count
Yes	77.2%	190
No	22.8%	56
<b>Total</b>		<b>246</b>

## Age

The age distribution for the community survey participants is provided in Table 5-30. As these data show, the majority of survey participants are between the ages of 26-55.

**Table 5-30: Age Distribution**

Age	Percent	Count
Under 18	0%	0
18-25	15.1%	37
26-55	49.8%	122
56-64	17.1%	42
65+	18.0%	44
<b>Total</b>		<b>245</b>

## Employment Status

The majority of the survey participants (48.2%) reported that they are employed full-time. The second highest employment status recorded was retired, at 21.9%. Table 5-31 summarizes the employment status for survey participants. For this question, respondents could indicate more than one response, as appropriate for their situation (i.e. a full-time student working part-time).

**Table 5-31: Employment Status**

Employment Status	Percent	Count
Employed full-time	48.2%	119
Employed part-time	13.4%	33
Retired	21.9%	54
Student full-time	12.6%	31
Student part-time	4.9%	12
Homemaker	3.6%	9
Unemployed	4.5%	11
Other	3.6%	9

## Household Income

The community survey participants represented a much higher income level than the rider survey participants, with almost 43% indicating an annual household income of at least \$75,000 or more. Thirty-eight percent of the rider survey participants reported annual household incomes of below \$15,000. Table 5-32 indicates the income ranges of the community survey participants.

**Table 5-32: Household Income**

Reported Income	Percent	Count
Under \$15,000	13.5%	30
\$15,000-\$29,999	12.6%	28
\$30,000-\$49,999	10.3%	23
\$45,000-\$59,999	10.8%	24
\$60,000-\$74,999	10.3%	23
\$75,000 or over	42.6%	95
<b>Total</b>		<b>223</b>

## Community Transportation Survey Summary

The community transportation survey was completed by area residents who typically drive their own cars, live in the Williamsburg area, and have relatively high incomes. About half of the survey participants reported that they are familiar with public transportation services in the region and 44% reported that they have used WATA at least once. Eighty-three percent of the respondents indicated a need for public transportation improvements, citing a need for more frequent service, more geographic coverage and better regional connections, website and mapping improvements, stop and shelter improvements, and a number of detailed service requests. It is interesting to note that the current riders desired later hours of service as the highest priority, while the non-riders indicated that more frequent service is needed to attract non-riders.

The information provided by the community survey participants was considered in the development of the TDP/COA alternatives.

## STAKEHOLDER OPINION

In addition to the stakeholder opinion gathered through the TDP/COA Study Committee (detailed in Chapter 2), KFH Group staff also interviewed WATA Board members, and key community leaders, to gather more insights with regard to unmet transit needs in the region, to learn of the functional areas within WATA that stakeholders feel need more attention, the strengths and weaknesses of WATA, and the vision for public transportation in the region. These interviews took place in July 2015. The opinions gathered from these stakeholders are summarized below, by topic area.

### Unmet Transit Needs/Issues

The following unmet transit needs and transit issues were discussed by regional transit stakeholders:

- Service to the Lackey Free Clinic. This connection is needed from the WATA service area, as well as from Newport News.
- Service to the James City County Government Center.
- Direct service to the new hospital.
- Service to Cheatham Annex.
- Additional service for the Grove area and the Longhill Road area.
- Later hours of service.
- Generally – the working poor struggle to access affordable transportation that meets their needs. Many human service programs develop inefficient work-arounds because of unmet client transportation needs. Additional coordination of transportation efforts is needed.

- The senior population is growing and WATA needs to be ready for increased transit use by seniors.
- Smaller vehicles may be appropriate for the Green Line. The road network around the William & Mary campus is difficult and ridership at any one time does not generally require a full size bus.
- Loop routing (Green, Red, and Trolley) results in long travel times. Bi-directional service is needed.
- Additional connections to Newport News are needed.

## **WATA Strengths**

- WATA does a good job of providing services for their core ridership base.
- WATA provides an essential service.
- WATA has a committed team of employees.
- The Board is experienced and committed.
- WATA does a good job of accessing federal and state funding and leveraging local assets.
- The Board rarely hears about customer service complaints.
- The drivers are friendly and provide good customer service.

## **WATA Weaknesses**

- The high turnover rate for the Executive Director position and the associated lack of leadership.
- Low employee morale.
- Public image. WATA has a good story to tell and should work to improve its image in the community.
- The continued need to negotiate for local funding on an annual basis.
- Route choices are sometimes politically driven, rather than based on the level of transit need. This comment reflects the basic transit philosophical decision of transit coverage (geographic), versus transit frequency (within a core area). It was mentioned with regard to the extension of service in Jamestown.
- More thoughtful planning is needed when implementing routes.

## **Functional Areas Needing Attention**

- Staffing and employee morale - keeping a stable management staff that can work to improve employee morale.
- Facilities - WATA needs a new administrative and operating facility. A dedicated northern hub for WATA services is needed.
- Continued fleet replacement is needed.

- Advocacy - WATA should consider developing an advocacy program that includes the economic impact of long travel times and the human cost of not having access to the grocery store, the doctor, etc. Transportation is access to opportunity.

## Vision

- The solidification of stable management at WATA.
- An Executive Director that is proactive within the organization and the community.
- Development of an organizational culture that results in WATA continuing to be a dependable source of transportation.
- Maintaining local jurisdictional contributions to WATA and facilitating more community support. Equitable and stable funding from the localities
- Inclusion of the College of William & Mary as a voting member.
- A level of service and route network that will encourage more William & Mary students to use transit.
- Preserving and enhancing connectivity throughout the community, including the William & Mary community.
- Development of a reputation for quality and a high level of service. These are hallmarks of the Williamsburg area communities and the transit program should reflect this.
- Several stakeholders questioned the stated WATA vision of becoming the option of choice for residents and visitors. These questions were not necessarily criticisms, but rather acknowledgement of the car-oriented land uses in the region.

## Summary of Stakeholder Input

System stakeholders were in agreement that WATA continues to do a good job of providing transit service for their core ridership base and has been successful in accessing federal and state transit grant funding to help the system stretch local resources.

The stakeholders echoed the staff opinion (Chapter 4) that stable management leadership is needed at WATA, and the lack of stable management leadership has resulted in low employee morale and has impacted WATA's ability to facilitate important projects and continue to grow the system to meet the region's public transportation needs.

The vision for transit in the region incorporates the desire for stable leadership at WATA, the continued development of the system, stable local financing, and the development of a reputation for quality service.

## SUMMARY

The outreach effort for the TDP/COA has reached over 1,100 individuals, including riders, non-riders, and community transportation stakeholders. Their experiences and opinions were sought through surveys and interviews, which were conducted over a four-month period (April-July, 2015). The feedback received and documented throughout this chapter, including the detailed comments included as Appendices, was combined with the detailed system analysis (Chapter 4) to form a number of alternatives for improvement. These alternatives are outlined in Chapter 6 and provided the basis for the TDP/COA recommendations.

# Chapter 6 – TDP and COA Alternatives

## INTRODUCTION

The TDP/COA process included the collection, presentation, and analysis of data and information from a number of relevant sources. Chapters 1 through 5 documented these efforts that tell the WATA story and lay the foundation for the development of alternative strategies for WATA to consider for the six-year TDP planning period and beyond. Sources of data and information that shape the WATA story have included:

- WATA operational and financial data, both historic and current
- System characteristics, policies, procedures, ridership, and performance patterns
- WATA board members and staff
- WATA riders and community stakeholders
- Regional demographics and land uses
- Relevant studies and plans that have been conducted in the region
- Peer system characteristics

These data sources built the WATA story, providing insight from multiple sources to guide the study team in the development of a number of potential improvements for WATA to consider as the Authority grows and matures as a regional transit provider. These potential improvements are discussed in this chapter, and are organized into the following topic areas:

- Changes to current routes and potential new routes
- System wide improvements
- Fare and pass alternatives
- Staffing
- Infrastructure and communications improvements

For each alternative there is a discussion of the origin of the proposal, a description of how each could be implemented, the advantages and disadvantages of implementation, cost estimate, and a ridership estimate where relevant.

## CHANGES TO CURRENT ROUTES AND POTENTIAL NEW ROUTES

Many of the routing alternatives for the current routes focus on suggested ways to address the following primary issues:

1. As the system has grown and development has occurred in the region, more stops and route segments have been added onto the core routes without enough running time added into the schedule. This has resulted in routes that cannot be accomplished within their allotted time while adhering to the speed limit and picking up and dropping off passengers. For these routes it is necessary to either reduce the route mileage or change the schedule to allot more time. Adding time to a route within a timed-transfer network is difficult, particularly when attempting to maintain “clock-face” frequencies, as it requires changes to all of the schedules.
2. There has been growth and development in the region that is not currently served by WATA. There have also been some long-standing requests that have not been able to be accommodated.
3. Some of the service patterns are not convenient for the riders.

Each of the WATA current routes and proposed new routes are discussed in this section.

### Blue Line

#### **Challenges**

As documented in Chapter 3, the Blue Line is currently over-extended. It is difficult to maintain the schedule given the current route, high ridership, and traffic. There is no recovery time making the route run late if a driver needs to take a short break or if there is significant traffic. If the Blue Line (or any of the core routes), is running late all of the core routes end up also running late as they meet for transfer opportunities. The Blue Line exhibits very high ridership on Saturdays, with only one bus in operation.

#### **Proposed Solutions**

- Eliminate the James City County Human Services stop.
  - A new route is proposed to cover the James City County Human Services stop which is an important transit destination for WATA riders.
  - If the new route is not implemented, the Purple 1 Line will need to continue to serve the stop.
- Eliminate the extension to Walmart and have the Blue Line meet the Purple 1 Line at the Thomas Nelson Community College stop.

- If both of these changes are implemented, the revised Blue Line will be 13.6 miles round trip, a reduction of 1.24 miles, which should provide approximately 6 minutes to accommodate some layover time for the route. Figure 6-1 shows the proposed revisions.
- Operate a second bus on Saturdays from 10:00 a.m. to 5:00 p.m. to alleviate crowding.

### **Advantages**

- Reducing the length of the Blue Line will provide some recovery time to the route which is needed for the drivers as well as to accommodate traffic delays.
- Reducing the length of the route will improve the on-time performance of the route which will also improve the on-time performance of the other routes in the timed-transfer network.
- Serving TNCC with the Blue Line will provide direct access to the college from the Williamsburg Transportation Center and WATA's primary travel corridor (Route 60 West).
- Adding a second bus on Saturdays will alleviate crowding on the route and improve the on-time performance.
- Adding a second bus on Saturdays will allow for 30-minute frequencies on the route on Saturdays.

### **Disadvantages**

- The addition of a new route will add significant expenses for WATA. These costs are outlined within the discussion of the new route.
- Eliminating Walmart from the Blue Line will eliminate a significant destination from the route as well as eliminating the western connection with the Tan Line.
- Adding a second bus on Saturdays will add expenses.

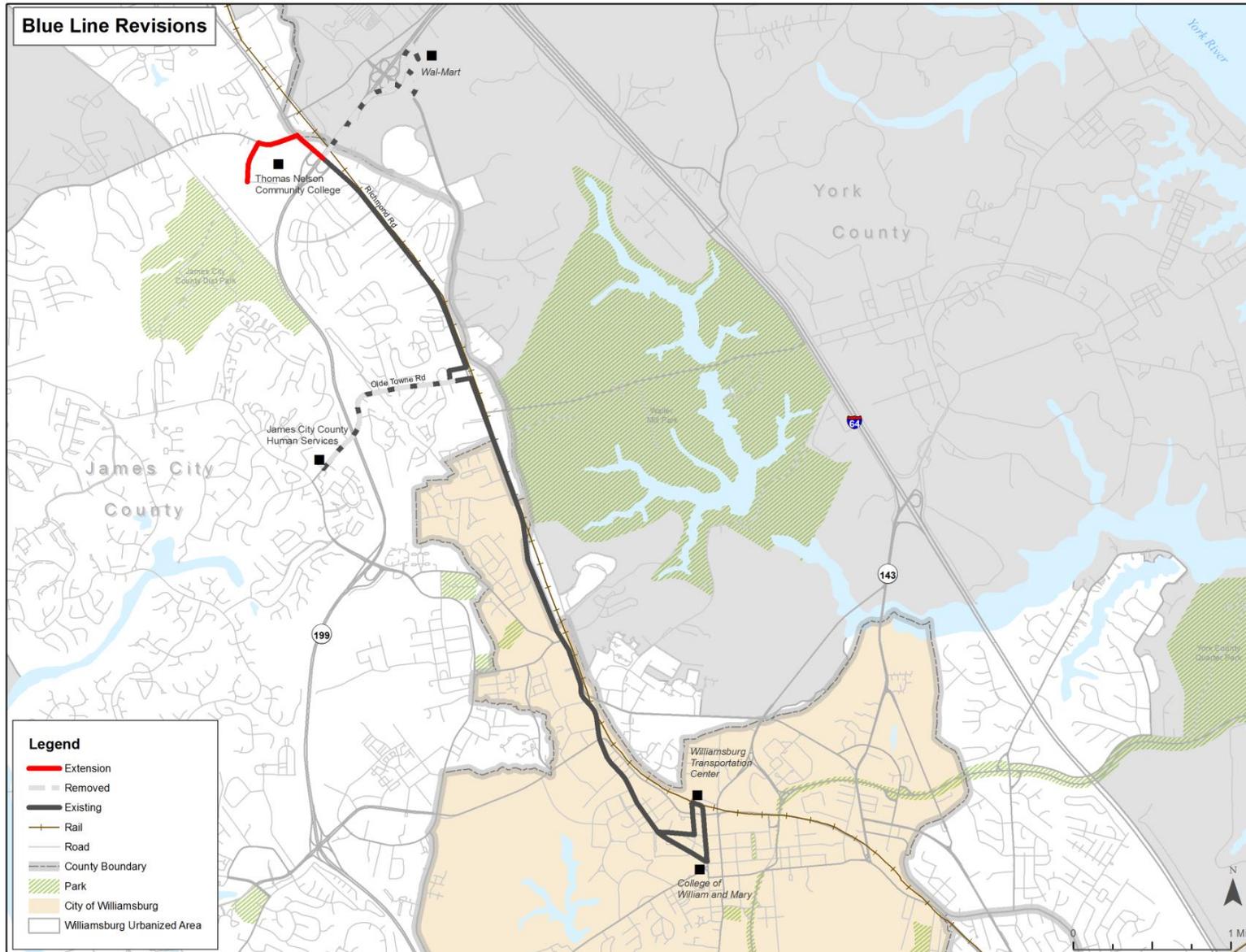
### **Cost**

- Adding a second bus on Saturdays between 10:00 a.m. and 5:00 p.m. will add 7 revenue service hours per week, for a total of 364 annual revenue service hours. The annual operating cost for these additional hours is \$21,840. No capital is required.

### **Ridership**

- Eliminating these stops will reduce ridership on the Blue Line. These riders will not be lost to the system; they will be re-directed to other routes. There will likely be a modest increase in Saturday ridership with improved service levels.

Figure 6-1: Proposed Blue Line Changes



## Gray Line/ Lackey-Yorktown Route

### Challenges

WATA riders and community stakeholders expressed a need to travel to the Lackey area, particularly the Lackey Free Clinic, and to Yorktown. This need was documented via the WATA rider survey, the community survey, and the stakeholder interviews. In addition, this need has been discussed several times in previous years, including in 2011, when York County approached WATA to consider service to Lackey, the Naval Weapons Station, and Yorktown (WATA Board Minutes, March 16, 2011). The request in 2011 acknowledged the gap in service between Williamsburg and Yorktown that would result when the grant funding for the Historic Triangle Shuttle expired (2011). After the grant period ended, CWF continued to provide the Historic Triangle Shuttle for the 2012 and 2013 seasons but discontinued it after the 2013 summer season.

### Proposed Solutions

#### Option 1

Adding a vehicle to the Gray Line to extend the route from the current Lee Hall terminus to Yorktown using Yorktown Road and Old Williamsburg Road is proposed as one option. This would lengthen the Gray Line by approximately 12.2 miles per round trip (6.1 miles each way, depending upon the turnaround option chosen in Yorktown). A second vehicle would be needed during the frequency portion of the service day. The following additional trip generators could be served:

- Newport News Community Gardens
- Chelsea at Lee Hall Apartments
- Hamilton Redoubt Apartments (Lincoln Military Housing)
- Woods at Yorktown Apartments
- Lackey Free Clinic
- Yorktown Naval Weapons Station
- Yorktown Victory Center
- York County government offices (if extended past the Victory Center)

#### Option 2

A second option is to start a connecting route that serves the corridor and meets the Gray Line, rather than serving as a direct extension of the Gray Line. This would allow the route more flexibility to be operated as a deviated fixed route, and would alleviate concerns regarding the extended ADA complementary paratransit service area. This would also allow the route to remain on hourly headways, rather than increase to 30-minute headways during the frequency schedule as the Gray Line does. As a new route through an area that is not densely populated, it

is unlikely that 30-minute frequencies will be required. It could also operate on a shorter service day than the Gray Line does.

A map of the proposed extension/new route is provided in Figure 6-2.

### ***Advantages***

- Addresses a need that has been articulated through several data sources.
- Provides a connection from Williamsburg and through the Grove area to the Lackey Free Clinic.
- Provides access to the Lackey Free Clinic and Yorktown for HRT riders via the transfer opportunity at Lee Hall.
- Connects Williamsburg, Busch Gardens, and Yorktown, which restores the connection between Williamsburg and Yorktown that was discontinued in 2013.
- Provides public transportation service for the Naval Weapons Station.
- Adds several multi-family housing areas to the WATA service area.
- Offers a convenient layover opportunity at the Victory Center.

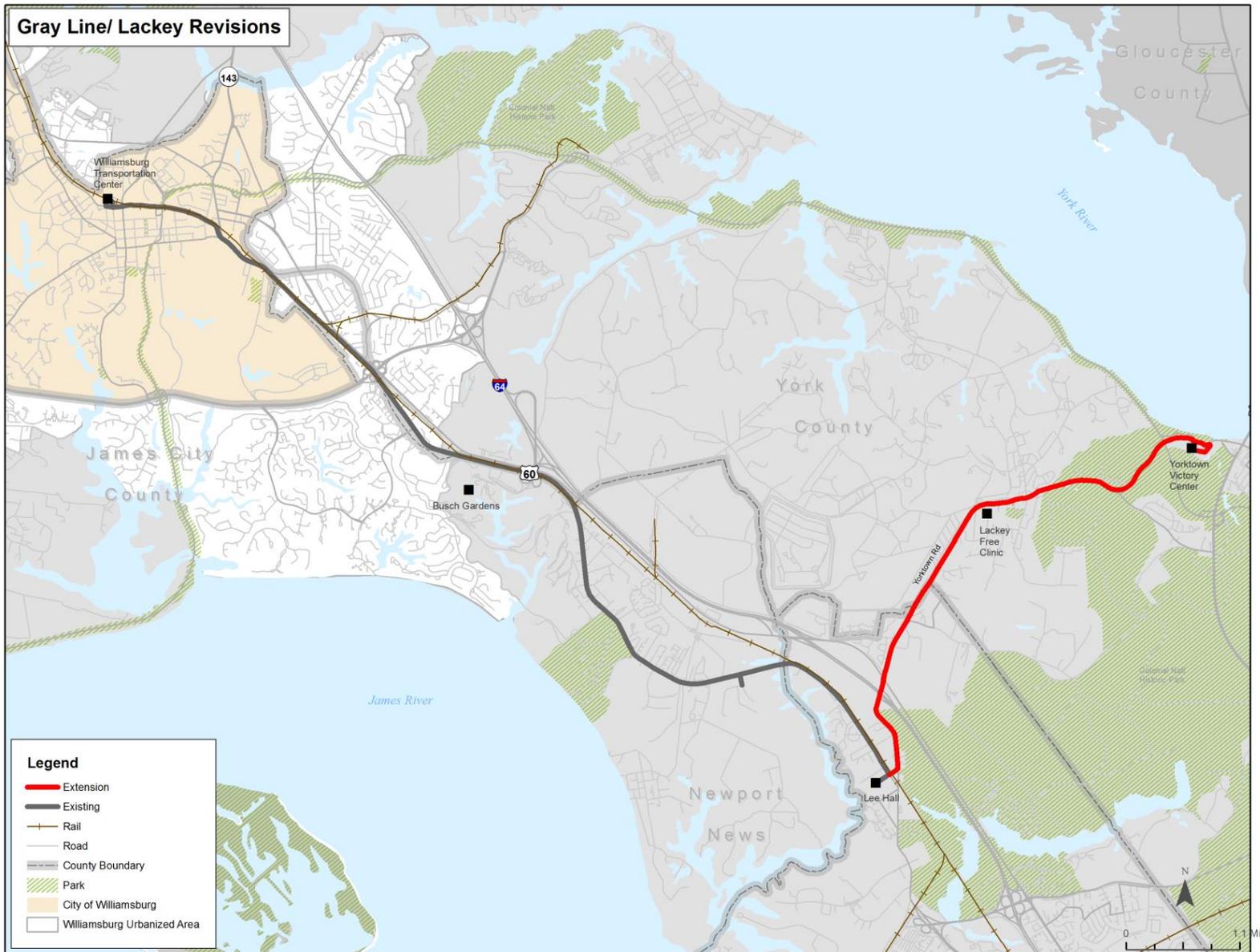
### ***Advantages Specific to Gray Line Extension***

- Adds some recovery time to the Gray Line, as the new round trip route length would be 34.2 miles (using two vehicles), compared to the current 22 miles (using one vehicle). This would give each vehicle approximately one 16-minute recovery for each 2-hour cycle. This would only be an advantage if the Gray Line extension option were to be chosen.
- Does not require that riders transfer to get between Williamsburg and Yorktown if the route is operated as an extension of the Gray Line. A transfer would be required if operated as an independent route.

### ***Advantages Specific to New Route***

- Would not require an extension of ADA complementary paratransit if operated as a deviated fixed route.
- Could operate different hours than the Gray Line, as appropriate for the service area.
- A shorter route would increase service reliability.
- Would not require the frequency schedule.
- Would have more flexibility to provide service within Yorktown during the off-season.

Figure 6-2: Proposed Gray Line/ Lackey-Yorktown Route



## **Disadvantages**

### **Disadvantages Specific to Gray Line Extension**

- Lengthens an already long route, which may affect service reliability.
- Adds a second vehicle to the route for hourly service, and two vehicles for 30-minute service, which represents a significant cost.
- Extends the ADA paratransit service area, which would put additional demand on the service that is currently operating close to capacity.
- Provides a higher level of service than may be needed for a new route segment.

### **Disadvantages Specific to New Route**

- Requires that passengers transfer at Lee Hall.
- Adds operating and capital costs.

## **Cost**

### **Cost Specific to Gray Line Extension**

- Operating – Adding a second vehicle to the Gray Line during all service periods would result in approximately 5,200 additional annual revenue hours. This improvement would cost \$312,000 annually in operating expenses. If two vehicles were used during the frequency period, this would add additional 1,820 revenue service hours, for a total of 7,020 additional revenue service hours, and a total operating cost of \$421,200.
- Paratransit - The additional ADA paratransit expenses are likely to be about \$19,000 annually, based on adding 6.2% to the fixed route total route mileage and applying the 6.2% to the current ADA revenue vehicle hours and associated expenses.
- Capital – Assuming two vehicles are needed for the service expansion, the capital costs would be \$1,016,000, using the vehicle expense estimate in the HRTPO TIP (\$508,000 per vehicle). The expected federal share would be 80%; the expected state share would be 16%, with a local share of 4%.

### **Cost Specific to New Route**

- Operating – A new route could operate during a shorter service span and weekdays only to test the market. If the route were to be operated Monday through Friday from 6:00

a.m. to 6:00 p.m., the annual operating hours would be about 3,120, for an annual operating cost of about \$187,200.

- Capital – A body-on-chassis vehicle could be purchased for this service. This type of vehicle would be more maneuverable through Yorktown if the route continues past the Victory Center. A body-on-chassis vehicle costs approximately \$90,000, depending upon the size and options chosen. The expected federal share would be 80%; the expected state share would be 16%, with a local share of 4%.

### ***Expected Ridership***

The current trip rate for the Gray Line is 21.6 passenger trips per revenue hour. The proposed added service area is similar to the eastern part of the current service area. Trip generators are interspersed with areas of little development. The new service area is likely to produce slightly fewer trips per revenue hour than the current route, as the current route includes more densely populated areas that are within the City of Williamsburg and in James City County. It is estimated that the route addition will generate between 12 and 15 trips per passenger hour. The total annual ridership will depend upon the number of hours operated. The lower end of service (3,120 hours) would likely produce between 37,000 and 47,000 annual passenger trips.

## **Green Line**

### ***Challenges***

The Green Line provides circulator service in a counter-clockwise direction along the perimeter of the College of William & Mary campus. The primary issues associated with the route that have been articulated are the need for additional stops along Jamestown Road, the need for earlier weekend hours, and the idea of running the route in the opposite direction to reduce travel time for riders.

### ***Proposed Solutions***

It is proposed that the Green Line add two operating hours on Saturdays and Sundays, to begin service at 8:00 a.m. An additional bus stop along Jamestown Road, at Chandler Court is proposed.

Given the significant expense of adding a second vehicle to operate the Green Line in a clockwise direction, the proposed service improvement is to operate the Trolley in a clockwise direction. This concept is discussed in association with the Trolley.

### ***Advantages***

- Adding two additional operating hours on Saturdays and Sundays responds to a need that was expressed via the survey and stakeholder efforts.
- The additional hours will provide mobility for riders to access work and other destinations earlier in the day on Saturdays and Sundays.
- Adding one stop along Jamestown Road will be convenient for William & Mary riders.

### ***Disadvantages***

- Adds service during a time period that is not likely to have high ridership.
- Adds operating expenses.

### ***Cost***

- Adding four hours of service each week for 33 weeks would cost about \$ 7,920 annually.

### ***Ridership***

- This improvement is likely to add a modest amount of ridership, estimated to be approximately 800 passenger trips annually.

## New Human Service Center Route

A new route is being proposed for the WATA core area. This route, termed the Human Service Center Route, would be a hybrid between the current Purple 1 and Blue Lines, offering service from Williamsburg to Walmart via the Human Services Center. A map of the route is shown in Figure 6-3.

The route concept provides service from the Transportation Center, serving Lafayette Street, then making a right turn onto Route 60 West. The route would travel along Route 60 West and make a left onto Ironbound Road, a right onto Longhill Road, and another right at the Longhill Apartments to stay on Longhill Road. The route would then make a right onto Olde Towne Road to serve the Human Services Center. After leaving the Human Services Center, the route would make a left onto Olde Towne and continue to Route 60 West (Richmond Road). The route would then make a left onto Richmond Road and continue to Route 199, taking the ramp to access Route 199 and then Walmart. The route is 16.4 miles long. If this route is too long, it could be routed to TNCC, similar to the Blue Line proposal.

This route is proposed to operate on one-hour headways. The timing of the route will be dependent on what alternatives move forward for implementation as the schedule of each affects the others. It is proposed that this route be run on a schedule that complements the Blue and Purple Lines, rather than duplicating them.

### **Advantages**

- Provides a way to serve the Human Services Center without taking the Blue or Purple Lines from their primary travel paths.
- Provides bi-directional service for people using the route to access the Human Services Center.
- Re-establishes a link to Walmart, which may be severed if the Blue Line is terminated at TNCC.
- Provides additional capacity through the corridor.
- Provides additional service to the Regency Apartments and the Rolling Meadows Apartments.

### **Disadvantages**

- May be too long to accomplish in one hour.

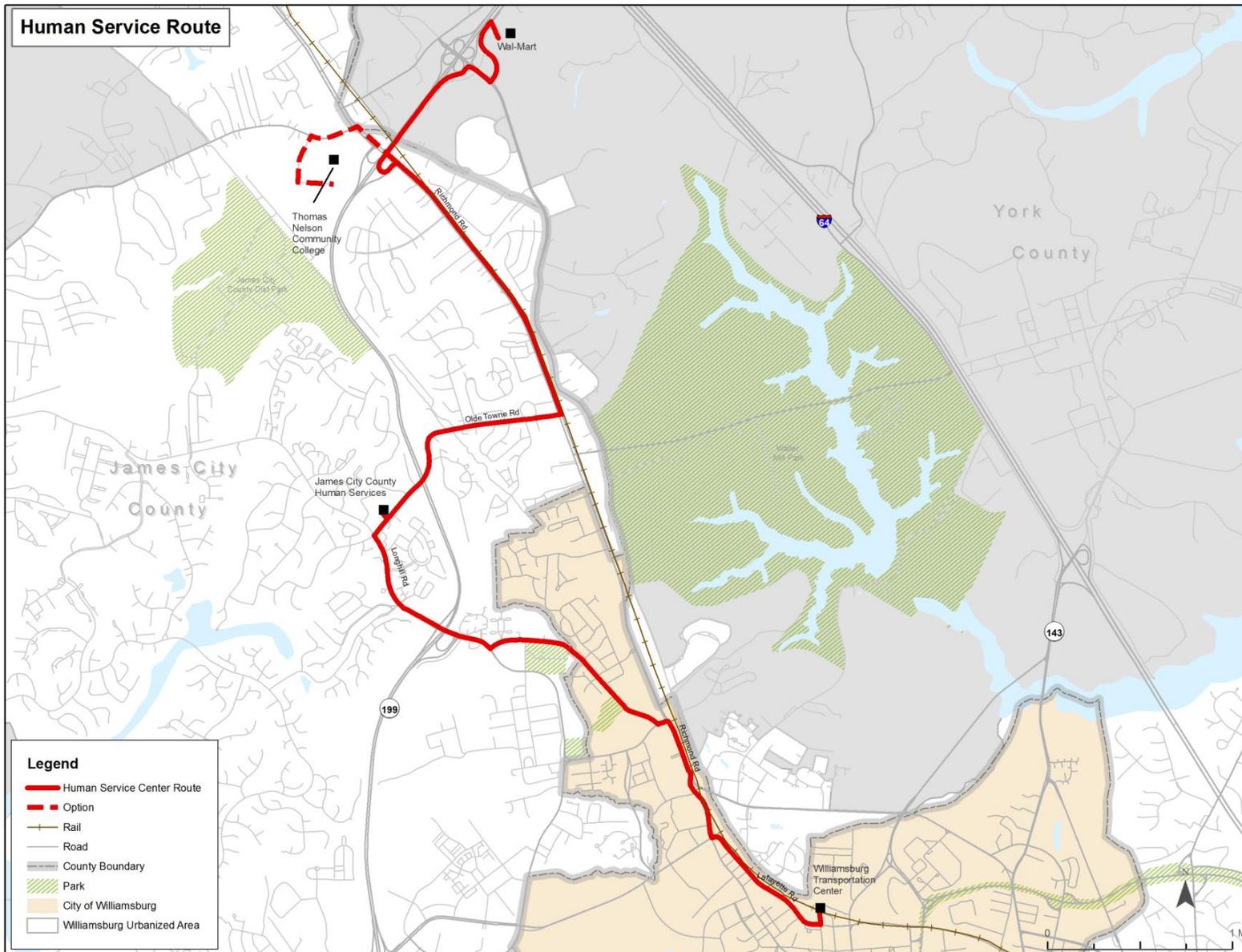
### **Cost**

- The operating costs of this route are estimated to be \$309,000 annually, based on 5,150 hours of service (Monday -Saturday, 6:00 a.m. to 9:00 p.m.; Sundays 8:00 a.m. to 6:00 p.m.).
- The capital costs are estimated to be \$508,000 for one vehicle.

### **Ridership**

- This route will pull some riders from the Blue and Purple Lines and will likely generate some new riders based on the added convenience of the trip. Annual ridership is estimated to be approximately 70,000 passenger trips, once the route is fully established. It is estimated that about 50,000 of these trips are currently provided on the Blue and Purple lines, resulting in roughly 20,000 new trips.

Figure 6-3: Proposed Human Service Center Route



## Jamestown Line

### Challenges

The Jamestown Line is a relatively new route, funded through a demonstration grant, which provides service from the Williamsburg Crossing Shopping Center to Jamestown on a clockwise loop along Route 199, Jamestown Road (Route 31), Greensprings Road, and John Tyler Highway. The route operates on 30-minute frequencies, Monday through Friday. Ridership on the route is very low so far as compared to the rest of the fixed route network (35 passenger trips on the day of the counts) likely due to the following reasons:

- The area is low density which limits ridership potential.
- The route is relatively new and is still building ridership.
- The route does not connect to Williamsburg directly and the connection at the Williamsburg Crossing Shopping Center to the Red Route is not timed with the Red Route serving the Center on the 0:45 (and also on the 0:15 during the frequency schedule) or the Jamestown Route serving the Center on the 0:00 and 0:30.

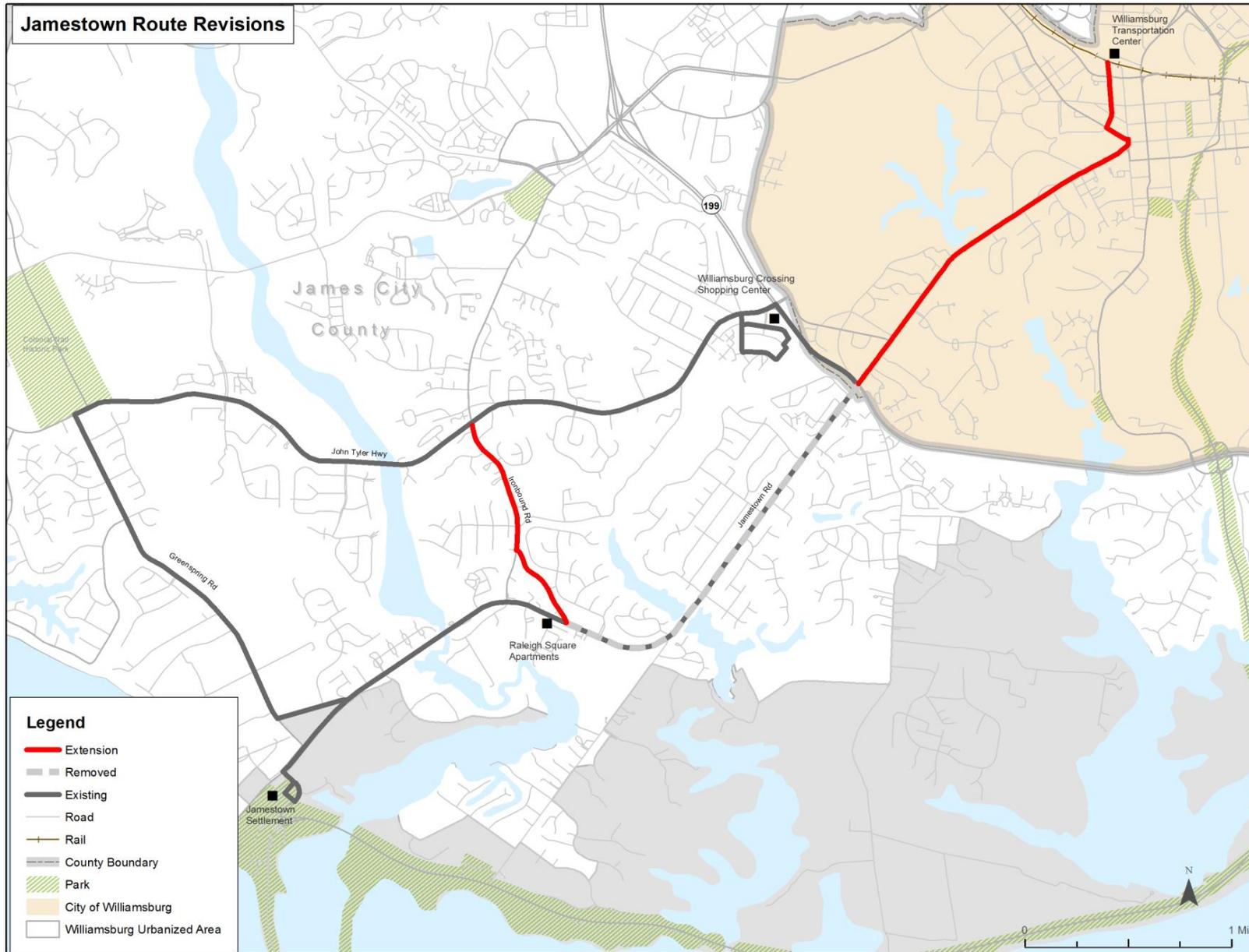
### Proposed Solutions

It is proposed that the Jamestown Route transition to a one-hour frequency so that it can connect directly to the City of Williamsburg at the Williamsburg Transportation Center. The service concept is to extend the route along Jamestown Road north, adding about 6.25 miles round trip. The route segment that includes the Williamsburg Crossing Shopping Center and Jamestown Road from Route 199 to the Williamsburg Transportation Center would be eliminated from the Red Line and added to the Jamestown Route. This would allow the Red Line to transition from a loop to a bi-directional route. This will be further discussed in conjunction with the Red Line.

Taking this segment from the Red Line may require that the Jamestown Route operate on Saturdays, as access to the Williamsburg Crossing Shopping Center from Williamsburg would be eliminated on Saturdays if it were to be taken off of the Red Line and added to the Jamestown Route under the current schedule.

In addition to extending the route to downtown Williamsburg, it is also proposed that the Jamestown portion of the route be changed to provide a more bi-directional loop so that Jamestown area residents could go to a local store and home without traveling to Williamsburg. This will necessitate eliminating a segment along Jamestown Road, between Route 199 and Ironbound Road and would eliminate two stops, one of which would still be within walking distance of the route. The new proposed route is 18.26 miles round trip and is shown in Figure 6-4.

Figure 6-4: Proposed Revised Jamestown Route



### **Advantages**

- Provides a direct connection between Jamestown and Williamsburg.
- Takes a segment from the Red Line that will spread the ridership load and allow the Red Line to offer bi-directional service.
- Adds the Ironbound Road segment to the route which will allow for a shorter loop and allow local trips to be better accommodated.
- Allows the route to operate fewer miles in one hour which should improve the schedule reliability.
- May offer Saturday service on the route.
- Provides a level of service that is compatible with the population density (i.e., hourly service, rather than 30-minute service).

### **Disadvantages**

- Reduces the frequency of service from 30 minutes to one hour.
- Eliminates a segment along Jamestown Road, from Ironbound Road to Route 199.

### **Cost**

- Additional costs would be incurred if the route were to be operated on Saturdays. These costs are estimated to be approximately \$46,000 annually (based on 51 Saturdays, 15 hours per Saturday @ \$60 per revenue hour).
- There are minor cost savings, as the 60-minute route covers fewer miles in one hour (18.3) than the 30-minute route does (23.9).

### **Ridership**

- Adding the Williamsburg Crossing to downtown segment will likely generate an additional 65 to 70 passenger trips per operating day, based on the ridership currently on that segment on the Red Line. These trips would shift from the Red Line to the Jamestown Route. There may be additional added ridership from the provision of a direct connection from Jamestown to Williamsburg.

## Parkway Shuttle

One of the unmet needs that has been articulated by stakeholders and riders is a public transportation service to link the Williamsburg area to Yorktown. In response to this need, an alternative was developed to connect WATA's Gray Line to Yorktown via the Lackey Clinic. The Lackey-Yorktown alternative (described on page 6- 5) is focused on the needs of current riders and local residents, rather than tourists.

During the WATA Stakeholder meeting that was held in January, 2016, the National Park Service representative discussed a desire to examine the possibility of re-instituting some version of the prior Historic Triangle Shuttle, which operated on a seasonal basis and provided a connection between Williamsburg, Jamestown, and Yorktown via the Colonial Parkway. This shuttle was initiated in 2004 and was funded through a demonstration grant. The route operated from mid-March to mid-November each year. The hours of service were generally 9:00 a.m. to 5:30 p.m., with 30-minute headways. Funding for the service lasted through the 2011 tourist season. The CWF operated the service and continued it for two seasons after the demonstration grant expired. The route operated fare-free.

From a ridership perspective, the route appeared to be successful. Secondary data sources indicated that the route provided between 60,000 and 100,000 passenger trips annually. The study team has requested the specific ridership data.

To implement hourly service, it is likely that one vehicle for each leg of the service would be needed. Thirty-minute frequency would require a total of four vehicles. If the service were to be operated seven days per week during the peak tourist season (Memorial Day through Labor Day), from 9:00 a.m. to 5:00 p.m., the annual revenue service hours would be as follows:

- Hourly Frequency: 1,488 hours
- 30-Minute Frequency: 2,976 hours

It is proposed that the service would serve the following stops:

### Yorktown Link:

- Williamsburg Transportation Center
- The Colonial Williamsburg Foundation Visitor's Center
- Yorktown Victory Center
- Yorktown NPS Visitor Center

### Jamestown Link:

- Williamsburg Transportation Center
- The Colonial Williamsburg Foundation Visitor's Center
- Jamestown Settlement

- Preservation Virginia
- Historic Jamestowne (NPS)

The route maps are provided in Figures 6-5 and 6-6.

### **Advantages**

- Provides an attractive alternative to driving for Historic Triangle Visitors
- May attract choice riders
- Re-implements a successful transit service
- May help improve visitation for Jamestown and Yorktown
- Would provide additional transit options for local riders who need to access Jamestown and Yorktown

### **Disadvantages**

- Does not address the daily mobility needs of current riders.

### **Costs**

The direct operating cost to implement hourly service, on seasonal basis is estimated to be about \$89,300 annually. Thirty-minute frequency is estimated to cost \$178,600 annually. The capital costs are dependent upon the chosen type and size of vehicle. If heavy duty transit vehicles are chosen, the capital costs will be about \$500,000 per vehicle; body-on-chassis vehicles are about \$90,000 each.

This project appears to be eligible for the Federal Lands Access Program (FLAP), which was included in the new FAST Act (Fixing America's Surface Transportation Act). Under the previous transportation act, the FLAP in Virginia required a 20% local match, with projects eligible for four years. The details regarding the current program are not yet available.

### **Ridership**

For hourly service, ridership is estimated to be between 20,000 and 30,000 annually. Thirty-minute frequency is likely to attract between 42,000 and 59,000 annual riders.

Figure 6-5: Parkway Shuttle- Yorktown

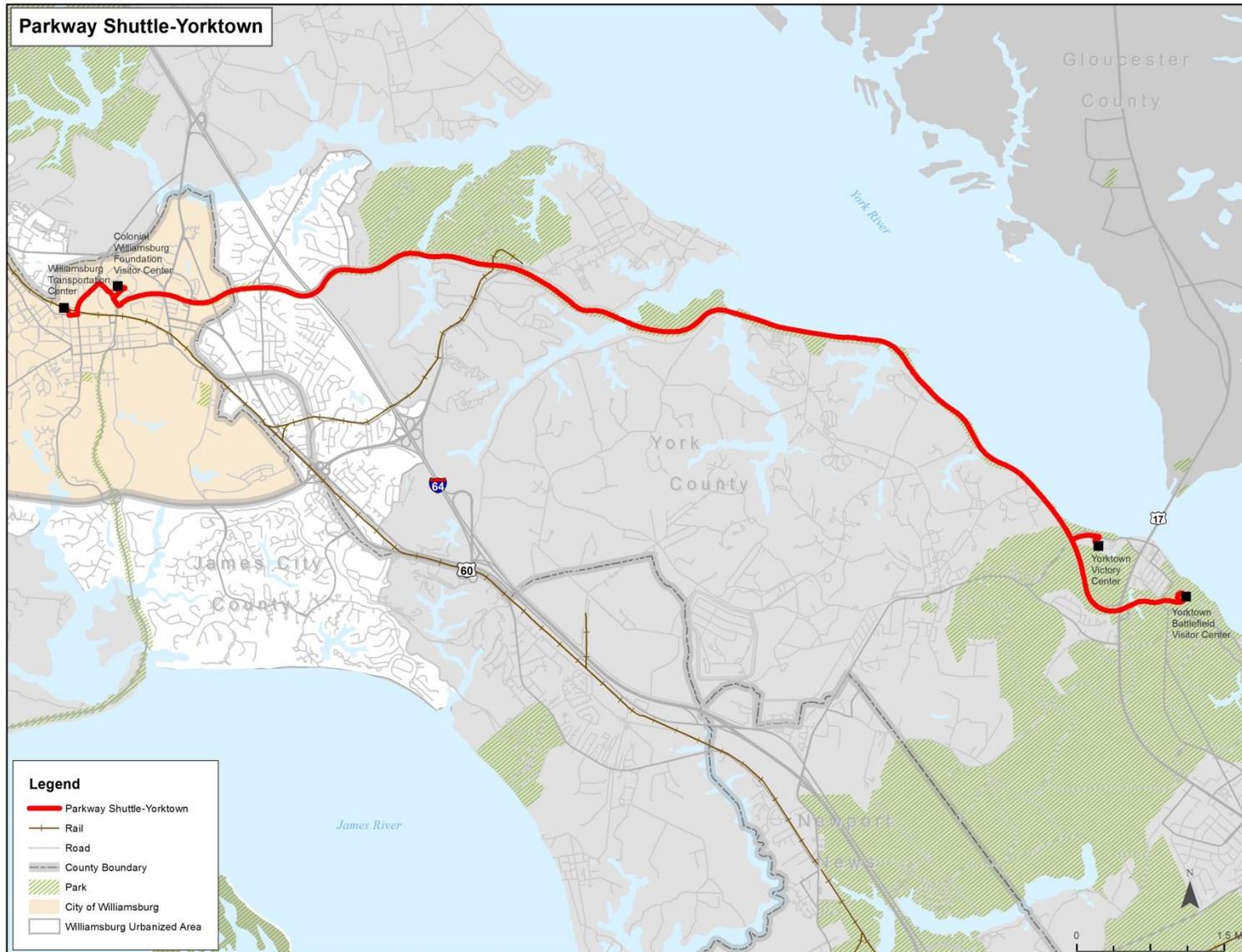
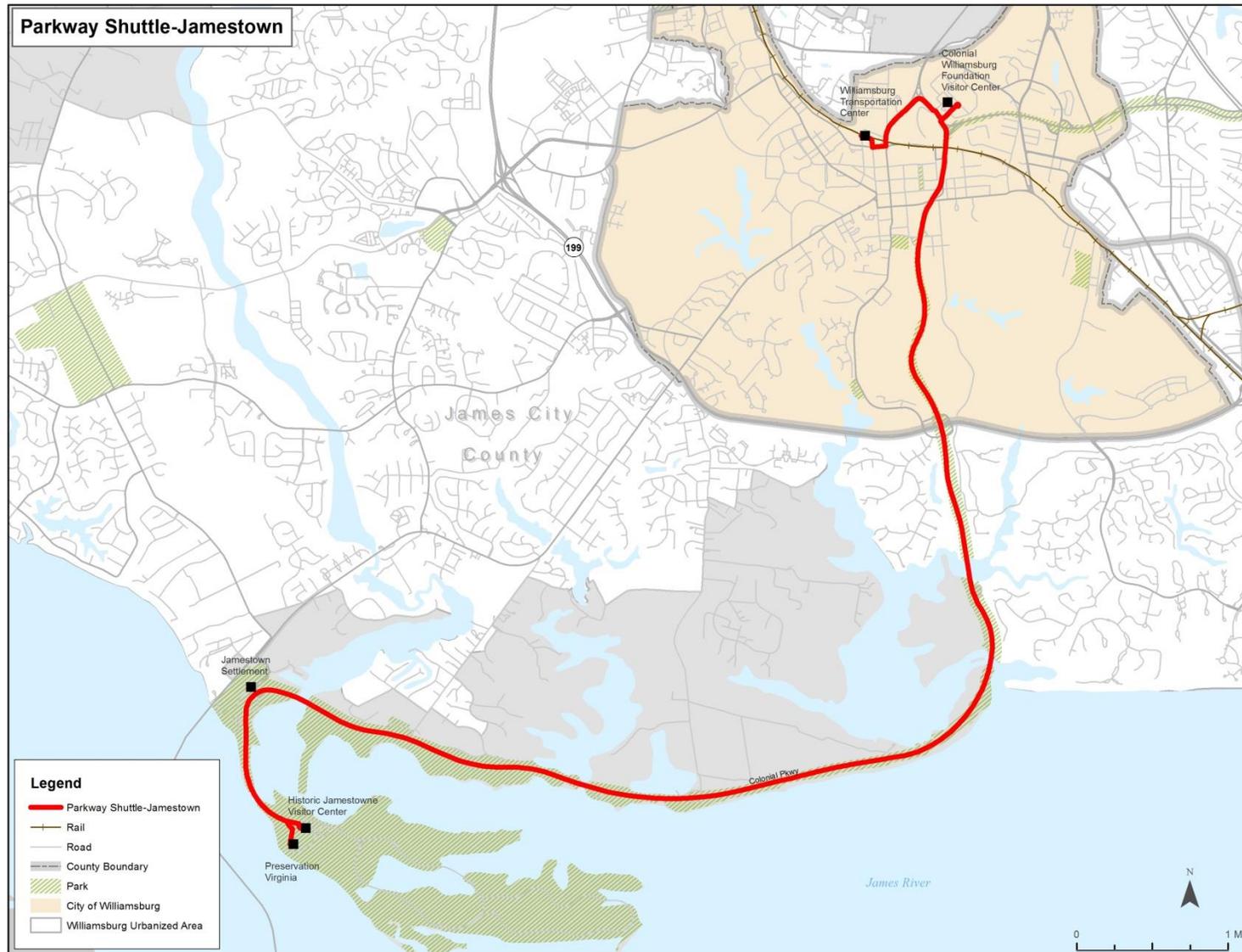


Figure 6-6: Parkway Shuttle- Jamestown



## Orange Line

The Orange Line currently experiences better on-time performance than any other route, at 75%, with an additional 19% of the time points showing that the route was operating ahead of schedule. Only 6% of the time points checked during the count period showed that the route was running late. This would suggest that for the area traversed by the Orange Line, the relatively long route length (16.96 miles round trip) does not result in significant delays.

Given the proposed new Quarterpath Route that will serve the Marquis Shopping Center, there was some consideration of eliminating the stop from the Orange Line. This idea was discarded in favor of having the new route meet the Orange Line at the Marquis Center, providing for greater connectivity in the southeastern portion of the service area, something that was desired by stakeholders.

The only modifications suggested for the Orange Line will involve timing so that the route will not run ahead of schedule.

## Purple 1 and Purple 2

### *Challenges*

The Purple 1 Line was named by several drivers as being very stressful to operate, given that it is difficult to complete the route within the time scheduled. There is no recovery time currently included on this route. The on-time performance data from the boarding/alighting counts confirmed this, with the Purple 1 Line providing on-time service only 58% of the time during the count days. Twenty-seven percent (27%) of the time checks showed that the route was running late. Given the important connectivity provided by the Purple 1 Line, it is difficult to cut mileage from either end of the route.

Another issue that was cited on passenger surveys and mentioned by drivers is the lack of bi-directional stops for a few key trip generators. These include three relatively large apartment complexes where there are outbound stops but not inbound stops, i.e., Rolling Meadows Apartments, Lafayette Square, and Seasons Trace.

### *Proposed Solution*

In order to gain some recovery time for the Purple 1 Line, it is proposed that it be re-combined or inter-lined with a slightly shorter Purple 2 Line. The proposal calls for the Purple 2 Line to use La Grange Parkway as the turnaround, rather than continuing to the McDonalds on Barhamsville Road. This would save 1.4 miles round trip. In addition, the segment along Lightfoot Road and International Drive to the Walmart would be traveled by one Purple Line, rather than both, which will save about two miles, for a total savings of 3.4 miles.

Additional in-bound stops should be considered across from Rolling Meadows, Lafayette Apartments, and Seasons Trace. Pedestrian safety amenities may be needed to accommodate these stops as riders exiting the bus from across Longhill Road will need to cross the street to get home.

The route map for this option is provided in Figure 6-7.

### **Advantages**

- Reduces the overall mileage on the combined Purple Lines so that recovery time can be included on the route and on-time performance will improve.
- Reduces the need for Purple 2 riders to transfer.
- Maintains all of the route coverage for the Purple 1 Line.

### **Disadvantages**

- Discontinues service to the most western segment of the Purple 2 Line, including the stop at Barhamsville Road and McDonalds and the stop at Barhamsville Road and Cocos Path. For the count days, the ridership was between one and two total daily riders from these two stops combined.

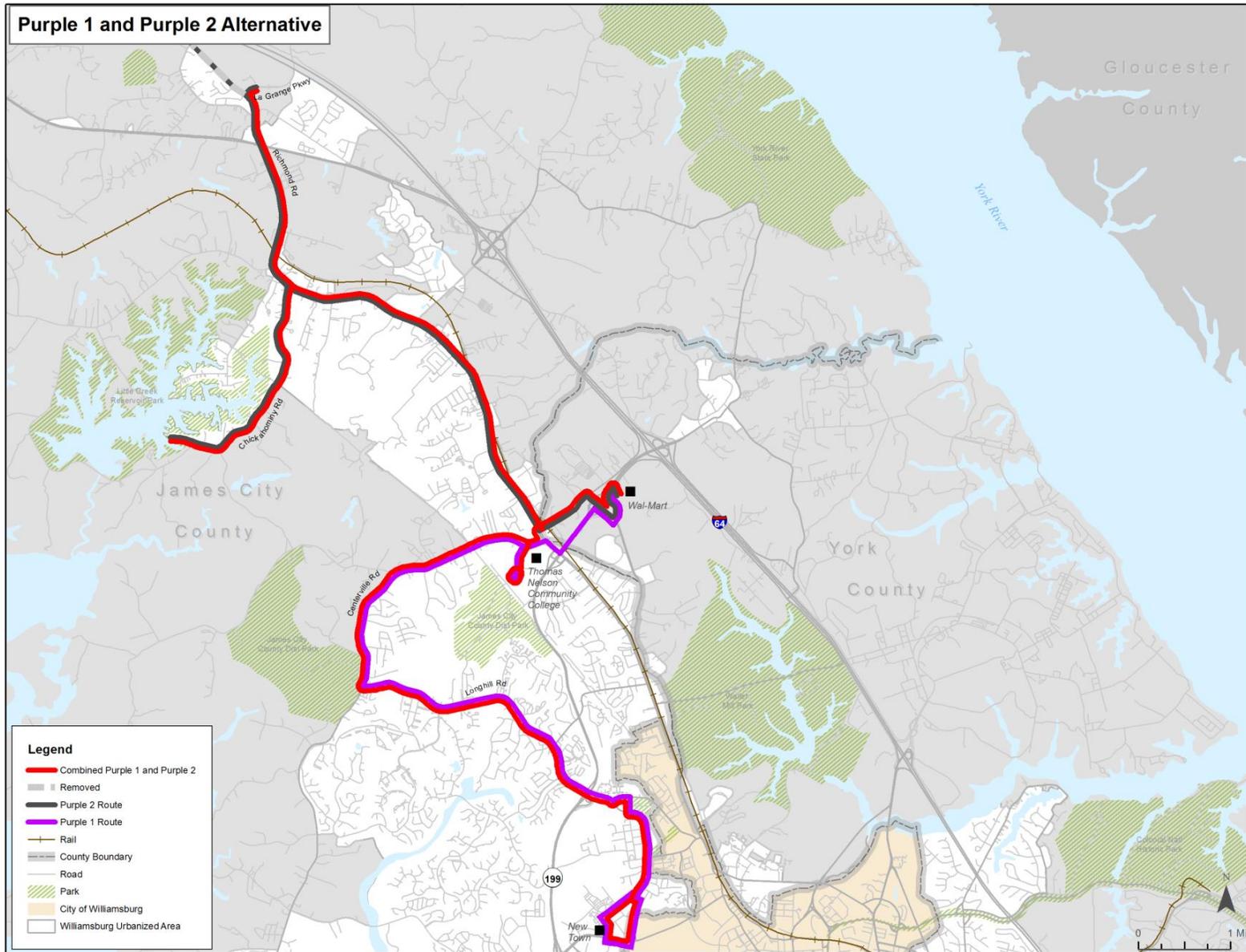
### **Cost**

- This proposal would result in minor cost savings through the reduction in mileage.

### **Ridership**

- True ridership would be slightly reduced through this change, assuming the one to two riders for the count days are daily riders. There would be a perceived ridership reduction, as the riders who currently transfer between the Purple 1 and Purple 2 routes would be counted once, rather than twice. The data collected via the passenger surveys indicated that about 10% of the Purple Line riders transfer from one Purple Line to the other.

Figure 6-7: Proposed Combined Purple Line



## New Mounts Bay/Quarterpath Route

WATA has been awarded grant funding to implement a route to provide coverage for the newly developing Mounts Bay/Quarterpath area of the City of Williamsburg and nearby James City County, including the Mounts Bay offices of James City County. As part of the COA, four potential routings have been proposed for this area.

### **Option 1**

Option 1 originates at the Williamsburg Transportation Center, and leaves downtown Williamsburg via South Henry Street, traveling south to Route 199. The route makes a left onto Route 199, and then a right onto Mounts Bay Road to serve the James City County Government Center. After exiting the government complex, the route would travel north on Mounts Bay Road, crossing 199 onto Quarterpath Road. The route would serve the new shopping center with an on-street stop, and then turn right onto Battery Boulevard, serving the new apartments and the new Riverside Hospital. There is space along Battery Boulevard, just east of the circle with Commonwealth Boulevard, where there is room for a stop and shelter. The route would next make a right onto Pocahontas Trail, and then travel onto Humelsine Parkway to serve the Marquis Shopping Center, which would be the terminus for the route. The route makes the same trip in reverse, from the Marquis Center back through the Quarterpath and Mounts Bay areas to downtown Williamsburg. The round-trip route mileage for this route is 15.6 miles.

### **Advantages**

- Provides service to several locations that have been identified by stakeholders and the public as needing service (Mounts Bay James City County Complex, Quarterpath Shopping Center, and Riverside Hospital).
- Provides a connection from Route 60 East corridor to the Marquis Center and the Orange Line.
- Provides service through a currently un-served quadrant of the City of Williamsburg.
- Potentially adds another option to access the William & Mary Law School.

### **Disadvantages**

- This routing does not serve many housing areas, making it likely that the ridership will be on the lower end of the core routes.
- Adding another route to the Transportation Center that is timed with the other core routes may be difficult, considering the available bus layover space at the Transportation Center.

## **Option 2**

Option 2 originates at Legacy Hall (New Town), and leaves New Town by making a left onto Monticello Avenue, a right onto Ironbound Road, and then a left onto Strawberry Plains Road to serve the Midlands Apartments. The route would continue along onto John Tyler Lane and make a right onto John Tyler Highway, then a left onto 199. The next part of the route would be express in nature, using 199 East to Mounts Bay Road. The route then makes a right onto Mounts Bay Road to serve the James City County Government Center. After exiting the Government complex, the route would travel north on Mounts Bay Road, crossing 199 onto Quarterpath Road. The route would serve the new Shopping Center with an on-street stop, and then turn right onto Battery Boulevard, serving the new apartments and the new Riverside Hospital. There is space along Battery Boulevard, just east of the circle with Commonwealth Boulevard, for a bus stop and shelter. The route would then make a right onto Pocahontas Trail, and then travel onto Humelsine Parkway to serve the Marquis Shopping Center which would be the terminus for the route. The route makes the same trip in reverse, from the Marquis Center back through the Quarterpath and Mounts Bay areas, and then along Route 199, Jamestown Road, John Tyler Road, Strawberry Plains Road, Ironbound Road and Monticello Avenue back to New Town. The round-trip route mileage for this route is 20.2 miles. This might be too long for the route to accomplish in one hour, however, there are three segments along Route 199 that will not have passenger activity and will likely have relatively high operating speeds.

### **Advantages**

- Provides service to several locations that have been identified by stakeholders and the public as needing service (Mounts Bay James City County Complex, Quarterpath Shopping Center and Riverside Hospital).
- Provides a connection from Route 60 East corridor to the Marquis Center and the Orange Line.
- Provides a connection from the New Town area and Jamestown Road to the James City County Government Center and the new Riverside Hospital.
- Includes some housing areas, one of which (Midlands Apartments) could be taken off of the Red Line if this option is chosen.

### **Disadvantages**

- May be too long to accomplish in one hour.
- Includes segments with no ridership potential (select areas along Route 199), though these segments do provide an opportunity to increase the speed of the route.

### Option 3

The third Mounts Bay/Quarterpath option uses a routing on the east side of Williamsburg, traveling from the Transportation Center to a left onto N. Henry Street to a right on the Bypass to Page Street. This option would then make a left onto Second Street, serving an area that does not currently have service, and a right onto Parkway Drive. The route would then make a left onto Penniman Road and a right onto Merrimac Trail. The route would take the 199 ramp to travel to Mounts Bay Road, making a left to serve the James City County Complex. After exiting the government complex, the route would travel north on Mounts Bay Road, crossing 199 onto Quarterpath Road. The route would serve the new shopping center with an on-street stop, and then turn right onto Battery Boulevard, serving the new apartments and the new Riverside Hospital. There is space along Battery Boulevard, just east of the circle with Commonwealth Boulevard, for a bus stop and shelter. The route would then make a right onto Pocahontas Trail, and then travel onto Humelsine Parkway. At this point, the route would either return to Williamsburg via Merrimac/Penniman/Parkway/Second/Page/Bypass, or serve the Marquis Shopping Center, and then return to Williamsburg. The shorter option is about 16 miles round-trip and the longer option is about 18.4 miles round-trip.

#### **Advantages**

- Provides service to several locations that have been identified by stakeholders and the public as needing service (Mounts Bay James City County Complex, Quarterpath Shopping Center, and Riverside Hospital).
- Provides service on Second Street and a currently unserved section of Penniman Road.
- Provides a connection from Route 60 East corridor to the Marquis Center and the Orange Line.

#### **Disadvantages**

- There are some areas of duplication with the Orange Line.
- Adding another route to the Transportation Center that is timed with the other core routes may be difficult, considering the available bus layover space at the Transportation Center.
- This option may be too long if the Marquis Center is included.

## Option 4

There are a number of multi-family housing units along the portion of Quarterpath Road that is currently accessible via Pocahontas Trail. The Quarterpath Recreation Center is also along this road segment. In the future, there are plans to build a road (“Redoubt Boulevard”) that will connect this segment of Quarterpath Road to Battery Boulevard. This future development is shown in Exhibit 1. A bus route along this route was likely the original intent of the Mounts Bay Route, as it would provide the most direct connection to the new Riverside development, as well as serving current development along the completed portion of Quarterpath Road. The current Quarterpath Road does connect through to the newly developed areas, but the segment adjacent to Tutters Neck Pond is not accessible for transit vehicles and is programmed to become a shared use path.

The fourth option for the Mounts Bay/Quarterpath Route, as suggested by WATA staff, would be the easiest to adjust when Redoubt Boulevard is constructed. This option originates at the Williamsburg Transportation Center, travels east on Lafayette Street to Pocahontas Trail, and then makes a right onto Battery Boulevard to serve the hospital, and then a left onto Quarterpath Road to serve the shopping center. The route would then travel across State Route 199 to serve the James City County Government Center. After leaving the Government Center, the route would travel east on Route 199, south on Pocahontas briefly, circling through McLaws Circle, and then traveling north on Pocahontas and east on Route 199 to serve the Marquis Center. The route would return to Williamsburg via 199 and Route 143.

### **Advantages**

- Provides service to several locations that have been identified by stakeholders and the public as needing service (James City County Complex, Quarterpath Shopping Center, and Riverside Hospital).
- Provides the most direct connection to the Quarterpath area, allowing the use of Redoubt Boulevard, when constructed.
- Provides a connection from Route 60 East corridor to the Marquis Center and the Orange Line.

### **Disadvantages**

- There are some areas of duplication with the Gray and Orange Lines.
- Adding another route to the Transportation Center that is timed with the other core routes may be difficult, considering the available bus layover space at the Transportation Center.

Each of the routing options are shown in Figure 6-8.

**Costs and Ridership – All Options**

- For each scenario, assuming the hours of service will be similar to the hours of service currently offered on the core routes, the total annual service hours for a one-vehicle operation is approximately 5,100 annual revenue hours, which equates to about \$306,000 annually. A vehicle would be required under each scenario, and one vehicle is estimated to cost \$508,000. It should be noted that the route could be implemented with a lower level of service (i.e., a shorter span of service), which would reduce the total annual hours and resulting expenses. This may make sense for a new route.
- There will likely be some modest additional costs with regard to ADA paratransit as some of the route segments are not currently within ¾ mile of another route.
- Ridership is likely to be higher for the options that include New Town and Strawberry Plains, as well as the options that include Second Street, largely because there are more housing areas covered by these options. The high estimate for ridership is 15 trips per revenue hour or about 76,000 passenger trips and the low estimate for ridership is about 10 trips per revenue hour, or 51,000 annual passenger trips. For the high end of the estimate, some of these trips will be trips shifted from the Red Line to the new Quarterpath Line (for Option 2) and some will be shifted from the Orange and Gray Lines to the new Quarterpath Line (for Option 3 and Option 4).

**Exhibit 1: Riverside Health System Development - Quarterpath at Williamsburg**

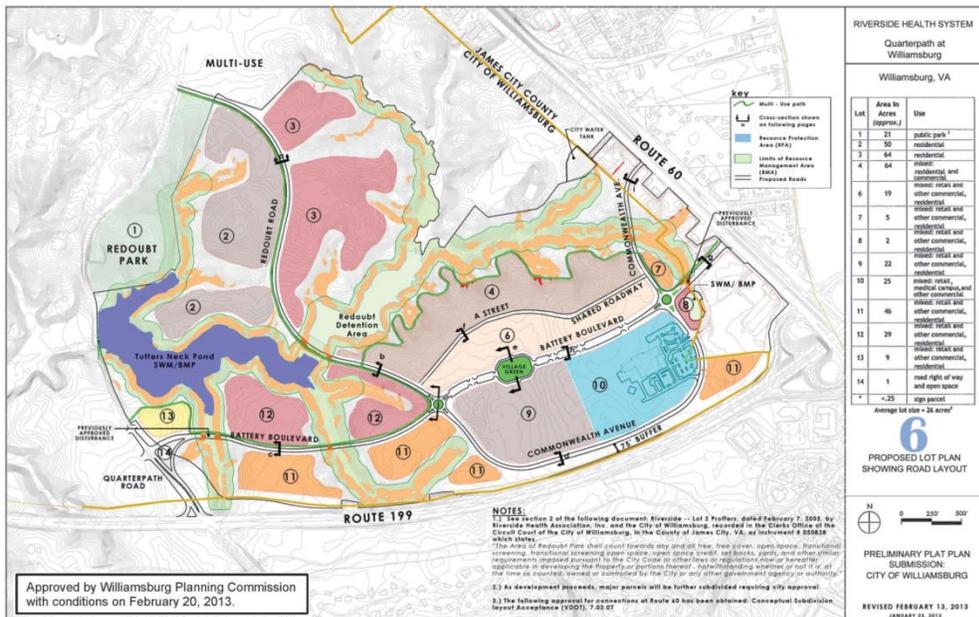
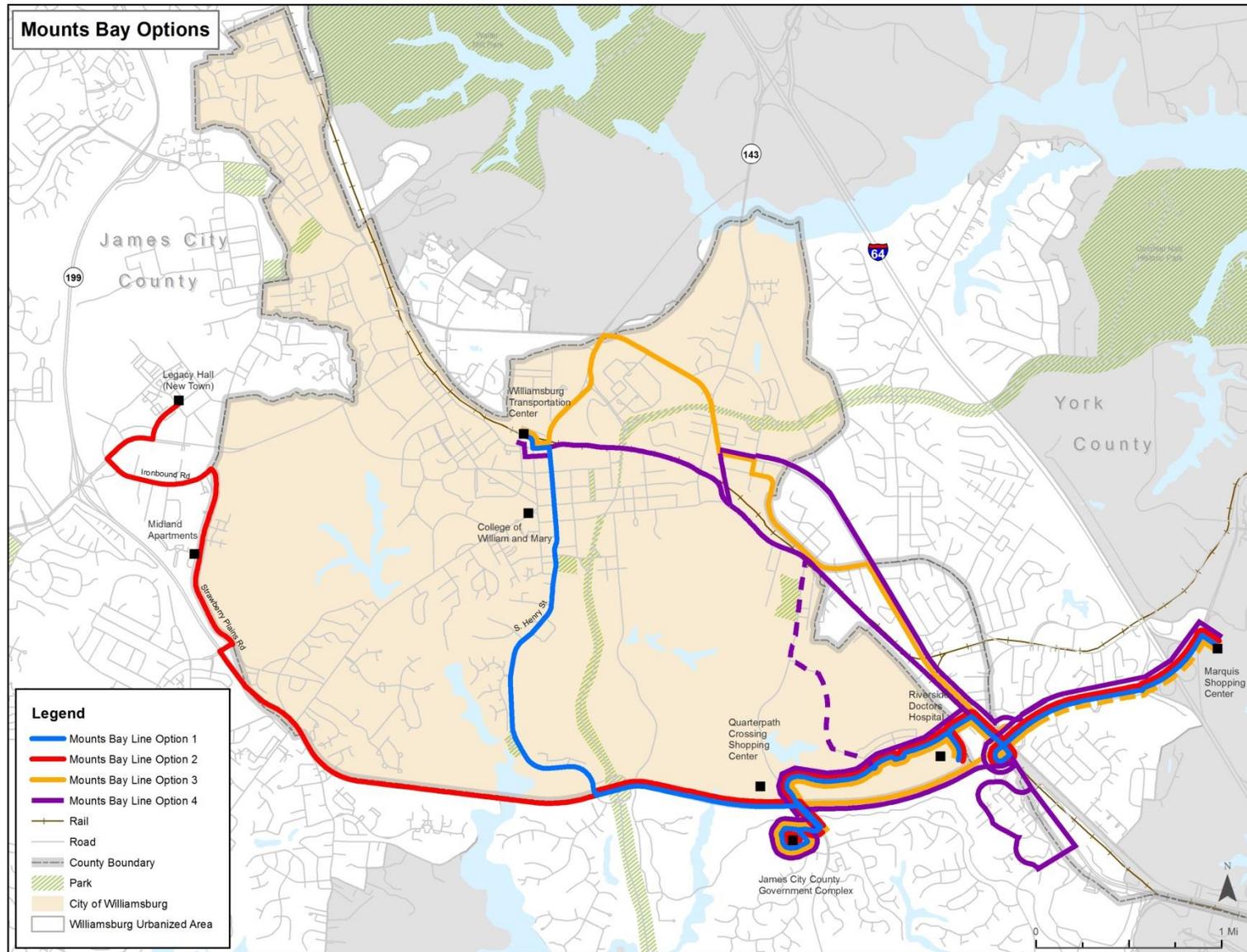


Figure 6-8: Options for the Proposed New Mounts Bay/Quarterpath Route



## Red Line

### Challenges

The major issue that passengers have with the Red Line is that it operates as a loop, rather than as a bi-directional route. This means that one leg of a trip is typically direct, while the other leg takes a lot longer because it requires a circuitous trip. As with the other core routes, the Red Line lacks recovery time. The current route is 14 miles round trip. Another issue with the Red Line is its travel into and through shopping center parking lots. This practice adds time and exposes the bus to added hazards but is necessary for some of the centers that have large parking lots without pedestrian amenities.

### Proposed Solutions

It is proposed that the Red Line become a bi-directional route by eliminating Williamsburg Crossing and Jamestown Road from the loop. These areas would be served by the proposed adjusted Jamestown Route. It may also be possible to eliminate the Strawberry Plains segment (to the Midlands Apartments) if the route chosen for the Quarterpath Route originates at New Town and picks up this route segment, or if the Jamestown Route picks up this segment.

The three potential route revisions are shown in Figure 6-9. The first option, including the Midlands Apartments, increases the round trip to 18 miles, which is probably not feasible. The second option for the route (no Midlands Apartments stop) would be more effective for the efficiency and convenience of the Red Line, eliminating an additional mile and providing true bi-directional service. This round trip mileage is a bit long at 16.6 miles. A third option would be for the Red Route to return to Williamsburg via 321, which would reduce the route mileage to a more feasible option. This has a round-trip route mileage of 13.1 miles. This option also fills a request that was articulated via the surveys, which is inbound service along Route 321.

### Advantages

- Provides more convenient service from downtown Williamsburg and New Town to the Monticello Marketplace area and Steeplechase Apartments.
- Provides a relatively direct trip between downtown Williamsburg and New Town, in both directions.

### Disadvantages

- Changes travel patterns for people using the route from the Midlands Apartments and Strawberry Plains Road, the Williamsburg Crossing, and Jamestown Road. It is likely that some passengers' trips will be improved and for others the trip will be less convenient.

- Requires that other routes in the network change to accommodate bi-directional service for the Red Line.
- May be too long to be feasible, if Option 1 or Option 2 is chosen.

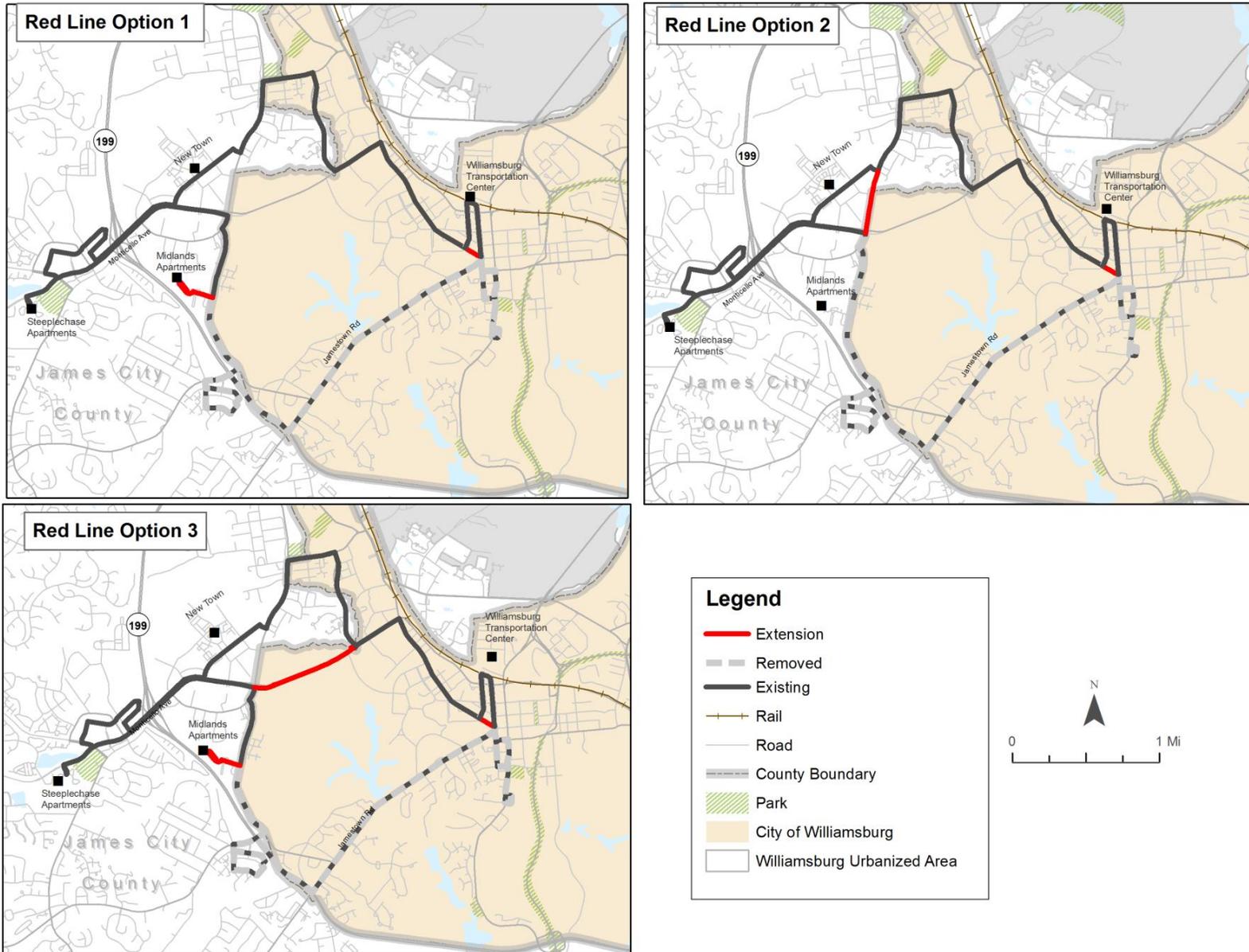
### **Costs**

- This route alternative is cost neutral.

### **Ridership**

- There will be a shift in ridership from the Red Line to the Jamestown Line for riders that use the Williamsburg Crossing, Riverside Clinic, and Jamestown Road stops. This is estimated to be about 65-70 passenger trips per day. If the Midlands stop is shifted to the Quarterpath Route, then these trips will shift away from the Red Line. For the passenger count days, these stops average 11 trips per day.
- Ridership on the core section of the route, between Williamsburg, New Town, and Steeplechase, is likely to increase as the convenience of the route is improved.

Figure 6-9: Proposed Options for the Red Line



## Surry Line

The Surry Line connects the Williamsburg-Jamestown area with Surry County via the Jamestown-Scotland Ferry. Ridership on the route is low compared with the rest of the routes in the WATA network, though it is classified as a deviated fixed route, rather than a fixed route. Ridership on the route has steadily increased over the past several years, from 5,700 passenger trips in FY11 to 8,054 passenger trips in FY15. The ridership counts showed that on the Thursday count day, there was very low ridership on the 10:30 a.m. trip and the 1:30 p.m. trip (two passengers and one passenger, respectively). It is recommended that WATA monitor the mid-day activity on the route during the weekdays to determine if this pattern is typical or if it was an anomaly for the day of the counts. If these vehicle trips continue to provide just one or two passenger trips, WATA should consider eliminating them.

The time checks for the route indicated that the schedules may need to be adjusted to more accurately reflect the running times. For example, the stop at Farm Fresh is scheduled for just seven minutes after the vehicle leaves the Williamsburg Transportation Center. Timing data for the count days indicated that this segment takes between 12 and 18 minutes, depending upon traffic.

The timing for the Surry County stops appear to be ahead of what actually occurs with the service typically arriving between five and nine minutes after the printed times for Surry Village, Lebanon Village, the Surry County Community Center, and Bank Street. Adjusting the times will provide for a more accurate public schedule.

### **Surry Line Option**

While discussing the Surry Line with WATA operating staff, the sentiment was that people do not use the line as much as they might if it were to be operated more frequently. An option to accomplish this without adding operating costs was proposed by staff. This option proposes that the Surry Line operate from Surry to Jamestown, eliminating the segment from the Transportation Center. Passengers would transfer at the Jamestown Settlement from the Surry Line to the Jamestown Line if they need to get to the Williamsburg area. This would significantly reduce the route mileage, allowing the route to operate more frequently to Surry and back. Figure 6-10 shows the proposed shorter Surry Line.

The Surry Line currently makes five trips each day, for a total of 9.5 revenue service hours. If the route were to eliminate the segment to Williamsburg, it is likely that service could be increased to either eight or nine trips per day, depending upon which ferry trips were served. This option is probably only viable if the Jamestown Route is adjusted to travel all the way into Williamsburg.

### **Advantages**

- Provides more frequent service for Surry.

- Reduces duplicative service between Jamestown and Williamsburg.

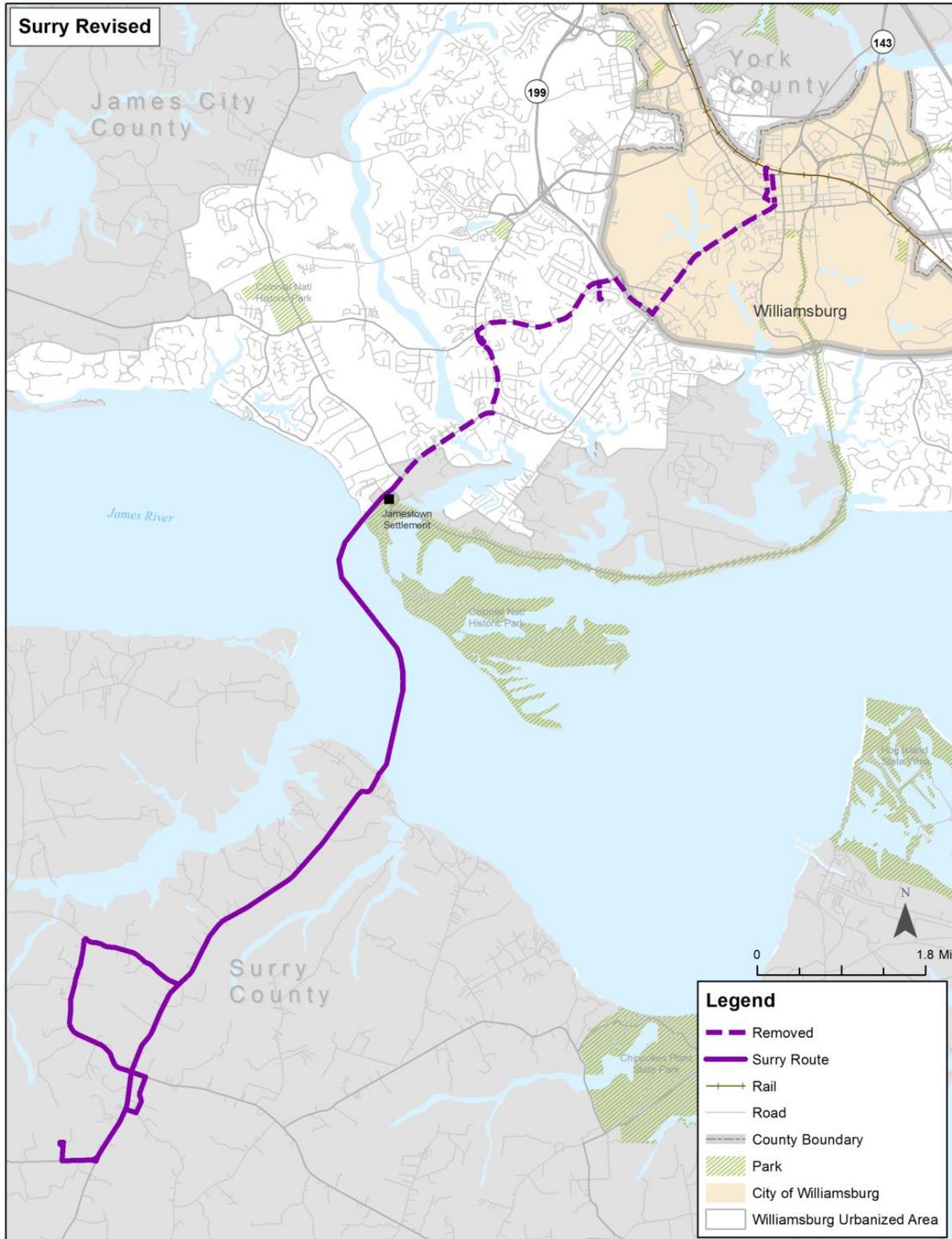
***Disadvantages***

- Forces Surry riders to transfer.
- Requires a timed transfer with the Jamestown Line.

***Cost***

- This option is cost neutral.

Figure 6-10: Proposed Surry Line Revision



## Tan Line

In examining potential options to find some recovery time for the Tan Line, none have emerged as viable, as each current Tan Line diversion (Great Wolf Lodge and Waller Mill Road) has important transit stops. One option that may be possible is to interline this route with the Red Line, if the Red Line eliminates Strawberry Plains Road and comes back to Williamsburg via 321. The Red Line may have some extra recovery time if Option 3 is chosen. Pairing it with the Tan Line (from the driver's perspective) will allow the driver to have some recovery time every other run, which is better than the current scenario.

## Trolley

### *Challenges*

The Trolley Line is currently the least productive route among the true, established fixed routes. The focus of the alternatives for the route is to improve its performance, while also helping improve connectivity for riders.

### *Proposed Solutions*

The first solution proposed for the route is to reverse the direction of travel so that it travels in a clockwise direction and complements the Green Line. This will provide bi-directional service for the shared segments, including Richmond Road, Jamestown Road, Ukrop Way, and Compton Drive.

A second concept for the route is to eliminate service after 9:00 p.m. when William & Mary is not in session. This service reduction will eliminate approximately 250 annual service hours. These hours currently produce just 1.88 trips per revenue service hour (FY15 summer data), or 474 total passenger trips after 9:00 p.m. from May 18, 2015 to August 22, 2015. This reduction will save about \$15,000 annually.

A third option is to eliminate service after 9:00 p.m. year-round (with the exception of unusual days such as July 4<sup>th</sup>). Daily ridership counts from January 1 to June 30, 2015 indicated the following average ridership after 9:00 p.m.:

Monday:	9 trips
Tuesday:	11 trips
Wednesday:	9 trips
Thursday:	9 trips
Friday:	30 trips
Saturday:	19 trips

A compromise strategy may be to eliminate evening service (after 9:00 p.m.) when William & Mary is not in session and Monday – Thursday year-round. This preserves Trolley service after 9:00 p.m. on Fridays and Saturdays when William & Mary is in session.

### **Advantages**

- Adds bi-directional service through the William & Mary campus without adding expenses.
- Eliminates under-performing evening service.
- Provides direct service from the William & Mary campus to New Town.

### **Disadvantages**

- The only disadvantage is the reduced convenience from New Town to the William & Mary Campus.

### **Cost**

- Reduces the operating expenses by about \$15,000 annually for eliminating service after 9:00 p.m. when William & Mary is not in session.
- Eliminating service after 9:00 p.m. year round would save about \$25,000 annually.

### **Ridership**

- Ridership patterns will shift as this option provides a more convenient trip from the William & Mary campus to New Town, but a less convenient option from William & Mary to Merchant's Square and Richmond Road.
- Ridership will be reduced by about 474 trips annually for the evening service reduction (when William & Mary not in session). This is 1.3% of the annual Trolley ridership.
- Ridership will be reduced by about 4,800 trips if all Trolley service is eliminated after 9:00 p.m. This is about 14% of the annual Trolley ridership.

## **Upper York County**

Requests for service to origins and destinations in Upper York County were received via the surveys, as well as through direct email and telephone contact from an area resident. The areas specifically mentioned include Newman Road (north of I-64) to the KOA Campground, and the

Banbury Cross Neighborhood. Areas of Rochambeau Road were mentioned, as was Lightfoot Road. These areas are low density and not likely able to support traditional fixed route service. Figure 6-11 provides a map of this area.

This area could be served by a deviated fixed route that provides a connection to the full WATA fixed route network at the Walmart in Lightfoot. A few specific time points could be developed, with a call-in required for a deviated pick-up within certain parameters. This type of service is hybrid between WATA's existing fixed route service and its paratransit service. A body-on-chassis vehicle would be appropriate for the service.

Prior to implementing this type of service, it is recommended that WATA meet with RIDES to see if they have existing passenger capacity in this part of the region or if services could be coordinated.

### ***Advantages***

- Addresses a need that was articulated via surveys and direct contact.
- May provide an opportunity to further coordinate transportation services with RIDES.
- Provides a connection from rural Upper York County to the fixed route network.

### ***Disadvantages***

- Adds service that will likely be less productive than other services in the network.
- Provides specialized service to only one portion of the region.
- Adds operating and capital expenses.

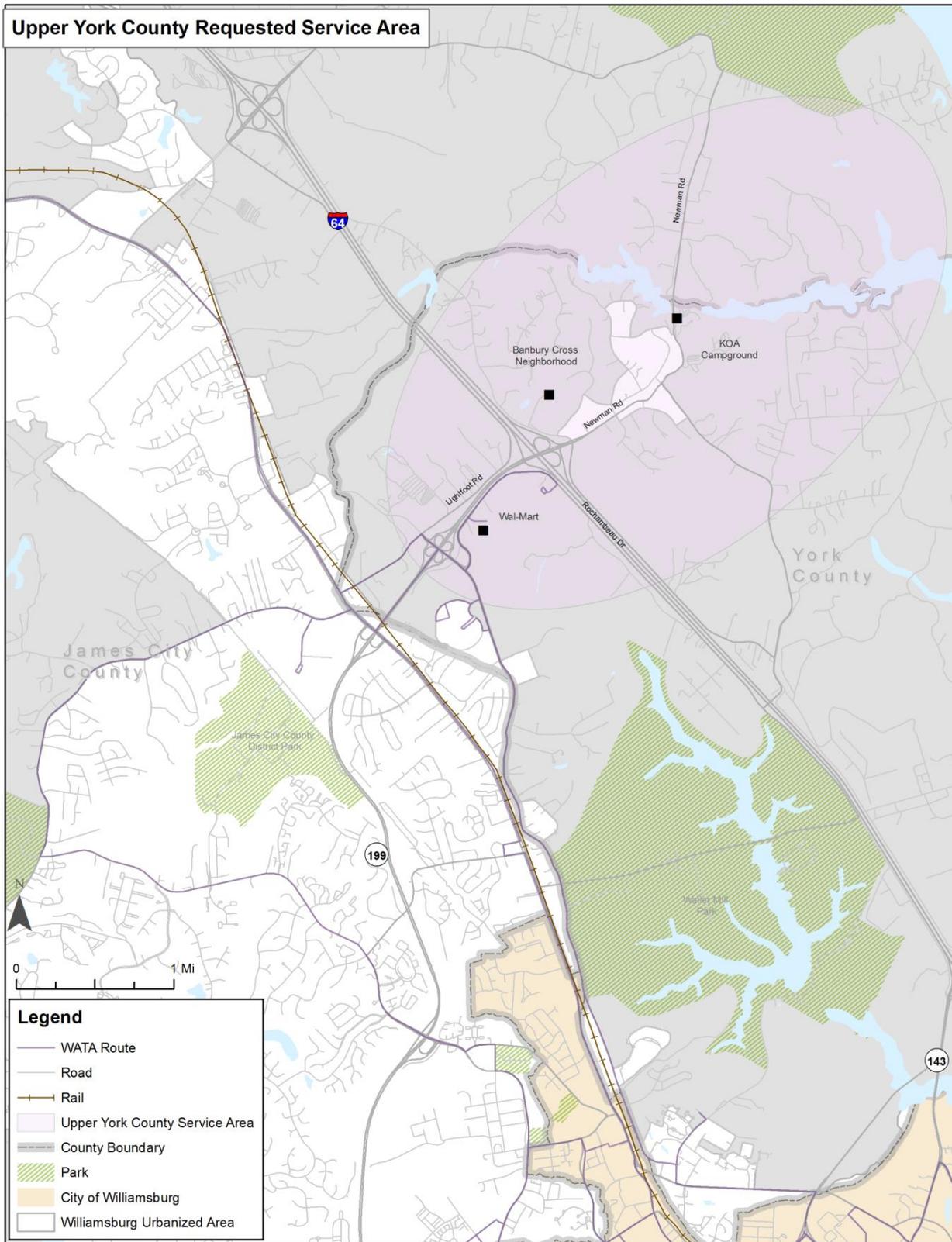
### ***Cost***

- If this service were to be operated Monday through Friday from 6:00 a.m. to 6:00 p.m., using one vehicle, the annual operating costs would be about \$187,200 annually. The cost of a body-on-chassis vehicle ranges from about \$60,000 to \$80,000, depending upon the capacity and configuration.

### ***Ridership***

- Productivity on the service will likely fall into the two to three passengers per revenue hour range, which will produce between 6,100 and 9,100 annual passenger trips.

Figure 6-11: Potential Service Area in Upper York County



## SYSTEM WIDE IMPROVEMENTS

### Later Hours of Service for Core Routes

The most frequently requested improvement on the passenger survey was “later evening hours,” with 57% of the survey respondents (488 individual riders) requesting this improvement. WATA stakeholders indicated this need, particularly in light of the timed transfer system, where a rider may have to be at a particular bus stop by 7:30 p.m. in order to get home using the WATA system.

The current core routes (Blue, Gray, Purple 1, Purple 2, Red, Orange, and Tan) operate until 9:00 p.m. Monday through Saturday, with the buses starting their last trips at 8:00 p.m. On Sundays, the last buses leave at 5:00 p.m. to complete their runs by 6:00 p.m.

In order to help determine the viability of evening service, the study team compiled the ridership recorded for the last three runs of the core routes during the two count days. These data are provided in Table 6-1.

**Table 6-1: Current Evening Ridership on WATA’s Fixed Core Fixed Routes**

Time	Blue		Gray		Orange		Red		Tan		Purple 1		Time	Purple 2	
	Th	Sa	Th	Sa	Th	Sat	Th	Sa	Th	Sa	Th	Sa		Th	Sa
	<i># of Passengers</i>														
6:00	31	29	31	44	21	11	24	32	26	18	11	8	5:56	11	9
7:00	34	23	27	39	15	16	11	22	8	13	7	18	6:56	4	6
8:00	22	26	23	22	17	8	5	10	8	10	6	11	7:56	2	3

As these data show, ridership remains over 20 for the Blue and Gray Lines, but drops for the other lines, particularly the Purple 2.

This alternative proposes to extend evening service on the Blue and Gray Lines, with the last bus leaving at 10:00 p.m., Monday through Saturday. Two additional round trips (9:00 p.m. and 10:00 p.m.) would be added, totaling two additional revenue hours per route.

#### **Advantages**

- Responds to a need articulated via the surveys.
- Provides mobility for riders later into the evening.
- Focuses on the routes that currently show the highest evening ridership.

#### **Disadvantages**

- Adds operating expenses

- Adds service that is likely to be less productive than during other time periods.
- Does not include the entire network.

### **Cost**

- Adding four revenue service hours per day, Monday through Saturday, adds about 1,250 annual revenue service hours. The operating expenses for these hours are estimated to be \$75,000 annually.

### **Ridership**

- Ridership is estimated to be about 15 trips per revenue hour for the last two service hours of the day. This estimate equates to 18,750 additional passenger trips each year.

### **Frequency Schedule Adjustment**

WATA offers 30-minute frequencies on the highest ridership core routes (Blue, Gray, Orange, Red, Tan), Monday through Friday from 10:00 a.m. to 5:00 p.m., with second buses traveling these routes at 10:30 a.m., 11:30 a.m.; 12:30 p.m.; 1:30 p.m.; 2:30 p.m.; 3:30 p.m. and 4:30 p.m. This schedule, while convenient from a driver scheduling perspective, does not reflect the hours of highest rider demand for most of the routes on the weekdays, which generally includes a morning peak and a second late afternoon peak. The Blue Line exhibits peak ridership at 11:00 a.m., 2:00 p.m., and 3:00 p.m.

The focus of this alternative is to shift the 30-minute frequency period from the current Monday - Friday mid-day pattern to a morning and afternoon split pattern. The proposed schedule times for a second vehicle would shift to the following: 7:30 a.m., 8:30 a.m. and 9:30 a.m. and again at 2:30 p.m., 3:30 p.m., 4:30 p.m., and 5:30 p.m.

There is a separate discussion under the Blue Line that suggests adding a second vehicle to that route on Saturdays, to help with capacity, and adding a Human Service Center route, which will help with Blue Line capacity.

### **Advantages**

- Will provide a better match between the supply of bus capacity and the supply of riders.
- Will offer more convenient service during the times of the day when many riders are going to work.

### **Disadvantages**

- Will require a major shift in the way that WATA schedules drivers.

**Cost**

- Cost neutral, with the exception of the Blue Line, which is discussed within the Blue Line alternatives.

**Ridership**

- There may be some modest ridership gains in the form of new customers who do not currently use WATA because of the hourly headways during peak commute hours. Thirty-minute headways during peak commute hours may attract some new riders.

**FARE AND PASS ALTERNATIVES**

The peer analysis indicated that WATA's farebox recovery rate was low compared to peer systems, and the fares are lower than both GRTC and HRT. In addition, WATA has more fare and pass options than the peer systems. The focus of this alternative is to raise farebox revenue, which will help offset the costs associated with improvements, and possibly improve the farebox recovery rate. Simplifying the fare options is also discussed.

**Eliminate the Transfer Fee**

WATA's fare data indicate that very few riders use a single transfer, most likely because the cost of an all-day pass is only \$2.00 and the cost to purchase a single fare (\$1.25) and add the transfer fee (\$0.25) is \$1.50. Survey data indicate that 57% of WATA riders make a transfer, though farebox data show that in FY14 only 5% of the single-fare riders used a transfer. This would indicate that the majority of riders who need to transfer use the all-day pass.

In FY14, WATA recorded 5,468 transfers. In FY15, WATA recorded 11,880 transfers. The FY15 transfers resulted in \$2,970 in fare revenue. It is proposed that the transfer fee be eliminated since it produces very little revenue and penalizes riders who choose the single fare category, but need to transfer to complete their trips.

**Advantages**

- Eliminates the financial penalty of the transfer.
- Simplifies the fare structure.
- May result in a small ridership boost, as 5% of WATA's riders will be getting a 16.7% fare reduction.

## Disadvantages

- Reduces revenue by about \$2,970 annually.

## Raise the Cost of an All-day Pass from \$2.00 to \$2.50

Raising the all-day pass from \$2.00 to \$2.50 is a significant fare increase (25%) for the customers who use the all-day pass. A \$2.50 all-day pass is proposed, as this represents the value of two one-way trips.

The effect of this change will likely be a reduction in ridership, as well as an increase in revenue. Using an elasticity of (-.20)<sup>1</sup>, applied to the 541,152 trips taken using the all-day pass, the reduction in ridership is estimated to be about 23,540 annual trips, or 2.3% of WATA's total annual ridership.

Without the data concerning how many day passes were sold in FY2014, it is difficult to figure out how much fare revenue is attributable to day pass riders, as the data with regard to how many trips each day pass user made per day is not available. For example, if each trip taken using the day pass was worth \$1.00 (assuming 2 trips per day), then the fare revenue attributed to day passes would be \$541,152. This is too high, based on the FY2014 total fare revenue of \$556,155. If it is assumed that 3 trips per day were taken, then the cost of each trip was \$0.66 and the fare revenue attributed to the passes was \$357,160. This is a bit high, given the total fare revenue and the other fare categories. For estimation purposes, it is assumed that each day pass rider used the all-day pass for 3.2 trips per day, for a cost per trip of \$0.625 and total day-pass fare revenue of \$338,220. This equates to 169,110 day passes sold.

If the \$2.00 pass is raised to \$2.50, and riders continue to take 3.2 trips per pass, the cost per trip will rise to \$0.833. Assuming a ridership loss of 23,540 trips from this category, the resulting number of passenger trips (517,612) should result in day pass fare revenue of \$404,384. This equates to 161,754 day passes sold.

If the data are to become available from WATA to check some of these assumptions, these calculations will be repeated to refine these estimates.

## Advantages

- Raises fare revenue for the day pass category. The increase in fare revenue is estimated to be about \$66,164 annually.

<sup>1</sup> Fare elasticity refers to the change in ridership that occurs as a result of a change in fares. The historic rule of thumb in transit, the "Simpson-Curtin" model suggested that for every 10% increase in fare, there is a corresponding 3.3 percent decrease in ridership. Elasticities for transit dependent riders have since been shown to be less elastic. (David Gillen, "Curbing Gridlock," TRB, 1994, pp. 115-151.) We are estimating that the fare elasticity for WATA is -.20, meaning that for every 10% increase in fares, there will be a 2% decrease in ridership.

- Brings the day pass cost more in line with the single fare cost.

### **Disadvantages**

- Will raise the fare for frequent users.
- Will likely result in some loss of ridership.

## **STAFFING**

Chapter 4 provided the background and details for the staffing recommendations that are highlighted below.

### **Eliminate the Use of On-Call Drivers, Implement Extra-Board, and Implement Long-Term Scheduling**

The use of on-call drivers makes it difficult and time-consuming to construct employee schedules, necessitates the use of short-term schedules, and is a factor that contributes to overtime pay. The focus of this alternative is to eliminate the on-call driver category, replacing the hours with part-time drivers, implementing an “extra-board”, which are basically stand-by driver shifts, and moving to a longer-term driver schedule.

WATA’s operating staff budget currently includes 15,600 hours for “on-call” drivers. It is proposed that these hours be converted to between 12 and 14 part-time positions. At this level of employment (between 1,100 and 1,400 hours per year), these positions will include pro-rated sick leave, holiday pay, vacation time, mandated Social Security and Medicare taxes, and workers’ compensation. WATA estimates the fringe rate for part-time workers is 15%, as compared to 12.65% for on-call employees.

Another feature of this alternative is the move to longer-term schedules that are based on WATA’s seasonal schedule changes. This method of scheduling is standard in the transit industry, where particular “picks” are put together and chosen based on seniority. These schedules are then in effect for a several-month period, with changes made only for vacation or sick leave.

### **Advantages**

- Allows for staffing continuity.
- Allows for longer-term scheduling.
- May reduce over-time pay, assuming adequate staffing levels are achieved.

## **Disadvantages**

- May eliminate some drivers who wish to truly work “on-call”, rather than on a permanent part-time basis.
- Will result in some modest costs increases due to the additional fringe benefits earned by part-time drivers.

## **Cost**

The average hourly wage for part-time and on-call drivers in FY15 was \$14.37 per hour.<sup>2</sup> Applying this hourly wage to the 15,600 budgeted on-call hours equates to a total on-call wage expense of \$224,172. Using WATA’s fringe rate of 12.65% for the on-call category, the total fringe benefits for these drivers was \$28,358. Applying the part-time fringe rate of 15% to these wages will increase the fringe benefits by about \$5,268, to a total of \$33,625.

This change is likely to reduce overtime wages for drivers, assuming all scheduled slots will be covered. Overtime pay in FY15 was \$148,941.<sup>3</sup>

## **Increase the Number of Driver Hours – Both Budgeted and Actual**

The analysis of the pay hours, actual hours worked and budgeted hours for the operating staff (presented in Chapter 4) indicate the following three things:

- 1) The total number of hours actually worked by operating staff in FY15 (100,250)<sup>4</sup> was significantly lower than the scheduled hours (107,881)<sup>5</sup>, which were lower than the budgeted hours (111,288), meaning that WATA was short-staffed much of the time. This validates the staff’s sentiment that they are stretched too thin, compromising the ability of WATA to provide driver breaks, increasing the need for overtime and increasing the need to have more than one lead driver on at a time.
- 2) The FY15 budgeted operating staff hours (111,288) were not enough to cover all of the operating shifts, when the vacation/leave rate is considered. The budgeted hours do not currently include the buffer that is needed to cover shifts when operating staff are on paid leave and replacement workers are needed. This is not an issue for administrative and management staff, as they are not replaced when they are absent.
- 3) In order to cover all of the currently scheduled operating shifts (drivers, dispatchers, leads, and storefront), the budgeted number of staff pay hours should be increased from 111,288 to 117,050. This increase will account for the current schedule and the

<sup>2</sup> WATA payroll data, FY15.

<sup>3</sup> Ibid.

<sup>4</sup> Ibid.

<sup>5</sup> WATA operating staff schedule, Spring 2015.

vacation/leave rate of 8.5% (meaning that the pay hours in FY15 were 8.5% higher than the hours actually worked). This equates to 5,763 hours, or 2.8 FTE. If service hours are added then these hours will need to increase.

### **Advantages**

- Provides enough operating staff hours to cover all of the time when drivers and operating staff are getting paid but are not working (such as sick leave and vacation).
- Reduces the need for overtime hours. In FY15, WATA recorded 7,603 hours of overtime pay, which is close to the difference between the scheduled hours (107,881) and the pay hours (100,250), and when considering the 618 hours that were paid to hourly employees when WATA was closed due to inclement weather.

### **Disadvantages**

- Increases pay hours without a corresponding increase in operating hours.

### **Costs**

- The straight cost of adding 5,763 pay hours is about \$82,814 (based on the average hourly part-time cost of \$14.37 per hour). Using overtime to cover these hours costs an average of \$19.59 per hour. The cost per hour savings of \$5.22 per hour equates to a net cost of \$52,731 for these additional pay hours, assuming WATA is converting an overtime hour to a straight hour.
- Another factor to consider when reducing the need for overtime pay is the need to pay fringe benefits on additional hired staff. For part-time drivers, this rate is 15% and for full time drivers it is about 38%.

## **Safety and Training Coordinator**

The need for a more organized and robust safety and training program was mentioned by the majority of the staff members interviewed. Given the number of operating staff members that need to be trained each year, it is appropriate that safety and training functions be given a higher level of attention than a partial staff position.

Under MAP-21, there are likely to be additional safety certification requirements for FTA grantees, including the development of an agency safety plan that includes strategies for

identifying risks and minimizing exposure to hazards, an adequately trained safety officer, safety performance targets, and a staff training program.<sup>6</sup>

In order to further develop the safety and training functions for WATA, it is proposed that a “Safety and Training Coordinator” position be created. The proposed primary job duties of this new position will be to:

- Coordinate, develop, and monitor safety and training programs for WATA.
- Identify appropriate training resources and materials, and develop and prepare lesson plans and materials.
- Conduct safety classes and train, demonstrate and test transit employees in the operation of transit vehicles, machinery and defensive driving techniques.
- Enforce safety procedures and report safety violations.
- Develop and administer a training evaluation process, evaluate training effectiveness, document progress of participants, and make recommendations for improvement.
- Coordinate with in-house and outside sources to provide/conduct training.
- Inspect transit facilities and equipment, report safety hazards and ensure correction of hazards.
- Develop and recommend policies and procedures concerning the department’s safe operation of vehicles and facilities.
- Review Workers’ Compensation claim forms for accuracy and determine if further investigation is required.
- Serve as the Safety Officer for WATA.
- Investigate WATA- related accidents and incidents.
- Administer WATA’s Drug and Alcohol Program in accordance with U.S. DOT guidelines and regulations.
- Inspect transit facilities and equipment for potential hazards.
- Prepare and submit required safety and security reports to FTA and the National Transit Database (NTD).

### **Advantages**

- The development of this position will help to improve the safety and training functions, as well as removing administrative tasks from supervisors, freeing them up to provide on-road supervision and driver support. Moving the Safety Officer function from the Budget and Grants Administrator will allow the Safety Officer to have more complete focus on the program.
- A dedicated position will allow for a more robust safety and training program that should result in fewer reportable as well as minor incidents.

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<sup>6</sup> USDOT, FTA, MAP-21 Fact Sheet: Transit Safety & Oversight, Section 5329.

- A more robust safety and training program could allow for the development of a WATA roadeo, which can help to build driver skill and morale.

### **Disadvantages**

- The cost of adding the position which increases expenses but does not provide additional service hours.

### **Cost**

- At an estimated salary of \$45,000 annually, with a fringe range of 39%, the annual cost of adding this position would be \$62,550.

## **ADA Coordinator/Williamsburg Area One Call System**

A preliminary staffing recommendation considered consolidating WATA's paratransit program staff so that one individual has oversight of both the eligibility and scheduling functions. Currently these functions are split between two staff members who also have other responsibilities.

This preliminary recommendation may not be needed if the proposed Williamsburg Area One-Call System is implemented and if ADA eligibility is one of the tasks taken on by the call-center staff. The one-call center project is described below.

### **One-Call System Planning**

WATA recently participated with the Peninsula Agency on Aging (PAA), Faith in Action, and the Williamsburg Health Foundation in the development of a planning study for the "Williamsburg Area One-Call Transportation System." The focus of the project was to outline a plan for the implementation of a central location that will allow customers to receive information about transportation services available in the community and serve as a foundation for one-click services and other efforts to improve mobility. It is envisioned that the center would be eligible for funding under the Federal 5310 program, which provides funding for mobility management projects at an 80% federal participation rate, requiring a 20% local match. The program is administered through DRPT.

The recommended plan outlined the development of a one-call center, to be housed at the PAA, and initially staffed by a Mobility Manager, which would be a new position. The Mobility Manager position would focus on the implementation of the one-call center, and then could evolve into one that would manage the call center. Initial implementation activities would include coordinating efforts to establish a centralized transportation center. Once the center is successfully launched and implemented, responsibilities would be added to include activities related to daily operations.

The plan anticipates that at least one additional staff would be needed beyond the Mobility Manager and the current PAA staff, depending upon call volume and the involvement of the staff in additional mobility management activities.

### **Functions**

When established, the core function of the one-call center will be answering calls from customers through a central number, discussing their transportation needs, providing information on travel options, and if appropriate scheduling trips on PAA RIDES, WATA ADA paratransit services, or Faith In Action volunteer driver services. The current RouteMatch software would expand to incorporate all available transportation services and be used by the central call staff to schedule trips.

Coordinating this transition will be a major component of the proposed Mobility Manager's responsibilities. The transportation services currently operated by WATA and Faith In Action will need to be integrated into the scheduling software and staff appropriately trained to be able to schedule trips on different services and to ensure a smooth transition at the outset of the one-call center.

Additional users would be added to PAA's existing RouteMatch license. Additional licenses would be purchased to include WATA's vehicles, and WATA's paratransit vehicles would be equipped with tablets.

### **Advantages**

- One of the additional functions under consideration for the Mobility Manager is managing WATA's ADA eligibility certification process, and expanding the level of assessment, potentially helping WATA manage demand by focusing on those who are truly unable to access the fixed route services. It would also eliminate the need to develop an ADA coordinator position at WATA.
- A significant benefit to WATA for participating in the one-call center will be the expansion of the current PAA RouteMatch software, adding WATA as an additional user. The preliminary price estimates from RouteMatch indicate that it is substantially less expensive than if WATA were to procure its own paratransit software. The full costs and potential funding sources are outlined within the cost section below.

### **Disadvantages**

- Uncertainty of whether the call center will be funded

- Long lead time for implementation. WATA would like to make improvements to better manage the growth of the paratransit program in the near term, and the One-Call Implementation Plan indicates that the center will not be operational until FY18.

### **Costs and Funding**

- The FY17 proposed budget for the one-call center is \$73,000. This budget includes the Mobility Manager and direct administrative expenses. The second year budget (FY18) is proposed to be \$176,535 and includes additional staff, direct expenses, as well as the software and hardware expenses needed to share and implement RouteMatch for WATA and Faith in Action. The third year budget is \$193,828.
- If the grant is funded, the local share is projected to be \$14,620 in FY17; \$35,307 in FY18; and \$38,766 in FY19. The plan does not specify the source of the local funds.

## **INFRASTRUCTURE AND COMMUNICATION IMPROVEMENTS**

### **Facility Planning and Development**

As discussed in Chapter 1, WATA has been exploring the development of its own operations and maintenance facility as there are a number of inadequacies associated with its current leased facility. The facility study completed in 2010 by AECOM recommended that WATA acquire, retrofit, and further develop the existing site as the lowest cost alternative for its facility needs.

WATA has recently begun additional work to implement the recommendations from the 2010 study, contracting with Kimley Horn and Associates to assist WATA with the next phase of facility planning. This facility project has two primary phases:

- Phase 1: Planning and Site Acquisition
- Phase 2: Facility Design – Build<sup>7</sup>

The first phase includes coordination with FTA and DRPT and a series of real estate tasks. The first phase is scheduled to take place during 2016 and 2017.

Phase 2 of the project involves engineering and design, bids and construction, testing and commissioning. The second phase is scheduled to take place between 2017 and 2019. The new plan, as outlined in September, 2015, calls for an administrative building to be constructed in an area that is now parking, with the current building converted completely for maintenance use. A new bus wash facility is also proposed. This plan has a significantly lower

<sup>7</sup> WATA: New Transit Facility Project. Board Briefing Overview, Kimley-Horn, October 2015.

cost estimate than the 2010 study, with the cost estimate ranging between \$4.4 and \$4.5 million (not including fuel tanks). The cost estimate is significantly less, largely because the proposed scenario calls for a lease agreement with CWF for the land, rather than a purchase option. The facility would continue as a shared facility.

This project has already been incorporated into WATA's capital planning process. DRPT's Six-Year Improvement Program shows Regional Surface Transportation Program (RSTP) funds programmed for this project in FY18; FY19; and FY20. It has been included in the alternatives discussion, as it is an integral project for WATA for the six-year planning period.

## **Bus Stop Improvement Project**

A comprehensive bus stop inventory and improvement project was beyond the scope of the TDP/COA; however, a number of specific bus stop issues came to light during the process. These issues are:

- There are several bus stops that are located in areas not ideal from a pedestrian safety perspective. An example is the stop at the Regency Apartments along Longhill Road. This stop has a large ditch behind it.
- There are locations, particularly along the Purple 1 Line that do not have inbound and outbound paired stops, requiring riders to travel out of their way in one direction or the other to get to their stops.
- There are a large number of stops that are not served by a sidewalk network.
- Bus stop spacing is inconsistent throughout the system.

This alternative focuses on developing a full bus stop inventory and analysis that includes the development of system wide guidelines for bus stop placement, amenities, and spacing. WATA could use this information to program bus stop improvements with a defined, prioritized plan. Currently there are approximately 300 unique bus stops within WATA's fixed route network.

This type of project could be completed by a contractor or could be conducted in-house, perhaps through the use of an intern.

### ***Advantages***

- Provides WATA with a strategy for improving bus stops and passenger amenities.
- Continues to improve the riding experience for passengers.

### **Disadvantages**

- The only disadvantage is cost.

### **Cost**

- Bus stop inventory and analysis tasks typically cost approximately \$100 a stop. With about 300 stops, the cost is estimated to be about \$30,000.

### **Northern/Western Hub – Warhill Transfer Center**

WATA's route network covers a very large area from northwest to southeast along the peninsula, necessitating connections among the fixed routes to maximize efficiencies for both local community and regional trips. A connection among the Blue, Purple 1, Purple 2, and Tan Lines is currently made at the Walmart in Lightfoot. As discussed among the route alternatives, the location of this connection is difficult for the Blue and Purple 1 Lines, largely due to the extra time it takes to travel from the Richmond Road corridor to the Walmart. The current location necessitates a turnaround that uses the Walmart delivery access roadway.

The focus of this alternative is for WATA to purchase land and develop its own passenger transfer facility. It is envisioned that this type of facility would include a small structure to house restrooms (at least for staff). The ideal location would be in the Lightfoot area, and closer to the Richmond Road corridor. The area adjacent to the James City County Law Enforcement Building and Thomas Nelson Community College may be appropriate (except for the Tan Line, which would likely require routing adjustments). This area is close to the prior location of WATA's northern/western hub which was on the property of the now closed Outlet Center. This property is currently being re-developed into a shopping center.

WATA has identified a parcel of land on Opportunity Way that it would like to purchase for this hub and has begun the process of applying for grant funding and inserting the project into regional transportation improvement plans. Some examples of the scale of the proposed facility are provided in Figures 6-12 and 6-13.

The ideal location would be close to other destinations, such as a grocery or convenience store, to maximize patron convenience. Between one and two acres is likely to be needed depending upon the configuration of the lot.

Figure 6-12: Downtown Bus Transfer Center, Hickory, North Carolina



Figure 6-13: Germantown, Maryland, Bus Transfer Center



### **Advantages**

- Provides a permanent location for WATA to use for passenger transfers, layovers, and breaks.
- A dedicated facility could be planned specifically for WATA's needs, rather than attempting to fit into an existing parking lot with mixed traffic.
- WATA would control the condition of the facility with regard to appearance and upkeep.

### **Disadvantages**

- Will require a significant investment.
- May not be convenient for passengers if it is not located near other amenities.

### **Cost**

- The cost to purchase land and construct a passenger transfer facility will vary significantly depending upon several factors, most notably the cost of the land.

Passenger transfer facilities can be constructed on various size parcels, depending upon the ingress and egress. It is estimated that between one and two acres would be needed. A preliminary look at land costs in the Lightfoot area indicate that land prices are about \$400,000 per acre. Construction expenses are variable, depending upon the size of the structure. A preliminary cost estimate for the project is approximately \$2.5 million. This project would be eligible for the standard 80% federal and 20% local match, with some state involvement likely.

WATA has developed a preliminary proposal for a Warhill transfer center and is proposing the project for FY22 funding.

### **Technology Improvements**

In recent years, WATA has made several investments in technology upgrades, including electronic fareboxes, security equipment, and automatic vehicle location technology for the fixed routes (BusTime).

WATA has an IT professional on staff who oversees details regarding the purchase, configuration, and maintenance of technological equipment. A number of additional technological improvements are proposed for the TDP period, described in the following paragraphs.

### ***Driver Scheduling /Runcutting Software for Fixed Route Operations***

WATA has historically scheduled drivers manually, using spreadsheet applications to assist in the process. As the system grows and becomes more complex, it is likely that a computer-assisted scheduling/runcutting program will be able to develop driver work blocks more efficiently and use less staff time than the current manual system.

WATA has a tool through its Clever Devices system, called Sched21, which is capable of developing fixed route driver run. Information provided by Clever Devices indicated that this feature could probably be used by WATA with some modifications and staff training. WATA would need the resources to program their data and maintain the data long term.

#### **Advantages**

- Optimizes driver schedules to minimize down time while including driver breaks.
- Once the program is up and running, the amount of staff time devoted to scheduling will be greatly reduced.
- Eliminates any perceived scheduling favoritism.

#### **Disadvantages**

- Cost
- Implementation of the program which will likely take an adjustment period.

#### **Cost**

- More information concerning the ability of WATA's current tool to be modified is needed before a cost estimate can be developed. This can be further developed if WATA would like to pursue this option.

### ***Paratransit Scheduling Software***

As previously discussed, WATA is participating in the development of a one-call center for transportation services in the region. One potential feature of the center will be shared use of PAA's RouteMatch software, which will have some costs, but not nearly the full cost of a stand-alone WATA paratransit software program. This would be an ideal solution for WATA, as its current volume is on the low side for an investment in paratransit scheduling software, though the reporting capabilities of automated programs would save a significant amount of staff time in the compilation of paratransit data. If the one-call center is not implemented, then WATA should consider the purchase of its own paratransit scheduling software program.

#### **Advantages**

- Potentially increases the efficiency of the paratransit schedules.

- Automates the data collection and reporting functions which will save a significant amount of staff time.
- Prepares for likely future growth in ADA paratransit as the system grows and the community ages.

### **Disadvantages**

- Costs.
- Transition process.

### **Costs**

- Paratransit software systems range in price from \$35,000 to \$100,000 depending upon the desired features. There is typically an upfront cost for the software, set-up and in-vehicle hardware (typically tablets) along with ongoing monthly maintenance fees.

### ***Smart Phone Application for BusTime***

WATA currently uses BusTime to provide real-time bus schedule information for passengers. This program can be accessed through the Internet but WATA does not have a smart phone application for the program. This alternative proposes to add the smart phone application to the existing BusTime program.

### **Advantages**

- Improves the accessibility of the BusTime program by providing a direct smart phone interface.
- Improves the availability of real-time schedule information.
- Responds to comments received via the passenger survey.

### **Disadvantages**

- The only disadvantage is cost.

### **Cost**

- Clever Devices has indicated that the cost to develop the smart phone application is roughly \$40,000.

## **Dispatch Headsets**

The current phone system at WATA does not have headsets for the dispatchers. This is inconvenient for the dispatchers as the job entails a significant level of multi-tasking. This alternative focuses on purchasing headsets for the dispatchers.

Corded or cordless headsets are available for analog phone systems though the cordless systems require a handset lifter device. There is a device on the market called “The Conductor” that allows the dispatcher to use one headset and switch between radio and telephone with a foot pedal.

### **Advantages**

- Allows for greater freedom of movement for the dispatchers.
- Reduces the steps required to answer the telephone.

### **Disadvantages**

- The only disadvantage is cost.

### **Costs**

- Dispatch headsets are between \$150 and \$300 each and the handset lifter devices are about \$100 each. “The Conductor” costs \$815.

## **Customer Information Improvements**

WATA has recognized that there is a need to improve the provision of customer information and is currently working with a consulting firm on the development of a marketing, rebranding, and web design project. The goals for the project are:

- Develop, enhance, and promote a sustainable regional transit identity that will enhance service coordination and marketing efforts.
- Build awareness for available transit services and how to access them.
- Create an image for the transit network that is inclusive of all potential user groups.
- Encourage usage among target markets with transportation needs.
- Develop a user-friendly, flexible, informative website that is easy to maintain.<sup>8</sup>

This project will address a number of marketing improvements including the website. There are a couple of additional customer information improvements that have evolved from the TDP/COA data and analysis, discussed below.

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<sup>8</sup> Request for Proposal #15-005: WATA Marketing, Rebranding, and Web Design, March 20, 2015.

### **Route maps- Web and Printable**

With the exception of the Trolley and the Jamestown Route, there are no printable route maps for the WATA fixed routes and there are very few time points listed on the printed schedules. These two factors combined make it difficult to understand exactly where and at what time a particular stop is served. The focus of this alternative is to publish maps for the routes and have them available with the individual route timetables. A system wide map could be published on one side of the WATA system brochure with the schedules provided separately. The maps should be available both as hard copy and on WATA's website. It is suggested that WATA add a few time points to each route to make it easier for riders to understand the path of travel. This task will require a re-design of the system brochure which is included with the marketing project.

Once the TDP/COA is complete and decisions made with regard to the routes, KFH Group can provide the shape files for WATA to use in the creation of public information maps.

### **Advantages**

- Provides customers with a visual representation of the path of travel for each route.
- Graphically shows the intersections of the routes so customers can see which routes they need to use to travel through the service area.
- Additional time points will provide a clearer idea of the stops that are served.

### **Disadvantages**

- The only disadvantage is cost.

### **Cost**

- A cost estimate will be developed in consultation with WATA. It may be that the inclusion of maps in the brochure and on the website is part of the Pulsar project.

### **Route Names – Transition from Colors to Numbers**

For several years WATA has used colors to define its fixed routes. Many small agencies use colors for bus routes, while larger agencies use them only for rail lines given that there are a limited number of colors available. WATA has grown to the extent that colors are no longer a viable mechanism to use for route identification.

This alternative proposes that WATA shift to a number/description system for route identification. A corridor or destination is typically used as a descriptor. This model is used by both of WATA's neighboring systems, GRTC and HRT. WATA already provides a descriptor along with the color.

An example of how this could work for WATA is provided below:

Route 1 – Richmond Road/Route 60 West (current Blue)  
Route 2 – Pocahontas Trail/Route 60 East (current Gray)  
Route 3 – Mooretown Road/Great Wolf Lodge (current Tan)  
Route 4 – Merrimac Trail/Tam O Shanter (current Orange)  
Route 5 – Williamsburg West/Steeplechase Apts. (current Red)  
Route 6 – Longhill Road/Centerville Road (current Purple 1)  
Route 7 – Stonegate/Chickahominy (current Purple 2)  
Route 8 – William & Mary Circulator (current Green)  
Route 9 – Trolley Circulator  
Route 10 – Surry  
Route 11 – Jamestown

Some agencies number the routes based on the historic sequence of when the route was implemented, while other systems use different number schemes to denote circulators or express routes.

### **Advantages**

- Allows WATA to add routes without using obscure color names.
- Provides for a more logical naming convention.
- Allows WATA to develop a naming convention based on the type of route.

### **Disadvantages**

- Current users will have to adjust to a new route identification system.

### **Cost**

- With WATA's public information currently under re-development, the cost to change the route names would be minimal.

# Chapter 7 – Operations Plan

## INTRODUCTION

The development of the combined WATA Transit Development Plan (TDP) and Comprehensive Operational Analysis (COA) has included six draft chapters that provided a detailed analysis of WATA, including tasks associated with the development of the six-year TDP, and tasks associated with the COA. These analyses provided an overview of public transportation in the WATA service area and led to the development of alternatives for improvement. The chapters discussed goals, objectives, and standards; provided a detailed analysis of the current transit services operating in the region; analyzed WATA staffing; documented unmet transit needs; and proposed both COA and TDP alternatives for consideration.

Significant stakeholder outreach has occurred through the process, including rider input through an on-board survey; community input through a general survey; staff input, through individual interviews; and community stakeholder input, through both a working group and individual interviews.

This operations plan details the specific projects that WATA and local stakeholders have chosen to implement, presented as short-term and vision phases. The short-term projects follow a six-year timeline, and three of the vision projects have been tentatively assigned to the out years. Including the vision projects in the plan allows WATA to adapt to changing circumstances, and consider accelerated implementation during its yearly reviews, if funding opportunities are presented. The operations plan includes the changes planned for the route network, system-wide improvements, staffing recommendations, fare and pass changes, and infrastructure and communications improvements. The vision projects are discussed at the end of the chapter. Chapters 8 and 9 provide companion capital and financial plans to support this operations plan.

The Plan is organized into the following six sections:

- Changes to Current Routes and Potential New Routes
- System-Wide Improvements
- Staffing
- Fare and Pass Improvements
- Infrastructure and Communications Improvements
- Vision Projects

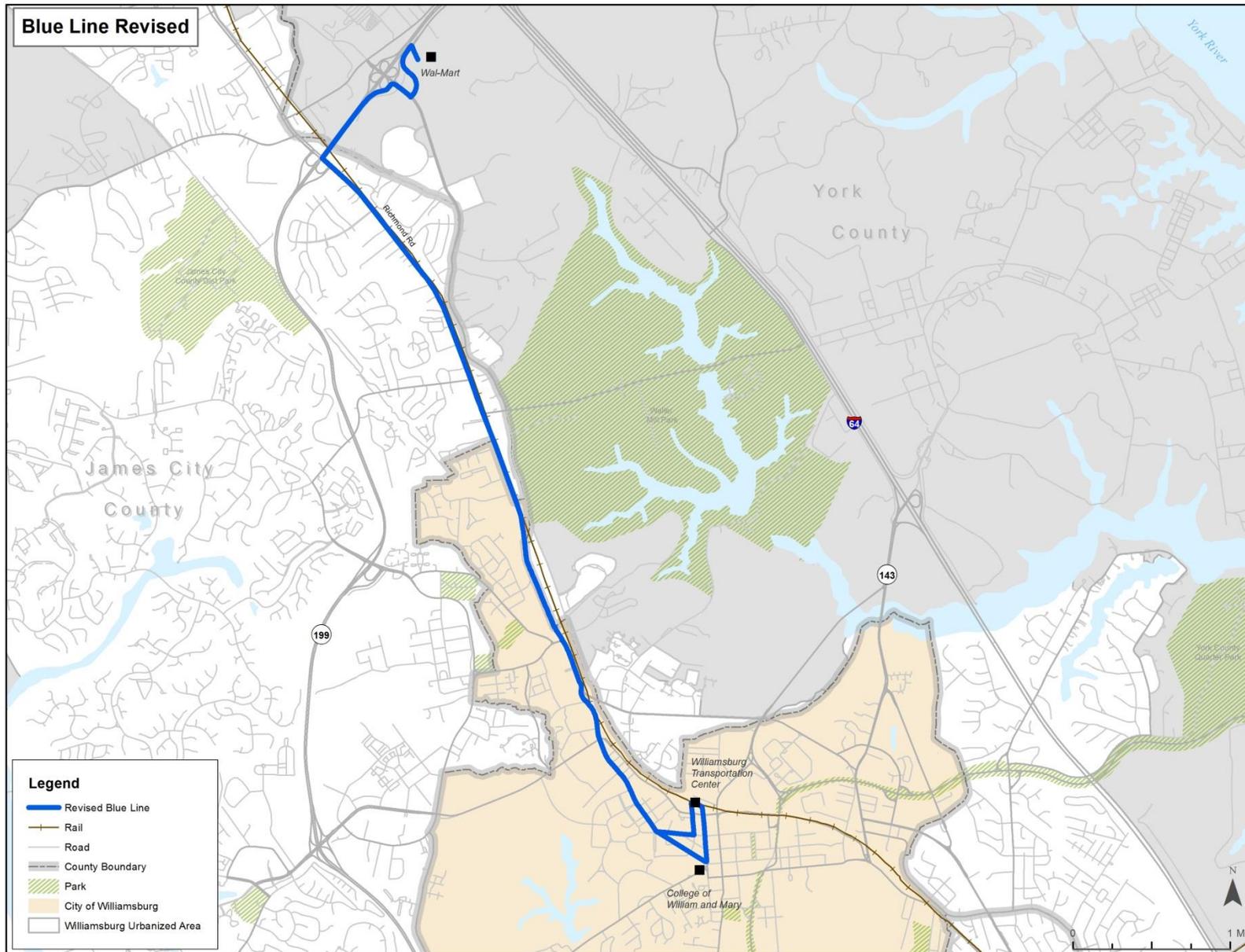
## CHANGES TO CURRENT ROUTES AND POTENTIAL NEW ROUTES

### Blue Line

As discussed in Chapters 3 and 6, the Blue Line is WATA's most productive route and also experiences poor on-time performance, largely because the route is too long to accomplish within an hour, given its strong ridership. After careful consideration of the options, WATA has chosen to modify the Blue Line in the following manner:

- Eliminate the James City County Human Services Center stop, as well as all stops along Olde Towne Road, including the stop that is on the property of the Premium Outlets. The Blue Line will continue to serve the Premium Outlets, but with the on-street stop (along Richmond Road). The purpose of this change is to reduce the running time so that it can complete one round trip in one hour, with a few minutes to spare for recovery time. This change may result in minor fuel savings, given the reduction in mileage.
- There was a discussion of eliminating the Walmart stop (Lightfoot), but it was determined that this stop is valuable to riders who use the route, both as a destination and as a transfer opportunity to the Purple (1 and 2) and Tan Lines. The route change is scheduled for implementation in FY17.
- Extend the service hours to 11:00 p.m., Monday through Saturday. The cost of this improvement is estimated to be \$ 38,450 annually, based on 2 additional operating hours per day for 310 service days. This change is scheduled for implementation in FY17/FY18
- Add a second bus to the route to improve capacities on Saturdays from 10:00 a.m. to 5:00 p.m. during the peak season. The cost of this improvement is estimated to be \$6,100 annually, based on 14 Saturdays. This change is scheduled for implementation in FY17/FY18.
- Change the 30-minute (frequency) headways from the current 10:30 a.m. to 5:30 p.m. pattern to one that more closely aligns to work schedules (6:30 – 9:30 a.m. and 3:30 – 6:30 p.m.). This recommendation is cost neutral and is scheduled for FY17.
- The specific timing of the improvements within each fiscal year will depend upon WATA's staffing levels and available operating funds. WATA will also need to develop a new driver scheduling pattern to accommodate later hours and potentially some split shifts, depending upon the mix of part-time drivers and WATA's ability to piece blocks of work together in a different pattern than is currently done.
- A revised route map for the Blue Line is provided as Figure 7-1.

Figure 7-1: Blue Line Revised



- Given these changes, ridership is likely to increase modestly, as removal of the Human Service Center will serve to reduce ridership, but later hours of service and a second vehicle on Saturdays during the peak season will serve to increase ridership.

## Gray Line

While a geographic service extension was considered for the Gray Line, no geographic changes were ultimately recommended. The Gray Line is already a long route, providing important corridor service connecting Williamsburg to Newport News via Route 60. In recognition of the route's important role in providing connections, particularly for people who live in the Grove area of James City County, two improvements are planned for the route. These are:

- Extend the service hours to 11:00 p.m., Monday through Saturday. This improvement will increase the annual operating expenses for the route by \$38,450. This improvement is scheduled for implementation in FY17/FY18.
- Change the 30-minute (frequency) headways from the current 10:30 a.m. to 5:30 p.m. pattern to one that more closely aligns to work schedules (6:30 – 9:30 a.m. and 3:30 – 6:30 p.m.). This change is cost neutral and is scheduled for FY17.
- The specific timing of the improvements within each fiscal year will depend upon WATA's staffing levels. WATA will also need to develop a new driver scheduling pattern to accommodate later hours and potentially some split shifts, depending upon the mix of part-time drivers and WATA's ability to piece blocks of work together in a different pattern than is currently done.
- Continue to work with the City of Newport News and Hampton Roads Transit to provide a high quality shelter for passengers who transfer at Lee Hall between HRT and WATA.
- Ridership is expected to increase by about 3,000 annual passenger trips.

## Green Line

No changes are planned for the Green Line for the short-term. A recommendation to reverse the direction of the Williamsburg Trolley will address some of the concerns voiced by Green Line riders regarding the need for bi-directional service. WATA will also need to work with William & Mary as the campus implements its Campus Master Plan, which includes significant changes to its properties along Jamestown Road.

There is also a concern about the ridership trend on the Green Line, which dropped considerably between FY13 and FY14, but showed some growth (3.5%) between FY14 and FY15. It is recommended that WATA and William & Mary work together in monitoring productivity during all service periods to ensure that the supply of service is matched to the demand. While

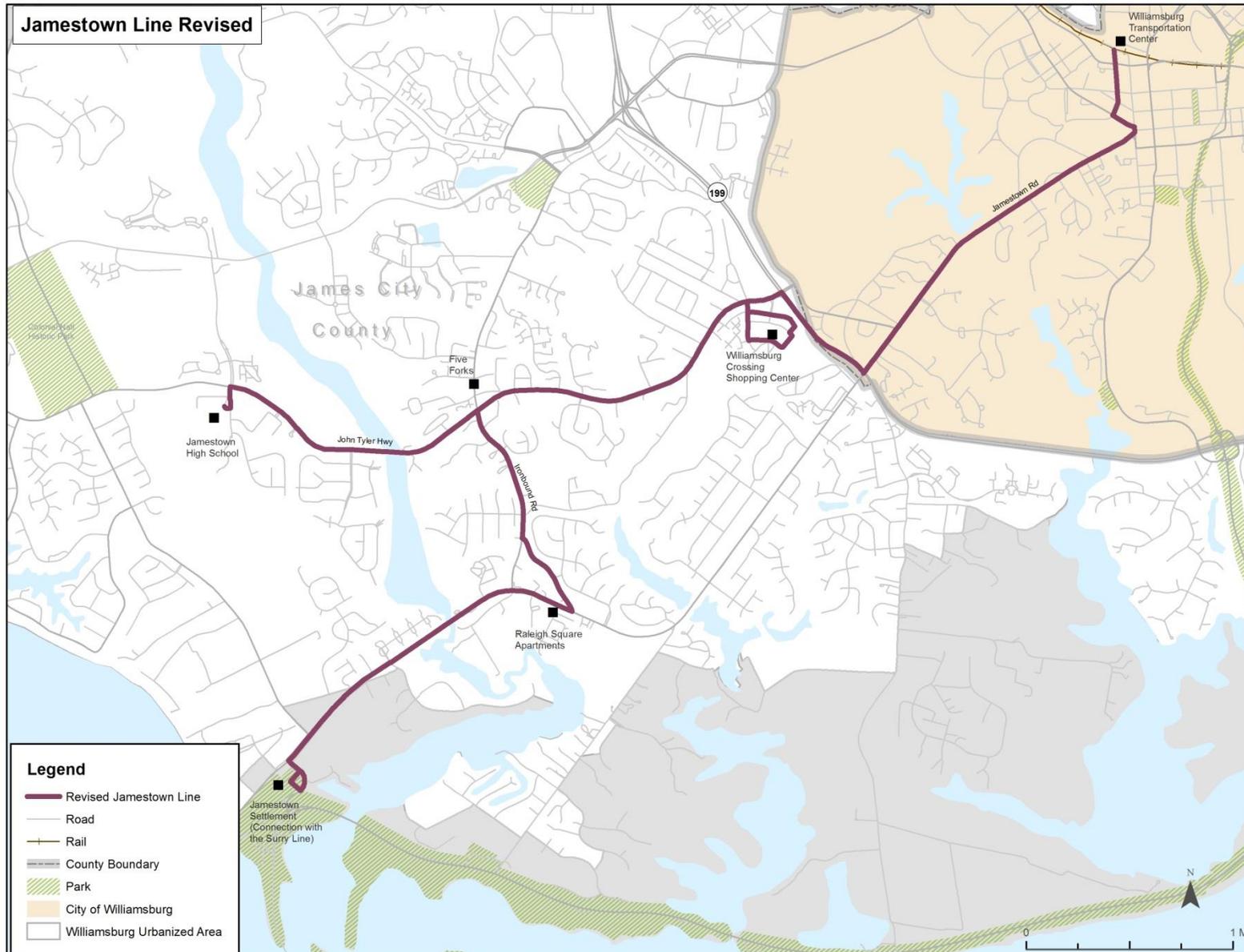
there were requests for service earlier in the day on the weekends, past ridership trends have suggested that there is not enough demand to warrant service during this period.

## Jamestown Line

As discussed in Chapter 6, the Jamestown Line has been experiencing significantly lower ridership and productivity than the other routes in the network. As a new route, it would be expected that productivity will take time to build, but the first year numbers suggest that the current routing may not be a viable alternative for long-term sustainability. In order to improve ridership and long-term sustainability, the following route changes are recommended:

- Change the route alignment to eliminate non-productive segments and bring the route into the Williamsburg Transportation Center. This will result in a 60-minute headway, rather than a 30-minute headway, but will provide riders a direct trip into downtown Williamsburg. The new route alignment eliminates Greensprings Road, as well as a segment of Jamestown Road. The revised route alignment is provided in Figure 7-2.
- A second routing recommendation involves the companion route, the Surry Line. It is recommended that the Jamestown Line serve as a direct link to the Surry Line (and the Jamestown-Scotland Ferry) by meeting the route to provide service from the Jamestown Ferry to the Five-Forks area, the Williamsburg Crossing shopping area, and downtown Williamsburg.
- The timing of the Jamestown route will need to be adjusted so that link to the Surry Line and the Jamestown Ferry is direct. This will also likely mean that the Jamestown Line may not pulse directly with the other routes at the Williamsburg Transportation Center. Given the current Ferry schedule, from 9:15 a.m. to 3:15 p.m., it appears that the Jamestown Line could meet the Surry Line on the :15 - :20 at the Jamestown Settlement, which would mean it would be at the Williamsburg Transportation Center about :45 to :50 after the hour. The Ferry schedule shifts between 3:30 p.m. and 7:30 p.m., which will result in a bus schedule shift as well.
- Because the Jamestown Line will be taking on some segments currently operated by the Red Line, as well as its new role as connector for the Surry Line, it will need to operate on Saturdays. This will result in additional annual operating expenses of about \$48,400.
- These improvements are scheduled for FY17. The route will continue to utilize one vehicle and operate from 6:00 a.m. to 9:00 p.m., as is the current pattern.
- Ridership is expected to improve significantly with these changes.

Figure 7-2: Jamestown Line, Revised



## Orange Line

As one of WATA's core routes, the Orange Line offers 30-minute headways between the hours of 10:30 a.m. and 4:30 p.m. As discussed in Chapter 6, it is recommended that this frequency pattern be adjusted to better coincide with commute times so that 30-minute frequencies are offered between 6:30 a.m. and 9:30 a.m. and again from 3:30 p.m. to 6:30 p.m.

This change is scheduled to occur in FY17. The specific timing of the improvements will depend upon WATA's staffing levels. WATA will also need to develop a new driver scheduling pattern to accommodate later hours and potentially some split shifts, depending upon the mix of part-time drivers and WATA's ability to piece blocks of work together in a different pattern than is currently done. This change is cost-neutral.

## Purple 1 and Purple 2 Lines

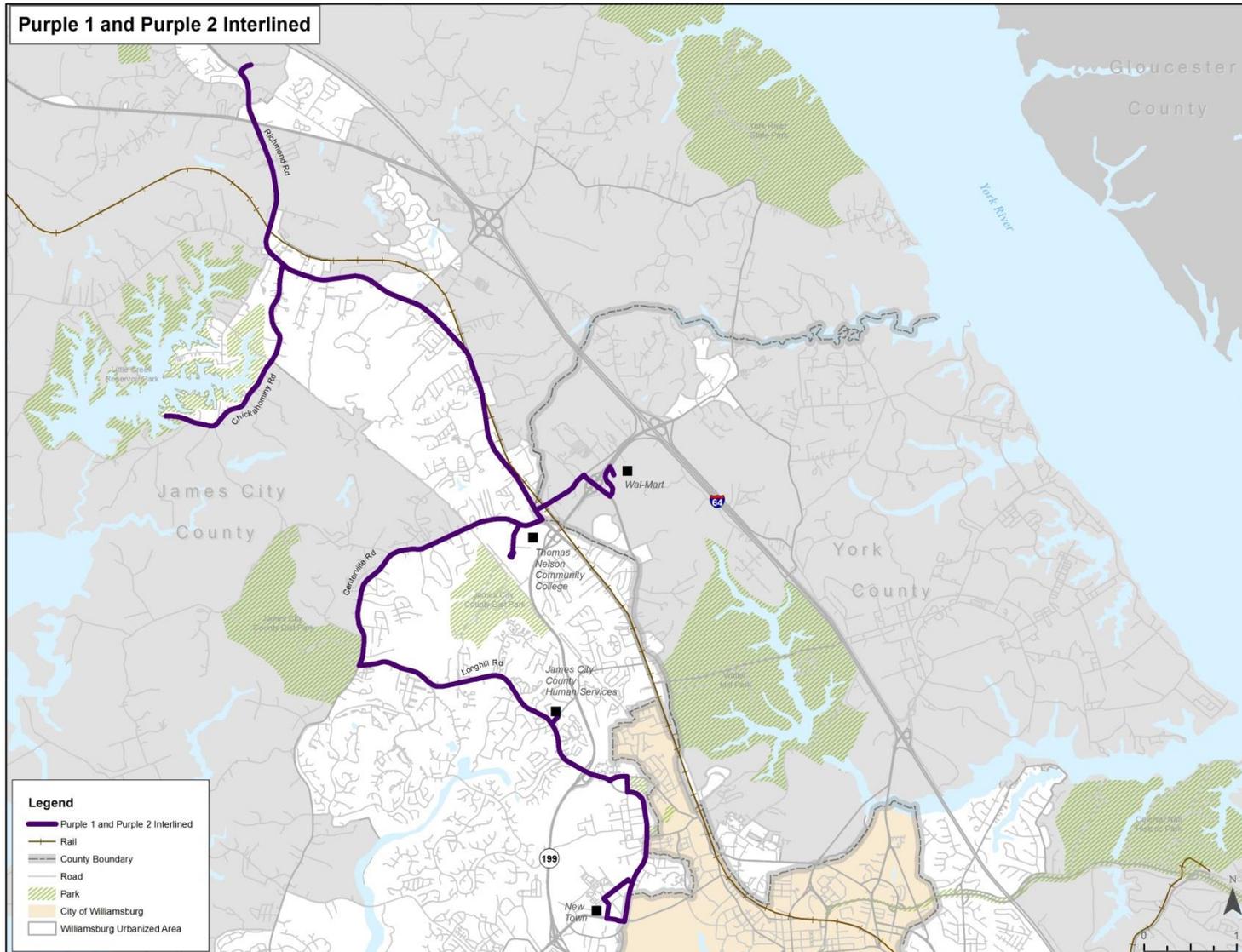
As discussed in Chapters 3 and 6, the Purple 1 Line is too long to complete within one hour, as currently routed. Because there are major destinations, as well as transfer opportunities on both ends of the line, it is not possible to cut the length of the Purple 1 Line. As a way to help the route, it is recommended that it be interlined/combined with a shortened Purple 2 Line. Time savings will be achieved by eliminating the lightly traveled western segment of the current Purple 2 Line, as well as by having just one vehicle at a time, rather than two, travel into and out of the Walmart transfer location. This will also reduce bus traffic at the transfer location.

During the alternatives analysis, there was also a proposal to eliminate the James City County Human Services Center from this route, as it adds a diversion from the main route along Longhill Road. Without developing another route option for the Human Services Center, the stop will need to remain along the Purple Line, in both directions. The Human Services Center stop is scheduled to be eliminated from the Blue Line, which means that the Purple Line will be the only route serving this stop. A future expansion route that incorporates Olde Towne Road should be considered.

The route map for the interlined Purple 1 and Purple 2 Lines is provided in Figure 7-3. This change will be implemented in FY17 and is cost neutral. During the transition period, WATA may wish to retain both the names Purple 1 and Purple 2, changing the head sign of the vehicle at the Walmart transfer center. As riders learn over time how the two interlined routes function, it may be possible to merge them into one route name. This change will result in minor fuel cost savings through the small reduction in mileage.

Ridership will likely increase on the Purple Lines, as all of the human service center ridership will be directed to this route, rather than the Blue Line.

Figure 7-3: Purple 1 and Purple 2 Lines – Interlined



## Mounts Bay Line/Quarterpath

WATA has funding in place to implement a new route to serve the Mounts Bay/Quarterpath area of Williamsburg, which includes the new Quarterpath development in the City of Williamsburg, the Mounts Bay complex (James City County offices), and the new Riverside Doctor's Hospital. During the development of the TDP and COA, there was significant interest in extending WATA service to the Lackey Free Clinic and Yorktown. A need was also identified to connect the Riverside Doctor's Hospital directly with the Lackey Free Clinic.

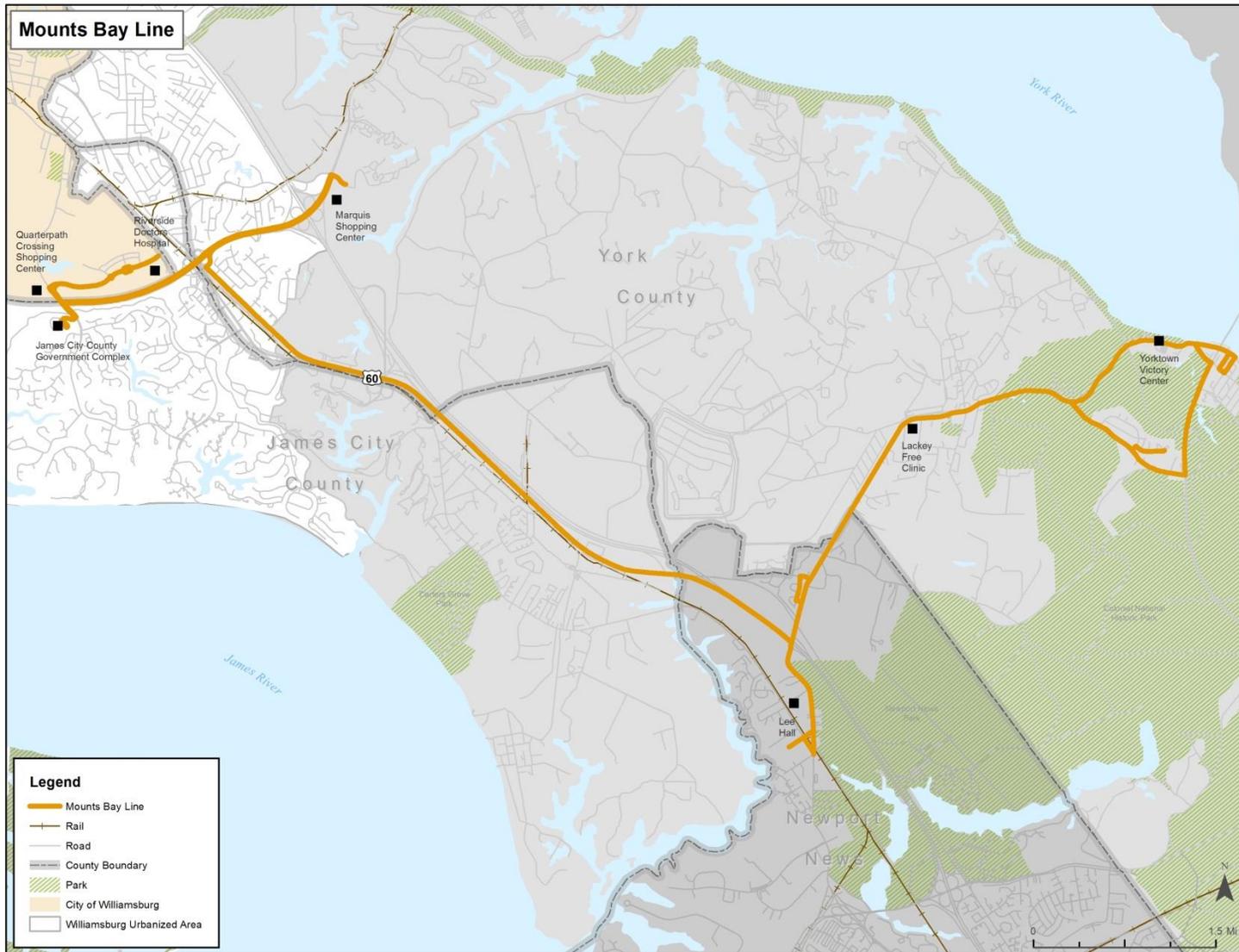
Given these factors, the new Mounts Bay Line will incorporate the identified needs in the Mounts Bay/Quarterpath area, and provide the link to the Lackey Clinic and to Yorktown. This route will also provide additional direct mobility opportunities for residents in the Grove area of James City County, which has been identified as an area of high transit need.

This route will be the longest in the WATA network; as such it will need to operate either with a two-hour headway, or with two vehicles assigned to the route. During the alternatives analysis, WATA staff further refined the route to develop the proposed routing that is presented in Figure 7-4. The study team feels that it is important that this route be connected to downtown Williamsburg directly, either through a timed connection to the Gray Line or the Orange Line. These connections will allow Mounts Bay riders to access Williamsburg as well as the rest of the route network.

This route is scheduled for implementation in FY17 using CMAQ funding. The total annual operating costs for one vehicle will be \$225,800 and for two vehicles will be \$451,600. It is proposed that this route be implemented with a body-on-chassis vehicle, rather than a full heavy-duty transit bus. This type of bus will be better able to navigate the circles along Battery Boulevard, as well as the turnaround at the Mounts Bay Center. As a new route, ridership demands are not likely to warrant a large vehicle. The recommended vehicle for the route is estimated to cost about \$100,000.

Ridership on this route will depend upon whether or not the route is implemented on a one-hour or two-hour headway. For a two-hour headway, with the proposed span of service of 14 hours per day, five days per week, the ridership is expected to be about 30,000 annual passenger trips. If a one-hour headway is provided, the passenger trips are likely to be about 60,000 annually. Note that some of these trips may come from riders who currently use the Gray or Orange Lines.

Figure 7-4: Mounts Bay/Quarterpath Line



## Red Line

The three primary issues that came to light during the examination of the Red Line were:

- 1) The looped route makes bi-directional travel inconvenient,
- 2) The route is too long to be accomplished in one hour, and
- 3) Traveling through several shopping center parking lots is time consuming and exposes the bus to parking lot traffic hazards.

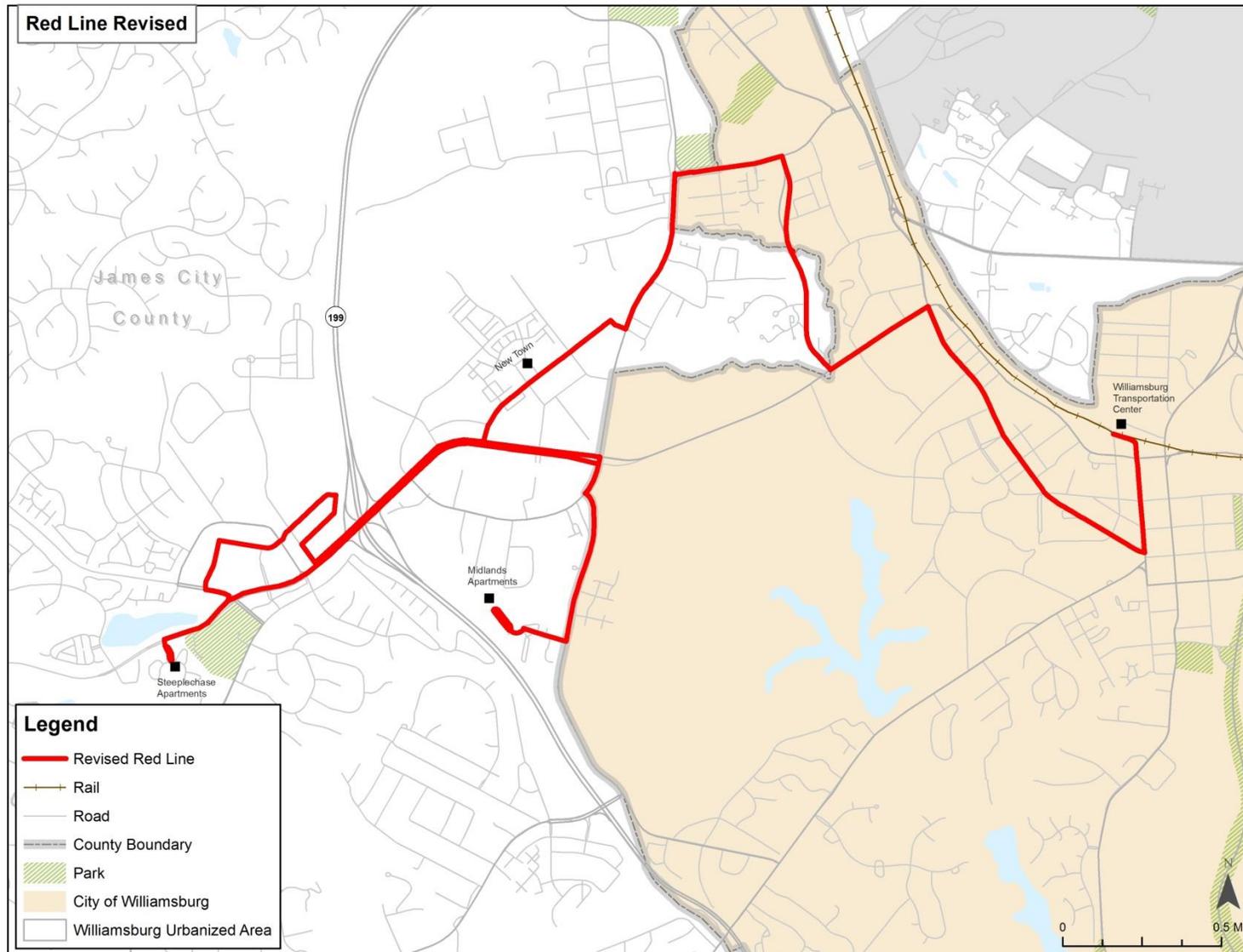
In order to address the first two issues, the route was re-aligned to become more bi-directional in nature, eliminating the portion of the route that serves Williamsburg Crossing and Jamestown Road. This change was possible with the revision of the Jamestown Line that includes this connection. To help reduce the shopping center parking lot hazards, the route has also been recommended to be re-configured around the Monticello Marketplace to use Old News Road, accessing the center with a stop adjacent to Rite Aid, rather than the current stop at Target.

Several route options were considered, with the preferred option displayed as Figure 7-5. This route change will need to coincide with the recommended change for the Jamestown Line in FY17, as some of the current Red segments are being assigned to the Jamestown Line instead.

Similar to the frequency schedule adjustment for WATA's other core routes, it is recommended that the 30-minute (frequency) headways be changed from the current 10:30 a.m. to 4:30 p.m. pattern to one that more closely aligns to work schedules (6:30 – 9:30 a.m. and 3:30 – 6:30 p.m.). This change is also scheduled for FY17.

The route and schedule changes recommended for the Red Line are cost neutral. Ridership on the Red Line should be monitored closely after this route change, as it is expected to make the route more attractive, though the route will be losing some segments that will be picked up by the Jamestown Line. Red Line ridership had been growing each year until FY15, when there was a small dip in ridership. Of the five core routes that currently offer 30-minute frequencies for part of the day, the Red Line produces the fourth highest ridership.

Figure 7-5 Red Line Revised



## Tan Line

Of WATA's five core routes, the Tan Line currently experiences the lowest ridership. As such, it is recommended that the schedule for the route offer hourly headways throughout the service day, rather than adding 30-minute headways during peak times. This change will improve the productivity of the route by reducing the number of daily service hours and will save \$110,723 in annual operating expenses. There will likely be some reduction in ridership, reflecting the seven fewer daily vehicle trips (Monday-Friday). This change is scheduled for FY17.

## Surry Line

In order to offer increased frequency for the Surry Line without incurring additional operating expenses, it is recommended that the route operate primarily between Jamestown and the Surry County stops, making a timed connection with the Jamestown Line so people can access the Five Forks area, Williamsburg Crossing, and downtown Williamsburg.

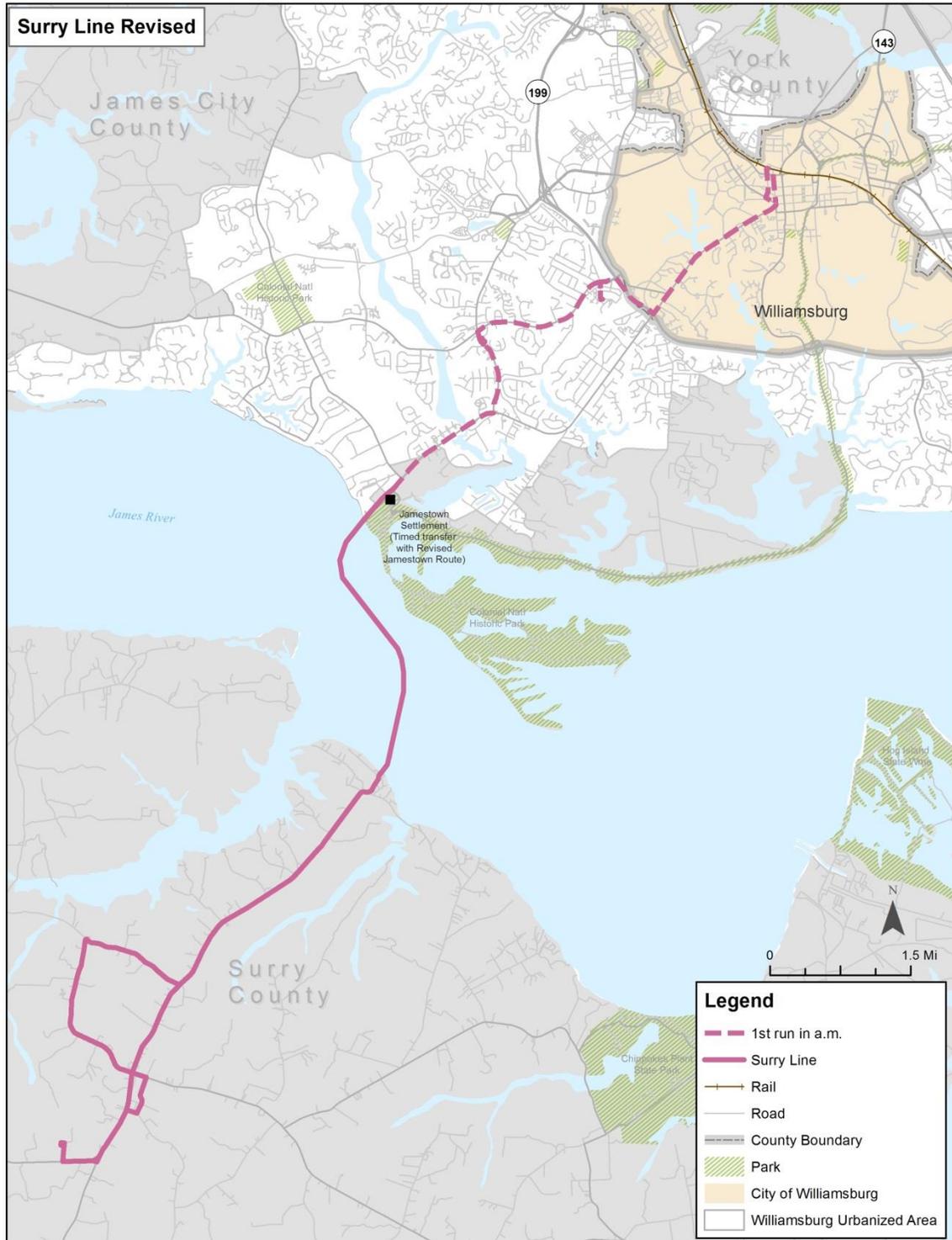
For the first run of the day, it is recommended that the Surry Line complete the full round trip from the Jamestown Ferry Terminal to the Surry County stops, back to the ferry, boarding the ferry to Jamestown, and then making the currently scheduled stops to bring people to the Williamsburg Transportation Center. The second trip of the day will originate at the Williamsburg Transportation Center and travel to the Ferry to access the 8:10 trip across the James River. The route will make the Surry County stops and travel back on the 9:00 a.m. ferry, arriving in Jamestown about 9:15- 9:20. Beginning with this run, passengers coming from the Surry Line and wishing to travel to other parts of the Jamestown-Five Forks area, or Williamsburg, will transfer to the Jamestown Line. As part of the service design, the Jamestown Line vehicle will wait for the Surry Line transfers before traveling north toward Williamsburg.

Given the current Ferry schedule, from 9:15 a.m. to 3:15 p.m., it appears that the Jamestown Line could meet the Surry Line on the :15 - :20 at the Jamestown Settlement, which would mean it would be at the Williamsburg Transportation Center about :45 to :50 after the hour. The Ferry schedule shifts between 3:30 p.m. and 7:30 p.m., which will result in a bus schedule shift as well.

This concept also opens up the opportunity for pedestrian travel from Surry County. For example, if there is an occasion when the Ferry is full for vehicles and the WATA bus does not make it on, riders could travel across the Ferry as pedestrians and then get on the Jamestown Line to complete their trips.

This route change is recommended to coincide with the change in the Jamestown Line (FY17). This change is cost neutral, as the vehicle hours that are currently used to travel on the Surry Line between Jamestown and Williamsburg will be re-directed to provide increased frequency for the Surry County portion of the route. The route map for the revised Surry Line is provided in Figure 7-6. Ridership on the route should increase, given the additional opportunities for travel.

Figure 7-7: Surry Line, Revised



## SYSTEM WIDE IMPROVEMENTS

There are two improvements that were termed “system wide” improvements in Chapter 6. These were:

- 1) Later hours of service for the core routes, and
- 2) Frequency schedule adjustment.

Both of these improvements have been discussed within the context of each route in the previous section, resulting in the following recommendations:

- Extend the hours of service Monday through Saturday on the Blue and Gray Lines to provide two additional full round trips (9:00 p.m. and 10:00 p.m., with service ending at 11:00 p.m.). These two routes are the highest ridership routes in the system and cover a large geographic area. Additional routes may be considered for later hours in future years. This recommendation is scheduled for FY18.
- Change the hours during which 30-minute service is provided to better coincide with ridership and commute patterns. The recommendation is to provide 30-minute frequency between the hours of 6:30 a.m. and 9:30 a.m. and again between the hours of 3:30 p.m. and 6:30 p.m. This recommendation is scheduled for FY17.

### Frequency Standard

WATA staff members are also interested in developing a service standard to help decide which core routes should be considered for 30-minute frequency. Using current ridership and productivity as benchmarks, the following standards are proposed:

- Route productivity of at least 20 passenger trips per revenue hour, and/or
- Total annual ridership of over 140,000 passenger trips.

This standard would not apply to specialty routes such as the Green Line, the Trolley Line, or the Surry Line.

This standard would result in elimination of 30-minute service on the Red and Tan Lines, using current ridership and productivity numbers. As discussed in the route-by-route analysis, it is recommended that frequency service be maintained along the Red Line for a year or so following the route change to determine if the more attractive route will generate additional ridership.

## ADA PARATRANSIT

ADA paratransit demand has risen significantly over the past several years. This increase will likely continue as the area's population ages. In addition, the TDP includes an expansion route that travels through some areas not currently served by public transportation (Mounts Bay), which will also lead to an increase in ADA paratransit demand. In recognition of the likely growth in paratransit demand, 2,080 hours have been added to the program, starting in FY18, with additional hours added for FY20-FY22. Paratransit vehicles have also been added, beginning in FY2018. There is also a recommendation for WATA to work with the proposed Williamsburg Area One-Call Center, which could potentially offer paratransit software, as well as helping WATA with ADA paratransit eligibility certification.

## STAFFING RECOMMENDATIONS

There are a number of staffing recommendations that are included as part of the COA and six-year plan. These are:

- Eliminate the use of on-call drivers
- Fully staff driver positions
- Add a safety and training coordinator
- Participate with the Williamsburg Area One- Call Center

The details for each of these changes are documented below.

### Eliminate the Use of On-Call Drivers

As detailed in previous chapters, the use of on-call drivers makes it difficult and time-consuming to construct employee schedules, necessitates the use of short-term schedules, and is a factor that contributes to overtime pay. The focus of this change is to eliminate the on-call driver category, replacing the hours with full and part-time drivers.

WATA has already taken steps to implement this improvement, obtaining Board approval in March, 2016 to eliminate the use of on-call drivers, replacing this workforce segment with three (3) full-time positions and eight (8) part-time positions. Of the full-time positions, one is designated as a trainer and two are drivers. One of the part-time positions has been designated as a customer service position, which is one of the duties that had been previously performed by on-call drivers. This improvement, as implemented, is cost neutral.

### Fully Staff Driver Positions

As discussed in Chapter 4, WATA's operating staff members reported that it was stressful to schedule drivers, as there never seemed to be enough available drivers to fill all of the shifts. An analysis of driver hours indicated that this was true, as the actual pay hours were significantly

lower than the budgeted hours (FY15). Further analysis indicated that the budgeted hours for drivers may also need to be increased to ensure adequate staffing when drivers are sick or on vacation.

With the transition away from on-call drivers, it should be easier for WATA to fully staff the driver positions to ensure a more stable workforce to fill its scheduled hours. In addition, the Operations Director position has been filled since the staffing analysis, which has allowed the supervisors to be in the field more regularly. This should reduce the need to schedule more than one lead driver for any given shift.

Once the full transition away from on-call drivers has been accomplished, WATA should re-evaluate whether or not additional driver hours are needed to cover absenteeism.

## **Hire a Safety and Training Coordinator**

The need for a more organized and robust safety and training program was mentioned by the majority of the staff members interviewed. Given the number of operating staff members that are trained each year, it is appropriate that safety and training functions be given a higher level of attention than a partial staff position.

In order to further develop the safety and training functions for WATA, it is proposed that a “Safety and Training Coordinator” position be created. The proposed primary job duties of this new position will be to:

- Coordinate, develop, and monitor safety and training programs for WATA.
- Identify appropriate training resources and materials, and develop and prepare lesson plans and materials.
- Conduct safety classes and train, demonstrate and test transit employees in the operation of transit vehicles, machinery, and defensive driving techniques.
- Enforce safety procedures and report safety violations.
- Develop and administer a training evaluation process, evaluate training effectiveness, document progress of participants, and make recommendations for improvement.
- Coordinate with in-house and outside sources to provide/conduct training.
- Inspect transit facilities and equipment, report safety hazards and ensure correction of hazards.
- Develop and recommend policies and procedures concerning the department’s safe operation of vehicles and facilities.
- Review Workers’ Compensation claim forms for accuracy and determine if further investigation is required.
- Serve as the Safety Officer for WATA.
- Investigate WATA- related accidents and incidents.
- Administer WATA’s Drug and Alcohol Program in accordance with U.S. DOT guidelines and regulations.

- Inspect transit facilities and equipment for potential hazards.
- Prepare and submit required safety and security reports to FTA and the National Transit Database (NTD).

WATA is planning to develop this position for FY17. This position, including fringe benefits, is estimated to cost \$62,550 annually. WATA currently has a former staff member working half-time in this capacity.

## **Participate with the Williamsburg Area One-Call System**

A preliminary staffing recommendation considered consolidating WATA's paratransit program staff so that one individual has oversight over both the eligibility and scheduling functions. Currently these functions are split between two staff members who also have other responsibilities.

This preliminary recommendation may not be needed if the proposed Williamsburg Area One-Call System is implemented and if ADA eligibility is one of the tasks taken on by the call-center staff. The one-call center project is described below.

### ***One-Call System Planning***

WATA recently participated with the Peninsula Agency on Aging (PAA), Faith in Action, and the Williamsburg Health Foundation in the development of a planning study for the "Williamsburg Area One-Call Transportation System." The focus of the project was to outline a plan for the implementation of a central location that will allow customers to receive information about transportation services available in the community and serve as a foundation for one-click services and other efforts to improve mobility. It is envisioned that the center would be eligible for funding under the Federal 5310 program, which provides funding for mobility management projects at an 80% federal participation rate, requiring a 20% local match. The program is administered through DRPT.

The recommended plan outlined the development of a one-call center, to be housed at the PAA, and initially staffed by a Mobility Manager, which would be a new position. The Mobility Manager position would focus on the implementation of the one call center, and then could evolve into one that would manage the call center. Initial implementation activities would include coordinating efforts to establish a centralized transportation center. Once the center is successfully launched and implemented, responsibilities would be added to include activities related to daily operations.

The plan anticipates that at least one additional staff would be needed beyond the Mobility Manager and the current PAA staff, depending upon call volume and the involvement of the staff in additional mobility management activities.

## Functions

When established, the core function of the one-call center will be answering calls from customers through a central number, discussing their transportation needs, providing information on travel options, and if appropriate scheduling trips on PAA RIDES, WATA ADA paratransit services, or Faith In Action volunteer driver services. The current RouteMatch software would expand to incorporate all available transportation services and be used by the central call staff to schedule trips.

Coordinating this transition will be a major component of the proposed Mobility Manager's responsibilities. The transportation services currently operated by WATA and Faith In Action will need to be integrated into the scheduling software and staff appropriately trained to be able to schedule trips on different services and to ensure a smooth transition at the outset of the one-call center.

Additional users would be added to PAA's existing RouteMatch license. Additional licenses would be purchased to include WATA's vehicles, and WATA's paratransit vehicles would be equipped with tablets.

One of the additional functions under consideration for the Mobility Manager is managing WATA's ADA eligibility certification process, and expanding the level of assessment, potentially helping WATA manage demand by focusing on those who are truly unable to access the fixed route services. It would also eliminate the need to develop an ADA coordinator position at WATA.

A significant benefit to WATA for participating in the one-call center will be the expansion of the current PAA RouteMatch software, adding WATA as an additional user. The preliminary price estimates from RouteMatch indicate that it is substantially less expensive than if WATA were to procure its own paratransit software.

According to the planning study, implementation of the one-call center is tentatively scheduled for FY17, assuming the project is awarded grant funding. The local share for this project is projected to be \$14,620 in FY17; \$35,307 in FY18; and \$38,766 in FY19. The current plan does not specify the source of the local funds, though it is presumed it will be a split between participating agencies. A copy of the draft final report for the study is provided in Appendix D.

## FARE AND PASS RECOMMENDATIONS

Given that WATA's farebox recovery is lower than its peers, and there is a need to improve and expand services, WATA has chosen to increase fares. These changes, as well as the estimated results for WATA's fixed routes, are provided in Table 7-1.

The ridership and revenue estimates in the table are based on industry research with regard to fare elasticities, which measure the response of transit patronage to fare changes. Fare elasticity

is defined as the ratio of percentage change in ridership to a one percent change in fare.<sup>1</sup> Elasticities range considerably among rider and trip categories, with car owners generally having a much greater elasticity (-.41) than people who are transit dependent (-.10); and work trips generally being much less elastic than shopping trips.<sup>2</sup> For WATA, a fare elasticity of -.15 was used. It is likely that the elasticity will be lower (closer to -.10), but the study team chose a more conservative figure to minimize the chance of future fare revenue and ridership being over-stated.

There was also a need to make some assumptions regarding future behavior, as WATA is eliminating the 6-ride pass. The study team has assigned these riders to the 7-day pass category of fare payment. In addition, instituting a fare for children who are large enough to occupy a seat required the study team to estimate the fare revenue that will be derived from this group. Without data on the actual age/size of children who ride, the study team made the assumption that half will ride for free and half will pay \$1.50, resulting in an average fare of \$0.75, up from the current level of \$0.00.

The mathematical formula used to estimate the changes in ridership and fare revenue that are expected to result from the fare changes is provided below:

$$R2 = R1 * \frac{(F1 + F2) + e (F2-F1)}{(F1 + F2) - e (F2-F1)}$$

- R2 = Ridership after a fare change
- R1 = Ridership before a fare change (current ridership)
- F2 = Fare after a fare change
- F1 = Fare before a fare change (current fare)
- e = Arc elasticity of demand (elasticity)

For WATA, we estimated that e= -.15

The package of fare increases should increase the annual fixed route fare revenue by about 37%. Ridership is expected to decrease by about 5.3%. It should be noted that WATA's FY17 budget for fare revenue is \$525,000, so the budget number used to estimate future fare revenue (outlined in Chapter 9) is the FY17 budget number plus 37%. WATA is also raising the ADA complementary paratransit fare from \$2.00 to \$3.00. This increase reflects a fare that is twice the fixed route fare. The current ADA fare revenue is about \$14,862 (based on the FY15 ridership of 7,431 trips). Assuming a fare elasticity of -0.15, WATA can expect ridership to decrease to about 7,133 annual passenger trips, with fare revenue increasing to \$21,400. Note that these estimates consider only the fare change, and not other factors that may influence paratransit demand.

<sup>1</sup> Fare Elasticity and Its Application to Forecasting Transit Demand, APTA, August, 1991.

<sup>2</sup> Transit Elasticities and Price Elasticities, Victoria Transport Policy Institute, Todd Litman, August, 2015.

**Table 7-1: Summary of the Proposed Fixed Route Fare Changes and the Effect on Ridership and Revenue**

Fare Category	# Passenger Trips	% of Total Passenger Trips	Estimated Fare Revenue	Current Cost	Proposed Cost	Estimated Ridership After Fare Increase	Estimated Revenue After Fare Increase
One-way bus fare	102,775	10.0%	\$ 128,469	\$ 1.25	\$ 1.50	100,000	\$ 150,000
Discounted one-way bus fare	10,914	1.0%	\$ 5,457	\$ 0.50	\$ 0.75	10,259	\$ 7,694
All-day pass	541,152	54.0%	\$ 346,337	\$ 2.00	\$ 3.00	508,683	\$ 488,336
Discounted all-day pass	57,467	6.0%	\$ 18,964	\$ 1.00	\$ 1.50	54,134	\$ 26,796
William & Mary (pre-paid)	117,970	12.0%	\$ -	\$ -	\$ -	117,970	\$ -
6-ride Pass	2,262	0.2%	\$ 1,244	\$ 10.00	eliminate	-	\$ -
6-ride Pass - discounted	1,417	0.1%	\$ 393	\$ 5.00	eliminate	-	\$ -
7-day Pass	6,069	0.6%	\$ 2,889	\$ 10.00	\$ 15.00	7,848	\$ 5,603
7-day Pass - discounted	714	0.1%	\$ 171	\$ 5.00	\$ 7.50	2,007	\$ 723
30-day Pass	36,584	3.7%	\$ 21,000	\$ 35.00	\$ 45.00	35,237	\$ 25,864
30-day Pass - discounted	52,201	5.2%	\$ 10,127	\$ 17.50	\$ 22.50	50,270	\$ 14,628
Middle/High School Students	6,136	0.6%	\$ 3,068	\$ 0.50	\$ 0.75	5,780	\$ 4,335
TNCC Students	29,241	2.9%	\$ 36,551	\$ 1.25	\$ 1.50	28,451	\$ 42,677
12 and under	31,552	3.2%	\$ -	\$ -	\$ 0.75	23,317	\$ 17,488
<b>Totals</b>	<b>996,454</b>		<b>\$ 574,670</b>			<b>943,956</b>	<b>\$ 784,143</b>

Notes: Fare revenue breakdown is based on FY14 fare data  
Assumes fare elasticity of  $-(.15)$   
Trolley fares were not studied separately  
The current six-ride pass customers have been included in the future 7-day pass category  
The new 12 and under fare category assumes a mid-point fare of \$0.75

WATA has begun the process of implementing the fare increases, with full implementation expected to occur in FY17.

## INFRASTRUCTURE AND COMMUNICATIONS IMPROVEMENTS

### Facility Planning and Development

As discussed in Chapter 1, WATA has been exploring the development of its own operations and maintenance facility as there are a number of inadequacies associated with its current leased facility. The facility study completed in 2010 by AECOM recommended that WATA acquire, retrofit, and further develop the existing site as the lowest cost alternative for its facility needs.

WATA has recently begun additional work to implement the recommendations from the 2010 study, contracting with Kimley-Horn and Associates to assist WATA with the pre-construction phase of facility planning. This facility project has two primary phases:

- Phase 1: Planning and Site Acquisition
- Phase 2: Facility Design – Build<sup>3</sup>

The first phase includes coordination with FTA and DRPT and a series of real estate tasks. The first phase is scheduled to take place during 2016 and 2017.

Phase 2 of the project involves engineering and design, bids and construction, testing and commissioning. The second phase is scheduled to take place between 2017 and 2019.

The new plan, as outlined in September, 2015, calls for an administrative building to be constructed in an area that is now parking, with the current building converted completely for maintenance use. A new bus wash facility is also proposed. This plan has a significantly lower cost estimate than the 2010 study, with the cost estimate of about \$8.3 million. This facility cost does not include land acquisition. WATA is also looking at purchasing the property, rather than leasing. The facility would continue as a shared facility.

This project has already been incorporated into WATA's capital planning process. DRPT's Six-Year Improvement Program shows Regional Surface Transportation Program (RSTP) funds programmed for this project in FY18; FY19; and FY20. These details are provided in Chapters 8 (Capital Improvement Plan); and Chapter 9 (Financial Plan). This is an integral project for WATA for the six-year planning period covered by this TDP.

<sup>3</sup> WATA: New Transit Facility Project. Board Briefing Overview, Kimley-Horn, October 2015.

## Bus Stop Improvement Project

A comprehensive bus stop inventory and improvement project was beyond the scope of the TDP/COA; however, a number of specific bus stop issues came to light during the process. These issues are:

- There are several bus stops that are located in areas not ideal from a pedestrian safety perspective. An example is the stop at the Regency Apartments along Longhill Road. This stop has a large ditch behind it.
- There are locations, particularly along the Purple 1 Line that do not have inbound and outbound paired stops, requiring riders to travel out of their way in one direction or the other to get to their stops.
- There are a large number of stops that are not served by a sidewalk network.
- Bus stop spacing is inconsistent throughout the system.

This alternative focuses on developing a full bus stop inventory and analysis that includes the development of system wide guidelines for bus stop placement, amenities, and spacing. WATA could use this information to program bus stop improvements with a defined, prioritized plan. In addition, improvements to the accessibility of fixed route bus stops may lead to a decrease in ADA paratransit demand. Currently there are approximately 300 unique bus stops within WATA's fixed route network.

This type of project could be completed by a contractor or could be conducted in-house, perhaps through the use of an intern. Bus stop inventory and analysis tasks typically cost approximately \$100 a stop. With about 300 stops, the cost is estimated to be about \$30,000. This project is scheduled for FY18. Funding for bus stop improvements has been included in the capital budget.

## Northern/Western Hub – Warhill Transfer Center

WATA's route network covers a very large area from northwest to southeast along the peninsula, necessitating connections among the fixed routes to maximize efficiencies for both local community and regional trips. A connection among the Blue, Purple 1, Purple 2, and Tan Lines is currently made at the Walmart in Lightfoot. As discussed among the route alternatives, the location of this connection is difficult for the Blue and Purple 1 Lines, largely due to the extra time it takes to travel from the Richmond Road corridor to the Walmart. The current location necessitates a turnaround that uses the Walmart delivery access roadway.

The focus of this improvement is for WATA to purchase land and develop its own passenger transfer facility. It is envisioned that this type of facility would include a small structure to house restrooms (at least for staff). The ideal location would be in the Lightfoot area, and

closer to the Richmond Road corridor. The area adjacent to the James City County Law Enforcement Building and Thomas Nelson Community College may be appropriate (except for the Tan Line, which would likely require routing adjustments). This area is close to the prior location of WATA's northern/western hub which was on the property of the now closed Outlet Center. This property is currently being re-developed into a shopping center.

WATA has identified a parcel of land on Opportunity Way that it would like to purchase for this hub and has begun the process of applying for grant funding and inserting the project into regional transportation improvement plans. Some examples of the scale of the proposed facility were provided in Figures 6-12 and 6-13.

The ideal location would be close to other destinations, such as a grocery or convenience store, to maximize patron convenience. Between one and two acres is likely to be needed depending upon the configuration of the lot.

Passenger transfer facilities can be constructed on various size parcels, depending upon the ingress and egress. It is estimated that between one and two acres would be needed. A preliminary look at land costs in the Lightfoot area indicate that land prices are about \$400,000 per acre. Construction expenses are variable, depending upon the size of the structure. A preliminary cost estimate for the project is approximately \$2.5 million. This project would be eligible for the standard 80% federal and 20% local match, with some state involvement likely.

WATA has developed a preliminary proposal for a Warhill transfer center and is proposing the project for FY20 funding. Additional details regarding this project are included in Chapters 8 (Capital Improvement Plan) and Chapter 9 (Financial Plan).

## Technology Improvements

In recent years, WATA has made several investments in technology upgrades, including electronic fareboxes, security equipment, automatic vehicle location technology for the fixed routes (BusTime), and Automatic Vehicle Monitoring (AVM<sup>®</sup>), which transmits vehicle fleet maintenance information.

WATA has an IT professional on staff who oversees details regarding the purchase, configuration, and maintenance of technological equipment. A number of additional technological improvements are proposed for the TDP period, described in the following paragraphs.

### ***Driver Scheduling /Runcutting Software for Fixed Route Operations***

WATA has historically scheduled drivers manually, using spreadsheet applications to assist in the process. As the system grows and becomes more complex, it is likely that a computer-assisted scheduling/runcutting program will be able to develop driver work blocks more efficiently and use less staff time than the current manual system.

WATA has a tool through its Clever Devices system, called TeleDriver, which is capable of developing fixed route driver run. Information provided by Clever Devices indicated that this feature could probably be used by WATA with some modifications and staff training. WATA will need the resources to program their data and maintain the data long term.

The TeleDriver implementation is scheduled for FY17, to coincide with the changes in bus scheduling that will be associated with

### ***Paratransit Scheduling Software***

As previously discussed, WATA is participating in the development of a one-call center for transportation services in the region. One potential feature of the center will be shared use of PAA's RouteMatch software, which will have some costs, but not nearly the full cost of a stand-alone WATA paratransit software program. This would be an ideal solution for WATA, as its current volume is on the low side for an investment in paratransit scheduling software, though the reporting capabilities of automated programs would save a significant amount of staff time in the compilation of paratransit data. If the one-call center is not implemented, then WATA should consider the purchase of its own paratransit scheduling software program.

### ***Smart Phone Application for BusTime***

WATA currently uses BusTime to provide real-time bus schedule information for passengers. This program can be accessed through the Internet but WATA does not have a smart phone application for the program. This alternative proposes to add the smart phone application to the existing BusTime program. The cost to develop the smart phone application is about \$40,000. This project is scheduled for FY18.

### ***Telephone System – Analog to Digital***

Using technology funds from FY15, WATA will be upgrading its phone system in FY17 from an analog system to a digital system.

### ***Dispatch Headsets***

The current phone system at WATA does not have headsets for the dispatchers. This is inconvenient for the dispatchers as the job entails a significant level of multi-tasking. This alternative focuses on purchasing headsets for the dispatchers. WATA will have a greater choice in headset choices once the telephone system is upgraded from analog to digital.

Dispatch headsets are between \$150 and \$300 each and the handset lifter devices are about \$100 each. "The Conductor" costs \$815.

## Customer Service Improvements

WATA has recognized that there is a need to improve the provision of customer information and is currently working with vendors on the development of a marketing, rebranding, and web design project. The goals for the project are:

- Develop, enhance, and promote a sustainable regional transit identity that will enhance service coordination and marketing efforts.
- Build awareness for available transit services and how to access them.
- Create an image for the transit network that is inclusive of all potential user groups.
- Encourage usage among target markets with transportation needs.
- Develop a user-friendly, flexible, informative website that is easy to maintain.<sup>4</sup>

This project is addressing a number of marketing improvements including the website. There are a couple of additional customer information improvements that have evolved from the TDP/COA data and analysis, discussed below.

### ***Route maps- Web and Printable***

With the exception of the Trolley and the Jamestown Route, there are no printable route maps for the WATA fixed routes and there are very few time points listed on the printed schedules. These two factors combined make it difficult to understand exactly where and at what time a particular stop is served. The focus of this alternative is to publish maps for the routes and have them available with the individual route timetables. A system wide map could be published on one side of the WATA system brochure with the schedules provided separately. The maps should be available both as hard copy and on WATA's website. This task will require a re-design of the system brochure, which has been included with the marketing project.

### ***Route Names – Transition from Colors to Numbers***

For several years WATA has used colors to define its fixed routes. Many small agencies use colors for bus routes, while larger agencies use them only for rail lines given that there are a limited number of colors available. WATA has grown to the extent that colors are no longer a viable mechanism to use for route identification.

This alternative proposes that WATA shift to a number/description system for route identification. A corridor or destination is typically used as a descriptor. This model is used by both of WATA's neighboring systems, GRTC and HRT. WATA already provides a descriptor along with the color.

An example of how this could work for WATA is provided below:

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<sup>4</sup> Request for Proposal #15-005: WATA Marketing, Rebranding, and Web Design, March 20, 2015.

- Route 1 – Richmond Road/Route 60 West (current Blue)
- Route 2 – Pocahontas Trail/Route 60 East (current Gray)
- Route 3 – Mooretown Road/Great Wolf Lodge (current Tan)
- Route 4 – Merrimac Trail/Tam O Shanter (current Orange)
- Route 5 – Williamsburg West/Steeplechase Apts. (current Red)
- Route 6 – Longhill Road/Centerville Road (current Purple 1)
- Route 7 – Stonegate/Chickahominy (current Purple 2)
- Route 8 – William & Mary Circulator (current Green)
- Route 9 – Trolley Circulator
- Route 10 – Surry
- Route 11 – Jamestown

Some agencies number the routes based on the historic sequence of when the route was implemented, while other systems use different number schemes to denote circulators or express routes. Transitioning to a number/name based system will allow WATA to add routes without using obscure color names and will provide for a more logical naming convention. This improvement is scheduled for FY19.

## VISION PROJECTS

There are a number of additional potential improvements that WATA can consider, if demand warrants and funding becomes available. These projects are highlighted below, most of which have been assigned to later years of the TDP (FY20-FY22).

### Human Service Center Route

This route was proposed as an alternative in Chapter 6, and was not chosen for implementation. The focus of the route was to provide relief to the Blue and Purple 1 Lines, as well as to provide a convenient trip to and from the James City County Human Services Center.

If transit service to the Human Service Center is not adequate under the currently recommended plan (i.e. served by the interlined Purple Line), and funds are available, WATA can consider developing a specialty route that provides a convenient connection to and from the Center.

### Parkway Shuttle

During the WATA Stakeholder meeting that was held in January, 2016, the National Park Service representative discussed a desire to examine the possibility of re-instituting some version of the prior Historic Triangle Shuttle, which operated on a seasonal basis and provided a connection between Williamsburg, Jamestown, and Yorktown via the Colonial Parkway. This shuttle was initiated in 2004 and was funded through a demonstration grant. The route operated from mid-March to mid-November each year. The hours of service were generally 9:00 a.m. to 5:30 p.m., with 30-minute headways. Funding for the service lasted through the

2011 tourist season. The CWF operated the service and continued it for two seasons after the demonstration grant expired. The route operated fare-free.

While restoration of this route was not chosen for implementation by WATA for the six-year plan, it is included as a vision project. It could be implemented by WATA or by CWF if funding becomes available.

## **Frequency Improvements**

WATA currently provides 30-minute service for the core routes on a “frequency” schedule that operates between 10:30 a.m. and 6:00 p.m. The TDP improvements call for this schedule to be shifted to peak commute hours and also set a ridership/productivity standard for the provision of 30-minute service frequency. The focus of this vision project is to consider 30-minute frequency throughout the service day for all of the WATA routes that meet the ridership and productivity standards.

## **Later Hours of Service**

The two WATA routes with the highest ridership also currently exhibit ridership patterns that suggest that riders need and would use later hours of service. These routes (Blue and Gray) will be extending their hours of service Monday-Saturday so that the last run begins at 10:00 p.m., rather than the current 8:00 p.m. If this improvement is successful, and ridership patterns suggest that later service is needed on other routes as well, WATA should consider offering later hours on other core routes, pending funding availability.

## **Southern Hub**

The six-year plan includes significant infrastructure improvements, including a new operating facility and a Northern Transfer Hub. During the TDP process, the need for a more southern hub was also discussed. Once the Mounts Bay Line is established, the riding patterns for the southern portion of the service area can be re-evaluated to determine if a southern hub would be helpful to WATA operations and WATA riders, as well as where such a hub should be located. This project has not been assigned to a specific year.

## **New Fareboxes**

Another issue that was discussed during the TDP process was that of farebox equipment that requires a swipe transaction. The swipe transaction takes more boarding time, particularly using paper fare media that do not function properly when they get wet. The focus of this project will be to transition WATA’s fare collection technology to a system that requires the tap of an electronic card, rather than a swipe. This will significantly speed boarding and eliminate a number of issues associated with the swipe technology and paper fare media. This project has not been assigned to a specific year.

# Chapter 8 - Capital Improvement Program

## INTRODUCTION

This chapter outlines the capital infrastructure projects needed to implement the service recommendations described in Chapter 7. The Capital Improvement Program (CIP) provides the basis for WATA's requests to DRPT for federal and state funding for capital replacement, rehabilitation, and expansion projects. The recommended projects are those for which WATA reasonably anticipates local funding to be available. Capital projects include vehicles, passenger amenities, equipment, facilities, and technology.

## VEHICLE REPLACEMENT AND EXPANSION PLAN

This section presents the details of the vehicle replacement and expansion plan, including vehicle useful life standards and estimated costs. A vehicle replacement and expansion plan is necessary to maintain a high quality fleet and to dispose of vehicles that have reached their useful life. The capital program for vehicles was developed by applying FTA/DRPT vehicle replacement standards to the current vehicle fleet, which was presented in Chapter 1.

### Useful Life Standards

The useful life standards used by DRPT are developed based on the manufacturer's designated vehicle life-cycle and the results of independent FTA testing. The standards indicate the expected lifespans for different vehicle types. If vehicles are allowed to exceed their useful life they become much more susceptible to break-downs, which may increase operating costs and decrease the reliability of scheduled service. DRPT's vehicle useful life policy for a number of different vehicle types is shown in Table 8-1.

**Table 8-1: DRPT's Vehicle Useful Life Policy**

Vehicle Type	Useful Life
Service Vehicle	Minimum of 4 Years or 100,000 Miles
Vans	Minimum of 4 Years or 100,000 Miles
Body on Chassis Vehicles	Minimum of 4 Years or 100,000 Miles
Light Duty Bus (25'-35')	Minimum of 5 Years or 150,000 Miles
Medium Duty Bus (25'-35')	Minimum of 7 Years or 200,000 Miles
Heavy Duty Bus (~30')	Minimum of 10 Years or 350,000 Miles
Heavy Duty Bus (35' – 40')	Minimum of 12 Years or 500,000 Miles

Source: DRPT's Section 5311 State Management Plan (January 2015)

## Vehicle Plan – Baseline Estimate

There are a variety of vehicles currently in the regional fleet, including the following:

Vehicles operated by WATA:

- 14 35-ft low floor transit vehicles
- 6 30-ft low floor transit vehicles
- 5 body-on-chassis vehicles (14-15 passenger capacity)
- 3 trolley-style vehicles
- 7 support vehicles

Vehicles operated by CWF:

- 17 40-ft. CNG transit vehicles
- 1 support vehicle

Vehicles operated by York County:

- 2 trolley-style vehicles

DRPT's useful life policy was applied to this fleet by vehicle type in order to develop an estimate of the region's capital needs for the next six years. Appendix B provides the existing publicly-funded regional fleet inventory with the estimated fiscal year that each vehicle is eligible for replacement. The operating condition of the vehicles, as well as the availability of funding, will dictate the actual replacement year.

## Vehicle Plan

The annual schedule for vehicle replacement and expansion is shown in Table 8-2, based on the vehicle inventory and typical annual fleet mileage, coupled with the Operations Plan (Chapter 7). This table reflects all vehicle replacement needs for the entire publicly-operated fleet, including partners.

**Table 8-2: Vehicle Replacement and Expansion Schedule**

Type of Vehicle	FY2017	FY2018	FY2019	FY2020	FY2021	FY2022
<b>Replacement</b>						
<30 ft. Bus	1	3			1	
30 ft. Bus	2	3				
35 ft. Bus		2	6			
40 ft. CNG Bus		4	6			
Trolley				3		
<b>Expansion</b>						
<30 ft. Bus		1	1	1		1
30 ft. Bus						
35 ft. Bus				3		2
Trolley						
<b>Sub-Total Vehicles</b>	<b>3</b>	<b>13</b>	<b>13</b>	<b>7</b>	<b>1</b>	<b>3</b>

## Estimated Vehicle Costs

The estimated vehicle replacement costs are presented in Table 8-3. These costs are based on vehicle costs currently experienced by WATA. For fiscal years 2018 to 2022 a two percent inflationary factor was applied. These cost estimates will be used to develop the capital budget, which is included with the Financial Plan in Chapter 9. The plan includes a modest number of expansion vehicles over the course of the planning period.

Potential funding sources for the replacement and expansion vehicles include FTA S. 5307 and S.5311 funds, CMAQ, DRTP's Mass Transit Trust Fund and Mass Transit Capital Fund, and local funds. The Commonwealth has recently implemented a tiered capital allocation policy, which means that the state match for capital will be decreasing over the period, and will be different for different "tiers." According to DRTP staff, there may be a reduction in the amount of state money available for capital, beginning in FY18. These funding tiers are fully explained in the financial plan (Chapter 9).

**Table 8-3: Estimated Costs of New Vehicles**

Fiscal Year	Estimated Vehicle Cost				
	Diesel/Gas				CNG
	< 30 ft.	30 ft. Medium Duty	30 ft.-35 ft. Heavy Duty	Service Vehicles	40-ft
2017	\$90,000	\$150,000	\$500,000	\$36,000	\$539,000
2018	\$91,800	\$153,000	\$510,000	\$36,720	\$550,000
2019	\$93,636	\$156,060	\$520,200	\$37,454	\$561,000
2020	\$95,509	\$159,181	\$530,604	\$38,203	\$572,220
2021	\$97,419	\$162,365	\$541,216	\$38,968	\$583,664
2021	\$99,367	\$165,612	\$552,040	\$39,747	\$595,338

*Note: These vehicle prices do not include on-board technology*

## FACILITIES

As discussed in the operations plan (Chapter 7), one of the most important projects for WATA during the next several years is the planning, design, and construction of an administrative and maintenance facility. The most recent cost estimate for the facility is \$8.3 million, which is significantly less than earlier estimates, which had contemplated the purchase of real estate as part of the facility. Planning and design for the facility are scheduled for FY17 and FY18, and construction funds have been included for FY17, FY18, and FY19.

Another important facility project for WATA is the development of a northern transfer center. WATA has tentatively identified a location for this facility (Opportunity Way), and has termed the project the “Warhill” passenger facility. Real estate acquisition has been included in the FY17 capital budget and FY18 capital budgets. Design and construction funds have also been included in the FY17, FY18, and FY19 budgets.

## PASSENGER AMENITIES

During the TDP/COA process, it became evident that significant improvements are needed for WATA's bus stops. As part of the Operations Plan, a bus stop inventory and analysis project was recommended. Following the recommendations from that project, it is anticipated that WATA will begin to make strategic investments in passenger amenities, based on the highest priority needs identified through the bus stop project. These investments could include additional shelters, landing pads, sidewalk connections, benches, lighting, and trash cans. Funding has been recommended for each year of the plan for these improvements, beginning in FY18.

## EQUIPMENT

The capital plan includes a line item each year for associated capital maintenance. This line item is for a number of different types of maintenance equipment that WATA will need for its program over the six-year period.

## TECHNOLOGY

During FY17, WATA is planning to upgrade its phone system from analog to digital, using funds from a FY15 grant. Once a digital phone system is in place, headsets for the dispatchers will be purchased. In addition, the plan recommends implementing the smart phone application project for BusTime. This project is scheduled for FY18. Routine technology updates, such as hardware and software replacement/upgrades have been included in the plan. Paratransit software was included in WATA's FY16 capital budget. WATA may need only a modest amount for paratransit software if the Williamsburg Area One-Call project is implemented. This project will allow WATA to purchase a user license for Route Match for only \$ 3,750 as part of a coordinated mobility effort with the Peninsula Agency on Aging. The One-Call project also includes tablets for WATA paratransit vehicles. The final report for the project did not specifically identify the responsible entity for the local match for the project, but it is anticipated that it will be a partnership arrangement with each entity paying a portion. At this time, this has not been included in the WATA budget, but it may need to be added if WATA is assigned a portion of the local match. The total local match amounts for the project are modest, ranging from \$14,620 in FY17 to \$38,800 in FY18.

A need to improve WATA's fareboxes has also been identified, but is not currently included in the six-year budget. The focus of this improvement will be to transition WATA's fare collection technology to a system that requires the tap of an electronic card, rather than a swipe. This will significantly speed boarding time and eliminate a number of issues associated with the swipe technology and paper fare media. If funding allows, this project could be added during the six-year period.

# Chapter 9 - Financial Plan

## INTRODUCTION

This chapter provides a financial plan for funding existing and proposed public transportation services in the WATA service area for the TDP's six-year planning period. The financial plan addresses both operations and capital budgets, focusing primarily on financially constrained project recommendations. A long range budget forecast has also been provided. The budgets were constructed with the information that is currently available, including the Commonwealth Transportation Board's FY2016 Public Transportation Improvement Plan, the FY2017 DRPT grant information from WATA, as well as the existing transit budgets that were reviewed for Chapter 3 of the TDP.

For the six-year planning period, there are a number of unknown factors, including the future economic condition of the region and the Commonwealth of Virginia, and the availability of local match for the federal and state funds. The multi-year federal transportation funding program has been finalized, but the individual system amounts are not yet available. The exact revenue available each year will depend upon the availability of funding from the federal Sections 5307 and 5311 programs, the Commonwealth Transportation Fund, and local sources.

## OPERATING EXPENSES AND FUNDING SOURCES

Table 9-1 provides a financial plan for the provision of public transportation services in the region under the financially-constrained six-year plan. For the first year of the plan (FY17), several recommendations from the COA and TDP are scheduled to be implemented and were already included in WATA's FY17 budget. The FY17 operating budget is \$7,413,917, which includes \$1,601,831 in bus operating expenses for The Colonial Williamsburg Foundation. Future years include additional ADA paratransit hours (FY18-FY22), as well as additional hours for later hours of service for more of the core routes, additional frequency of service, and a new route.

**Table 9-1: Operating Expenses and Funding Sources**

Projects	FY2017	FY2018	FY2019	FY2020	FY2021	FY2022
<b>Projected Incremental Annual Revenue Hours</b>						
<i>Current Level of Service (FY16)- Total # of Revenue Hours- Baseline</i>	60,300	60,300	60,300	60,300	60,300	60,300
Extended Hours -Blue and Gray	1,240	1,240	1,240	1,240	1,240	1,240
Jamestown Line on Saturdays	780	780	780	780	780	780
Quarterpath Line - hourly headways	7,280	7,280	7,280	7,280	7,280	7,280
Tan Line - Eliminate Frequency	(1,785)	(1,785)	(1,785)	(1,785)	(1,785)	(1,785)
Added Bus on Blue - Peak Season Saturdays		98	98	98	98	98
ADA Expansion	-	2,080	2,080	3,000	3,000	4,000
Extended Hours - Other Core Routes	-	-	504	504	504	504
Additional Frequency of Service	-	-	-	4,680	4,680	4,680
Human Service Route or Parkway Shuttle					3,000	3,000
<b>Total Transit Revenue Hours</b>	<b>67,815</b>	<b>69,993</b>	<b>70,497</b>	<b>76,097</b>	<b>79,097</b>	<b>80,097</b>
<b>Projected Operating Expenses</b>						
<i>Fully Allocated Cost Per Revenue Hour (1)</i>	\$85.71	\$87.99	\$89.14	\$89.07	\$89.95	\$91.46
<i>Direct Operating Cost Per Revenue Hour</i>	\$62.03	\$63	\$65	\$66	\$67	\$68
<i>Current Level of Service and Year 1 Operating Expenses</i>	\$ 5,812,086	\$ 5,928,328	\$ 6,046,894	\$ 6,167,832	\$ 6,291,189	\$ 6,417,013
<i>The Colonial Williamsburg Foundation</i>	\$ 1,601,831	\$ 1,633,868	\$ 1,666,545	\$ 1,699,876	\$ 1,733,873	\$ 1,768,551
Safety Training Coordinator	-	\$ 62,550	\$ 63,801	\$ 65,077	\$ 66,379	\$ 67,706
Bus Stop Improvement Planning	-	\$ 30,000	\$ -	\$ -	\$ -	\$ -
Added Bus on Blue - Peak Season Saturdays		\$ 6,201	\$ 6,325	\$ 6,451	\$ 6,580	\$ 6,712
ADA Expansion		\$ 131,603	\$ 134,235	\$ 197,480	\$ 201,430	\$ 273,945
Extended Hours - Other Core Routes	-	-	\$ 32,526	\$ 33,177	\$ 33,840	\$ 34,517
Additional Frequency of Service				\$ 308,069	\$ 314,230	\$ 320,515
Human Service Route or Parkway Shuttle					\$ 201,430	\$ 205,458
<b>Total Projected Operating Expenses</b>	<b>\$7,413,917</b>	<b>\$7,792,549</b>	<b>\$7,950,326</b>	<b>\$8,477,962</b>	<b>\$8,848,951</b>	<b>\$9,094,416</b>

(1) Refers to the total operating costs (WATA operated services only) divided by the number of WATA-operated revenue hours.

Table 9-1: Operating Expenses and Funding Sources, continued

Anticipated Funding Sources	FY2017 Base	FY2018	FY2019	FY2020	FY2021	FY2022
<b>Federal</b>						
Federal Operating - S.5307/S.5311	\$ 2,164,597	\$ 2,275,143	\$ 2,318,315	\$ 2,472,174	\$ 2,580,354	\$ 2,651,932
<b>State</b>						
State Operating	\$ 1,430,649	\$ 1,503,962	\$ 1,534,413	\$ 1,636,247	\$ 1,707,848	\$ 1,755,222
<b>Local</b>	<b>\$ 3,818,671</b>	<b>\$ 4,013,444</b>	<b>\$ 4,097,598</b>	<b>\$ 4,369,541</b>	<b>\$ 4,560,750</b>	<b>\$ 4,687,262</b>
Local Grants	\$ 1,393,983	\$ 1,356,062	\$ 1,395,768	\$ 1,569,372	\$ 1,688,481	\$ 1,762,871
Farebox Revenue	\$ 525,000	\$ 719,250	\$ 724,463	\$ 782,759	\$ 813,989	\$ 824,399
Advertising	\$ 15,000	\$ 15,750	\$ 16,538	\$ 17,364	\$ 18,233	\$ 19,144
Contract Services	\$ 282,857	\$ 288,514	\$ 294,284	\$ 300,170	\$ 306,174	\$ 312,297
The Colonial Williamsburg Foundation	\$ 1,601,831	\$ 1,633,868	\$ 1,666,545	\$ 1,699,876	\$ 1,733,873	\$ 1,768,551
<b>Total Projected Operating Revenues</b>	<b>\$ 7,413,917</b>	<b>\$ 7,792,549</b>	<b>\$ 7,950,326</b>	<b>\$ 8,477,962</b>	<b>\$ 8,848,951</b>	<b>\$ 9,094,416</b>

## Budget Notes:

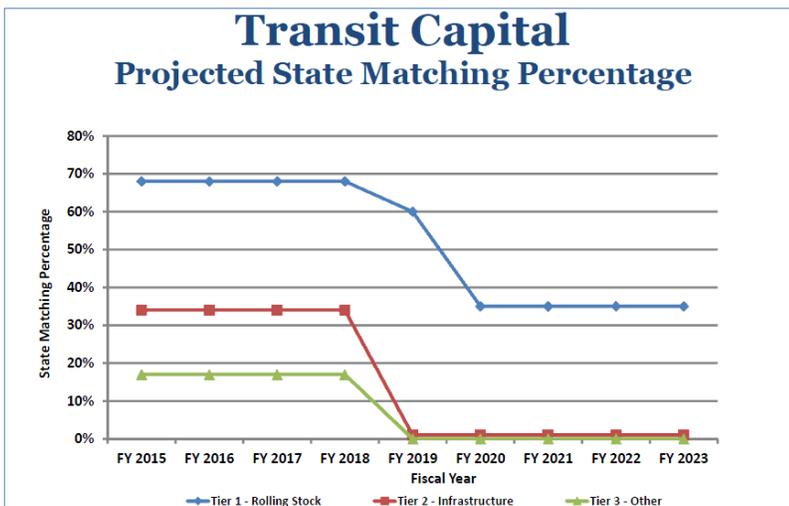
1. The FY17 budget includes TDP improvements.
2. A 2% inflation factor was included each year, beginning in FY18.
3. The fare revenue estimates start with WATA's FY17 budgeted amount of \$525,000 and adds 37% for the first year, and then incremental increases based on additional services for the future years.
4. The direct cost per hour was used to estimate the cost of service improvements.
5. Federal and State funding ratios for operating assistance are estimated at a constant rate through the life of the plan.

## CAPITAL EXPENSES AND FUNDING SOURCES

DRPT has indicated that during FY 2018, state capital funding levels are scheduled to permanently decline by approximately 62 percent.<sup>1</sup> Referred to as the “fiscal cliff,” this reduction in capital funding will affect all transit systems in the Commonwealth.

While federal funding will remain at eighty percent of the project cost, the amount of state funding will vary depending upon the type of capital project. As seen in Figure 9-1, beginning in FY 2019, the state’s match for vehicle replacement and expansion (Tier 1 – Rolling Stock) will decrease over a two year period. Whereas, during the same period, the state’s match for infrastructure and facilities (Tier 2 – Infrastructure) will drop to minimal levels and other capital equipment (Tier 3 – Other) will lose all state funding.

**Figure 9-1 DRPT’s Projected State Match Percentage**



Source: Transit Capital Funding Issues, DRPT Presentation to the Commonwealth Transportation Board, January 13, 2015.

Federal Sections 5307 (urban) and 5311 (rural) funding will continue to provide eighty percent of capital funding; however, the pending fiscal cliff will directly impact the percentage of required state and local matches. The funding split is based on recommendations from the Commonwealth Transportation Board in response to the fiscal cliff. Beginning in FY2019, state funding for Tier 1 projects will decrease from approximately 68 percent to 60 percent of the non-federal share to approximately 35 percent of the non-federal share in FY2020 and the projected future.

<sup>1</sup> Transit Capital Funding Issues, DRPT Presentation to the Commonwealth Transportation Board, January 13, 2015.

It should be noted that WATA has been awarded federal Congestion Mitigation and Air Quality Program (CMAQ) funds for several vehicle projects through its history and this program is included in the FAST Act, the recently authorized highway and transit funding law. The Surface Transportation Program (STP), now termed the Surface Transportation Block Grant Program, has also been included in the FAST act, and may also be a source for federal project funding. WATA is planning to use STP funds to help fund the facility project.

## Replacement & Expansion Vehicle Expenses and Funding

Table 9-2 offers the financial plan for Tier 1 projects including vehicle expansion and replacement over the six-year period. Eligible activities for funding under Tier 1 include<sup>2</sup>:

- Replacement and expansion vehicles
- Assembly line inspection
- Fare collection equipment
- Automated passenger counters
- On-vehicle radios and communication equipment
- Surveillance cameras
- Aftermarket installation of farebox, radios, and surveillance cameras
- Vehicle tracking hardware and software
- Rebuilds and mid-life repower of rolling stock

Over this plan's six-year timeline a total of 31 vehicles are due to be replaced, and nine expansion vehicles have been planned.

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<sup>2</sup> DRPT FY2015 Revised Budget. <http://www.drpt.virginia.gov/media/1293/fy15-drpt-agency-budget-revised.pdf>

Table 9-2: Tier 1 Projected Capital Expenses and Funding

Type of Vehicle	FY2017	FY2018	FY2019	FY2020	FY2021	FY2022
<b>Replacement</b>						
<30 ft. Bus	1	3			1	
30 ft. Bus	3	3				
35 ft. Bus		2	6			
40 ft. CNG Bus		4	6			
Trolley				3		
<b>Expansion</b>						
<30 ft. Bus	0	1	1	1		1
30 ft. Bus						
35 ft. Bus				3		
Trolley						
<b>Sub-Total Vehicles</b>	<b>4</b>	<b>13</b>	<b>13</b>	<b>7</b>	<b>1</b>	<b>1</b>
<b>Vehicle Costs</b>						
Replacement	\$ 1,485,000	\$ 5,069,400	\$ 6,554,520	\$ 1,591,812	\$ 97,419	\$ -
Expansion		\$ 91,800	\$ 93,636	\$ 1,687,321		\$ 99,367
<b>Sub-Total Vehicle Costs</b>	<b>\$ 1,485,000</b>	<b>\$ 5,161,200</b>	<b>\$ 6,648,156</b>	<b>\$ 3,279,133</b>	<b>\$ 97,419</b>	<b>\$ 99,367</b>
<b>Other Tier One Capital</b>						
Hardware- Bus Replacement Units	\$ 50,000					
CAD/AVL Equipment Upgrade					\$ 50,000	
Bus Time Smart Phone Application		\$ 40,000				
<b>Subtotal, Other Tier One</b>	<b>\$ 50,000</b>	<b>\$ 40,000</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ 50,000</b>	<b>\$ -</b>
<b>TOTAL TIER ONE EXPENSES</b>	<b>\$ 1,535,000</b>	<b>\$ 5,201,200</b>	<b>\$ 6,648,156</b>	<b>\$ 3,279,133</b>	<b>\$ 147,419</b>	<b>\$ 99,367</b>
<b>Anticipated Funding Sources</b>						
Federal	\$ 1,228,000	\$ 4,160,960	\$ 5,318,525	\$ 2,623,306	\$ 117,935	\$ 79,494
State	\$ 208,760	\$ 707,363	\$ 904,149	\$ 445,962	\$ 20,049	\$ 13,514
Local	\$ 98,240	\$ 332,877	\$ 425,482	\$ 209,864	\$ 9,435	\$ 6,360
<b>TOTAL TIER ONE FUNDING</b>	<b>\$ 1,535,000</b>	<b>\$ 5,201,200</b>	<b>\$ 6,648,156</b>	<b>\$ 3,279,133</b>	<b>\$ 147,419</b>	<b>\$ 99,367</b>

## Infrastructure Facilities Expenses and Funding

Table 9-3 provides the financial plan for infrastructure facilities, considered Tier 2 capital projects. Eligible activities under this funding tier include<sup>3</sup>:

- Construction of infrastructure or facilities for transit purposes
- Real estate used for a transit purpose
- Signage
- Surveillance/security equipment for facilities
- Rehabilitation or renovation of infrastructure and facilities
- Major capital projects.

Projects identified as infrastructure facilities include the engineering, design, and construction of an extension to the mass transit facility, resurfacing the access lane leading to the mass transit facility, bus stop amenities, and bicycle racks.

Capital federal funding for infrastructure facilities will remain at 80 percent while state funds will provide 34 percent of the required remaining 20 percent match until FY 2019. As previously discussed, an important project to be completed during the TDP period is the design and construction of a new administrative and maintenance facility, as well as the proposed Warhill Transfer Center. The lease amount remains for the WATA administrative and maintenance facility, as WATA is evaluating the long-term lease versus purchase options.

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<sup>3</sup> DRPT FY2015 Revised Budget. <http://www.drpt.virginia.gov/media/1293/fy15-drpt-agency-budget-revised.pdf>

Table 9-3: Tier 2 Projected Capital Expenses and Funding

Tier Two Capital	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY2022
<b>Infrastructure and Facilities</b>						
Real Estate Acquisition - Warhill	\$ 1,250,000	\$1,250,000	\$ -	\$ -	\$ -	\$ -
Construction Admin/Maint Facility		\$3,725,000	\$3,725,000	\$2,000,000	\$ -	\$ -
Warhill Passenger Facility- Construction	\$ 833,333	\$ 833,333	\$ 833,333	\$ -	\$ -	\$ -
Williamsburg Transportation Center Lease	\$ 87,922	\$ 90,560	\$ 93,276	\$ 96,075	\$ 98,957	\$ 101,925
Main Office Facility Lease	\$ 84,000	\$ 84,000	\$ 84,000	\$ 84,000	\$ 84,000	\$ 84,000
Passenger Shelters/Bus Stop Improvements	\$ -	\$ 125,000	\$ 125,000	\$ 125,000	\$ 125,000	\$ 125,000
Bike Racks	\$ -	\$ -	\$ -	\$ 20,000	\$ -	\$ -
Renovation of Maintenance Facility- CNG	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 200,000
<b>Total Costs</b>	<b>\$ 2,255,255</b>	<b>\$6,107,893</b>	<b>\$4,860,609</b>	<b>\$2,325,075</b>	<b>\$ 307,957</b>	<b>\$ 510,925</b>
<b>Anticipated Funding Sources</b>						
Federal	\$ 1,804,204	\$4,886,314	\$3,888,487	\$1,860,060	\$ 246,366	\$ 408,740
State	\$ 153,357	\$ 415,337	\$ 330,521	\$ 158,105	\$ 20,941	\$ 34,743
Local	\$ 297,694	\$ 806,242	\$ 641,600	\$ 306,910	\$ 40,650	\$ 67,442
<b>Total Funding</b>	<b>\$ 2,255,255</b>	<b>\$6,107,893</b>	<b>\$4,860,609</b>	<b>\$2,325,075</b>	<b>\$ 307,957</b>	<b>\$ 510,925</b>

## Other Capital Expenses and Funding Sources

The following other capital expenses are considered Tier 3 capital projects<sup>3</sup>:

- All support vehicles
- Shop equipment
- Spare parts
- Hardware and software not installed on a vehicle
- Project development expenses for capital projects
- Office furniture and other equipment
- Handheld radios
- Landscaping
- Other transit-related capital items

The Tier 3 capital budget for WATA for the TDP period is presented in Table 9-4.

**Table 9-4: Tier 3 Projected Capital Expenses and Funding**

Capital Need	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY2022
<b>Support Vehicles</b>						
SUV		0	1	2	1	0
Van	0	0	0	0	0	0
Sedan	0	1	0	0	0	0
<b>Total Support Vehicles</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>2</b>	<b>1</b>	<b>0</b>
<b>Support Vehicle Expenses</b>	<b>\$ -</b>	<b>\$ 37,080</b>	<b>\$ 38,192</b>	<b>\$ 78,676</b>	<b>\$ 40,518</b>	<b>\$ -</b>
<b>Additional Tier Three Capital Expenses</b>						
Associated Capital Maintenance	\$ 150,000	\$ 150,000	\$ 125,000	\$ 150,000	\$ 150,000	\$ 70,000
Project Management Facility	\$ 250,000	\$ 200,000	\$ -	\$ -	\$ -	\$ -
Engineering & Design Facility	\$ 250,000	\$ 200,000	\$ -	\$ -	\$ -	\$ -
Engineering & Design Facility- Warhill		\$ 50,000				
Furniture and Support Equipment	\$ -	\$ -	\$ -	\$ 75,000	\$ -	\$ -
Asset Management System	\$ 80,000	\$ -	\$ -	\$ -	\$ -	\$ -
ADP Software Support	\$ -	\$ 100,000	\$ 50,000	\$ 50,000	\$ 10,000	\$ -
ADP Hardware Support	\$ -	\$ -	\$ 50,000	\$ 100,000	\$ 40,000	\$ -
Third Party Contract - Legal	\$ 20,000	\$ 35,000	\$ 35,000	\$ 35,000	\$ 40,000	\$ 40,000
Third Party Contract - Audit	\$ 20,000	\$ 20,000	\$ 20,000	\$ 20,000	\$ 20,000	\$ 35,000
<b>Total Additional Tier Three Capital Expenses</b>	<b>\$ 770,000</b>	<b>\$ 755,000</b>	<b>\$ 280,000</b>	<b>\$ 430,000</b>	<b>\$ 260,000</b>	<b>\$ 145,000</b>
<b>Total Tier Three Capital Expenses</b>	<b>\$ 770,000</b>	<b>\$ 792,080</b>	<b>\$ 318,192</b>	<b>\$ 508,676</b>	<b>\$ 300,518</b>	<b>\$ 145,000</b>
<b>Anticipated Funding Sources</b>						
Federal	\$ 616,000	\$ 633,664	\$ 254,554	\$ 406,941	\$ 240,415	\$ 116,000
State	\$ 26,180	\$ 26,931	\$ 10,819	\$ 17,295	\$ 10,218	\$ 4,930
Local	\$ 127,820	\$ 131,485	\$ 52,820	\$ 84,440	\$ 49,886	\$ 24,070
<b>Total Funding</b>	<b>\$ 770,000</b>	<b>\$ 792,080</b>	<b>\$ 318,192</b>	<b>\$ 508,676</b>	<b>\$ 300,518</b>	<b>\$ 145,000</b>

## Total Capital Expenses over TDP Timeframe

Table 9-5 presents a summary of the total capital program categorized by tier. Under each tier, the projects are listed by fiscal year. Total projected capital expenses and funding are displayed covering the TDP timeframe, using the tiered formula for state capital funding.

**Table 9-5: Total Projected Capital Expenses and Funding**

	FY2017	FY2018	FY2019	FY2020	FY2021	FY2022
<b>Tier 1 Costs</b>						
Vehicle Replacement	\$ 1,485,000	\$ 5,069,400	\$ 6,554,520	\$ 1,591,812	\$ 97,419	\$ -
Vehicle Expansion	\$ -	\$ 91,800	\$ 93,636	\$ 1,687,321		\$ 99,367
Hardware-Bus Units	\$ 50,000					
CAD/AVL Upgrade					\$ 50,000	
BusTime Smart Phone App.		\$ 40,000				
<b>Sub-Total Cost</b>	<b>\$ 1,535,000</b>	<b>\$ 5,201,200</b>	<b>\$ 6,648,156</b>	<b>\$ 3,279,133</b>	<b>\$ 147,419</b>	<b>\$ 99,367</b>
<b>Tier 2 Costs</b>						
Real Estate Acquisition - Warhill	\$ 1,250,000	\$ 1,250,000				
Construction Admin/Maint. Facility		\$ 3,725,000	\$ 3,725,000	\$ 2,000,000		
Construction Warhill Facility	\$ 833,333	\$ 833,333	\$ 833,333			
Williamsburg Transportation Center Lease	\$ 87,922	\$ 90,560	\$ 93,276	\$ 96,075	\$ 98,957	\$ 101,925
Main Office Facility Lease	\$ 84,000	\$ 84,000	\$ 84,000	\$ 84,000	\$ 84,000	\$ 84,000
Passenger Shelters/Bus Stop Improvements		\$ 125,000	\$ 125,000	\$ 125,000	\$ 125,000	\$ 125,000
Bike Racks				\$ 20,000		
Renovation of Maint. Facility - CNG						\$ 200,000
<b>Sub-Total Cost</b>	<b>\$ 2,255,255</b>	<b>\$ 6,107,893</b>	<b>\$ 4,860,609</b>	<b>\$ 2,325,075</b>	<b>\$ 307,957</b>	<b>\$ 510,925</b>
<b>Tier 3 Costs</b>						
Support Vehicles		\$ 37,080	\$ 38,192	\$ 78,676	\$ 40,518	\$ -
Associated Capital Maintenance	\$ 150,000	\$ 150,000	\$ 125,000	\$ 150,000	\$ 150,000	\$ 70,000
Project Management Facility	\$ 250,000	\$ 200,000				
Engineering & Design - Facility	\$ 250,000	\$ 200,000				
Engineering & Design - Warhill		\$ 50,000				
Furniture & Support Equipment				\$ 75,000		
Asset Management System	\$ 80,000					
ADP Software Support		\$ 100,000	\$ 50,000	\$ 50,000	\$ 10,000	
ADP Hardware Support			\$ 50,000	\$ 100,000	\$ 40,000	
Third Party Contract - Legal	\$ 20,000	\$ 35,000	\$ 35,000	\$ 35,000	\$ 40,000	\$ 40,000
Third Party Contract - Audit	\$ 20,000	\$ 20,000	\$ 20,000	\$ 20,000	\$ 20,000	\$ 35,000
<b>Sub-Total Cost</b>	<b>\$ 770,000</b>	<b>\$ 792,080</b>	<b>\$ 318,192</b>	<b>\$ 508,676</b>	<b>\$ 300,518</b>	<b>\$ 145,000</b>
<b>Total Capital Cost</b>	<b>\$ 4,560,255</b>	<b>\$ 12,101,173</b>	<b>\$ 11,826,957</b>	<b>\$ 6,112,884</b>	<b>\$ 755,894</b>	<b>\$ 755,292</b>
<b>Anticipated Funding Sources</b>						
Federal	\$ 3,648,204	\$ 9,680,938	\$ 9,461,566	\$ 4,890,307	\$ 604,715	\$ 604,234
State	\$ 388,297	\$ 1,149,631	\$ 1,245,489	\$ 621,362	\$ 51,208	\$ 53,187
Local	\$ 523,754	\$ 1,270,604	\$ 1,119,902	\$ 601,215	\$ 99,971	\$ 97,872
<b>Total Funding</b>	<b>\$ 4,560,255</b>	<b>\$ 12,101,173</b>	<b>\$ 11,826,957</b>	<b>\$ 6,112,884</b>	<b>\$ 755,894</b>	<b>\$ 755,292</b>

## LONG RANGE FINANCIAL PROJECTIONS

Using the average growth rate of the system during the six TDP years as a basis, a long-range financial plan was developed. The long range plan assumes that WATA's operating budget will continue to grow at a modest pace during the period (4.5% per year). This growth rate incorporates inflation and modest population growth. The population projections for the years 2020, 2030, and 2040 indicate that the rate of population is expected to be about two percent per year during the period, which is similar to the expected growth rate for the TDP period. Table 9-6 provides the long-range operating and capital projections for WATA in five year increments up until the year 2040.

**Table 9-6: Long Range Financial Projections**

Year	Operating Estimate (in millions)		Capital Estimate (in millions)
FY2017	\$ 7.4		\$ 4.6
TDP Year 2022	\$ 9.1	TDP Capital Average/Yr.	\$ 6.0
FY2025	\$ 10.4		\$ 6.2
FY2030	\$ 12.9		\$ 6.9
FY2035	\$ 16.1		\$ 7.7
FY2040	\$ 20.1		\$ 8.5

# Chapter 10 - Monitoring and Evaluation

## INTRODUCTION

As described in the introduction in Chapter 1, this TDP/COA is a guiding document that should be reviewed and updated annually to reflect any changes in community priorities, funding availability, or other factors that may impact public transit services in the region. Several analyses regarding operations, service performance, community transportation needs, and service alternatives have been completed as part of the TDP process. While Chapters 7 and 8 detailed the recommended operations and capital projects, respectively, and Chapter 9 provided the financial plan for these recommendations, it is important to remember that the TDP is a planning document. As such, when it comes time to develop grant applications and implement projects, WATA staff, together with the Board, local partners, and stakeholders, should revisit the TDP/COA to ensure that the recommendations are appropriate and feasible given community needs and fiscal realities.

This chapter describes the processes that are recommended to periodically monitor and evaluate the progress that WATA has made in implementing the TDP/COA. Such processes include integrating TDP/COA projects with relevant planning documents, monitoring service performance, and submitting an annual update to DRPT. Monitoring and evaluation efforts are particularly important to ensure that the WATA is meeting the goals, objectives, and standards that were described in Chapter 2.

## COORDINATION WITH OTHER PLANS AND PROGRAMS

Chapter 3 included the review of various transportation and land use plans developed by a number of agencies and municipalities in WATA's service area. The purpose of this review was to ensure that the TDP is consistent with local and regional transportation goals and efforts. Likewise, when relevant plans are updated in the coming years, WATA staff should seek to participate in such efforts to ensure that projects recommended in this TDP are included in these area plans and studies, where fitting. Many of the TDP/COA stakeholders are involved as advisors or participants with other community groups.

At the state level, WATA should ensure that the recommended projects from this TDP/COA are incorporated into the public transportation element of the DRPT State Transportation Improvement Program (STIP) and Six-Year Improvement Plan (SYIP).

## SERVICE PERFORMANCE MONITORING

Chapter 2 included several proposed service and performance standards for WATA, the purpose of which was to develop some objective measurements that WATA can use to monitor transit service performance in the future and make performance-based service planning decisions.

Should particular services fail to meet the performance standards for two consecutive quarters, WATA should review the specific route or service and identify strategies to improve performance, or update the performance standards as warranted by changes in circumstance.

The results of this regular monitoring should be shared with the WATA stakeholders and with DRPT through the annual TDP update.

## TDP MONITORING AND UPDATES

It is recommended that WATA engage in several different monitoring activities on an annual basis, which will be reported to DRPT in an annual TDP update. Whereas the service performance monitoring described above helps to determine whether goals are being met to deliver service that is cost-effective and safe, it is also important to evaluate the extent to which WATA is meeting its goals with regard to serving the community. Approaches to collect data for such monitoring efforts could include community outreach meetings as well as periodic surveys.

DRPT guidance currently requires that grantees submit an annual TDP update letter that describes the progress that has been made toward implementing the adopted TDP. WATA's annual update to DRPT should document the following:

- Operating statistics for the twelve-month period, including the ridership, attributed to any new proposals implemented as a result of the TDP
- Any changes to system goals, objectives, or service standards
- A description of any service or facility improvements that have been implemented during the twelve-month period
- An update to the TDP recommendations to identify additional projects, deferment of projects to later years, or elimination of projects
- Updates to the financial plan to more accurately reflect current funding scenarios