City of Winchester
Transit Development Plan
2017-2028

PREPARED FOR

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Table of Contents

List of Tables

List of Figures

1

Introduction and Overview

Transit Development Plans (TDPs) are planning tools prepared by public transit agencies to improve their efficiency and effectiveness. TDPs help transit operators to identify current and future transit needs, evaluate their transit system's current performance, and determine the modifications and resources required to improve service to match the public's needs.

TDPs are required by the Virginia Department of Rail and Public Transportation (DRPT) to be completed every six years. DRPT uses TDPs as the foundation for funding requests, and it relies on TDPs to determine funding needs across the Commonwealth.

1.1 Background

The City of Winchester is an independent jurisdiction surrounded by Frederick County. The City is 9.3 square miles and is located at the northern entrance of the Shenandoah Valley.[1] According to the2015 American Community Survey, the estimated total residential population is 27,168.

Founded in 1744, the City is home to many Civil War sites and visitor attractions. Several historic battlefields are located within the City, as well as museums and memorials dedicated to Civil War history.[2] With its proximity to the Shenandoah Valley and Blue Ridge Mountains and Shenandoah river, Winchester also markets itself as a destination for outdoor recreation and nature enthusiasts.[3]

Much of the development and density in Winchester is located in the downtown area known as Old Town Winchester. The area includes several historical landmarks, such as the Handley Regional Library, as well as local shops, restaurants, arts and entertainment centers, and municipal offices. Since Winchester is the county seat of Frederick County, the downtown area also includes many municipal buildings for Frederick County. Streets form a grid network with short-blocks, making the area pedestrian-friendly.

The areas surrounding the downtown core are more suburban in nature, with major routes like Interstate 81, U.S. Route 11, U.S. Route 50, and Route 37 serving as main arterials. Key activity centers located outside the downtown area include: Winchester Medical Center, located approximately 2 miles west of Old Town district, the Apple Blossom Mall and Shenandoah University, which are southeast of the downtown area.

Public transportation in Winchester is provided through Winchester Transit (WinTran), which is operated by the City of Winchester. The Winchester Transit system includes eight routes, including seven fixed-routes and one trolley route. The system also offers origin-to-destination complimentary paratransit service. The Shenandoah Area Agency on Aging, a regional non-profit, also operates a van service (WellTran) for seniors and disabled persons. The following evaluation, however, only concerns Winchester Transit service.

1.2 History, Governance, and Organizational Structure

Winchester Transit has been operating transit service in the City of Winchester since 1951. The City operates under a Council-Manager form of government. The nine-member Council (known also as the Common Council) is the City's main governing body, with two council members elected from each of the City's four wards and a mayor who is elected at-large. The city manager oversees the administration of

[1] Sourced from https://www.winchesterva.gov .

[2] Ibid.

[3] Sourced from http://www.visitwinchesterva.com/ .

policies and projects approved by the Council and Mayor. The current mayor, council members, and city manager are listed below. Each council member and the Mayor serve a four-year term.

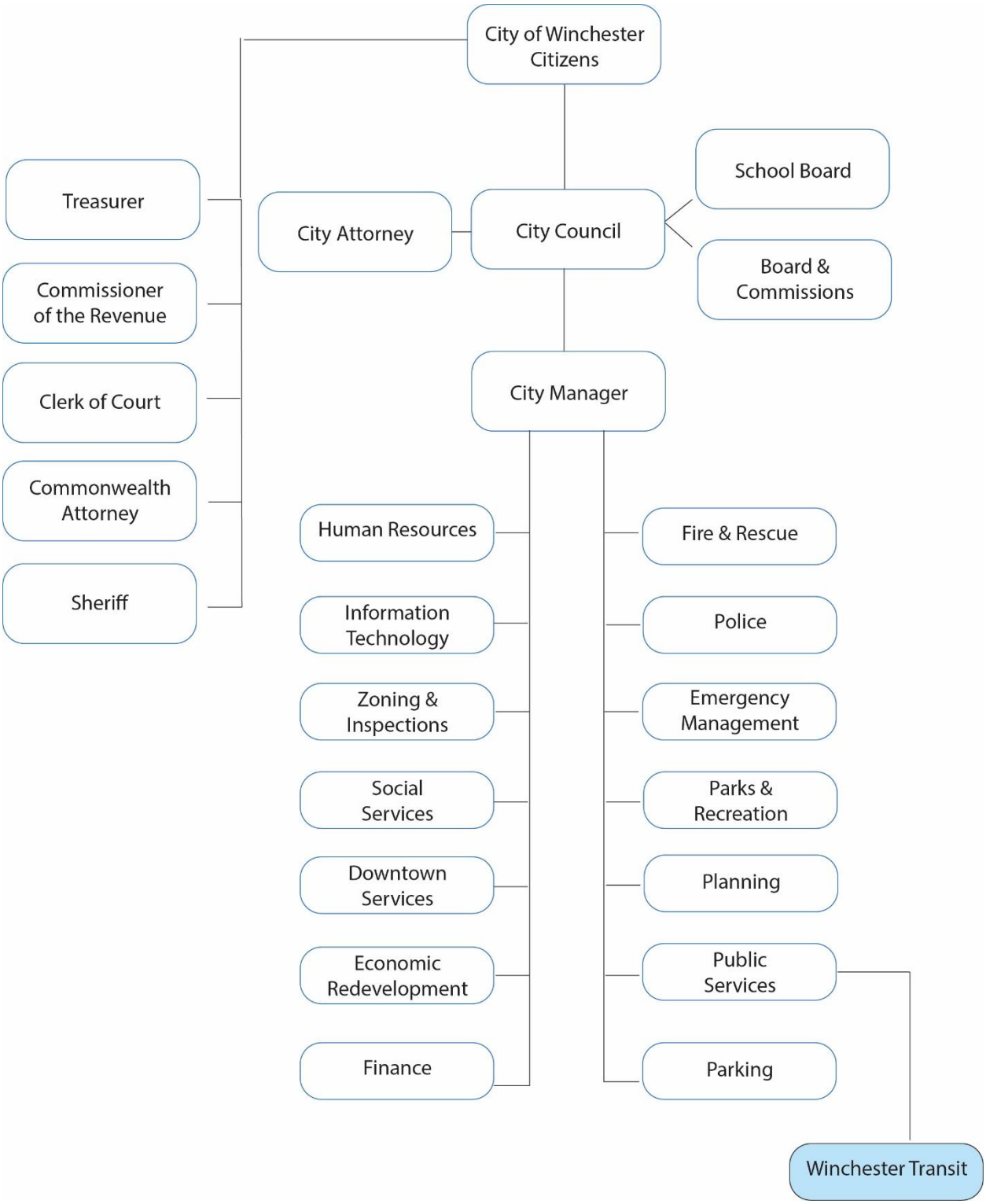
Mayor	David Smith
City Manager	Eden Freeman
Ward 1	Les Veach
	Bill Wiley
Ward 2	Evan Clark
	John Hill
Ward 3	Milt McInturff
	Corey Sullivan
Ward 4	Kevin McKannan
	John Willingham

Winchester Transit operates as a division under the City of Winchester's Public Services Department. The Transit Director reports to the Assistant Public Services Director under the Public Services Director. The Public Services Director reports to the City Manager, who serves the City Council. Figure 1 shows how Winchester Transit fits within the City government.

The Transit Director directly oversees Winchester Transit drivers and operations staff. The Transit Director manages the day-to-day administration of the agency. She is aided by a Transit Supervisor who manages the drivers and day-to-day operations, and by an Office Assistant who performs tasks requested by the Transit Director, in addition to answering phones, scheduling paratransit trips, and conducting the fare counting.

The City of Winchester does not have any transportation-related boards or commissions.

FIGURE 1 City of Winchester Organization Chart



1.3 Transit Services and Areas Served

The following section provides an overview of Winchester Transit's service and the areas covered by the bus system.

1.3.1 Transit Services

Winchester Transit operates seven fixed-routes and one trolley route. It also offers point-to-point paratransit service for those who are unable to use the fixed-route transit system due to temporary or permanent disability. The paratransit service serves destinations that are within three-quarters of a mile of a fixed route bus stop.

Fixed route service typically operates from 6:00 a.m. through 8:00 p.m. on weekdays, and from 9:00 a.m. to 5:00 p.m. on Saturdays. No transit service is offered on Sundays or observed holidays. These holidays include:

- New Year's Day
- Martin Luther King Jr. Day
- Shenandoah Apple Blossom Festival
- Memorial Day
- July 4th
- Labor Day
- Veterans Day
- Thanksgiving Day
- Day after Thanksgiving
- Christmas Eve
- Christmas Day

Headways are typically 70 minutes.

Trolley service operates Mondays, Wednesdays, and Fridays from 8:00 a.m. to 6:45 p.m., and on Saturdays from 10:10 a.m. to 4:35 p.m. The trolley does not run on Sundays or observed holidays (listed above). Headways are usually 65 minutes.

All routes begin and end at the Boscawen Street Transfer Station (Figure 2) and radiate to various landmarks in and just outside of the City. Figure 3 shows the areas served by fixed-route buses and the trolley. The system includes:

- Two Northside routes (Northside – Salvation Army and Northside -- Westminster Canterbury) that serve the northern end of the City, providing

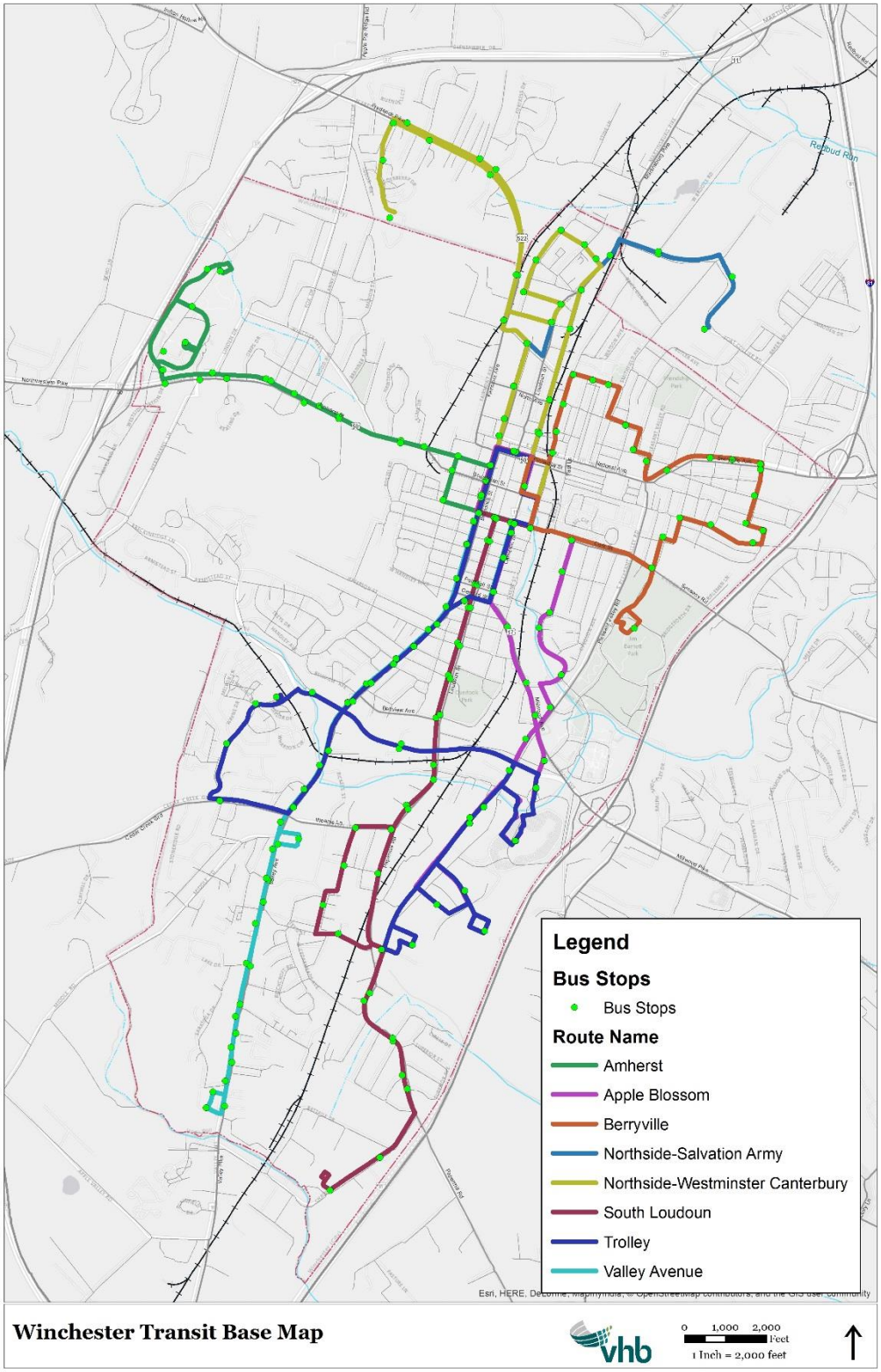
connections to the Salvation Army center and Westminster Canterbury senior living community

- The Amherst route serves the medical offices and Medical Center along the western edge of the City
- The Apple Blossom route serves major retail destinations like Apple Blossom Mall to the east of the downtown area
- The Berryville route serves the northeastern section of the City
- The Valley Avenue route runs south along the Valley Avenue corridor
- South Loudon provides additional service to the southern end of the City
- The Trolley operates in the neighborhoods just south of the downtown area

Winchester Transit utilizes nearly 100 bus stops that are located along neighborhood streets, or high-pedestrian traffic areas like the Apple Blossom Mall, making pedestrian access possible. Buses are equipped with bike racks and wheelchair lifts for individuals with disabilities or mobility impairments, but few bus stops currently have bike racks.

FIGURE 2 Boscawen Street Transfer Station

FIGURE 3 Winchester Transit System



1.3.2 Fare Structure

Winchester Transit passengers pay a flat fee to ride fixed route buses or the trolley. Select individuals, such as seniors and students, receive discounted fares. Passengers can transfer to another route during the same trip for free. Table 1 outlines the fare for a single trip on Winchester Transit buses and its trolley route.

TABLE 1 Winchester Transit Fare Structure

Passenger Type	Fare for One Trip
Adults	$1.00
Half-fare (senior citizens, disabled passengers, Medicare care holders)	$0.50
Students (under 18 years)	$0.50
Children Under 2 Years	free

1.3.3 Fleet

Winchester Transit's fleet includes six (6) 30-foot low floor buses, as well as a 30-foot trolley and paratransit vans. Table 2 outlines Winchester Transit's current vehicle inventory and includes vehicles used for both revenue and non-revenue service. During peak service, Winchester Transit operates four buses and three demand response vans from its fleet.[4]

[4] National Transit Database 2014 Agency Profile.

TABLE 2 Winchester Transit Fleet Composition

Year	Make/Model	Length	Assignment	VIN Number
2004	Freightliner Classic American Trolley	Bus 30 FT	Trolley	4UZAACBW65CU04622
2006	Ford Econoline	Van	Para-transit	1FTSS34L86DB30893
2008	Chevrolet Supreme BOC Paratransit Van	Bus 30 FT	Para-transit	1GBJG316281184694
2008	Chevrolet Supreme	Bus 30 FT	Fixed Route	1GBE5V1978F409756
2015	International Low-Floor	Bus 30 FT	Fixed Route	5WEXWSKKXFH517532
2015	International Low-Floor	Bus 30 FT	Fixed Route	5WEXWSKK1FH517533
2016	Arboc Spirit of Mobility Low Floor	Bus 30 FT	Para-transit	1GB6GUBG5G1181502
2016	Arboc Spirit of Mobility Low Floor	Bus 30 FT	Para-transit	1GB6GUBG3G1182387
2016	Arboc Spirit of Mobility Low Floor	Bus 30 FT	Fixed Route	1GB6GUBG5G1223974
2016	Arboc Spirit of Mobility Low Floor	Bus 30 FT	Fixed Route	1GB6GUBG7G1224365
2003	Chevrolet Malibu	Sedan/ Wagon	Admin/ Supervisor	1G1ND52J13M650362
2013	Nissan Exterra	SUV	Admin/ Supervisor	5N1AN0NW0DN823258

1.3.1 Existing Facilities

Winchester Transit has a total of three facilities to support its operations; all are located at 301 East Cork Street in Winchester, VA. The agency's administrative functions operate out of its Administrative Building, which was constructed in 2013. There is a surface parking lot neighboring the building.

Winchester Transit also has a bus facility that provides fleet storage. This facility was constructed in 2009. The agency's oldest building is a maintenance facility built in 1985.

1.3.2 Transit Security Program

Winchester Transit's security program consists of several correlated initiatives and plans that enable the agency to provide safe and reliable transit service to the public. The following section outlines the different aspects of Winchester Transit's security program.

Fare Inspection

Winchester Transit employs the following procedures for ensuring secure fare collection. Currently, all revenue service vehicles are equipped with a secure fare box for collection of fares, and the transit agency has established an exact change only policy. This helps to minimize the number of service-theft crimes. Drivers enforce the policy as each passenger boards. At the end of their shifts, each driver turns in

their collected fares to a "night deposit" drop box in the Office Assistance's office wall, which provides secure storage of fares until they can be counted. Each business day, the Office Assistant counts and reconciles the fare box revenues. The night deposit box is emptied and revenues are counted and compared to each driver's "meter" sheet (a summary of total passengers by fare category transported during the driver's shift). If there is a discrepancy between the fares and the meter sheet, the Office Assistant makes note of it.

After all counts have been completed, the Office Assistant records the values into an Excel spreadsheet that captures daily ridership and revenues. A bank deposit slip is then prepared, and the fares and deposit slip are returned to the lock box until the Transit Supervisor can take them to the bank, which occurs at the end of each day. A copy of the deposit slips is also turned into the City's Treasurer.

Safety and Security Program

Winchester Transit adopted in 2014 a System Safety and Security Program (SSEPP) that serves as a guide for the safe operation of the system and for responding to significant events that affect Winchester Transit and the City of Winchester. The plan includes an emergency preparedness plan that provides procedures and protocol for responding to threats. It also contains several tools for minimizing safety risks and for ensuring safe daily operation. These tools include recommendations related to driver selection, training, and vehicle maintenance.

Security features on vehicles

Winchester Transit has equipped all of its fleet vehicles with on-board surveillance cameras. The cameras help to ensure driver and passenger safety, and they provide additional information for the agency when incidents occur outside and/or inside of the vehicles. This information can be used to investigate incidents, identifying issues, and address safety concerns.

The SSEPP also outlines a number of preventative procedures for the agency and drivers to ensure a safe environment for passengers and to safeguard vehicles from theft and vandalism. For instance, the SSEPP recommends that Winchester Transit consider driver qualifications, driving record, medical background, and violations when hiring new drivers, and that such background checks be documented in driver qualification file in accordance with the Federal Motor Carrier Safety Administration (FMCSA). These procedures outline proactive measures to reduce safety risks.

Security features at stations

Winchester Transit periodically conducts passenger surveys to understand customer satisfaction with existing service. The SSEPP includes a suggestion that surveys incorporate questions that assess the perception of safety at bus stops and whether changes need to be made to elevate safety at stops (i.e.: lighting, landscaping, vandalism). The SSEPP also includes a recommendation that office managers reassess bus stop locations annually to determine if they are in the most secure areas possible, while providing accessibility to the public.

Security training programs and drills/exercises

The SSEPP recommends that all Winchester Staff attend two baseline trainings – one to learn about the Incident Command System (ICS) and a second course to learn how to operate during an incident command system. The SSEPP further recommends that the Director and Senior Staff supplement this baseline training with intermediate and advanced courses on ICS, an introduction to the National Incident Management System (NIMS), and a course for organizational leaders about partnerships between response agencies. The SSEPP suggests that all Winchester Transit personnel attend periodic briefings with the Winchester Police and Emergency Management.

Public Awareness Campaign

Winchester Transit does not currently have a formal public Awareness Program or Campaign. It is recommended that the agency consider developing a campaign to promote additional vigilance from the public.

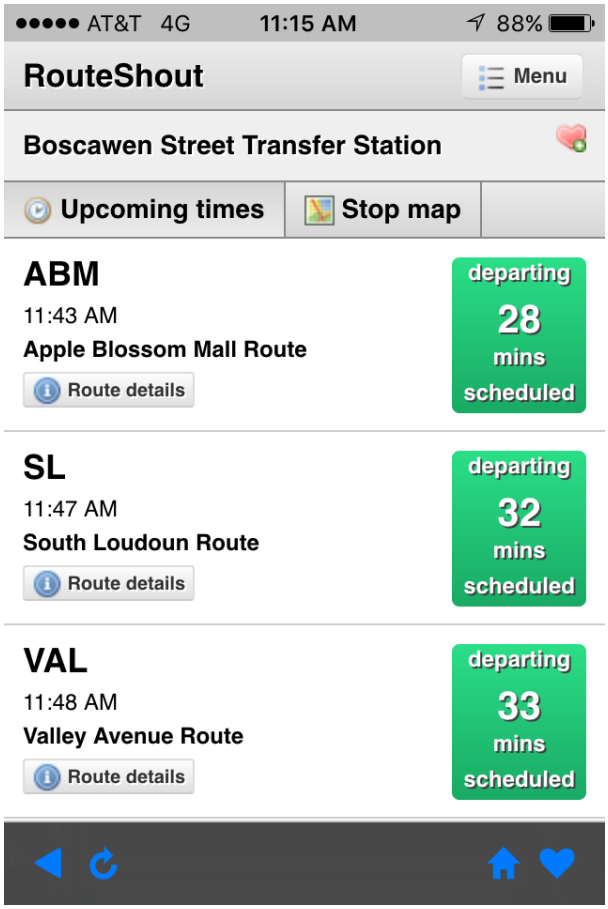
1.3.3 Intelligent Transportation Systems (ITS) Program

Winchester Transit has already integrated a number of technology systems and devices into its operations. The following table illustrates the ITS elements that have been deployed, and those that Winchester Transit plans to integrate into its system in the future. Figure 4 shows the Routeshout application available to WinTran riders.

TABLE 3 Intelligent Transportation Systems (ITS) Program

Program	Deployed	Near Term (1-2 years)	Mid-term (2-6 years)	Software
Computer Aided Dispatch (CAD) / Automatic Vehicle Locator (AVL)	X			RouteMatch, V2-7-08, 100%
Automatic Passenger Counters (APC)			X	
Traffic Signal Priority (TSP)				
On-board cameras	X			Seon and REI, 100%
Trip Planners			X	
Scheduling and runcutting software	X			RouteMatch, V2-7-08, 100% for Fixed Routes CTS Software for Demand Response
Maintenance, operations and yard management systems	X			Sunguard THE - Fleet Maintenance
Information displays				
Real time arrival		X		
Information to mobile devices or applications	X			RouteShout

FIGURE 4 RouteShout Application



1.3.4 Data Collection and Ridership and Revenue Reporting Methodology

Winchester Transit currently collects ridership and revenue data using two methods – manual driver counts and AVL-based software. Winchester Transit recently implemented AVL technology on its buses and is still in the process of transitioning data collection exclusively to the RouteShout software. As a result, bus drivers enter ridership data electronically and validate the information using manual counts. Data is collected at the route level, per trip, and by stop. Ridership and revenue data for demand response service is recorded by stop.

Data collection

For documenting ridership of fixed routes, drivers record passenger counts by passenger type – adult, half fare, students, children under 2 years, and transfers – on

an onboard tablet (based on the RouteMatch system). This data is validated against manual counts completed by drivers and recorded on "meter cards." For demand response routes, ridership counts are derived from the scheduling system and all data is recorded manually. No-shows are indicated on the paper manifest where data is collected, called into dispatch, and entered into CTS Software.

Revenue hour and miles data is collected similar to ridership data. Drivers use onboard tablets equipped with RouteMatch software to track revenue miles and hours data. This information is also compared against start and end odometer readings, as well as start and end times recorded by drivers. For demand response routes, all information is manually recorded.

Data Storage

Drivers submit their "meter cards" at the end of their shift. After staff reconcile the meter cards and collected fares, they enter the data manually in a spreadsheet. Data from the tablets is downloaded wirelessly to the RouteMatch server in real-time. Data is transferred daily, and it is either stored on an internal server (for manual data) or on cloud-based storage (for electronic data) provided by a vendor.

Data Validation and Reporting

Meter cards are verified against collected revenue, and the data is then used to validate the data electronically collected via tablets. Additionally, staff also check the data for inconsistencies. For fixed-routes, this check is performed on a weekly basis. For demand response routes, this check is conducted daily.

Once the data is validated, a custom report is generated from the CTS Software containing ridership, revenue miles, and revenue hours is generated for the City Manager's review. The data is also entered into OLGA for reporting to DRPT, and the information is reported annually to NTD.

1.3.5 Public Outreach

Winchester Transit has a policy that outlines the situations that warrant public input, how community feedback will be solicited and received, and additional procedures.

The policy requires public outreach in the following situations:

- A fare increase
- A service reduction, either in miles or hours, that exceeds 15% of the total service miles or hours currently provided.
- A route modification that exceeds 15% of the total inbound and outbound trip mileage of a route.

Fare Increase and Service Reductions

The policy requires approval by the City of Winchester City Council. Once approved, Winchester Transit can begin conducting public outreach, which includes holding a public meeting and soliciting public comments through various outreach efforts.

Winchester Transit's public meetings are required to be located near public transportation and scheduled at times when public transportation is running. Informational meetings should be held at various locations, with at least one meeting occurring during the evening and/or weekend and another during the day to accommodate stakeholders with different work schedules.

Public hearings and meetings must be advertised (via general publications, radio broadcasts, the Winchester Transit website, and on-board flyers) at least 30 days in advance.

Winchester Transit's outreach policy also includes specific instructions about how to document public comment and responses received.

Surveys

Winchester Transit's outreach policy prioritizes regular public participation, not just during times of service or fare change. It is the agency's policy to conduct regular route surveys on its fixed-route system to obtain passenger feedback.

2

Goals, Objectives, and Standards

The following chapter outlines Winchester Transit's goals, objectives, and standards. This section discusses the process used by the agency to review and update these elements and how the agency evaluates new service or changes to existing service.

2.1 Goals and Objectives

2.1.1 Previous Goals

Winchester Transit's mission is "to provide safe, dependable, and economical transportation services to its transit system passengers." In its 2011 TDP, Winchester Transit presented the following goals to support its mission. These goals were intended to provide guidance on how Winchester Transit can achieve its mission.

1. Offer convenient access to medical facilities, employment areas, shopping centers, schools, and community agencies.
2. Provide access to employment opportunities for City residents.
3. Provide adequate mobility options to enable City residents to "age in place."
4. Promote mobility options that enable City residents to maintain personal independence and be engaged in civic and social life.
5. Help improve the environment by offering transportation alternatives beyond the automobile.
6. Strengthen coordination and explore partnerships between the City of Winchester and Frederick County, major employers, educational facilities, and other private entities to ensure effective service delivery in the community.
7. Manage, maintain, and enhance the existing public transportation system.

Since these goals were established, Winchester Transit has solicited feedback from community stakeholders to determine if new goals should be added or existing goals should be revised. Stakeholders have indicated that they would like to see stronger language in goal #6 above that commits Winchester Transit to actively making partnerships, rather than exploring partnerships. The City of Winchester's Comprehensive Plan includes a mobility goal that could serve as alternative language:

Work closely with Frederick County and Stephens City to extend public transportation between the City and destinations such as Lord Fairfax Community College, DMV, the Employment Commission/Job Training office, and the regional detention facilities, as well as urbanizing areas of the County and Town (City of Winchester Comprehensive Plan)

The City of Winchester's Comprehensive Plan also included some mobility-related goals and objectives that discuss public transit service.

- Increase WinTran route frequency to more than once an hour (This is in support of the MPO's 2009 Transit Services Plan).
- Accommodate connections from other modes, including adding bike racks to buses and at bus stops. (This goal is in support of the MPO's 2007 Bike and Pedestrian Mobility Plan and MPO's 2009 Transit Services Plan)
- Explore extending service, particularly on Saturdays, to better serve the public. (This goal is based on feedback received through passenger surveys conducted for this TDP).

2.1.2 Proposed Goals and Objectives

In considering the goals that were previously proposed, and the targets suggested in City and regional planning documents, the following goals are recommended. These goals are provided in no particular order.

Goal A: Provide safe and accessible mobility to the community that meets demand and need.

- Implement strategies to ensure compliance with ADA and Title VI provisions
- Implement and maintain security features to ensure a safe and comfortable environment for passengers and transit operators
- Provide passengers and community stakeholders with opportunities to provide feedback on fare increases and general service
- Conduct community surveys to assess level of transit need
- Adjust span of service as appropriate
- Adjust service frequency as appropriate
- Re-align routes as appropriate

Goal B: Provide mobility that allows citizens to maintain personal independence and engage in civic and social life.

- Connect passengers to places of employment, community services, schools and learning institutions, and activity centers

Goal C: Integrate services with the broader local and regional transportation network to enhance transportation access.

- Provide connectivity to other modes, such as walking and biking infrastructure.
- Work with Frederick County and regional stakeholders to extend the reach of public transit service.

2.2 Service Standards

Service standards provide benchmarks to evaluate service. Winchester Transit has adopted the following service standards to help the agency achieve its mission. These standards are outlined in Winchester Transit's 2016 Title VI Program. They cover service availability, vehicle load, vehicle headway, and on-time performance.

TABLE 4 Winchester Transit Standards

Service Area	Standard
	Service Availability
Residential areas	Areas with population densities of 2,000+ people
Major activity centers	Employers or employment concentrations of 200+, health centers, middle and high schools, colleges/universities, shopping centers of over 25 stores or 100,000 square feet, social service/government centers
Bus stop spacing	5 to 7 stops per mile in core; in "fringe" areas, 4 to 5 per mile as needed based on land uses
	Vehicle Load Standards
30 ft. body on chassis	25% standees for short periods[5] acceptable for all vehicles on fixed route. Seating capacity of 24, standing capacity of 10
31 ft. body on chassis	25% standees for short periods acceptable for all vehicles on fixed route. Seating capacity of 22, standing capacity of 10
36 ft. trolley bus	25% standees for short periods acceptable for all vehicles on fixed route. Seating capacity of 30, standing capacity of 10.
	Vehicle Headway
Fixed route service	Three vehicles are used to operate seven fixed routes on a timed hub transfer system. Each line runs every hour and 10 minutes from early morning to late in the evening, six days a week. On weekdays, service should begin no later than 6:00 am and continue until 7:58 pm. On weekends, service should begin no later than 8:50 am and continue until 4:58 pm.
Trolley service	One vehicle is used to operate a loop service on a timed hub transfer system. This route operates every hour and five minutes from morning to evening, four days a week. On Mondays, Wednesdays and Fridays, service should begin no later than 8:00 am and continue until 6:44 pm. On Saturdays, service should begin no later than 10:10 am and continue until 4:34 pm.
	On-time Performance
On-time performance	A vehicle is considered on time if it departs from the transfer hub no more than 5 minutes late with no trips leaving early in comparison to the published schedule. Winchester Transit's on-time performance objective is 95% or greater.

[5] "Short periods" is currently not defined. It is recommended that Winchester Transit specify the amount of time it regards as a "short period."

Transit systems also utilize several other categories of service standards. Winchester Transit may benefit from establishing standards for some or all of these performance measures[6] to provide more consistent service. Establishing these standards may also allow Winchester Transit to gain a more comprehensive understanding of the service it provides.

- Bus stop amenities – the amenities that should be available at bus stops, given the utilization of the stop
- Maintenance administration
  - Vehicle miles between failures
  - Maintenance cost as a percentage of operating costs
- Cost-effectiveness
  - Fare box recovery ratio
  - Operating cost per boarding
- Productivity
  - Boardings per revenue hour
  - Boardings per revenue mile
- Safety and security
  - Collisions per 1,000 miles
  - Collisions per 1,000 boardings
  - Incidents per 1,000 boardings

[6] Performance measures are sourced from TCRP Report 141 and TCRP Report 100.

3

Service and System Evaluation

The following chapter assesses Winchester Transit's recent system performance by reviewing its operating statistics and performance measures, and comparing those statistics against peer systems in the Commonwealth.

Through onboard ridership surveys, an understanding of rider's perspective of service provided by Winchester Transit, and the existing and potential future needs of the community is identified.

Finally, this service and system evaluation identifies any system deficiencies.

3.1 System Performance

The operating and performance statistics for WinTran were provided by the City; an analysis of the data is summarized in Table 5 below.

WinTran has expanded its ridership by 16% since 2014. Between FY 2014 and FY 2015, the number of passenger trips grew by 4%. This rate of growth more than doubled from FY 2015 to FY2016, with a 10% increase in riders. A review of ridership at the route level shows that ridership growth on the South Loudoun, Berryville, and Amherst fixed routes are significant drivers of the rise in the system-wide passenger count. A substantial increase in ridership on the Apple Blossom Mall route between FY 2015 and FY 2016 also contributed to the ridership trends between those years. Para-Transit ridership increased slightly during the three-year period, and trolley ridership declined in FY 2015, but returned to FY 2014 levels in 2016. Table 6 outlines the ridership changes for each route.

WinTran's revenue miles and revenue hours fluctuated slightly between FY 2014 and FY 2016, but they remained relatively constant across all three years. The fixed routes collectively delivered between 13,500 to 14,000 revenue hours during each of the three fiscal years. Revenue miles for the fixed-routes ranged from 155,500 in FY 2015 to 160,000 miles during this period.

Para-transit service, which is based on demand, experienced a decrease in revenue miles in FY 2015 to 155,000, but it increased in FY 2016 to 160,000 miles. Revenue hours for para-transit service followed a similar trend – hours declined in FY 2015 but increased in FY 2016.

Overall, WinTran's continued increase in ridership, coupled with its relatively consistent delivery of revenue miles and hours for fixed routes, resulted in a gradual improvement in the system's productivity from FY 2014 to FY 2016. Table 5 shows the incremental increase in the system's passenger trips per revenue hour and passenger trips per revenue mile for fixed-routes.

The increased productivity also corresponds with improved farebox revenue. As part of WinTran's performance review, farebox revenue data for FY 2014 through FY 2016 was assessed to determine the system's farebox recovery rate. The data showed WinTran's farebox recovery rate improving from 8.6% in FY 2014 to 9.1% in FY 2015, despite receiving reduced funds in FY 2015. The farebox recovery had the highest increase between FY 2015 and FY 2016. The increased revenue is likely tied to WinTran's growth in ridership during this period, as well as reduced operational spending in response to limited funds.

TABLE 5 WinTran Performance Statistics, FY 2014- FY 2016

Year	Passenger Trips		Revenue Hours		Revenue Miles		Trips/ Revenue Hour		Trips/ Revenue Miles	
	Fixed Route	*Demand Response*	*Fixed Route*	*Demand Response*	*Fixed Route*	*Demand Response*	*Fixed Route*	*Demand Response*	*Fixed Route*	*Demand Response*
FY 2014	106,755	14,003	14,364	4,433	155,812	35,152	7.43	3.16	0.69	0.40
FY 2015	112,065	14,057	13,552	4,569	155,573	33,972	8.27	3.08	0.72	0.41
FY 2016	124,264	14,697	13,823	4,909	160,078	37,394	8.99	2.99	0.78	0.39

Year	Operating Expenses	Farebox Revenue	Farebox Recovery	Cost Per Trip	Cost per Hour	Cost per Mile
FY 2014	$913,297	$78,450	8.6%	$7.56	$48.59	$4.78
FY 2015	$892,180	$81,046	9.1%	$7.07	$49.23	$4.71
FY 2016	$921,283	$89,146	9.7%	$6.63	$49.18	$4.67

FIGURE 5 WinTran System Ridership, FY 2014 - FY 2016

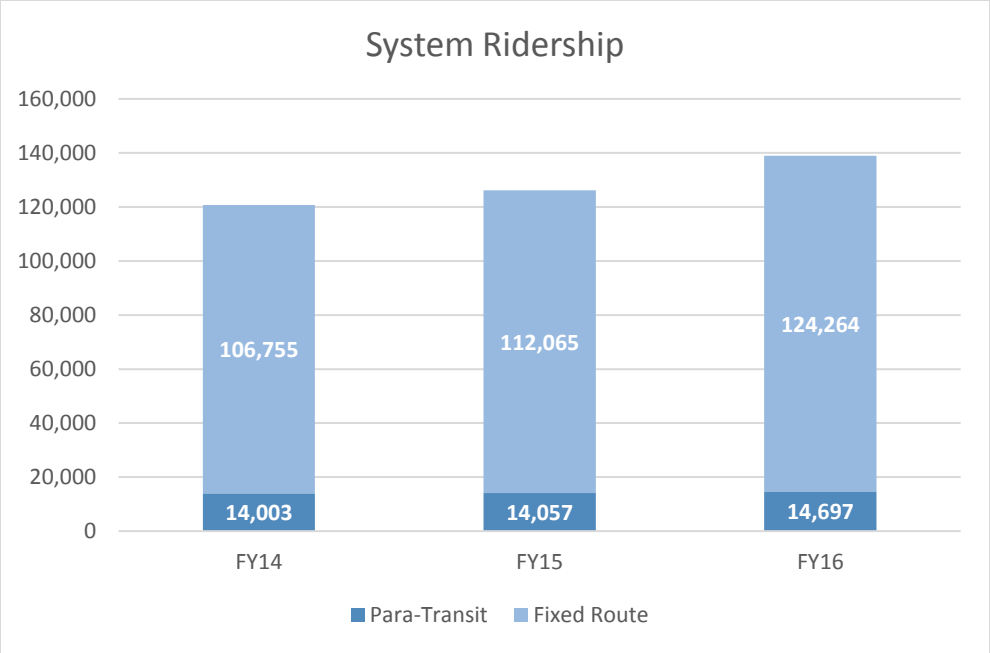
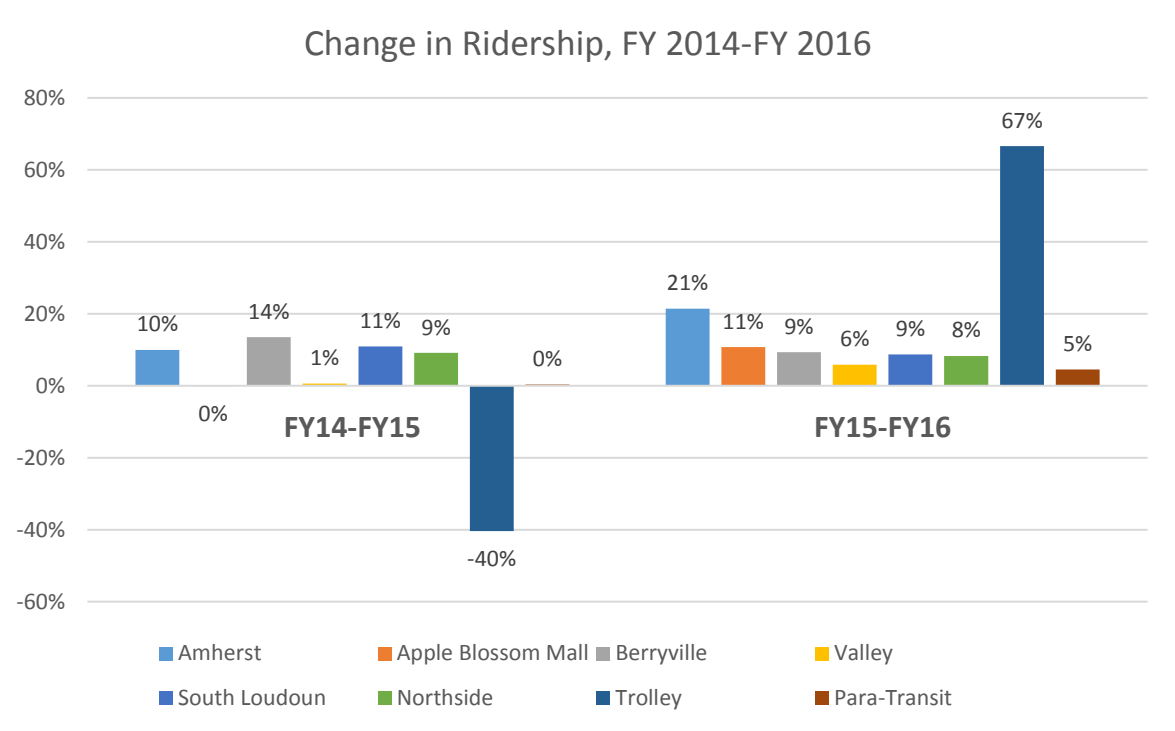


TABLE 6 Passenger Trips for Fixed and Paratransit Routes

Route	FY 2014	FY 2015	FY 2016
Amherst	10,738	11,807	14,338
Apple Blossom Mall	29,039	29,019	32,140
Berryville	19,534	22,181	24,248
Valley	20,824	20,961	22,195
South Loudoun	13,986	15,519	16,876
Northside	10,197	11,126	12,048
Trolley	2,437	1,452	2,419
Para-Transit	14,003	14,057	14,697
Grand Total	**120,758**	**126,122**	**138,961**

FIGURE 6 Percent Change in Ridership, FY 2014-FY 2016



3.2 Peer Evaluations

To provide context to WinTran's performance, this report also assessed WinTran's performance relative to other similar transit systems. For the evaluation, five systems were identified as "peers" based on similar operating metrics, budget, and service location. All peers operate within the Commonwealth of Virginia and receive similar levels of state-level financial and support as WinTran. The peer institutions include:

- Bristol Transit System
- Danville Transit System
- Farmville Area Bus
- City of Staunton
- Town of Culpeper

Table 7 shows the performance metrics for each of the peer systems.

TABLE 7 Performance Metrics for Peer Transit Systems, FY 2014

System	Service Area (sq. miles)	Revenue Miles (incl. demand response)	Revenue Hours	Unlinked Passenger Trips	Budget Expended	Trips/Rev. Mile	Trips/Rev. Hour
Winchester Transit	*37*	*190,964*	*18,797*	*120,758*	*$ 913,297.00*	*0.63*	*6.42*
Bristol Transit System	13	102,414	10,753	96,835	$ 491,544.00	0.95	9.01
Danville Transit System	25	557,261	35,432	307,892	$ 1,528,185.00	0.55	8.69
Farmville Area Bus	354	208,275	13,012	143,583	$ 567,844.00	0.69	11.03
City of Staunton	38	717,575	18,895	143,515	$ 506,096.00	0.20	7.60
Town of Culpeper	not available	688,874	21,687	126,236	$ 1,903,370.00	0.18	5.82
Peer Mean	**108**	**454,880**	**19,956**	**163,612**	**$ 999,407.80**	**0.51**	**8.43**

Performance data for the evaluation was provided by the Virginia Department of Rail and Public Transportation (DRPT). Service area and budget information was sourced from the National Transit Database.

WinTran's performance is generally consistent with that of its peers in the areas of revenue hours, budget, trips/revenue mile, trips/revenue hour, cost per revenue hour, and farebox recovery rate. There are, however, a few areas where WinTran's performance diverges from the peer average:

- WinTran's revenue miles are significantly lower than its peers, despite having similar revenue hours. WinTran delivered 190,964 revenue miles this past year. This total is less than the revenue miles provided by four of its five peers, and it represents a fraction of the peer mean (454,880 revenue miles). The difference could be attributed to a number of different factors – for instance, WinTran's stops may be spaced closer together than other systems because of the density of the service area. Considering WinTran's productivity (0.63 passenger trips per revenue mile) is higher than the peer mean and exceeds the ratios of three of the five peers, the low revenue miles may not be a deficiency it itself, but it will be further explored as part of this evaluation.
- Winchester's ridership is lower than its peers, and the system has the second lowest ridership count among its peer group. Even as one considers the population size of each jurisdiction in the peer group relative to annual passenger trips, Winchester has approximately 4.6 trips per City resident, while the peer mean is 6.5 trips per resident. (See, Table 8). Even as ridership is relatively low, WinTran's productivity (trips per revenue hour and trips per revenue mile) exceeds that of the four agencies with higher ridership. It suggests that WinTran's ridership may be proportional to the annual revenue miles it delivers. and its level of service is appropriately sized.
- WinTran's cost per revenue mile is approximately 1.5 times the peer average cost per mile. WinTran's revenue miles are lower than that of its peers, but its operating expenses are similar to its peers. WinTran's cost per revenue mile may not be a deficiency in itself, however, because its costs per hour align with that of its peers. Further evaluation may be needed to understand why WinTran's operating expenses are high relative to the number of revenue miles the system delivers.

FIGURE 7 WinTran versus Peer Mean

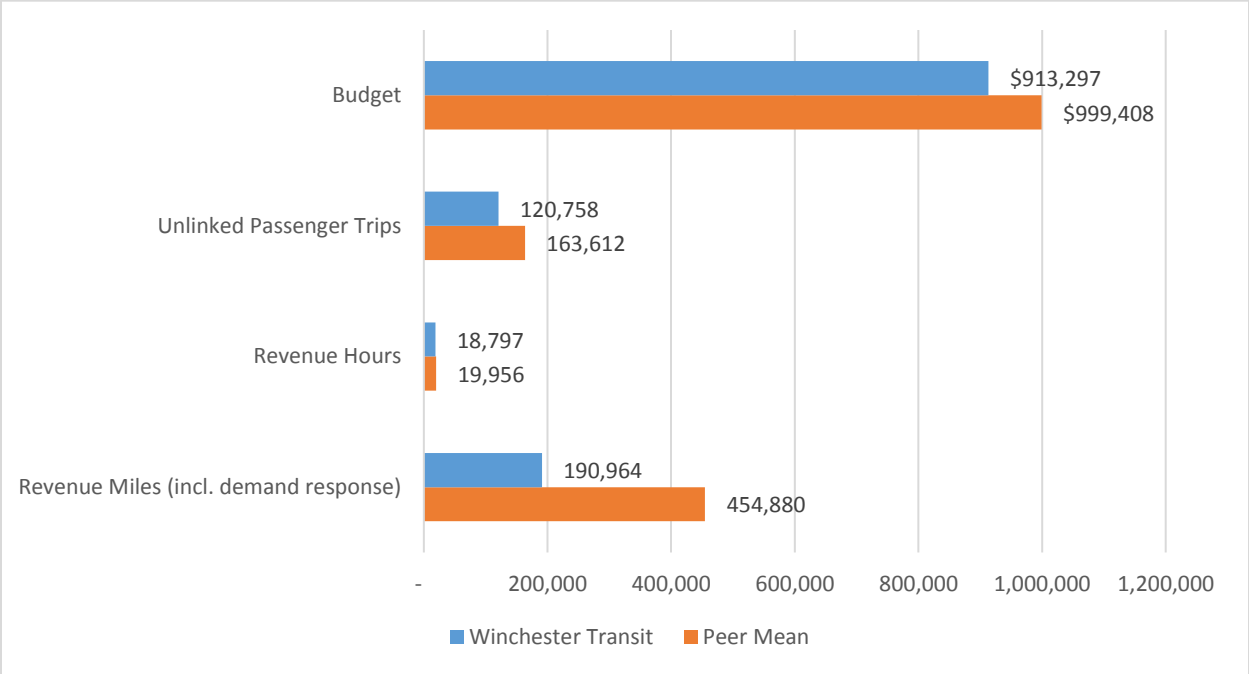


TABLE 8 Trips per Resident

System	Unlinked Passenger Trips	Population	Trips per Resident
Winchester Transit	*120,758*	*26,203*	*4.6*
Bristol Transit System	96,835	17,835	5.4
Danville Transit System	307,892	43,055	7.2
Farmville Area Bus	143,583	23,368	6.1
City of Staunton	143,515	23,746	6.0
Town of Culpeper	126,236	16,379	7.7
Peer Mean	**163,612**	**24,877**	**6.5**

TABLE 9 Operating Expenses

System	Operating Expenses	Fare Revenue	Costs Per Trip	Costs Per Hour	Cost Per Mile	Farebox Recovery
Winchester Transit	*892,180*	*81,046*	*$ 7.39*	*$ 47.46*	*$ 4.67*	*9.1%*
Bristol Transit System	446,015	52,208	*$ 4.61*	*$ 41.48*	*$ 4.36*	*11.7%*
Danville Transit System	1,710,765	336,980	*$ 5.56*	*$ 48.28*	*$ 3.07*	*19.7%*
Farmville Area Bus	625,808	9,091	*$ 4.36*	*$ 48.09*	*$ 3.00*	*1.5%*
City of Staunton	987,537	19,038	*$ 6.88*	*$ 52.26*	*$ 1.38*	*1.9%*
Town of Culpeper	1,102,328	138,818	*$ 8.73*	*$ 50.83*	*$ 1.60*	*12.6%*
Peer Mean	**974,491**	**106,197**	**$ 5.35**	**$ 47.53**	**$ 2.95**	**8.7%**

1 – Population data from 2010 US Census.

2– Population for Farmville Area Bus system reflects Prince Edward County, since the system serves the County.

3-Operating expense and fare revenue data from DRPT's FY 2018 Six Year Improvement Program.

3.3 Onboard Ridership Surveys

As part of this TDP, onboard ridership surveys were conducted to obtain information about popular destinations, rider satisfaction with existing service, passenger demographics, and service areas for improvement. The surveys were conducted on November 10, November 12, and November 14, 2016. The range of dates enabled responses from both weekday and weekend riders of the fixed route buses and trolley service. For the survey, riders were asked to respond to 19 questions. Each passenger only had to complete one survey, and participation was completely voluntary. A total of 173 passengers completed the survey. A copy of the form is attached as Appendix A.

Passenger boarding and alighting behaviors were also observed and documented during the three-day period. The observations provided insight on the key origins and destinations of passengers.

3.3.1 Trip Patterns

The survey found that the largest number of riders (42%) use WinTran to commute to work. Shopping, running errands, and attending medical appointments were also common reasons for riding WinTran, but commuting to work was by far the most dominant purpose for using WinTran among respondents (See, Figure 8).

The most popular destination was Walmart (13% of riders were traveling to this destination). Other popular landmarks among riders include Downtown Winchester, followed by Sharp Shopper, Apple Blossom Mall, and Winchester Medical Center. Table 10 outlines the top six most common destinations reported by survey respondents.

FIGURE 8 Rider Survey - Trip Purpose

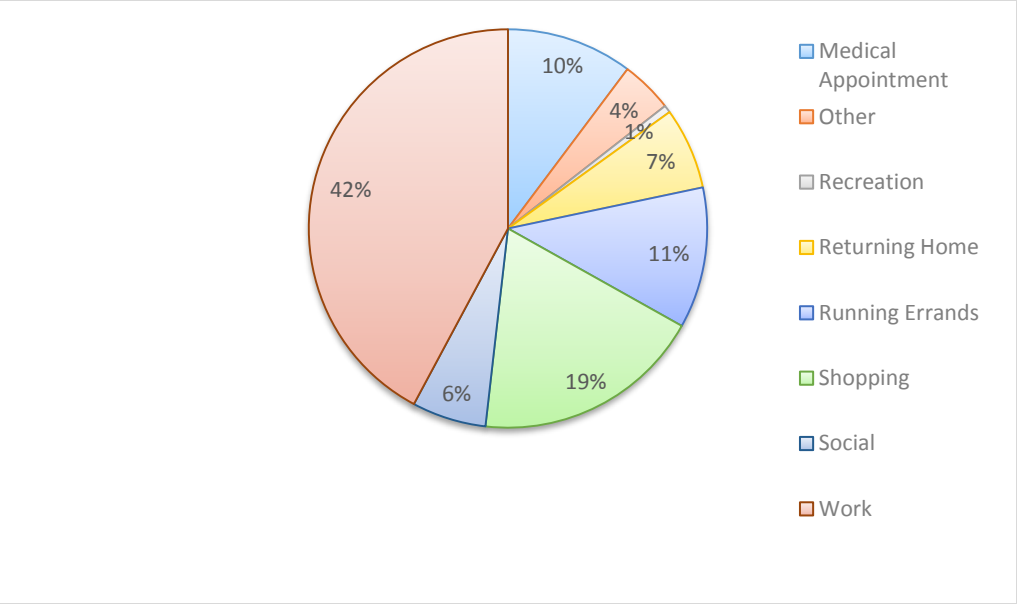


TABLE 10 Top WinTran Destinations

Destination	No. of Respondents Traveling to Destination
Walmart	20
Apple Blossom Mall	11
Downtown	9
Boscawen Transfer Station	8
Sharp Shopper	7
Winchester Medical Center	6

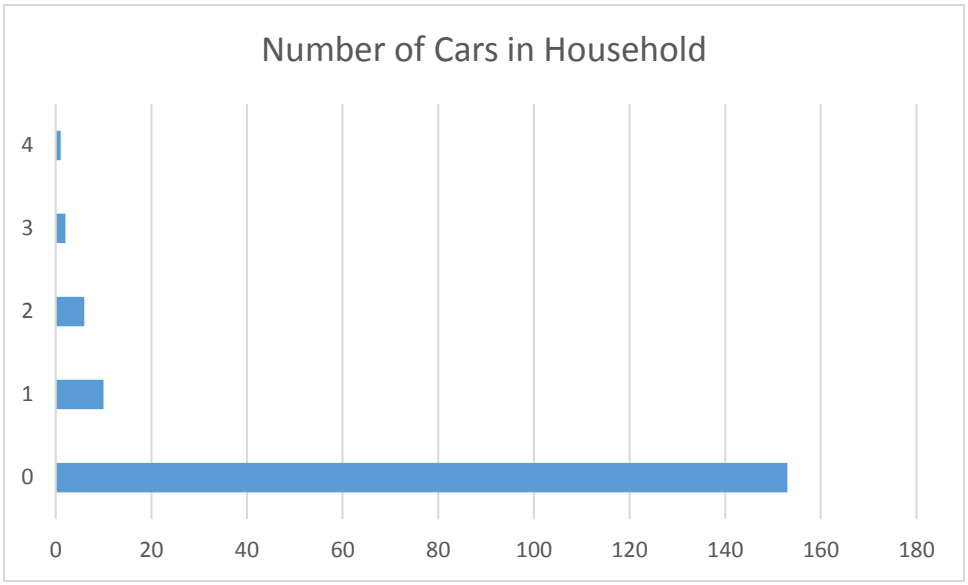
3.3.2 Demographics

The rider survey also sought to understand the passengers that use Wintran service. The survey found that the overwhelming majority of WinTran riders are "captive" riders who rely on WinTran service as their only means to get around. Eighty-nine percent of respondents do not own a vehicle in their household, and only 6% of respondents have access to a single vehicle.

Of the respondents that chose to identify their gender in the survey, 52% of riders were female and 48% were male. Most respondents (51%) were employed fulltime, and an additional 20.6% were employed part-time. About 19% of riders were unemployed. Most respondents elected not to share income information about

themselves, but among those who did, roughly 40% of riders earned a yearly salary of $35,000 or less.

FIGURE 9 Rider Survey - Number of Cars in Household



3.3.3 Rider Satisfaction

The survey attempted to measure rider satisfaction in eight areas of service:

- Hours of operation
- Areas served
- Service frequency
- Travel time
- Personal safety and security
- Real-time information
- Service reliability
- Seat availability

While not all 173 respondents provided ratings for this question, the majority of riders chose to provide feedback. In general, riders indicated that they were either "satisfied" or "very satisfied" in each of the service areas. Personal safety and security received the highest proportion of positive ratings (95% positive). Seat availability (94% positive), reliability (93% positive), and real-time information (93% positive) also received very positive responses.

While no service areas had an overall unsatisfactory rating, the service areas that received the lowest proportion of positive ratings were hours of operation (83%

positive), areas served (83% positive), and service frequency (83% positive). These ratings are consistent with feedback received for another question on the survey - service improvements that would increase ridership – which are discussed below. They are also consistent with comments provided by stakeholders at meetings and interviews, which are discussed in a later section.

It should be noted that the number of respondents that provided ratings varied from service area to service area. For example, 160 respondents rated "hours of operation", but only 149 respondents rated "travel time." The discrepancy could be interpreted in many ways – that respondents were hesitant to provide a negative rating so they skipped the question, or that the respondent was indifferent to the service area and had no opinion. As a consequence, the survey results should be relied upon with this discrepancy in mind.

3.3.4 Service Improvements

The survey also attempted to gauge the impact that specific service changes would have on ridership. The survey gauged rider response to the following eight potential improvements:

- Expanded Saturday service
- Earlier Weekday service
- Later Weekday service
- Sunday service
- More frequent service
- Additional bus shelters/benches
- Service to Lord Fairfax Community College
- Improved real-time information

In general, respondents indicated that all changes would motivate them to ride WinTran more often. In particular, they responded most positively to extending Saturday service (82% felt they would be more likely to ride WinTran with this change), in addition to more frequent service (76%) and instituting Sunday service (75%). The service changes that received less support included earlier weekday service, service to Lord Fairfax Community College (60%), and improved real-time information (65%). It should be noted that the majority of riders indicated that these changes would also influence them to ride WinTran more often, but just not to the extent that extending Saturday service, more frequent service, and Sunday service would.

Similar to the rider satisfaction question, the number of respondents that replied to each service improvement varied. While 163 riders commented on expanded Saturday service, about 161 riders commented on service to Lord Fairfax Community College.

3.4 Stakeholder Interviews and Focus Groups

3.4.1 Focus Group

A focus group meeting was held on November 9, 2016 to discuss current and future transit needs, what kinds of goals and objectives WinTran should adopt for the TDP, and desired service improvements.

The stakeholders that attended the meeting represented various human service providers and advocates in the community, as well as City agencies/departments:

- Adult Care Center
- Literacy Volunteers Winchester Area
- Shenandoah Area Agency on Aging (SAAA)
- Winchester Police Department
- New Eve Ministry & Maternity Home
- Virginia Department of Rail and Public Transportation
- Virginia Indigent Defense
- The Laurel Center
- Winchester/Frederick Juvenile Domestic Relations
- City of Winchester Public Works
- Northern Shenandoah Valley Regional Commission

Overall, the stakeholders voiced a need for public transit service into Frederick County. Destinations such as the probation office and Lord Fairfax Community College are located beyond the City of Winchester limits and WinTran's current coverage area. Stakeholders indicated a desire to see partnerships among transportation agencies to expand the reach of transit service.

In addition to regional service, it was reported that the hours of operation and bus frequency do not align with the shift schedules of local factory workers, who have to wait hours for a bus. Attendees commented that limited service span and service frequency have become a quality of life issue for these workers.

Finally, with regard to goals and objections, it was suggested that the goals include stronger language about creating partnerships in the community, and also offering accessibility to service agencies.

3.4.2 Stakeholder Interviews

Stakeholders who were unable to attend the focus group meeting were contacted to obtain additional feedback on service needs. The following stakeholders were contacted and were willing to provide input for the TDP.

3.4.2.1 AIDS Response Effort, Inc.

ARE provides transportation services for eligible clients with medical-related appointments and case management appointments. ARE provides non-eligible clients, typically low income or non-Medicare individuals, with WinTran bus passes. These individuals rely on WinTran service to attend their medical appointments. The organization has received the following feedback from these regular passengers:

- Several clients have requested Sunday bus service. Some clients are trying to turn their lives around by finding work and/or housing, and clients have indicated a need for service on Sundays to access jobs, or to do a walk-through of housing.
- ARE clients had several suggestions for extending routes:
    - Extend routes to serve DMV in Kernstown. Several clients have a need to visit the DMV to obtain licenses or photo IDs.
    - Extend routes to Delco Plaza Shopping Center in Frederick County. Several clients receive mental health treatment via offices in the shopping center.
    - Extend routes to the industrial park about 2-3 miles east of Winchester that includes the Harley Davidson Retail Store and FedEx. The FBI has announced it will add another 450 jobs to that site in the next few years, which could be an employment opportunity.
    - Extend routes to Lord Fairfax Community College. Some clients have expressed an interest in attending classes.
    - Extend routes east of Route 81. Several clients live between Route 81 and the Clarke County limit.
    - Extend service to Stephens City, if possible. ARE has clients who live in this area.
    - Extend service to Berryville, if possible. ARE has clients who live in this area.

An ARE representative observed that many community amenities are located right over the city limits and urged WinTran to think about transportation on a more regional scale which could perhaps include creating partnerships with Frederick County. He underscored that ARE clients are trying to turn their lives around by finding jobs and housing, and a lack of transportation creates a barrier to achieving those goals.

3.4.2.2 Lord Fairfax Community College

The Director of Marketing and Outreach for Lord Fairfax Community College - Kernstown (LFCC) stated that LFCC has a strong need for public transit service to its campus. Many LFCC students do not have reliable transportation – they either do not own cars and must seek rides from others to get to campus, or they have trouble covering the cost of gas or vehicle maintenance for their car. This lack of reliable transportation affects their ability to attend class, which in turn impacts retention. LFCC believes that having public transit service to the campus would assist those students facing transportation challenges.

She said there currently is no bus service to LFCC and having some form of transit would have a significant positive impact. Ideally, she believed that bus service would need to operate on a regular schedule with hourly frequencies at a minimum. Since most students attend class Monday through Thursday from 7 AM to 10 PM, there is a need for service on those days and during those times.

The representative said that they are currently trying to determine how to finance a route. One option could be to make the route a local route rather than a LFCC shuttle, and to solicit funds from all organizations that would benefit from local service, including LFCC. She said that LFCC is facing budget cuts and is not comfortable increasing student fees, but it is open to contributing to the route.

3.4.2.3 Shenandoah University

VHB interviewed the Vice President of Enrollment Management and Student Success for Shenandoah University (SU). She said that over the years, WinTran has expanded its presence at the University which has been beneficial for the school. She stated that having a more "robust" service schedule might increase ridership at SU. She pointed out that students currently study at three different SU locations within Winchester. The bus, however, does not come frequently enough for them to be able to transition between the three locations for the start of class. She felt that having more frequent service would instill a greater sense of reliability in the transit system. The official also noted that some students opt to complete course prerequisites or make up classes at Lord Fairfax Community College, which is not currently served by public transit. She stated that the span of service during weekdays worked well for classes, but not if students were using the bus for social purposes.

The representative pointed out that there currently is no public transit service into or out of the City of Winchester. This lack of connectivity impacts recruitment for the University. She believes that linking Winchester to another transportation hub, such as Washington Dulles International Airport or a WMATA Metrorail station, would be beneficial.

3.4.2.4 Top of Virginia Regional Chamber

VHB interviewed the Chief Executive of the Top of Virginia Regional Chamber, the chamber of commerce for the City of Winchester and Frederick County. He stated

that the primary need for public transit among local businesses is connecting employees to employers. He cited two employers – Navy Federal Credit Union, and P&G – which will either open offices in the region or expand operations in the area. They will have a need for additional hires. The Chief Executive also reported that the availability of a transit network is a point of enticement for new business to the area.

Finally, the Chief Executive mentioned the need to have consistent and regular service to Lord Fairfax Community College.

3.4.2.5 Frederick County Department of Planning & Development

VHB contacted the Frederick County Department of Planning & Development to identify new and future development projects in Frederick County that may impact WinTran service. The department indicated that retirement communities were being built in the county that would affect transit demand within the community. The agency added that demand may also exist along the Route 11 and Route 7 corridors.

3.5 Land Use Plans

3.5.1 Winchester Comprehensive Plan

The City of Winchester's current Comprehensive Plan was adopted in May 2011, and amended in July 2014. Goals and policies that influence public transit can be found in the Plan's vision (Chapter 3), as well as its sections dedicated to mobility (Chapter 6) and future development (Chapter 9).

3.5.1.1 Transit-related Goals & Objectives

The future vision for Winchester includes a greater reliance on sustainable modes and less dependency on personal vehicle use. To achieve this goal, the Plan sets forth 12 objectives that address mobility. Of these objectives, two directly impact public transit:

- *Encourage the use of alternate modes of mobility including walking, bicycling and public transportation by all sectors of the population to reduce the dependency upon private automobile use.*
- *Work closely with Frederick County and Stephens City to extend public transportation between the City and destinations such as Lord Fairfax Community College, DMV, the Employment Commission/Job Training office, and the regional detention facilities as well as urbanizing areas of the County and Town.*

To achieve the objective of encouraging alternate modes, the Plan suggests implementing the recommendations of the MPO's 2009 Transit Services Plan. These recommendations include:

- Using surveys and use patterns to add additional routes where potential exists
- Increasing WinTran route frequency to more than once an hour
- Extending WinTran service to Frederick County's most urbanized areas to support resident and visitor mobility needs
- Constructing more covered bus shelters especially at multimodal intersections near parking garages or the Green Circle Trail
- Adding bike racks to fleet vehicles
- Advertising WinTran services to tourists and other infrequent users
- Monitoring labor statistic and Census data to determining if demand exists for facilities or service to Washington DC , where about one-quarter of Winchester workers commute

The Plan also layouts specific actions for partnering with Frederick County and Stephens City to extend transit to key destinations beyond the Winchester City limits. The action calls upon the City to:

- *Implement the operational changes and undertake the capital expenses needed to develop a truly regional transit service that allows City residents to access services currently situated beyond the limits of existing transit routes.*

3.5.2 Frederick County 2030 Comprehensive Plan

Frederick County's current Comprehensive Plan was adopted in July 2011, and provides the county's vision through 2030. The plan includes a chapter focused on transportation objectives. The County expects public transit to play an increasing role in its transportation network and anticipates that service will initially begin with transit service for special needs, the elderly, and the disabled.

The County is currently drafting its 2035 Comprehensive Plan, with the final report expected to be complete by Winter 2017. The current draft version (which is still subject to public comment) states that private transit options will play a larger role in the county to address on demand-type services for the disabled, elderly, and special needs populations. This appears to conflict with Winchester City's goals to expand public transit service to urbanized areas of Frederick County and Stephens City.

3.5.3 Winchester-Frederick Metropolitan Planning Organization 2035 Transportation Plan Update

The Winchester Frederick MPO has a Long Range Transportation Plan that outlines goals for the region through 2035. The plan outlines several transit-related priorities including:

- Extending transit service for Route 7/Berryville Avenue Route
- Extending transit service for the Valley Avenue Route to Cross Creek Villa
- Extending transit service for the Amherst Route to Wal-Mart
- Extending transit service for the Apple Blossom Mall route to Millwood Ave/US522 South Corridor.
- Extending transit service for the Northside route to Rutherford Crossing
- Linking the Apple Blossom Route with the Amherst Route
- Reconfiguring the Winchester Trolley Route
- Extending service hours into Late Evening and adding Sunday service
- Increasing transit frequency from hourly service to 30-minute service
- Improving passenger amenities
- Construction of WinTran Department Administrative Building
- Replacing two fixed-route buses for WinTran
- Installing a bus stop announcement system for transit buses
- Expanding the Valley Connector for service to the D.C. area

The plan also set a goal of establishing county-wide demand response transit service for those with special needs.

For the region, the MPO envisioned providing service along the US-11 corridor to Lord Fairfax Community College, creating service throughout the I-81/US-11 corridor, and establishing future passenger rail service along I-81.

3.5.4 Lord Fairfax Community College Public Transit Feasibility Study

Lord Fairfax Community College (LFCC) and the Winchester Frederick Metropolitan Planning Organization commissioned a public transit feasibility study to explore extending public transportation service to the Community College in Middletown, VA in Frederick County.

The study, completed in August 2016, found a need for transit service to LFCC among students and support for the service among the community. A survey of LFCC students revealed that a lack of transportation was a barrier for roughly one-quarter (27%) of LFCC students. Over two-thirds (68%) of students indicated that they would use transit service to commute to campus if it was offered.

The study recommended that in the short-term, the City of Winchester spearhead transit service by extending one of its routes along the Route 11 corridor to LFCC. In the mid-term, the study recommended that transit service be expanded to other areas of the Northern Shenandoah Valley that are home to LFCC students, particularly Front Royal. The expanded service would be administered and operated by VRT. The long-term plan involves a route along the Route 11 South corridor,

which would like Woodstock and Strasburg to LFCC. Links to Frederick County (specifically north and west of Winchester) from the City of Winchester, and to Berryville would also be explored.

3.5.5 Northern Shenandoah Valley Regional Commission 2035 Rural Long Range Transportation Plan

The Northern Shenandoah Valley Regional Commission's (NSVRC) 2035 Long Range Transportation Plan is a segment of VDOT's 2035 Plan, which integrates regional transportation plans for rural and small urban areas with those of Virginia's metropolitan areas. The NSVRC's long range plan serves the Counties of Clarke, Frederick, Page, Shenandoah, and Warren; the City of Winchester; and the Towns of Berryville, Boyce, Edinburg, Front Royal, Luray, Middletown, Mount Jackson, New Market, Shenandoah, Stanley, Stephens City, Strasburg, Toms Brook, and Woodstock.

The NSVRC Long Range Transportation Plan includes travel demand management goals, but admits that low population densities found in the Northern Shenandoah region make shifts to mass transit a challenge. The Plan compiles public transportation deficiencies and remedies from the region, however, predominately from the Coordinated Human Service Mobility Plan (DRPT, Northern Shenandoah, 2008) and the VRT transit development plan (VRT, 2009). These deficiencies and remedies include:

- Continue to support capital needs of coordinated human service and public transportation providers
- Expand availability of demand-response and specialized transportation services to provide additional trips for older adults, people with disabilities, and people with lower incomes
- Build coordination among existing public transportation and human service transportation providers
- Expand outreach and information on available transportation options in the regional, including establishment of a centralized point of access
- Provide flexible transportation potions and more specialized one-to-one services through expanded use of volunteers
- Establish or expand programs that train customers, human service agency staff, medical facility personnel, and others in the use and availability of transportation services
- Establish a ride-sharing program for long-distance medical transportation
- Expand access to taxi and other private transportation operators
- Implement new public transportation services or operate existing public transit services on more frequent basis

- Bring new funding partners to public transit/human service transportation
- Provide targeted shuttle services to access employment opportunities

3.6 Service Standard Deviations and Remedies

WinTran's current service standards address service availability, vehicle load, vehicle headway, and on-time performance (See, Table 4 in Chapter 2). VHB assessed WinTran's progress in each of the areas and determined if any deficiencies exist.

3.6.1 Service Availability

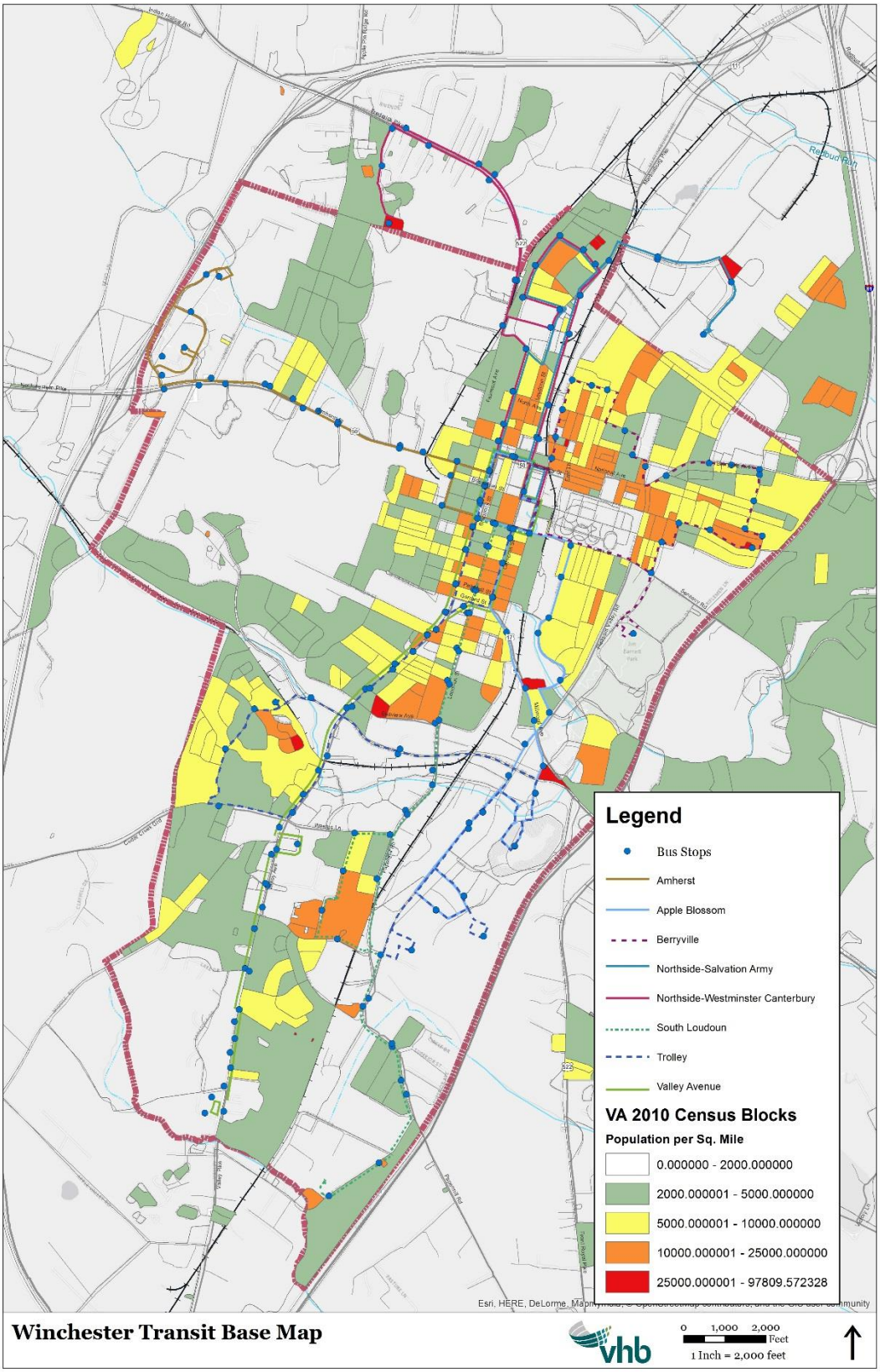
WinTran measures its service coverage using three elements:

- Service to residential areas with populations of 2,000+ people
- Service to major activity centers with employers or employment concentrations of 200+, health centers, middle and high schools, colleges/universities, shopping centers of over 25 stores or 100,000 square feet, social service/government centers
- Bus stop spacing of 5 to 7 stops per mile in core; in "fringe" areas, 4 to 5 per mile as needed based on land uses

3.6.1.1 Service in Residential Areas

Using GIS routing data and 2010 Census population data, VHB attempted to measure WinTran's service availability by mapping the system routes and stops against the population levels for each census block (See, Figure 10).

FIGURE 10 City of Winchester 2010 Population by Census Blocks



The analysis showed WinTran routes serving nearly all areas with significant residential populations. The only areas of the City that meet the standard but are not currently being served include:

- The residences along Meadow Branch Avenue/W. Jubal Early Drive (in the western segment of the City)
- Fox Drive/Route 767 (just west of the Westminster-Canterbury senior living community)

These areas have population densities between 2,000 and 5,000 people, which meet WinTran's benchmark for residential service. An analysis of the demographics of the two areas (i.e., age, population density, income level, employment opportunities) suggests that transit demand in these areas may be minimal. While it may not be effective for WinTran to implement service in these areas at this time, WinTran should monitor these areas for changes in conditions and needs that may warrantimproved service accessibility in these neighborhoods.

3.6.1.2 Bus Stop Spacing

An analysis of bus stop spacing along routes was also conducted. WinTran's existing standards require: *5 to 7 stops per mile in core areas and 4 to 5 stops per mile in fringe areas, as needed based on land uses.*

GIS routing and bus stop data was used to evaluate this metric. For the purposes of the analysis, the "core" area was defined as the section of Downtown Winchester between Braddock Street and Kent Street, and from Cork Street to W. Piccadilly Street. The "fringe" areas were defined as the segments of each route that extended beyond the core area.

The findings from the GIS assessment are presented in Table 11.

TABLE 11 Stop Spacing

Route	Core Mileage	Core Stops	Core Stops/ Mile	Non-Core Mileage	Non-Core Stops	Non-Core Stops/Mile
Amherst	0.91	6	6.60	3.53	23	6.51
Apple Blossom	1.59	11	6.91	6.07	19	3.13
Berryville Avenue	0.49	1	2.05	4.24	23	5.43
Northside-Salvation Army	0.66	2	3.05	4.69	21	4.48
Northside-Westminster Canter-bury	0.66	2	3.05	6.16	26	4.22
South Loudoun	1.51	13	8.62	4.56	27	5.92
Trolley	1.82	12	6.61	8.80	32	3.63
Valley Avenue	1.83	11	6.02	3.38	34	10.05

Core Area

The evaluation showed that on average, WinTran's routes had approximately 5.4 stops per mile. The South Loudoun route had the most stops within the core, with about 8 stops per mile. There were three routes that had fewer than the required 5 stops per mile in the core area. These routes were:

- Berryville Avenue (2.05 stops per mile)
- Northside Salvation Army (3.05 stops per mile)
- Northside-Westminster Canterbury (3.05 stops per mile)

A closer examination of these routes shows that only a small segment of each route (less than ¾ mile) falls within the core area. The routes all touch the downtown core along its eastern edge rather than looping around the perimeter of the core area like the other WinTran routes. These short segments accommodate only 1-2 stops, resulting in a lower stop per mile count.

While the Berryville Avenue and Northside routes do not strictly meet the bus stop spacing requirement for the core, it may not be considered a deficiency in itself. To satisfy the core bus stop spacing standard, the Berryville Avenue route would have had to fit approximately 3 stops within its half-mile segment in the core, and the Northside Avenue routes would need 4 stops within its 2/3 mile stretch in the core area. Having stops in such close proximity would hinder bus efficiency and increase passenger travel time by requiring the bus to stop at almost every block.

For that reason, WinTran may want to consider adjusting its bus stop spacing standard to a minimum of 2-3 stops in the core area. Given the size of the core downtown area reducing the requirement to a minimum of 2-3 stops in the core

area may improve the efficiency of buses traveling through the corridor while still maintaining passenger accessibility to stops.

Fringe Areas

The spacing of bus stops in non-core areas was also assessed. On average, WinTran routes have approximately 5 stops for every mile in "fringe" areas. The route with the largest ratio of bus stops per mile is Valley Avenue, with approximately 10 stops per mile. The route with the fewest number of stops per mile is Apple Blossom with approximately 3 stops per mile.

When compared to WinTran's service accessibility standard for fringe areas (4 to 5 stops per mile), the Apple Blossom route is the only route that falls below WinTran's benchmark. A closer examination of the route shows several sections of the route with no stops because of the surrounding land use. At the southern end of the route, there is an approximately half-mile stretch of the route (beginning just north of S. Pleasant Valley Rd. and Patsy Cline Blvd. to the intersection of Adams Dr. and Legge Blvd) that has commercial industrial zoning and is serviced by two stops. Another example includes a stretch at the northeast end of the route (along Parkway St. from E. Cork St. to E. Pall Mall St.) that traverses a medium density residential area and has no stops. These extended gaps in the bus stop spacing affect the route's overall bus stop per mile ratio.

WinTran's standard excludes fringe areas where the land use does not merit a bus stop. Given the different land use zones that the Apple Blossom Mall route crosses, the number of bus stops along the route may not need to be adjusted.

3.6.2 Vehicle Load Standards

WinTran's standard for vehicle loads allows for "25% standees for short periods on fixed routes." WinTran does not have automatic passenger counter (APC) technology at this time to determine the precise vehicle load throughout the day. Observations conducted during passenger surveying, however, showed that vehicle capacity was sufficient to allow all passengers to find a seat during their trip. This is also supported by passenger survey results that show overwhelming satisfaction with seat availability on buses.

Going forward, until APC technology can be installed on buses, it is recommended that WinTran drivers monitor vehicle load and note any overcrowding on buses.

3.6.3 Vehicle Headway and On-time Performance

WinTran faces similar technology issues in attempting to gauge its vehicle headway and on-time performance. Until automatic passenger counters are installed on buses, it is recommended that WinTran drivers or staff track bus arrival times at stops to verify the headway and on-time performance of routes.

3.7 Equipment and Facility Deficiencies

WinTran has procured equipment and constructed facilities to support its operational needs. Since 2013, the agency has completed construction of a new administrative office building and parking lot, purchased an administrative vehicle and fixed-route buses for its fleet, installed additional technologies, and placed benches and informational signs at stops.

In general, the agency's existing facilities appear to meet its needs. Nevertheless, WinTran may benefit from the following additional changes to facilitate operations.

- WinTran plans to install Automatic Passenger Counters (APCs) in 2-6 years. It is recommended that WinTran install the technology sooner rather than later, as it would help the agency to better identify changes in passenger boarding patterns and stops requiring amenities.
- The City should prepare and maintain a formal Facilities and Replacement Plan. A formal plan would help the agency to anticipate and plan for facility and equipment purchases.

3.7.1 Triennial Review

Additional recommendations were made as part of the City's Triennial Review, conducted by the Federal Transit Administration (FTA). The FTA identified deficiencies in six areas. The areas that did not meet federal requirements are outlined below.

- The review found that the City included farebox revenue among its calculations for operating expenses. The FTA recommended that the City submit by July20, 2015 procedures for properly calculating net project costs for operations.
- The review found that the City has met ADA service provisions in place but did not monitor its operations for compliance with service provisions. The City could not ensure that its drivers comply with all required provisions. The FTA recommended that the City submit procedures by July 20, 2015 for monitoring its operations for compliance.
- The review found that the City did not conduct independent cost estimates for competitive procurements. The FTA recommended that the City provide documentation by August 19, 2015 that it had updated its procurement procedures to include development of independent cost estimates prior to receiving proposals. The FTA also asked that the City submit a list of its anticipated procurements through February 2016.
- The review also found that the City did not have documentation of pre-award Buy America certification review. The FTA recommended that the City submit procedures for pre-award review and inspection by August 19, 2015.

- The City did not involve the public when setting its DBE goals. The FTA recommended that the City provide a timeline for public participation by July 20, 2015.
- The review also found that the City was not implementing the small business strategies it outlined in its DBE plan. The FTA recommended that the City show evidence of implementing its small business participation strategies by November 18, 2015.
- The review found that the City had deposited insurance proceeds from a transit accident into a general fund that earns interest. The FTA recommended that the City develop a procedure for documenting how insurance funds will be captured in financial records to ensure no interest is earned on the proceeds. The FTA also required the City to return an amount equal to the federal share of the interest earned from the insurance receipts.
- The review found that the City did not have an established procedure for soliciting and considering public comments prior to implementing a fare increase or service reduction. The FTA recommended that the City submit a written policy that describes how public comments will be obtained and considered, and defines a major service reduction.

3.7.2 Title VI

WinTran has a Title VI program to ensure that the quality and level of transit service is provided in accordance with Title VI regulations. Winchester's updates its Title VI program regularly. The latest version of the program was adopted in June 2016.

As of May 2016, no lawsuits had been filed with WinTran alleging discrimination. WinTran has not received any complaints either alleging discrimination. The document also outlined WinTran's efforts to comply with additional Title VI provisions including accommodating those with Limited English Proficiency, Civil Right compliance review, construction projects, inclusive public participation, minority representation on advisory boards, and service standard

4

Service and Capital Improvement

The following chapter discusses how Winchester's demographics are projected to change in the next 11 years and introduces service alternatives for the WinTran system to accommodate Winchester's evolving service needs.

The service alternatives are based on information described in Chapters 1-3, as well as demographic analysis information supplied by the WinFred MPO.

4.1 Needs Identification

4.1.1 Demographics of the City of Winchester

A demographic analysis of transit needs was conducted to identify areas where transit demand is high, now and in the future. The analysis examined three major demographic factors to assess transit demand:

- Population growth
- Employment levels
- Location of transit-dependent groups

4.1.1.1 Population Growth

The analysis examined areas where the population density is currently high, as well as neighborhoods where population growth is projected to occur. Data about the City's existing and future population size was provided by the Northern Shenandoah Regional Commission, which supplied 2015 and 2040 population estimates organized by traffic analysis zones (TAZ).

The data revealed that population density was highest in the northeast and southwest sections of the city, as well as the downtown area. These areas are currently served by Wintran fixed route service.

By 2040, certain pockets in the northeast and southwest segments of the city will increase in population density – particularly in the downtown area and just east of Valley Avenue. The vast majority of population growth, however, will occur outside of the city limits in Frederick County. This suggests that transit demand will remain relatively constant within the City of Winchester but will likely increase across the region. Figures 11 and 12 show the forecasted population change in the City between 2015 and 2040.

4.1.1.2 Employment Levels

The analysis also examined current and future employment density. The Northern Shenandoah Regional Commission supplied 2015 and 2040 employment estimates organized by TAZ. Employment was counted as the number of jobs organized by TAZ.

The comparison showed that within the City of Winchester, the number of jobs is expected to grow by 0-5%. Outside of the City, growth is projected to be between 5-45% with some areas (northwest and west of Winchester, and the Winchester Country Club) experiencing a 45-100% increase in the number of jobs. The most significant employment growth was located southeast of the city, where the number of jobs was projected to increase by more than 250%. Figure 13 displays the change in employments levels by percentage in the City.

FIGURE 11 Population per Square Mile, 2015

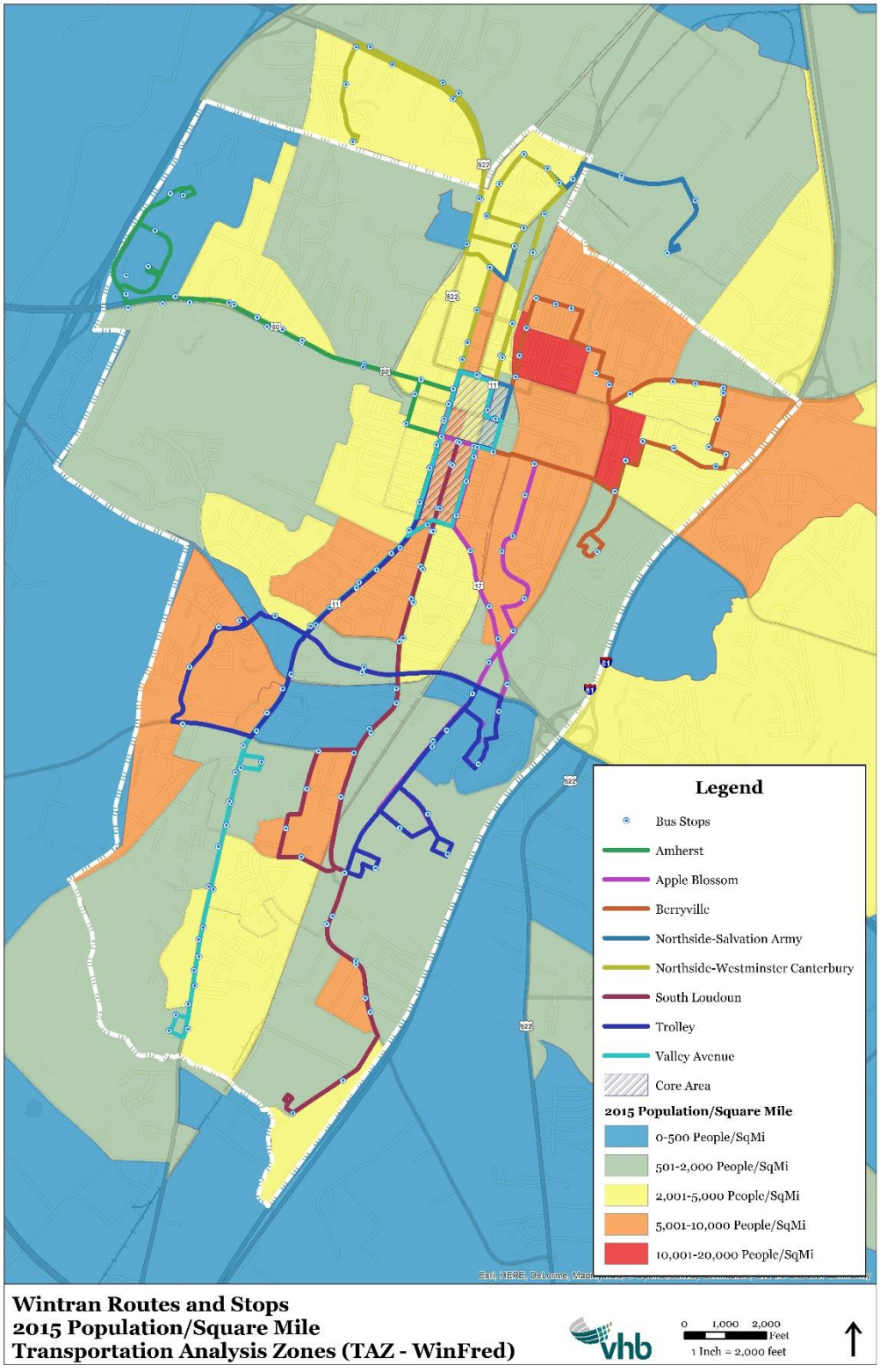


FIGURE 12 Population per Square Mile, 2040

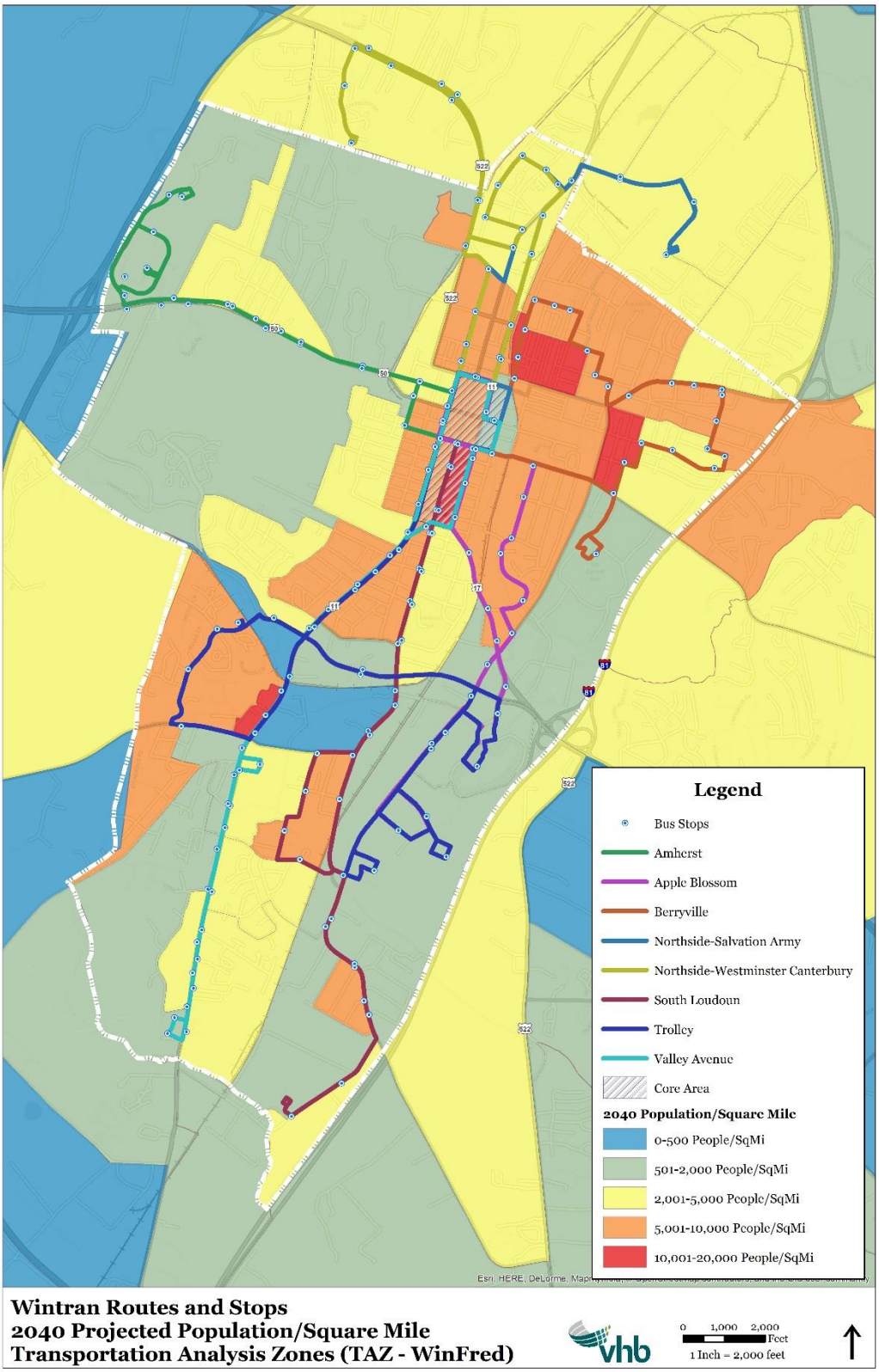
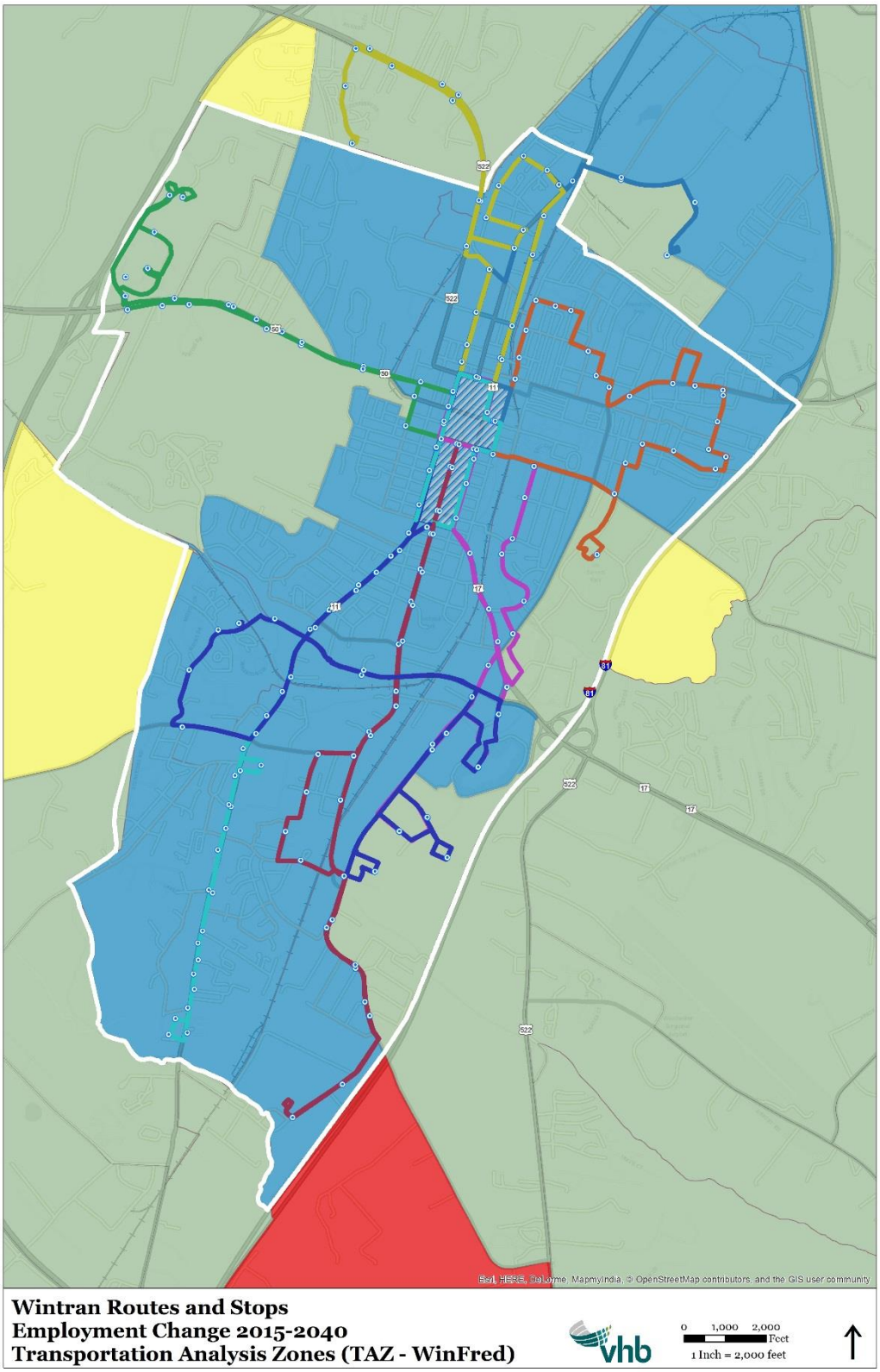


FIGURE 13 Percent Change in Number of Jobs, 2015-2040



4.1.1.3 Transit-dependent Population

A demographic analysis of transit needs was conducted to assess the ability of WinTran's current routing to meet existing transit needs. The analysis focused on specific segments of Winchester's population that would have a higher likelihood of facing mobility challenges than the general public and would require public transit to get around:

- **Poverty** – This segment of the population includes families or individuals who live below the poverty line defined by the U.S. Census Bureau. These individuals would have difficulty purchasing and/or maintaining a personal vehicle. For the analysis, poverty was measured by households per census block group.
- **Persons with disabilities** – These individuals have a physical, mental, or emotional condition that can make it difficult for them to travel. Disabled persons were measured as households with at least one disabled individual. Density was measured based on census block group.
- **Auto-less households** – These households do not have an automobile to provide members with mobility. The density of households with no automobile was measured by census block group.
- **Elderly** – This category defines the elderly as individuals age 60 and older. This group includes individuals who no longer drive or rarely drive as a result of factors related to age. Density was measured by the number of "elderly" persons per census block group.

The Northern Shenandoah Valley Regional Commission provided population count data for each demographic group for 2015. This information was mapped using geospatial analysis tools and analyzed to identify current and projected areas of relatively high transit need, as well as gaps in service. The findings were also used to develop recommendations for service improvement, outlined below. Figures 14, 15, 16, and 17 were generated from the analysis.

The location of some demographic groups in the city overlapped, most likely because of the correlation between certain characteristics, such as low income and being able to afford an automobile.

The analysis showed that in general, WinTran serves virtually all areas where the density of transit-dependent population is relatively high. Only one block – National Avenue east of Cameron Street - was identified as a service gap. The census block group north of this segment of National Avenue has a relatively high density of low-income households, and the census block group just south of National Avenue has a moderately high density of low-income households. While the Berryville route currently circulates through the high-density block, those households living near National Avenue would have to walk an additional distance to access the route. Providing additional service along National Avenue would create more direct access for these individuals.

FIGURE 14 Households Below the Poverty Line per Square Mile, 2015

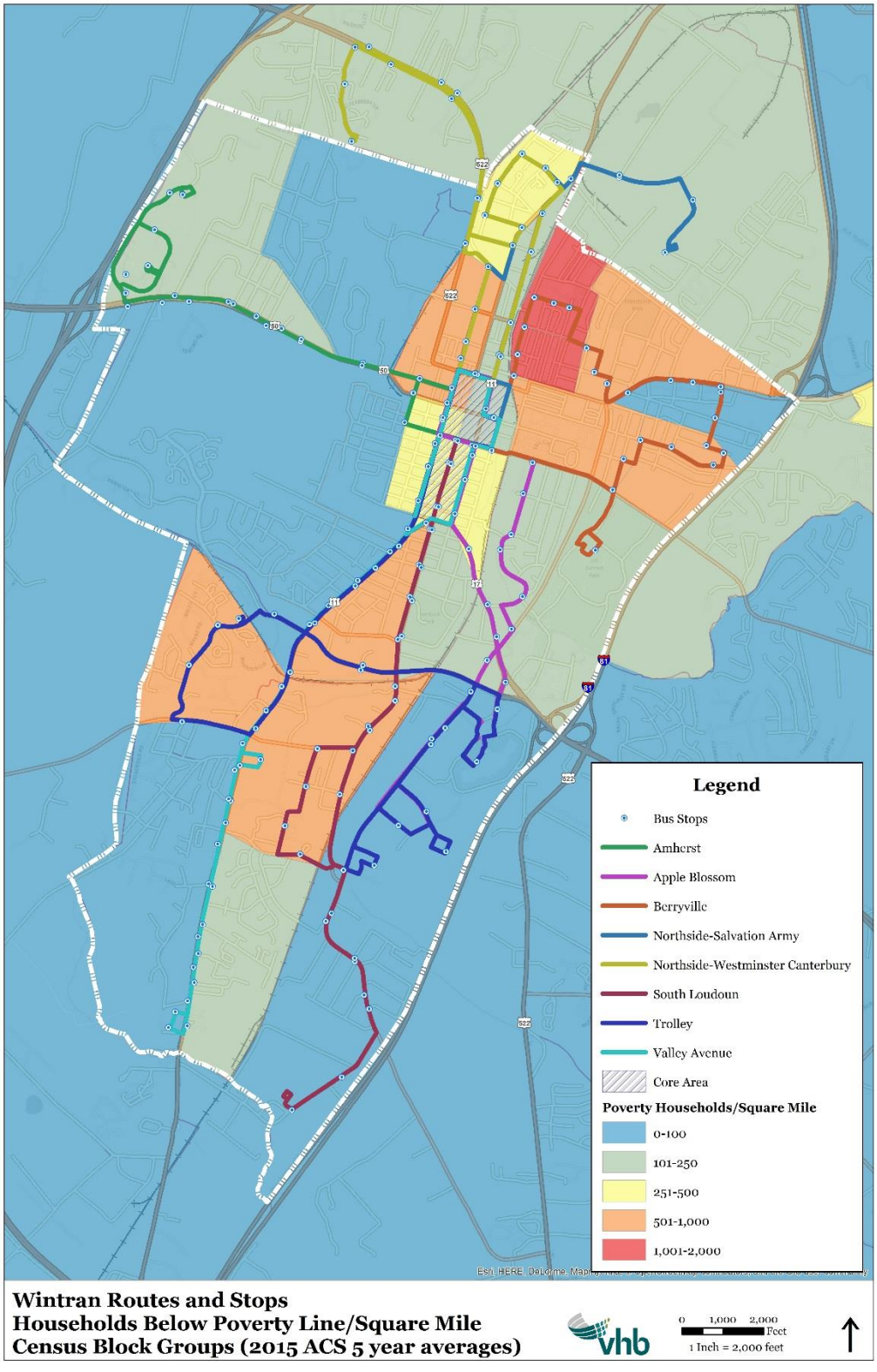


FIGURE 15 Households with Disabled Persons per Square Mile, 2015

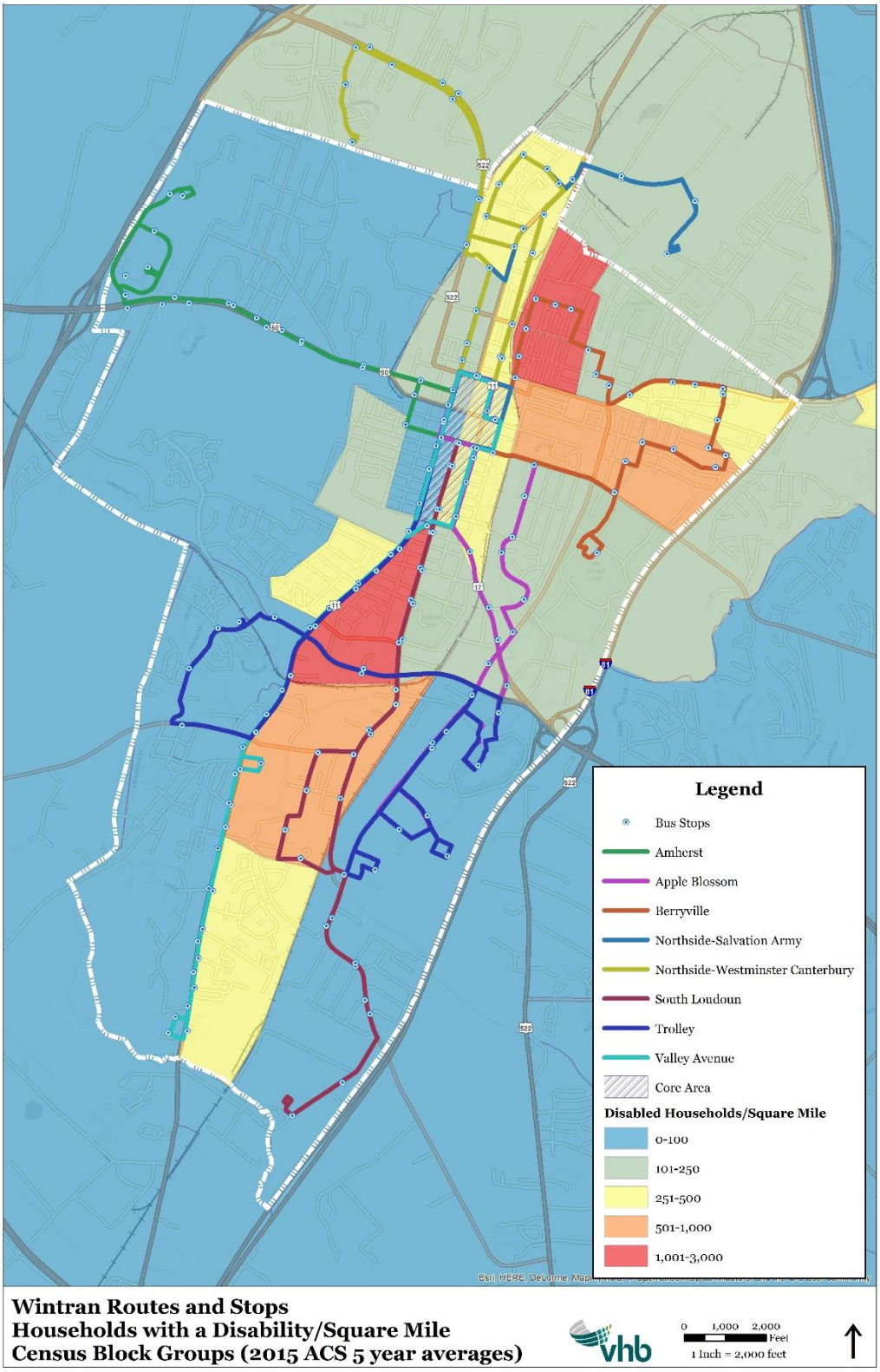


FIGURE 16 Households Without a Motor Vehicle per Square Mile, 2015

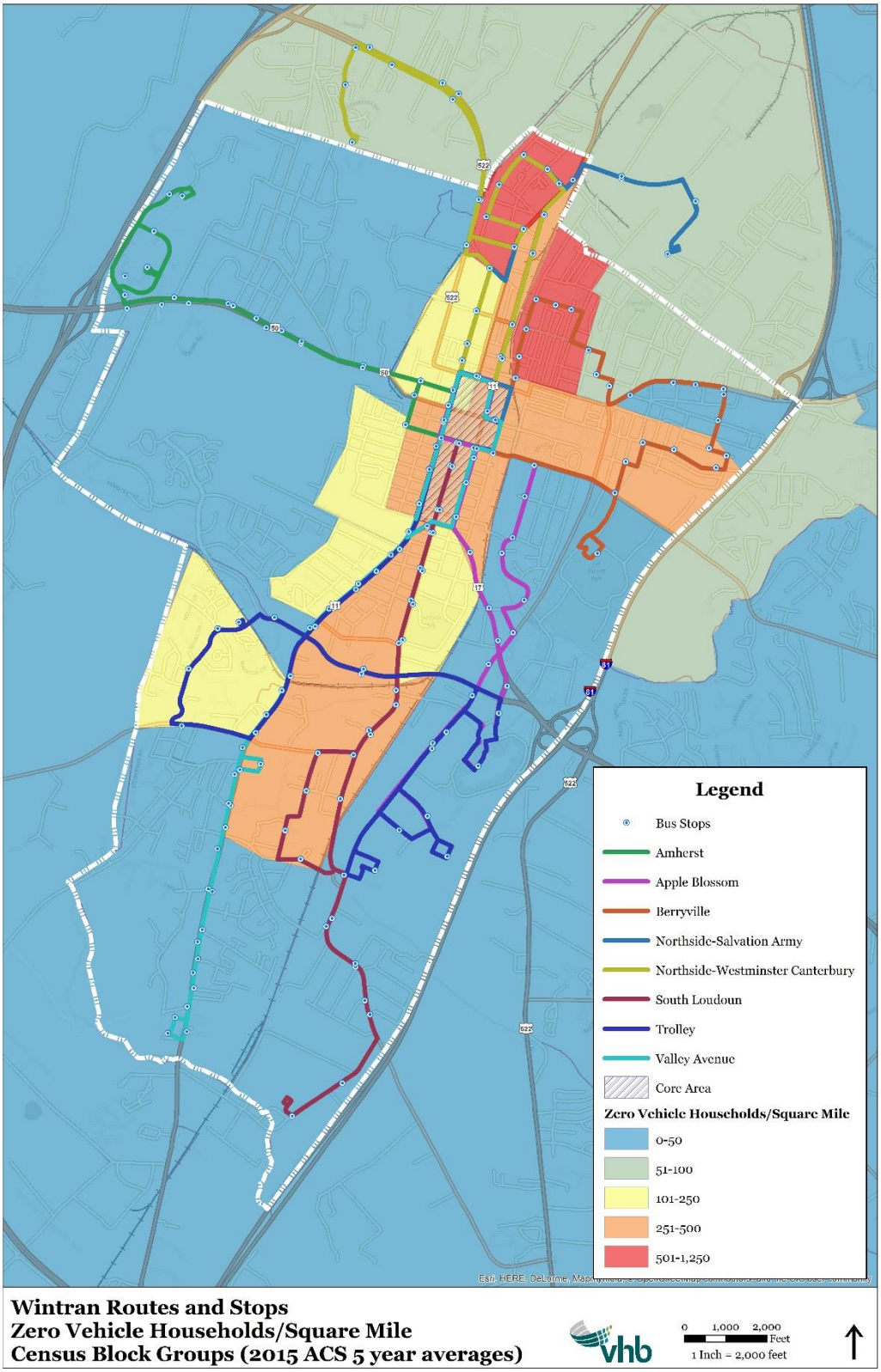
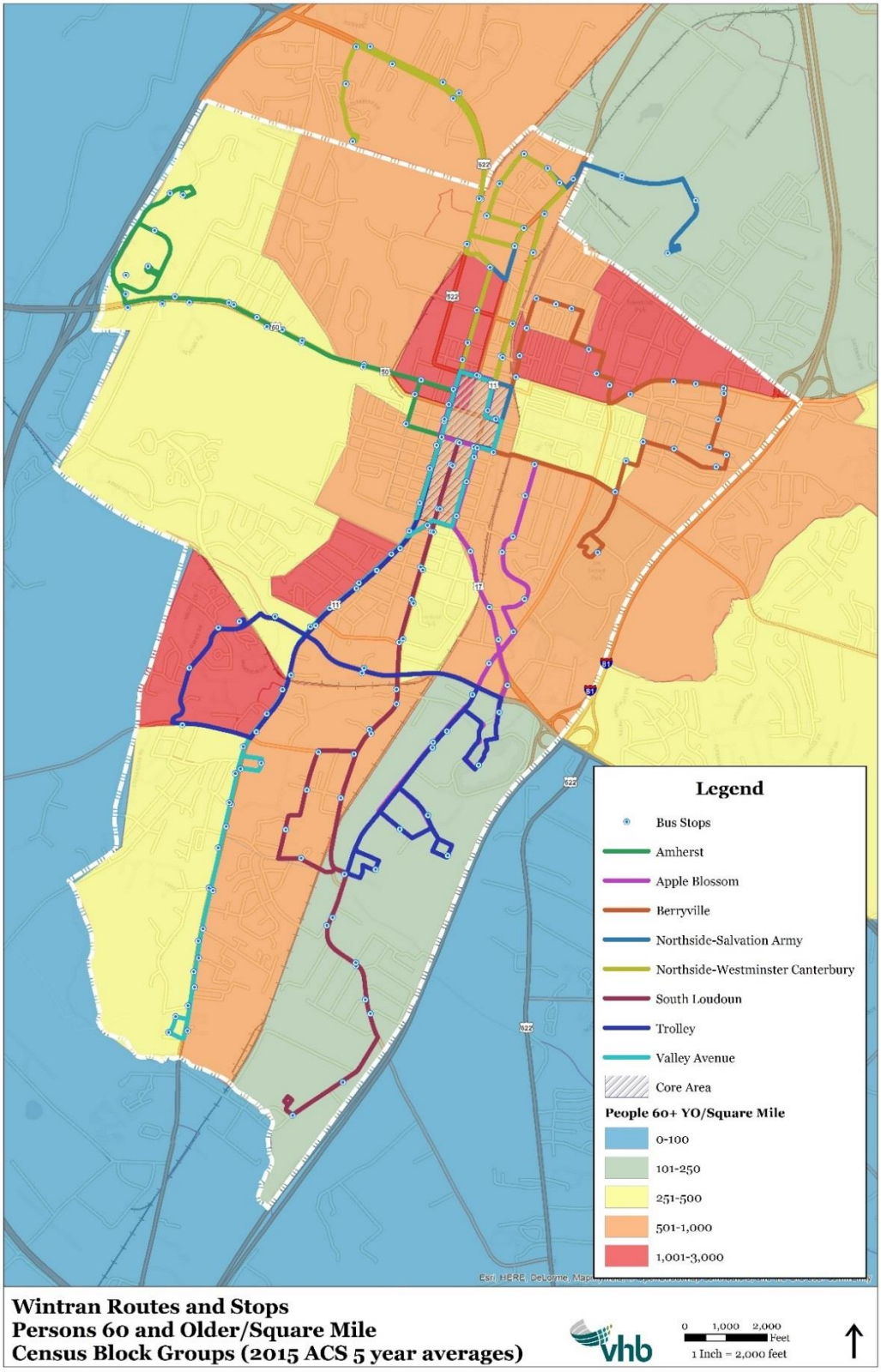


FIGURE 17 Elderly Persons per Square Mile, 2015



4.2 Service Improvements and Prioritization

Based on information collected through the passenger survey, public meeting, stakeholder interviews, geospatial analysis of demographics, and an analysis of operational data, the following needs and recommendations were identified. These recommendations also take into account Wintran's general mission and the system's anticipated role as identified in NSVC plans. They also consider the anticipated availability of transportation funding and assume that no additional capital project funding will be received in the short or medium term.

4.2.1 Short-term Needs

The short-term category includes needs that have a relatively higher urgency and should be addressed in the near future (e.g. 1-3 years).

4.2.1.1 Improved On-time Arrival

All WinTran vehicles currently stop at the Transfer Station along Boscawen Street every 70 minutes to allow passengers to transfer routes. Depending on the time of day and traffic conditions, some vehicles take longer to reach the Transfer Station than others, negatively impacting passenger transfers.

Recommendation

To promote better synchronizing of vehicles, WinTran can improve its on-time arrivals in the short term by eliminating underperforming stops, as well as only serving certain facilities during business hours. Updating the downtown circulation pattern to streamline routes would also eliminate circuitous travel and reduce travel time. Short-term adjustments include:

- Only stopping at main Winchester Medical Center facilities. Other facilities and clinics associated with the Medical Center would be served upon passenger request.
- Eliminating the stop behind Ward's Plaza. No passengers were observed using this stop. The stops in front of the Plaza will still be served.
- Servicing the stop at the entrance of Creekside Station but not the stops within the strip mall.
- Re-configuring each route's circulation pattern through the Downtown area so that vehicles can pass through the area efficiently while still serving the Transfer Station.
- Implement stops along both sides of Boscawen Street to promote more efficient circulation in the Downtown core.

These changes are expected to reduce operational miles, which saves fuel and the wear-and-tear of vehicles. It also reduces travel time, which facilitates on-time arrival and passenger satisfaction.

4.2.1.2 Re-assigning the Trolley to the Apple Blossom/Amherst Routes

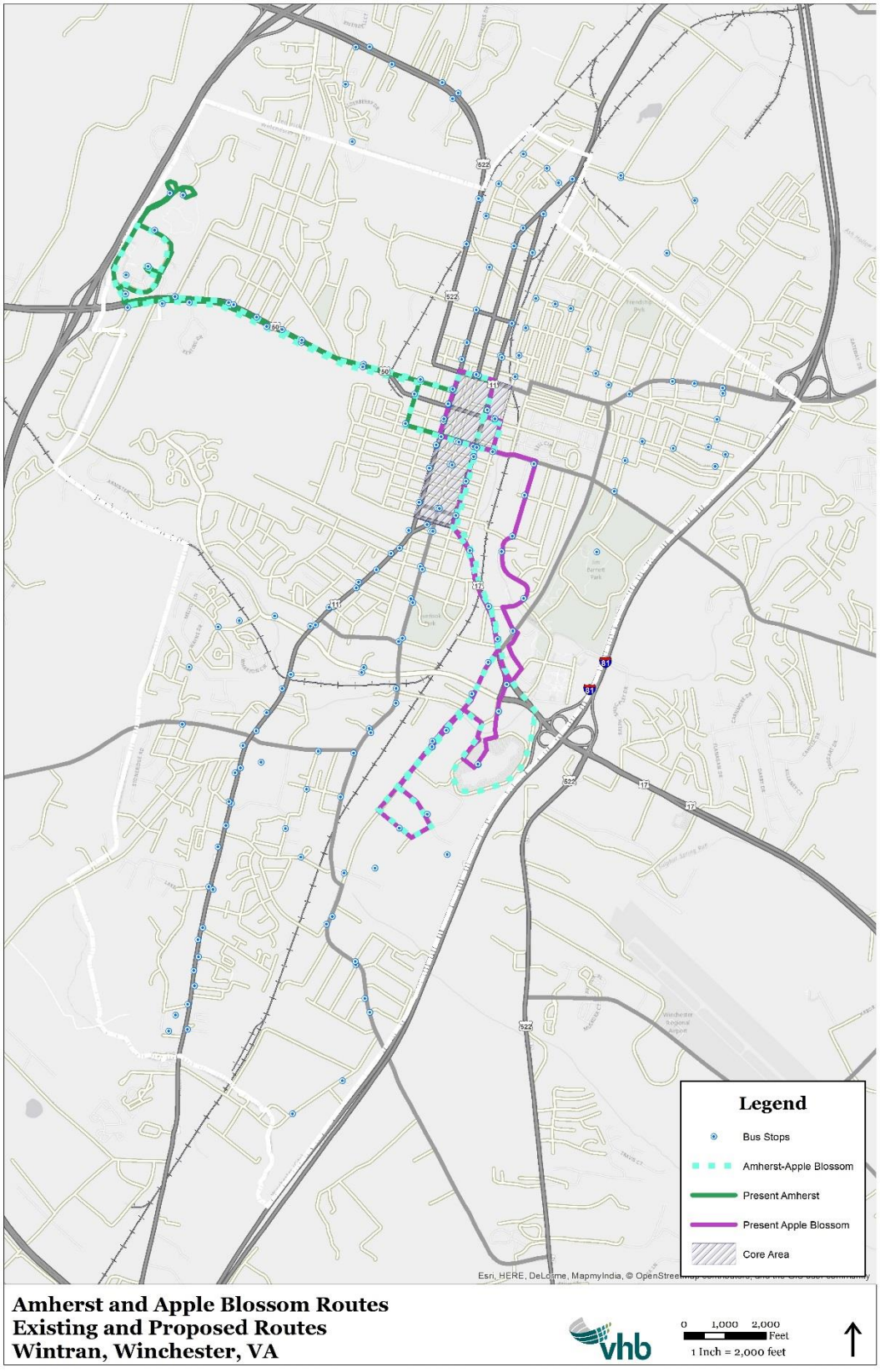
The Trolley currently has the lowest ridership compared to the other WinTran routes. Its service area overlaps with that of the Apple Blossom and Valley Avenue routes, and it only operates three days out of the week.

Recommendation

To maximize the utility of the Trolley, it is recommended that WinTran eliminate the Trolley route, separate and streamline the Amherst and Apple Blossom routes so that they each run 30-minutes long, and re-assign the vehicle to either the Amherst or Apple Blossom route. The trolley would serve as the second vehicle on the routes, enabling 30-minute service.

Streamlining the Amherst route would involve servicing just the main Winchester Medical Center facilities; the remaining clinics associated with the medical center would be serviced by request. Streamlining the Apple Blossom route would involve reconfiguring the route to use Cameron Street and Millwood Avenue to access Apple Blossom Mall from the Downtown core. The bus would also make stops along Mall Road as opposed to cutting through the Mall. This change is expected to shave 1.75 miles off of the Amherst route and 2.26 miles off of the Apple-Blossom route, and bring both routes to within 30-minutes (24 minutes for Amherst, 27 minutes for Apple Blossom). Figure 18 illustrates the updated Amherst and Apple Blossom routes.

FIGURE 18 Streamlined Amherst & Apple Blossom Routes



4.2.2 Mid-term Needs

The mid-term category includes needs that require 4-6 years for implementation.

4.2.2.1 More frequent service

WinTran buses currently serve bus stops every 70 minutes. This frequency creates long wait times for passengers and creates especially long travel-times for riders who need to transfer to another route. WinTran desires to achieve increased frequency and reduced headways in the future.

Recommendation

Reconfiguring routes would enable WinTran to reduce headways to 60-minutes while reducing passenger travel times, increasing rider convenience, and aiding ridership growth. The following alternative routes are proposed:

- **Eliminating service to Westminster Canterbury**. WinTran had been providing service to the retirement community pursuant to an agreement, but the agreement has expired. Since WinTran service was underutilized by residents of Westminster Canterbury, it is recommended that the Northside-Westminster Canterbury route be eliminated.
- **Merging portions of the Northside and Berryville routes to create a Northside Circulator that replaces the two routes.** Figure 19 captures the Northside Circulator's proposed routing pattern. The circulator would operate in a clock-wise direction, retaining the high-demand stops of the original routes, while providing 60-minute headways. An added benefit of the circulator is that passengers of the Northside portion of the route would now have direct access to amenities along the Berryville route. Previously, they would have needed to ride the Northside route into the downtown area and transfer to the Berryville line. On the other hand, the lack of southbound transit for passengers living just north of the Downtown core means that they would have to ride the full length of the circulator to access Downtown.
- **Merging portions of the Valley, South Loudoun, and Trolley routes to create a Southside Circulator that replaces the two routes**. Figure 20 captures the Southside Circulator's routing pattern. The circulator would operate in a clock-wise direction, serving the high-demand stops of the original routes, while providing 60-minute headways. Like the Northside Circulator, a benefit of the circulator pattern is by providing passengers with direct connectivity. Passengers of the South Loudoun and Trolley portions of the route would now have direct access to amenities along the Valley route without having to transfer lines. A disadvantage of the new configuration is that residents living along South Loudoun Street and Wilson Boulevard would have to ride the circulator's full loop to access the Downtown area where previously, they could ride the northbound South Loudoun route.

FIGURE 19 Northside Circulator

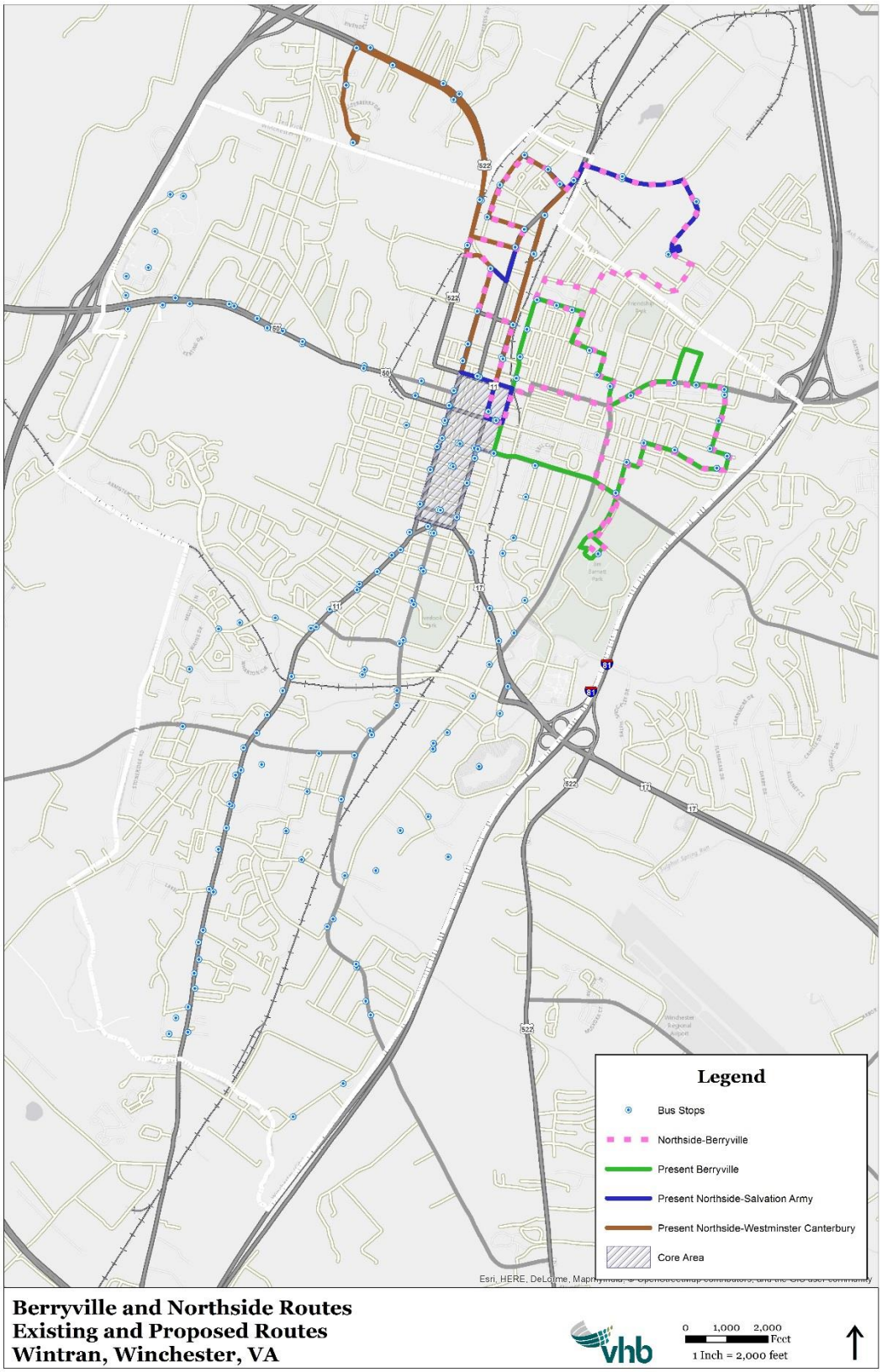
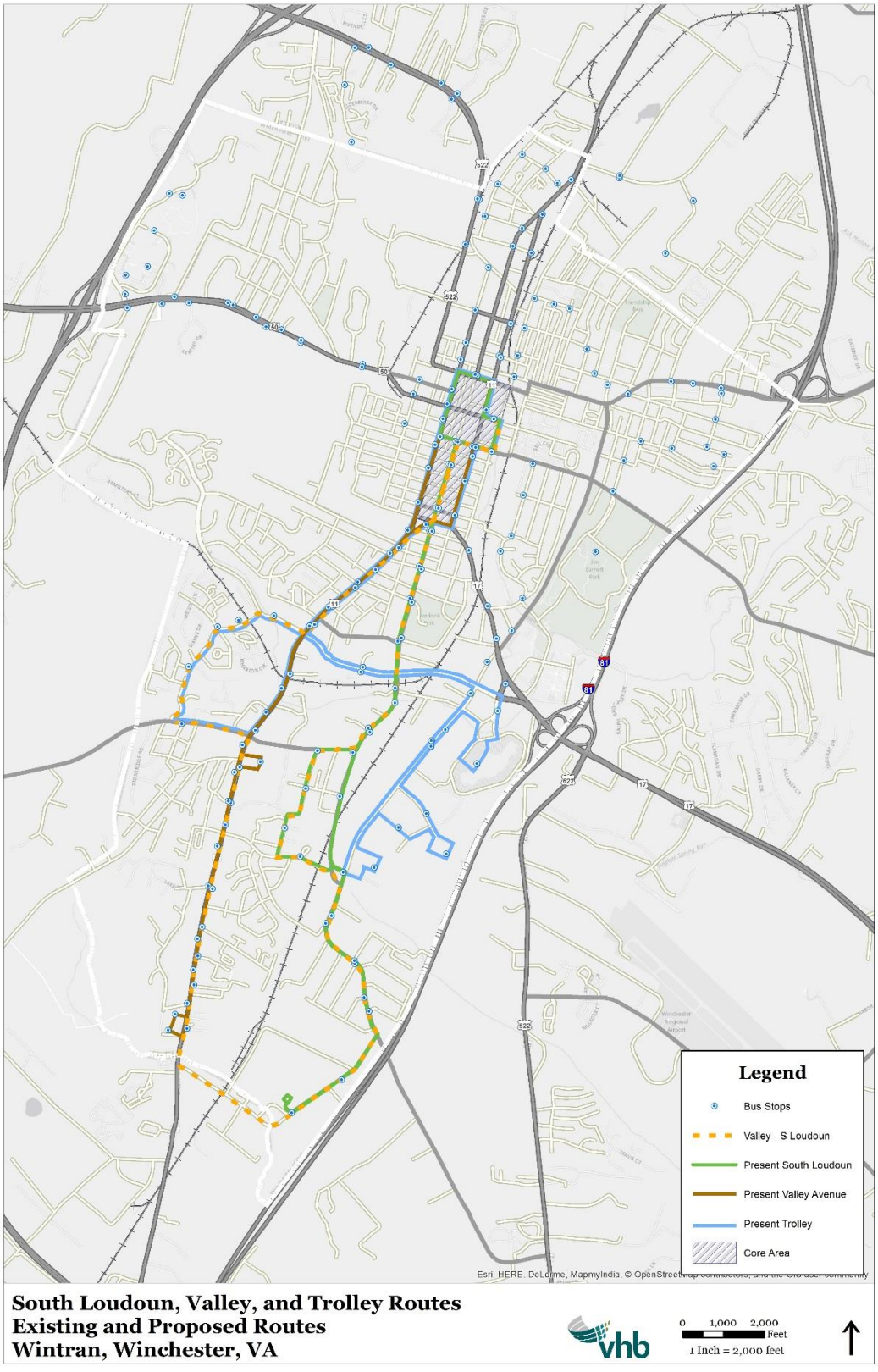


FIGURE 20 Southside Circulator



4.2.3 Long-term Needs

The "long-term needs" category includes needs that WinTran aspires to address beyond the eleven-year timeframe.

4.2.3.1 Expanded Service Span

Passengers expressed through the onboard rider survey and directly to survey administrators their desire to see extended service hours on Saturdays. Passengers indicated that the 5:00 PM system close time on Saturdays was too early, because it meant the last trip started at 4:30 PM for some passengers. Passengers also indicated that they had been left stranded at destinations around the City because they expected the bus to run until 8:00 PM on Saturdays. The rider survey also indicated an interest among passengers to have transit service on Sunday.

Recommendation

- Expansion of Saturday service to 8:00 PM to align with weekday service span.
- As demand increases and funding allows, WinTran should introduce service on Sundays.

4.2.3.2 More frequent service

To further reduce passenger wait-times for the bus, WinTran should aim to increase frequency and reduce headways.

Recommendation

- As demand increases and funding allows, place additional vehicles into service. Deploying three additional vehicles on the routes would reduce headways to approximately 30 minutes. This recommendation would be implemented towards the end of the mid-term period (i.e., 2027).

4.2.3.3 Expanded Service Area – Frederick County Attractions

Demographic analysis, passenger survey responses, stakeholder feedback, and regional planning documents have all expressed the desire for service to extend beyond the City boundaries. Several key destinations are located beyond the City limits, and with employment increasing in Frederick County, demand for regional access can be expected to rise.

Winchester, with financial support from Frederick County and other interested parties, could modify its system to accommodate stops in Frederick County.

Recommendation

- Demographic information shows population growth reaching at least 2,000 households per square mile east of Winchester City, along Route 7. This area

also includes the Winchester Gateway shopping center, the Parole Office, and Preston Apartments. A fourth route should be added to the WinTran system to serve this section of Frederick County.

- Modify the Apple Blossom route to serve Delco Plaza, located east of the Mall, off of Route 50.
- Demographic information shows population growth reaching at least 2,000 households per square mile north of Winchester City, along Route 11. This area also includes the Rutherford Crossing shopping center. A fifth route should be added to the WinTran system to serve attractions in this area of Frederick County, including Rutherford Crossing.

4.2.3.4 Expanded Service Area – Lord Fairfax Community College

Lord Fairfax Community College Public Transit Feasibility Study

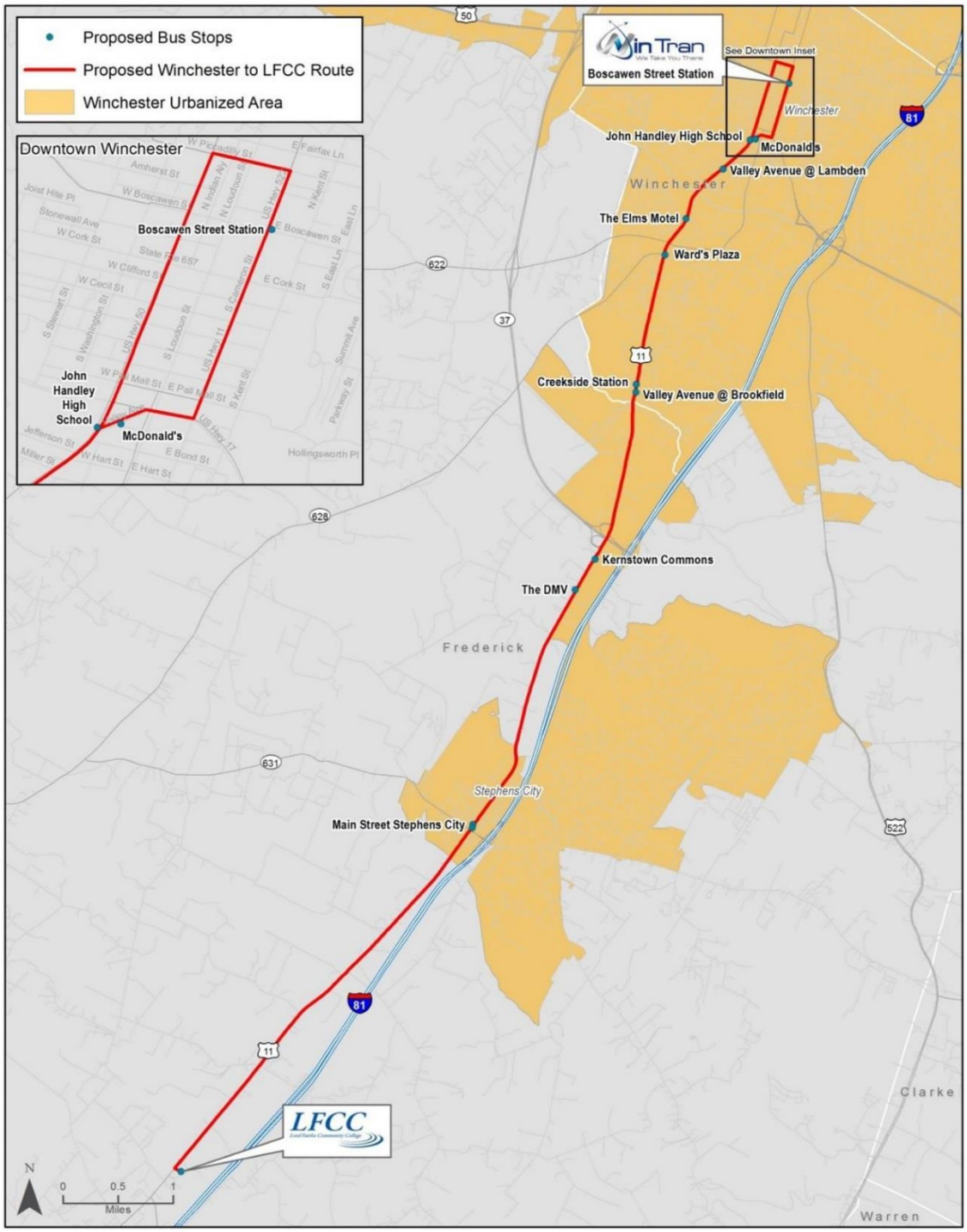
Community planning documents have long expressed interest in expanding service to Lord Fairfax Community College (LFCC), and a feasibility study was completed in October 2016. The feasibility study found that transportation to LFCC was "always" or "often" a barrier for members of the LFCC community (i.e., students, faculty, and staff). If a transit service was provided, 68% of the community indicated they would use the service.

The study proposed that jurisdictions with a high density of LFCC students and with existing transit systems establish new shuttle routes to campus. This plan would be implemented over a span of multiple years, with WinTran being the first operator to offer fixed-route service to LFCC.

The study proposed service along the Route 11 (Valley Avenue) corridor including a stop in Stephens City. WinTran would also operate paratransit service associated with the shuttle's service area. Figure 21 illustrates the route for the new shuttle service, as proposed in the feasibility study. The route would be 24.26 miles round-trip, and operate once every hour, Monday through Thursday from 7:00 AM through approximately 7:00 PM.

The study proposed having the operating expenses shared between Lord Fairfax Community College, City of Winchester, and Frederick County. There is also the potential for additional partners, such as major employers in Stephens City or Middletown, to contribute. The cost of vehicles and related capital investments (i.e., signs, shelters, etc.) would be funded through federal, state, and local sources.

FIGURE 21 LFCC-Winchester Shuttle Preliminary Route Map



Sourced from *Lord Fairfax Community College Public Transit Feasibility Study* (2016).

Additional Options

In the event funding cannot be obtained, this study proposes additional options for meeting the needs of LFCC students. These alternatives include:

- Serving LFCC student needs through an on-demand shuttle service to pick-up and drop-off students. A demand-response model may be better suited for this level of demand until transit demand grows. A demand-response shuttle would also be comparatively more cost-effective than operating a new fixed-route.
- Locating a LFCC satellite campus in the City of Winchester. Creating a campus in the City would make classes more accessible for City of Winchester students, as well as Frederick County students who live near the City boundary.

4.2.4 Organizational Needs and Improvements

Beyond service adjustments, observations of bus operations and discussions with WinTran revealed organizational areas that could be improved. The following section outlines organization needs and recommendations.

Designated Waiting Areas at Transfer Station (for FY 2018)

WinTran buses convene at the Transfer Station approximately every 35 minutes. Currently, the vehicles are not arranged in any specific order when they arrive at the station, causing passengers to scramble to find their bus once the vehicles pull up to the station. On several occasions, passengers were observed asking drivers directly what route they were operating, delaying buses from beginning their route.

Recommendation

WinTran should designate specific waiting areas for each route to clarify where passengers should wait. The bays should be clearly marked. Providing specific waiting areas would prevent any delays resulting from passenger confusion, and it would contribute to increased passenger satisfaction.

Improved information access (for FY 2019)

Schedule information for each WinTran route is available online through PDF documents. This display format makes navigating and accessing the website cumbersome.

Recommendation

For those who access system information through the website, WinTran may want to streamline the site to make scheduling and route maps more accessible by posting information directly on webpages instead of through a PDF document.

Expand WinTran Office Staff (for FY 2019)

WinTran currently operates with a staff of three full-time members who work constantly throughout the day to maintain operations. With historical data showing a

consistent increase in ridership, and service expansion under consideration, the transit agency requires additional support, especially in coordinating para-transit service requests.

Recommendation

WinTran should hire an additional staff member to assist with the increasing volume of work in the operations office. The staff member would assist with para-transit scheduling, responding to customer service calls, and receiving walk-in customers.

Regional Transportation

Based on survey results, population growth forecasts, and the recent Lord Fairfax Community College Public Transit Feasibility Study, there is passenger demand for bus service beyond the limits of the City of Winchester.

Recommendation

WinTran should enter into an inter-governmental agreement with Frederick County to establish a framework for managing and funding WinTran operations in Frederick County. The agreement could reflect a range of arrangements, including having Frederick County pay WinTran directly for service.

4.2.5 Summary of Alternatives

Table 12 provides a summary of prioritization of needs and recommendations.

TABLE 12 Summary of Service Alternatives (in FY 2017 dollars)

Need	Recommendation	Net Cost
	Short-term (1-3 Years)	
Improve on-time arrival	Eliminate underperforming stops	Negligible cost
	Serve facilities during business hours	
	Reconfigure Downtown circulation pattern	
More frequent service	Eliminate Trolley and re-assign to streamlined Amherst-Apple Blossom routes to achieve 30-minute service	$200,000 annually
Improved information access	Make route map available via print materials	Negligible cost
	Update website	
Designated waiting areas at Transfer Station	Designate bays for individual bus routes	Negligible cost
Additional staff member	Hire staff member to assist with operations	$30,000-$35,000 annually, plus benefits

	Medium-term (4-6 Years)	
More frequent service	Introduce Northside Circulator, to replace Northside and Berryville routes	$10,000 annually
	Introduce Southside Circulator, to replace valley, South Loudoun, and Trolley routes	-$40,000 annually
	Long-term (7-11+ Years)	
Expand service span	Extend Saturday service to 8:00 PM and Introduce Sunday service with ADA service on both days	$190,000 annually ($40,000 Saturday extension, $150,000 Sunday service)
More frequent service	Place additional vehicles into service on Circulator routes to achieve 30-minute headways	$340,000 for two new vehicles $380,000 annually
Expand service span	Extend Apple Blossom route to Delco Plaza with ADA service	$170,000 for one new vehicle $200,000 annually
	Introduce Frederick County route with ADA service	$170,000 for one new vehicle $240,000 annually
	Extend service to LFCC	$340,000 for two new vehicles $360,000 annually

4.2.6 Ridership Estimate

WinTran's ridership increased by approximately 1% each year for fixed-route service and -2% each year for demand response service between 2012 and 2016. Based on this growth rate, and the annual population growth rate of 1% for the City of Winchester, ridership forecasts were conducted to reflect the anticipated number of trips WinTran should expect from implementing the recommended changes. The projected ridership is displayed in Table 14.

The following methodology was used to generate the forecast. Passenger per revenue mile data and passengers per revenue hour data for Winchester Transit from the National Transit Database was used.

TABLE 13 Ridership Forecast Methodology

Proposed Service Change	Ridership Estimate Methodology
Extension of Route	(Passengers/Revenue Mile) x (Proposed Revenue Miles)
Decrease Headway	Average ridership based on applying +0.30, -0.44, and -0.58 elasticities
Increase Span	(Passengers/Revenue Hour) x (Proposed Revenue Hours)

The project is also based on the following assumptions:

- When the Trolley service ends in 2020, its ridership is distributed evenly between the Northside and the Apple Blossom routes.
- In 2022, when the Northside- Westminster Canterbury ends and the circulators launch, it is assumed that one-quarter of the original Northside Route (adjusted to include annual ridership growth) is lost.

TABLE 14 Ridership Forecast, 2018-2028

	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Population Factor	136,738	137,641	138,689	139,605	137,522	138,430	139,345	156,934	157,971	159,222	249,625
Ridership Factor	137,169	138,313	139,607	138,781	138,943	140,143	141,365	163,366	164,686	166,252	256,980
Grand Average	**136,953**	**137,977**	**139,148**	**139,193**	**138,233**	**139,287**	**140,355**	**160,150**	**161,328**	**162,737**	**253,302**

4.3 Service and Needs Prioritization

The anticipated capital and operational costs of the recommendations are outlined in Chapter 6.

None of the short-term or mid-term recommendations require capital improvements. In the long-term, WinTran would likely require two (2) additional buses to reduce vehicle headways to 30-minutes on the Northside and Southside Circulators to match that of the Amherst and Apple Blossom routes. In 2028, WinTran would require four (4) additional fixed-route buses and one (1) paratransit vehicle to pursue service expansion in Frederick County based on the proposed new routing.

4.3.1 Other Capital Projects

Beyond these improvements, WinTran intends to renovate its bus maintenance garage in FY 2018. This renovation is expected to cost $750,000. This capital project is proposed in The City of Winchester Five-Year Capital Plan and TDP Update Letter submitted in January 2016.

WinTran's current ITS plan also calls for the installation of automatic passenger counters (APCs) on vehicles. APCs, devices installed on vehicles that record passenger boarding and alighting information, would enable WinTran to understand passenger volumes and ridership trends. APC Units can cost $3,400 to $8,200 per vehicle, based on case studies.[7]

This project has not been included in the City of Winchester's capital and operating budgets, but the projected budget and funding sources are provided in the Chapter 6, Financial Plan.

4.3.2 Inclusion in Constrained Long-Range Plan

The metropolitan planning organization for the City of Winchester is the Winchester-Frederick County Metropolitan Planning Organization (Win-Fred MPO). The Win-Fred MPO published the *2030 Long Range Transportation Plan* in 2005 pursuant to Federal SAFETEA-LU legislation. Win-Fred published an update to the long-range plan in 2012 which updated the planning horizon to 2035. The Update included several WinTran service changes as priorities regarding local transit. Many of these priorities align with the proposed recommendations in Section 4.1, including:

- Extending transit service into Frederick County
- Extending Service Hours into Late Evening and Sunday Service
- Increasing transit frequency to 30-minute service

4.4 Service Development

Table 11 outlines the expected service frequency, hours, mileage, and implementation timeframe of each of the proposed changes.

[7] U.S. Department of Transportation, Intelligent Transportation Systems Joint Program Office Cost Database, available at: http://www.itscosts.its.dot.gov/its/benecost.nsf/DisplayRUCByUnitCostElementUnadjusted?ReadForm&UnitCostElement=Automatic+Passenger+Counting+System&Subsystem=Transit+Vehicle+On-Board+(TV) . Accessed Oct 11, 2017. Database costs are in 2009 dollars. A 4% escalation rate was applied to determine costs in 2017 dollars.

TABLE 15 Service Improvement Plan

	Eliminate Trolley Route	Re-assign Trolley	Introduce Northside Circulator	Introduce Southside Circulator	Expand Saturday Hours & Introduce Sunday Service	Improve Bus Frequency	Extension of Apple Blossom	Introduce Frederick County Route	Introduce LFCC-Winchester Shuttle
Implementation Date (FY)	**2020**	**2020**	**2022**	**2022**	**2025**	**2027**	**2028**	**2028**	**2028**
Mode	Fixed	Fixed	Fixed	Fixed	Fixed, Paratransit	Fixed	Fixed, Paratransit	Fixed, Paratransit	Fixed, Paratransit
Change Type	Elimination	Expansion	N/A	N/A	Expansion	Expansion	Expansion	Expansion	Expansion
Service Area	End existing Trolley Route.	Re-assign Trolley to Amherst or Apple Blossom route	Stops: ▪ Transfer Station ▪ White House Foods ▪ Detention Center ▪ Sharp Shopper ▪ Morgan Apartments ▪ Jim Barnett park ▪ Transfer Station	Stops: ▪ Transfer Station ▪ Peppertree Apartments ▪ Walmart ▪ NW Works ▪ Popeye's ▪ The Willows ▪ Transfer Station	No change in service area	Provide 30-minute headways. No change in service area	New stops: ▪ Delco Plaza ▪ Probation Parole Office ▪ Preston Apartments	Stops: ▪ Transfer Station ▪ Valley Mill Rd ▪ Regency Lakes ▪ Winchester Gateway ▪ Circle Court ▪ Salvation Army ▪ Transfer Station	Stops: ▪ Transfer Station ▪ Cameron St ▪ Braddock St ▪ DMV (SB only) ▪ Kernstown Commons (NB only) ▪ Stephens City ▪ LFCC
Span (Weekday)	8:00 am - 6:44 pm M/W/F	6:00 am -7 :58 pm	6:00 am-7:58 pm	6:00 am - 7:58 pm	N/A	6:00 am - 7:58 pm	6:00 am - 7:58 pm	6:00 am - 7:58 pm	7:00 am - 7:00 pm
Span (Saturday)	10:10 am - 4:34 pm	8:50 am - 4:58 pm	8:50 am - 4:58 pm	8:50 am - 4:58 pm	8:50 am - 7:58 pm	8:50 am - 7:58 pm	8:50 am - 7:58 pm	8:50 am - 7:58 pm	N/A
Span (Sunday)	N/A	N/A	N/A	N/A	8:50 am - 4:58 pm	8:50 am - 4:58 pm	8:50 am - 4:58 pm	8:50 am - 4:58 pm	N/A
Frequency (mins)	65	70	60	60	60	30	30	60	60
Route mileage	10.9	6.3 (Amherst) 7.5 (Apple-Bl)	8.7	10.6	Varies	Varies	11.8	10.3	24.3
Rev Hours (Wkday)	10.7	14	14	14	14.0 per route	27.9 per route	27.9	14	11.7
Rev Hours (Sat)	6.4	8.1	8.1	8.1	11.1 per route	22.3 per route	22.3	11.1	N/A
Rev Hours (Sun)	N/A	N/A	N/A	N/A	8.1 per route	16.3 per route	16.3	8.1	N/A
Peak Vehicles	1	2	1	1	1 per route	2 per route	2	1	1

4.4.1 Reduction in Service

In general, the proposed service changes represent an expansion of service as it exists today. The only proposed reductions in service are the elimination of the Trolley and the Northside-Westminster Canterbury Routes. These changes are proposed to maximize the utility of WinTran's limited fleet and resources and to address the service needs desired by the community. In both cases, the benefit of eliminating the routes and re-allocating resources to improve service elsewhere in the system was perceived as greater than the loss of service along each route.

4.4.1.1 Trolley

The elimination of the trolley was determined to have minimal impact on the service area and the function of the transit system as a whole. The existing trolley service has the lowest ridership by a wide margin of all the WinTran routes. Compared to most fixed routes, which average approximately 19,000 annual passengers, the annual ridership for the Trolley totaled approximately 2,400 in FY 2016 and 1,500 in FY 2015. The Trolley's routing is a duplication of segments of the South Loudoun and Valley Avenue routes. Service along Jubal Early Drive, west of Valley Avenue, and to the Winchester Station shopping center are unique to the Trolley Route.

Under the proposed routes, the majority of the Trolley's service area would be served by the Southside Circulator. The circulator would have 60-minute headways, which would represent an improvement over the Trolley's existing 65-minute service. By eliminating the Trolley route, the Trolley itself would be re-purposed to provide additional service frequency on the Apple Blossom and Amherst routes, which are higher performing routes in terms.

4.4.1.2 Northside -Westminster Canterbury

WinTran has been providing service to the Westminster Canterbury retirement community pursuant to an agreement. The agreement has since expired, and because very few passengers use WinTran service at the center, it was determined that the route would be eliminated so that the bus assigned to the route could deliver higher-frequency service in the northeast segment of the City (where there are more trip generators such as the Salvation army, probation office, and migrant housing).

Since little to no passengers from Westminster Canterbury used the route, the route's elimination is not seen as a burden on the retirement community. Passengers who catch the bus by the Winchester Budget Motel (which is technically outside of the City limits) would be affected by the service elimination, however. These passengers would have to find alternative transportation services.

4.4.1.3 Paratransit Service Area

The elimination of the Trolley and the Northside Westminster Canterbury would not have a significant impact on the coverage area for WinTran paratransit service. Currently, WinTran's policy is to provide paratransit service within the City and to those destinations that are within ¾ miles of the a fixed-route bus stop. An analysis of the coverage area before and after implementation of the route changes shows the service areas as nearly identical within the City limits. There is a small loss of coverage in the northeast end of the city as a result of the loss of the Northside-Westminster Canterbury route, and by the western end of the city due to adjustments in the Amherst route. The majority of the coverage area, however, is left intact.

4.4.2 Project Schedule

The implementation of the projects is also provided in Table 15. Service changes will be communicated to the public in accordance with WinTran's public outreach policy.

It is important to understand that the success of all proposed service expansion initiatives in this Plan (e.g., expansion of the service span, increase in frequency, and extension of the service area) would be contingent on WinTran receiving adequate funding. The extension of the service area into Frederick County would also depend upon the agreement of a governance and funding mechanism to ensure the service's sustainability.

No service changes are anticipated in response to recent Title VI report and/or the FTA Triennial Review, nor are any programs with Transportation Network Companies (TNCs) considered under this Plan.

5

Implementation Plan

Chapter 5 details the steps for implementing the changes outlined in the previous chapter. This chapter discusses the anticipated capital and operational needs for the following categories:

- Fleet Vehicles
- System maintenance and operational facilities
- Passenger Amenities
- Technology Systems

5.1 Vehicle Replacement, Expansion, and Reduction Program

WinTran currently owns 12 vehicles. Six of the vehicles are medium-duty buses for use on fixed-routes, four vehicles are paratransit buses, and two vehicles are cars for administrative operations. The model years of the revenue vehicles range from 2004 to 2016. Table 16 outlines the vehicles in WinTran's existing fleet.

TABLE 16 Vehicles in WinTran's Existing Fleet

Year	Make/Model	Length	Seating Capacity	Wheelchair Stations	Assignment	Power Mode	VIN Number	Year of Retirement
Vehicles in Revenue Service								
2005	Freightliner Classic American Trolley	30 FT	30	2	Trolley	diesel	4UZAACBW65CU04622	2022
2006	Ford Econoline	Van	9	2	Para-transit	gasoline	1FTSS34L86DB30893	2017
2008	Chevrolet Supreme BOC Paratransit Van	30 FT	24	2	Para-transit	diesel	1GBJG316281184694	2019
2008	Chevrolet Supreme	30 FT	24	2	Fixed Route	diesel	1GBE5V1978F409756	2017
2015	International Low-Floor	30 FT	28	2	Fixed Route	diesel	5WEXWSKKXFH517532	2021
2015	International Low-Floor	30 FT	28	2	Fixed Route	diesel	5WEXWSKK1FH517533	2022
2016	Arboc Spirit of Mobility Low Floor	30 FT	19	2	Para-transit	gasoline	1GB6GUBG5G1181502	2027
2016	Arboc Spirit of Mobility Low Floor	30 FT	19	2	Para-transit	gasoline	1GB6GUBG3G1182387	2027
2016	Arboc Spirit of Mobility Low Floor	30 FT	19	2	Fixed Route	gasoline	1GB6GUBG5G1223974	2023
2016	Arboc Spirit of Mobility Low Floor	30 FT	19	2	Fixed Route	gasoline	1GB6GUBG7G1224365	2023
Vehicles in Non-Revenue Service								
2003	Chevrolet Malibu	Sedan/ Station Wagon	5	0	Admin/ Supervisor	gasoline	1G1ND52J13M650362	11+ years
2013	Nissan Exterra	SUV	5	0	Admin/ Supervisor	gasoline	5N1AN0NW0DN823258	11+ years

For the implementation of the recommendations outlined in Chapter 4, WinTran will replace vehicles according to FTA useful life guidelines. WinTran has a relatively small service area compared to peer systems, meaning its vehicles incur comparatively few miles per year. WinTran intends to replace buses once they reach their useful life mileage rather than years, to ensure that buses are fully utilized. Medium-duty and para-transit buses are not eligible for rehabilitation. Table 17 shows a forecasted vehicle replacement and expansion schedule in relation to the recommendations of Chapter 4.

TABLE 17 Winchester Transit Vehicle Replacement and Expansion Program

		FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	TOTAL
Fixed Route	Existing	6	6	6	6	6	6	6	6	6	6	6	8	N/A
	Retire	-1	0	0	0	-2	-1	-2	0	-1	-1	0	-3	-11
	Replace	1	0	0	0	2	1	2	0	1	1	0	3	11
	Expand	0	0	0	0	0	0	0	0	0	0	2	4	6
Paratransit	Existing	4	4	4	4	4	4	4	4	4	4	4	4	N/A
	Retire	-1	0	-1	0	0	0	0	0	0	-2	-1	0	-5
	Replace	1	0	1	0	0	0	0	0	0	2	1	0	5
	Expand	0	0	0	0	0	0	0	0	0	0	0	1	1
Administrative	Existing	2	2	2	2	2	2	2	2	2	2	2	2	N/A
	Retire	0	0	0	0	0	0	0	0	0	0	0	0	0
	Replace	0	0	0	0	0	0	0	0	0	0	0	0	0
	Expand	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	Fleet Size	12	12	12	12	12	12	12	12	12	12	12	14	N/A
	Retire	-2	0	-1	0	-2	-1	-2	0	-1	-3	-1	-3	-16
	Replace	2	0	1	0	2	1	2	0	1	3	1	3	16
	Expand	0	0	0	0	0	0	0	0	0	0	2	5	7

5.1.1 Estimated Cost of Fleet

WinTran plans to continue using medium-duty vehicles of the same type for revenue service. New medium-duty replacement and expansion vehicles are anticipated to cost $170,000 each.[8] New light-duty paratransit vehicles will cost $150,000 each.[2]

For the initial nine years of the TDP time horizon, the fleet size is expected to remain constant at 12 vehicles – six fixed route buses, four paratransit buses, and two administrative vehicles. During these years, expenditures would only be associated with replacement vehicles (i.e,, in FY 2019, FY 2021, FY 2022, FY 2023, and FY 2025 through FY 2028). The largest expenditure during these initial nine years is projected to occur in FY 2026, when one fixed-route and two paratransit vehicles will need to be replaced, totaling $488,888, adjusted for inflation.

As WinTran begins to implement expanded service hours (in FY 2027) and expanded service in Frederick County (in FY 2028), it will need to expand its fleet size to 19 vehicles. Tables 6 and 7 in Chapter 6 provide the projected costs across the TDP time horizon for vehicle replacements and expansions, as well as anticipated funding sources.

[8] Cost is based on the City of Winchester's Five-Year Equipment Replacement Plan, which is included in its FY2018 Budget Document, available at: https://www.winchesterva.gov/sites/default/files/documents/finance/fy2018-budget-document-final.pdf

5.1.2 Major System Maintenance and Operations Facilities

The only major system maintenance or operational facility project planned is the renovation of its bus maintenance garage in FY 2019. This renovation is expected to cost $1,000,000.[9]

Funds for this project are anticipated to come from three sources, outlined in Chapter 6, Financial Plan.

5.1.3 Passenger Amenities

WinTran has been installing bus shelters and benches at high-volume stops in response to data from the 2011 TDP passenger survey. As of today, benches and/or shelters have been installed at 29 stations, out of approximately 60 stations that have been identified for passenger amenities.

An analysis of WinTran's bus shelter and bench inventory shows that the conversion of the fixed routes to circulators will not impact the stations that presently have benches or shelters. It is recommended that WinTran continue to add shelters and benches at a rate of two per year. Benches are estimated to cost $10,000 each.[10] This capital cost is included in Financial Plan outlined in Chapter 6.

When service extends to Frederick County, bus stop signs will need to be installed to indicate new stops. The cost for these signs, typically about $300[11] each, are also included in Chapter 6.

5.1.4 New Technology Systems or Upgrades

WinTran's current ITS plan includes two elements that it plans to implement in the next two to six years. These elements include the installation of automatic passenger counters (APCs) on vehicles and adding trip planner capability to the WinTran website to facilitate passengers.

The adoption of APCs on vehicles, as described in Chapter 4, Section 4.3.1, would involve the purchase and installation of the devices. APC Units can cost $3,400 to $8,200 per vehicle, based on case studies, for a total of $34,000 to $82,000 in capital costs to outfit WinTran's 10 buses.[12] For the purposes of the capital cost calculation in Chapter 6, the maximum cost for APC Units ($82,000) was used to provide a conservative estimate.

[9] Cost is based on the City of Winchester's Five-Year Equipment Replacement Plan, which is included in its FY2018 Budget Document, available at: https://www.winchesterva.gov/sites/default/files/documents/finance/fy2018-budget-document-final.pdf

[10] Based on cost estimates from prior WinTran TDP Updates.

[11] Based on professional expertise. Cost includes brackets for signs.

[12] U.S. Department of Transportation, Intelligent Transportation Systems Joint Program Office Cost Database, available at: http://www.itscosts.its.dot.gov/its/benecost.nsf/DisplayRUCByUnitCostElementUnadjusted?ReadForm&UnitCostElement=Automatic+Passenger+Counting+System&Subsystem=Transit+Vehicle+On-Board+(TV) . Accessed Oct 11, 2017. Database costs are in 2009 dollars. A 4% escalation rate was applied to determine costs in 2017 dollars.

Trip planners display transit directions (i.e., nearest bus stops and routes, travel time, etc.) via websites to assist passengers in planning their trips. Building this capability into a website may involve one-time software system setup and installation costs, and annual license, support, and training. Based on a vendor estimate for a system of WinTran's size, initial setup and installation costs can total $22,500, and subsequent annual costs can total approximately $15,000.

These projects have not been included in the City of Winchester's capital and operating budgets, but the projected budget and funding sources are provided in the Chapter 6, Financial Plan.

6

Financial Plan

The following chapter sets forth the financial plan for the improvements proposed in Chapter 4. The financial plan includes a projection of operating expenses and capital costs related to the recommended improvements. The chapter also includes a discussion of potential funding options for WinTran, should it decide to pursue and implement the recommended changes.

6.1 Operating Expenses

Table 18 provides the operating budget forecast for FY 2017 through FY 2028. The ten-year plan includes the "baseline" level of service expenses, as well as costs associated with the proposed service improvements outlined in Chapter 4.

6.1.1 Methodology

A three-factor model was used to project operating expenses for fixed-route service. The model uses three elements – costs per revenue mile, costs per revenue hour, and costs per vehicle – to estimate future operating costs. Compared to a single-factor approach, such as estimating costs based solely on costs per revenue hour, the three-factor model attempts to account for fixed costs (such as administrative overhead) and variable costs (such as fuel, maintenance, etc.) to provide a more precise estimate.

Operating cost and performance metrics for FY 2017 were used to generate each of the factors. A 3% annual escalation is assumed.

To calculate the expected costs of paratransit service, a ratio between the system's service area and number of miles delivered was developed. This relationship was used to estimate the number of miles expended by paratransit vehicles with the introduction of the circulator routes (which reduced the service area) and expansion of service into Frederick County. This mileage was then multiplied by a cost per mile factor to calculate operating costs. A cost per revenue hour factor was used to estimate the additional cost associated with expanding Saturday hours and introducing Sunday hours. A 3% escalation was also applied to paratransit operating costs.

6.1.2 Operating Cost Projections

Operating expenses in years FY 2020, FY 2022, FY 2025, FY 2027, and FY 2028 increase as a result of the service expansions.

- In FY 2020, the trolley route is re-assigned from its existing route (which operates just three days a week) to the Amherst and Apple Blossom routes for weekdays and Saturday service. As a result of the increased use of the trolley, operating expenses during this year increase by 15%[13] and continue through FY 2028.
- In FY 2021, WinTran updates its vehicles with APCs, and it implements trip planner software. The technological upgrades increase operating expenses by 3% and continue through FY 2028.

[13] This percent change excludes inflation.

- In FY 2022, the Northside and Southside circulators replace the Berryville, Northside, Valley Avenue, and South Loudoun routes. The transition results in a relatively small net increase in operating costs for the Northside circulator (approximately $8,000) and a net cost savings for the Southside circulator (about $41,000 less). The system's paratransit service area decreases from 18.83 square miles to 17.30 square miles, resulting in operational costs savings (approximately $13,500 less) for paratransit service.
- In FY 2025, WinTran introduces a wider service span with extended Saturday hours (until 8:00 pm) and service on Sundays (9:00 am to 5:00 pm). The added 11 operational hours per week results in a 12%[14] increase in operating expenses beginning in this year, with the Saturday extension equating to a 3% increase and the Sunday extension resulting in a 9% increase. The service span change will also apply to paratransit services, resulting in an 8% increase in operational costs for this element of WinTran.
- In FY 2027, additional vehicles are placed in revenue service to improve the frequency of the circulators. Operating two additional buses seven days a week increases operating expenses by 22%[15] beginning in FY 2027.
- In FY 2028, WinTran plans to extend service into Frederick County. The expanded service area would be achieved through three routes: by having a shuttle operate along Route 11 to provide service to Lord Fairfax Community College, a second route along Route 7 east of the city to serve housing and retail, and an extension of the Apple Blossom route to Delco Plaza and Parole office. The service would be contingent on the execution of an inter-governmental agreement with Frederick County to share costs. If fulfilled, WinTran's operating cost would increase by 40%, inclusive of paratransit service.[16]

6.2 Funding Sources for Operating Expenses

Table 19 provides the revenue projections for FY 2018 through FY 2028. The ten-year forecast details the expected federal, state, and local funding to support the improvements proposed in Chapter 4. It assumes that:

- Federal funds will continue to pay for approximately 44% of operating expenses (the current rate)
- State funds will continue to pay for 19% of operating expenses (the current rate)

[14] This percent change excludes inflation.

[15] This percent change excludes inflation.

[16] This percent change excludes inflation.

- Farebox revenue and advertising will continue to account for approximately 9% of expenses.
- Local funds will continue to pay for the remaining balance (roughly 28%). These local funds include supplemental funding from Frederick County for service into the County, as well as from Lord Fairfax Community College and other partners for the LFCC shuttle.

The projections show that increased funds from federal, state, and local governments will be required to sustain operations, especially as system service expands. Beyond the increases in federal, state, and local funds, the following strategies are recommended to meet financial needs:

- In order for farebox revenue and advertising to continue accounting for roughly 9% of expenses in the future, it is recommended that WinTran implement a fare increase in 2020 (See, 5.2.1).
- WinTran establish an agreement between the City of Winchester and Frederick County to fund services.

TABLE 18 Operating Expenses, FY 2017-FY 2028

	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028
Baseline Fixed Route Operating Expenses	$ 1,372,000.00	$ 1,154,000.00	$ 1,189,000.00	$ 1,225,000.00	$ 1,261,000.00	$ 1,299,000.00	$ 1,338,000.00	$ 1,378,000.00	$ 1,420,000.00	$ 1,462,000.00	$ 1,506,000.00	$ 1,551,000.00
Baseline Paratransit Operating Expenses	$ 165,000.00	$ 167,000.00	$ 172,000.00	$ 177,000.00	$ 182,000.00	$ 188,000.00	$ 193,000.00	$ 199,000.00	$ 205,000.00	$ 211,000.00	$ 218,000.00	$ 224,000.00
Total Baseline	$ 1,537,000.00	$ 1,321,000.00	$ 1,361,000.00	$ 1,401,000.00	$ 1,443,000.00	$ 1,487,000.00	$ 1,531,000.00	$ 1,577,000.00	$ 1,625,000.00	$ 1,673,000.00	$ 1,724,000.00	$ 1,775,000.00
Hire Additional Staff Member (Salary + benefits)		$ 48,000.00	$ 49,000.00	$ 50,000.00	$ 52,000.00	$ 54,000.00	$ 55,000.00	$ 57,000.00	$ 58,000.00	$ 60,000.00	$ 62,000.00	$ 64,000.00
End Trolley Route				$ (75,000.00)	$ (77,000.00)	$ (79,000.00)	$ (82,000.00)	$ (84,000.00)	$ (87,000.00)	$ (89,000.00)	$ (92,000.00)	$ (95,000.00)
Re-assign Trolley to Apple Blossom/Amherst and run 30-minute headways				$ 297,000.00	$ 306,000.00	$ 315,000.00	$ 324,000.00	$ 334,000.00	$ 344,000.00	$ 354,000.00	$ 365,000.00	$ 376,000.00
Install, operate, and maintain APCs					$ 2,000.00	$ 2,000.00	$ 2,000.00	$ 2,000.00	$ 2,000.00	$ 2,000.00	$ 2,000.00	$ 2,000.00
Implement Trip Planner Software (annual support)					$ 41,000.00	$ 17,000.00	$ 17,000.00	$ 18,000.00	$ 18,000.00	$ 19,000.00	$ 20,000.00	$ 20,000.00
End Berryville and Northside routes						$ (187,000.00)	$ (193,000.00)	$ (199,000.00)	$ (205,000.00)	$ (211,000.00)	$ (217,000.00)	$ (224,000.00)
Introduce Northside Circulator						$ 197,000.00	$ 203,000.00	$ 209,000.00	$ 215,000.00	$ 221,000.00	$ 228,000.00	$ 235,000.00
End Valley and South Loudoun routes						$ (253,000.00)	$ (261,000.00)	$ (269,000.00)	$ (277,000.00)	$ (285,000.00)	$ (294,000.00)	$ (303,000.00)
Introduce Southside Circulator						$ 206,000.00	$ 212,000.00	$ 218,000.00	$ 225,000.00	$ 232,000.00	$ 239,000.00	$ 246,000.00
ADA cost savings from circulators						$ (16,000.00)	$ (16,000.00)	$ (17,000.00)	$ (17,000.00)	$ (18,000.00)	$ (18,000.00)	$ (19,000.00)
Extend Saturday service + ADA service									$ 54,000.00	$ 56,000.00	$ 58,000.00	$ 59,000.00
Extend Sunday service + ADA service									$ 186,000.00	$ 192,000.00	$ 198,000.00	$ 204,000.00
Place additional vehicles on routes											$ 511,000.00	$ 526,000.00
Expand Apple Blossom to Delco Plaza + ADA service												$ 297,000.00
Launch Frederick County route + ADA service												$ 362,000.00
Introduce LFCC-Winchester Shuttle + ADA service												$ 495,000.00
Total Projected Expenses	**$ 1,537,000.00**	**$ 1,369,000.00**	**$ 1,410,000.00**	**$ 1,673,000.00**	**$ 1,767,000.00**	**$ 1,743,000.00**	**$ 1,792,000.00**	**$ 1,846,000.00**	**$ 2,141,000.00**	**$ 2,206,000.00**	**$ 2,786,000.00**	**$ 4,020,000.00**

(1) – A 3% annual inflation rate is applied to operating expenses.

(2) – The operating expenses for LFCC shuttle are from the *Lord Fairfax Community College Public Transit Feasibility Study*.

TABLE 19 Anticipated Funding for Operational Expenses, FY 2017- FY 2028

Anticipated Funding Sources	FY2018	FY2019	FY2020	FY2021	FY2022	FY2023	FY2024	FY2025	FY2026	FY2027	FY2028
Federal											
Federal Program	$ 426,000.00	$ 601,760.21	$ 701,002.21	$ 744,323.40	$ 733,711.55	$ 755,806.28	$ 780,199.75	$ 906,856.65	$ 936,269.92	$ 1,203,035.00	$ 1,729,175.61
State											
Formula Assistance	$ 214,000.00	$ 302,292.69	$ 352,146.65	$ 373,908.94	$ 368,578.10	$ 379,677.33	$ 391,931.33	$ 455,557.10	$ 470,332.78	$ 604,341.52	$ 868,646.90
Local											
City of Winchester General Fund	$ 283,900.00	$ 401,032.21	$ 467,170.25	$ 496,040.88	$ 488,968.80	$ 503,693.44	$ 519,950.02	$ 604,358.22	$ 623,960.17	$ 801,740.93	$ 490,738.04
Frederick County to support route extensions*											$ 659,000.00
Frederick County to support LFCC shuttle*											$ 65,545.00
LFCC to support LFCC shuttle*											$ 20,000.00
Fare Revenue and Advertising	$ 107,300.00	$ 104,914.89	$ 152,680.88	$ 152,726.78	$ 151,741.55	$ 152,822.95	$ 153,918.89	$ 174,228.03	$ 175,437.14	$ 176,882.55	$ 269,799.65
Total Revenue	$ 1,031,200.00	$ 1,410,000.00	$ 1,673,000.00	$ 1,767,000.00	$ 1,743,000.00	$ 1,792,000.00	$ 1,846,000.00	$ 2,141,000.00	$ 2,206,000.00	$ 2,786,000.00	$ 4,102,905.21

(*) – Operating expenses from Frederick County and LFCC are assumed.

(1) – Fare revenue forecasts reflect a fare increase in FY 2020.

6.2.1 Fare Increase

WinTran's current adult fare is $1.00. On average, this fare rate has accounted for approximately 8% of WinTran's annual operating expenses. An analysis of ridership and operating expense forecasts shows that WinTran's farebox recovery rate would fall below 8% if fares remain constant. Its farebox recovery rate dips to 5.7% when service hours expand in 2020. This rate further falls to 4% when frequency increases in 2027 and the service coverage area expands to Frederick County in 2028. To help with achieving a balanced budget, Wintran should consider raising its fare in 2020.

It is recommended that WinTran consider an increase by $0.50 for Adult Fare, by $7 for ticket books, and by $0.25 for Half-Fare. Table 20 provides the anticipated fare prices that WinTran may want to target.

TABLE 20 Target Rate Increases

Passenger Type	Current Fare for One Trip	Target Fare for One Trip
Adults	$1.00	$1.50
Half-fare (senior citizens, disabled passengers, Medicare care holders)	$0.50	$0.75
Students (under 18 years)	$0.50	$0.75
Children Under 2 Years	free	free
Ticket Book of 20 tickets	$17.00	$24.00

6.2.2 Frederick County Service Funding

It is recommended that the City of Winchester and Frederick County work to establish an interagency agreement to coordinate funding for service provided beyond the city limits. Such agreements can take various forms, including having Frederick County pay WinTran directly for vehicles and operational expenses associated with service delivered within Frederick County's boundary.

WinTran could also apply for Section 5311 federal funds. These federal funds are specified for rural transit. Applying for such dollars can help to lessen the local funding requirements for the City of Winchester and Frederick County.

6.3 Capital Expenses and Funding Sources

Tables 21 and 22 provide the capital budget and funding forecasts for the TDP time horizon. The anticipated expenses include:

- The replacement of 16 vehicles and addition of 7 vehicles to the WinTran fleet, as detailed in Table 17 of Chapter 5.
- The purchase of APC units for fixed and paratransit vehicles. Equipment costs range from $3,400 to $8,200 per vehicle. For the purposes of the

capital cost forecast, the higher price was assumed to provide a more conservative estimate.

- The purchase of bus shelters and benches at a rate of two (2) per year.
- The purchase of bus stop signs for new stops along the Delco Plaza extension of the Apple Blossom route, the Frederick County route, and shuttle service to LFCC.

Table 22 outlines a scenario for funding the capital costs. It is important to understand that with significant fleet expansion or capital projects (i.e., projects valued at $2 million or more, or the purchase of 5 new vehicles or more in a single year), it is likely that federal funding will be reduced and that increased state and local funds would be required.

WinTran will face a fleet expansion in FY 2027 and FY 2028 with the introduction of more frequent service on existing routes and service expansion into Frederick County. At present, the Commonwealth is still reviewing the degree to which it can help transit agencies fund these purchases. For the purposes of this TDP, it is assumed that the Commonwealth and the City of Winchester would share the cost of the expenditures equally. Other assumptions applied to the funding schedule include:

- Federal funds will pay for 80% of vehicle replacement costs and other "State of Good Repair" capital projects. "State of Good Repair" projects refer to projects that replace or rehabilitate existing assets, such as vehicles, maintenance facilities, passenger amenities, and certain technology systems/communications.
- State funds will pay for 16% of vehicle replacement costs and other "State of Good Repair" projects, and 50% of expansion costs
- Local funds will pay for 4% of vehicle replacement and other "State of Good Report" project costs, and the remainder of fleet expansion costs

TABLE 21 Projected Capital Costs, FY 2017 - FY 2028

	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028
Replace	$ 320,000.00	$ -	$ 150,000.00	$ -	$ 340,000.00	$ 170,000.00	$ 340,000.00	$ -	$ 170,000.00	$ 470,000.00	$ 150,000.00	$ 510,000.00
Expand	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 340,000.00	$ 830,000.00
Fleet Subtotal	$ 320,000.00	$ -	$ 150,000.00	$ -	$ 340,000.00	$ 170,000.00	$ 340,000.00	$ -	$ 170,000.00	$ 470,000.00	$ 490,000.00	$ 1,340,000.00
APCs					$ 82,000.00							
Benches/Shelters					$ 20,000.00	$ 20,000.00	$ 20,000.00	$ 20,000.00	$ 20,000.00	$ 20,000.00	$ 20,000.00	$ 20,000.00
Stop signs												$ 5,100.00
Escalated Total (4%)	$ 320,000.00	$ -	$ 162,240.00	$ -	$ 517,077.48	$ 231,164.05	$ 455,514.85	$ 26,318.64	$ 260,028.12	$ 697,422.79	$ 754,924.59	$ 2,101,508.73

(1) – A 4% annual inflation rate is applied to capital expenses.

TABLE 22 Anticipated Funding for Capital Costs, FY 2017-FY 2028

	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028
Federal	$ 256,000.00	$ -	$ 129,792.00	$ -	$ 413,661.99	$ 184,931.24	$ 364,411.88	$ 21,054.91	$ 208,022.50	$ 557,938.23	$ 136,000.00	$ 428,080.00
State	$ 51,200.00	$ -	$ 25,958.40	$ -	$ 82,732.40	$ 36,986.25	$ 72,882.38	$ 4,210.98	$ 41,604.50	$ 111,587.65	$ 197,200.00	$ 500,616.00
Local	$ 12,800.00	$ -	$ 6,489.60	$ -	$ 20,683.10	$ 9,246.56	$ 18,220.59	$ 1,052.75	$ 10,401.12	$ 27,896.91	$ 176,800.00	$ 436,404.00
Total	$ 320,000.00	$ -	$ 162,240.00	$ -	$ 517,077.48	$ 231,164.05	$ 455,514.85	$ 26,318.64	$ 260,028.12	$ 697,422.79	$ 754,924.59	$ 2,101,508.73