

FAIRFAX COUNTY
TRANSIT DEVELOPMENT PLAN
Fiscal Year 2016 – Fiscal Year 2022

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1. Overview of Transit System

1.1. History

Fairfax County provides transit service through Fairfax Connector (Connector), a locally owned and controlled fixed-route bus transit system operated by a contractor. Since its inception in 1985, the Connector system has grown significantly and now has the third largest bus fleet in the Washington, D.C. region and largest public bus fleet in Virginia¹. As of 2015, the Fairfax Connector system consists of 85 routes that provide over 619,000 revenue hours annually, representing 57 percent of the total bus service in the County.

In addition to Fairfax Connector, the Washington Metropolitan Area Transit Authority (WMATA) provides approximately 43 percent of the total bus service revenue hours in the County through Metrobus. Metrobus service is regionally focused, providing service across jurisdictional boundaries, while Connector service is non-regional in nature and operates largely within the County boundaries. The County initiated Fairfax Connector in September 1985 as a cost-effective alternative to the provision of non-regional fixed-route/fixed-schedule bus service by WMATA, and significant expansion of the system has occurred since then. The CUE (City-University-Energysaver) bus system, owned and operated by the City of Fairfax in conjunction with George Mason University, also provides service within Fairfax County.

The County is also served by two rail systems, WMATA's Metrorail and the Virginia Railway Express (VRE) commuter rail. The County is served by four Metrorail lines and 10 stations: the Orange Line along the I-66 corridor (three stations); the Blue Line from the Springfield area (one station); the Yellow Line (one station) from the Huntington area / Richmond Highway corridor; and the recently (2014) opened Silver Line (five stations) through Tysons to Reston, with an extension to Washington Dulles International Airport and Loudoun County currently under construction with three more stations in Fairfax County. VRE provides service to the County on two lines. The Manassas Line connects three stations in the Burke area to Alexandria, Arlington, and Washington, DC, while the Fredericksburg Line connects two stations, in Lorton and Springfield respectively, to those locations.

The following timeline outlines many of the milestones in the history of Fairfax Connector.

- | | |
|-------------|---|
| 1985 | • Fairfax Connector bus service started on September 29 with 33 buses operating 10 routes that served the Huntington Metrorail Station, by converting routes formerly operated by Metrobus. |
| 1988 | • Connector expanded in the southeastern part of the County, expanding the fleet to 50 buses and adding four new express routes to the Pentagon Transit Center, by converting routes formerly operated by Metrobus.
• Connector opened the Newington Maintenance Facility (Huntington Division). |

¹ National Transit Database, 2013 data.

- | | |
|-------------|--|
| 1990 | <ul style="list-style-type: none"> Connector took over operation of the RIBS (Reston Internal Bus Service), with service provided out of the new Community Bus Services Division |
| 1991 | <ul style="list-style-type: none"> Connector established new feeder bus service to the newly-opened Van Dorn Street Metrorail Station, on the border of the County in the City of Alexandria. |
| 1992 | <ul style="list-style-type: none"> Connector launched Route 401, the first cross-county route, linking Springfield Mall, Fairfax Hospital, Tysons, and the Dunn Loring-Merrifield Metrorail Station. This service was formerly operated by Metrobus. |
| 1993 | <ul style="list-style-type: none"> Connector added six new routes serving the Vienna/Fairfax-GMU, Van Dorn Street, and Pentagon Metrorail Stations. These routes were formerly operated by Metrobus. |
| 1994 | <ul style="list-style-type: none"> Connector underwent its greatest expansion to date, with Connector service replacing 16 Metrobus routes in Reston and Herndon operating to the West Falls Church-VT/UVA and Pentagon Metrorail Stations, and purchasing 45 new buses to operate the service. Connector opened the Reston-Herndon Operations Facility to support the new routes in the North County. |
| 1996 | <ul style="list-style-type: none"> A blizzard forced suspension of service for two days; this sparked an initiative to establish a call center with greater capacity the following year. Connector service replaced Metrobus routes linking the Vienna Metrorail Station with the Fairfax County Government Center and the Dunn Loring Metrorail Station. |
| 1997 | <ul style="list-style-type: none"> The Reston East Park-and-Ride Lot, the site of today's Wiehle-Reston East Metrorail Station, was opened as a hub for North County Connector service. Connector restructured and expanded its South County routes to serve the new Franconia-Springfield Metrorail/VRE Station. |
| 1999 | <ul style="list-style-type: none"> Two new passenger facilities, the Herndon-Monroe Park-and-Ride and the Tysons West*Park Transit Station, and four new Connector Stores were opened to provide information and fare media to riders. Connector launched its Dulles Corridor Express Bus Service, which doubled bus service in the corridor. |
| 2001 | <ul style="list-style-type: none"> Restructured Connector service during the September 11, 2001 terrorist attack to assist in evacuations. |

2002	<ul style="list-style-type: none"> • Connector began operation of Route 605, a new cross-county route connecting the Government Center and Fair Lakes with Reston. • Connector began the process of converting its fleet to Ultra-Low Sulfur Diesel fuel and retrofitting the fleet with Green Diesel technology, which has been shown to reduce harmful emissions by as much as 80 percent.
2003	<ul style="list-style-type: none"> • Connector merged the Community Bus Services Division (responsible for Tysons Shuttle and RIBS) with the Reston-Herndon Division, so that all services provided by two contractors from two garages could be provided by a single contractor from one garage. • Connector began operating service to the new Lorton Park-and-Ride. • Connector began selling advertising space on its bus fleet for the first time. • Metro Magazine recognized Connector as one of the 10 most improved transit systems in North America. • Hurricane Isabel forces suspension of Connector service for 24 hours.
2004	<ul style="list-style-type: none"> • Connector introduced the MATT (Mobile Accessible Travel Training) bus, a hands-on way to teach members of the public how to ride the bus and navigate the bus system. • Connector launched its South County Bus Service restructuring, increasing the Connector to 56 routes and 170 buses.
2005	<ul style="list-style-type: none"> • Connector completed the renovation of the Newington (Huntington) Operations Facility. • Connector began service to the new Gambrill Road Park-and-Ride.
2006	<ul style="list-style-type: none"> • Connector installed SmarTrip Fare Card technology on its bus fleet. • One new passenger facility, the Reston Town Center Transit Station, and one new Connector Store at the Franconia-Springfield Metrorail/VRE Station were opened. • Connector introduced its new bus design and logo on its new buses.
2007	<ul style="list-style-type: none"> • Connector installed bicycle racks on the front of its bus fleet.
2008	<ul style="list-style-type: none"> • FCDOT initiated a study to create a 10-year Transit Development Plan (TDP), the first comprehensive study of all bus service operated in, and paid for by, Fairfax County.

- | | |
|-------------|--|
| 2009 | <ul style="list-style-type: none"> • Connector service replaced 13 Metrobus routes linking Centreville, Chantilly, and Oakton to the Vienna Metrorail Station. • Connector begins operation of the Tysons Connector lunch-time shuttle service. • Connector opened the West Ox Operations Facility, which is shared with WMATA, to support the new routes in the West County. • FCDOT completed its TDP study, which included service recommendations for such transportation challenges as the Base Realignment and Closure (BRAC) movements, the opening of the I-495 Beltway HOT Lanes, and the opening of Phases 1 and 2 of the Metrorail Silver Line. |
| 2010 | <ul style="list-style-type: none"> • The Reston East Park-and-Ride and the Connector Store at the lot were closed to allow for site preparation and construction to begin on the Wiehle-Reston East Metrorail Station; on completion, the site now houses the north station entrance, the parking, and the main bus facility to support the Wiehle-Reston East Metrorail Station. • Connector adjusted routes that had served the Reston East Park-and-Ride, and created a new route to serve the temporary Sunset Hills Park-and-Ride. |
| 2011 | <ul style="list-style-type: none"> • Connector implemented South County service changes. These changes included Route 335, linking the Franconia-Springfield Metrorail/VRE Station and the Fort Belvoir Main Post, as well as others in support of Base Realignment and Closure (BRAC) moves to Fairfax County. |
| 2012 | <ul style="list-style-type: none"> • Connector initiated service linking the new Saratoga Park-and-Ride to the Franconia-Springfield and Pentagon Metrorail Stations. |
| 2013 | <ul style="list-style-type: none"> • Connector began "Express Connector" service to and from Tysons on the newly opened I-495 HOT lanes. • New fare policy was adopted for riders transferring between the VRE and Connector systems. Passengers transferring from the VRE system to a Connector bus are allowed a free, one-way transfer when boarding at a VRE station in Fairfax County with a valid VRE fare media (passes, tickets). • FCDOT initiated a study to update the 2009 Transit Development Plan, to include a ten-year Comprehensive Transit Plan (CTP) and a six-year Transit Development Plan (TDP). |
| 2014 | <ul style="list-style-type: none"> • Connector restructured its North County service to serve the newly opened Metrorail Silver Line stations in Tysons and Reston. This included implementing service on 15 new routes (including three Tysons Circulator routes), modifying 22 existing routes, and eliminating five existing routes. The changes, which covered 40 percent of existing Connector service, provided three circulator routes within Tysons, as well as new service to McLean and improved service to Vienna. |

2015

- Connector initiated service linking Springfield and the Mark Center in Alexandria.
- Connector modified several routes serving Phase 1 of the Silver Line.

1.2. Governance

Governance

Fairfax Connector is overseen by the Fairfax County Board of Supervisors (BOS), and is a component of Fairfax County Government. The Board consists of ten members; nine Supervisors are elected as direct representatives of their respective districts, and the Chairman of the Board is elected at-large, representing the entire County. All Board members are elected for four-year terms. Elections for these positions are held in the year before presidential elections.

Current members of the BOS are listed below. The terms for all members expire on December 31, 2019.

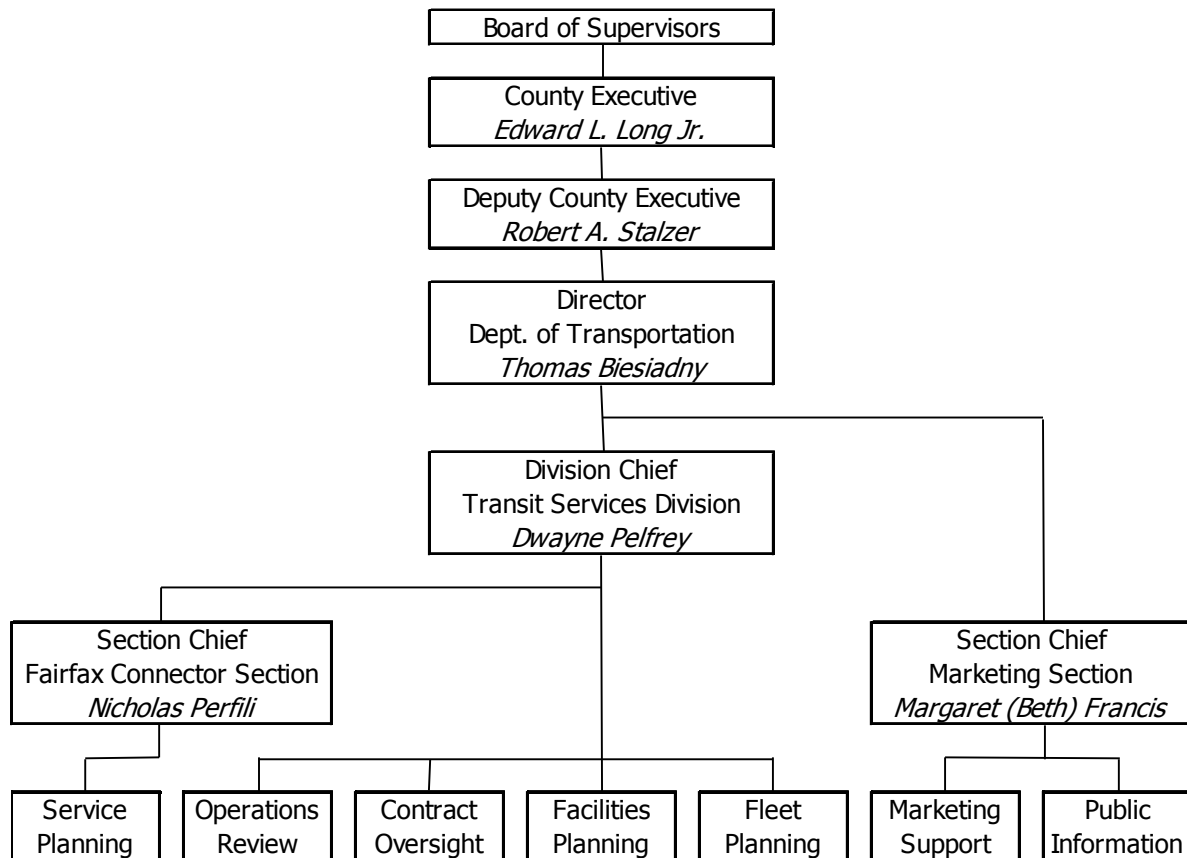
Chairman (At-Large):	Sharon Bulova
Braddock District:	John Cook
Dranesville District:	John Foust
Hunter Mill District:	Catherine Hudgins
Lee District:	Jeffrey McKay
Mason District:	Penelope Gross
Mount Vernon District:	Daniel Storck
Providence District:	Linda Smyth
Springfield District:	Patrick Herrity
Sully District:	Kathy Smith

The Board structure includes a Transportation Committee, a committee of the whole, currently chaired by Supervisor Foust. In addition, the Board is advised on transportation matters by a Transportation Advisory Commission with 11 members. Each district Supervisor appoints one resident of his/her district to serve on the Commission and the Board Chairman appoints a County resident as an at-large member. The eleventh member of the Commission is a representative from the Fairfax Area Disability Services Board. The normal term for Commission members is two years.

Organizational Structure

Figure 1-1 provides an organization chart for the Fairfax Connector functions that are carried out by the Fairfax County Department of Transportation (FCDOT).

Figure 1-1: Organization Chart for FCDOT Responsibilities



The Board of Supervisors provides general policy direction for the Connector through the County Executive and Deputy County Executive. The Director of FCDOT and the Division Chief of the Transit Services Division (TSD) provide policy recommendations and oversight on service provision. The TSD Division Chief and staff perform operations review, contract oversight, facilities planning, and fleet planning. The Section Chief and staff of the Fairfax Connector Section (FCS) perform service planning. The Section Chief and staff of the Marketing Section (TMS) provide marketing and public information support.

All Fairfax Connector service is provided under contract; the contractor provides all staff to support Connector operations, revenue and non-revenue fleet maintenance, operations planning, and administrative functions (e.g., payroll, purchasing, and accounting). MV Transportation currently holds the service provider contract with the County. The current service provider contract between the County and MV initially ran for five years, through June 2014, with an option to extend the contract for up to another five years in one-year increments; the current extension period expires in June 2016 with options for three more years.

Connector employees contracted through MV Transportation are represented by labor unions as listed below.

Huntington Division (South County):

- Operators: Amalgamated Transit Union (ATU) Local 1764 under a four-year agreement which expires on November 30, 2016.

- Mechanics: International Brotherhood of Teamsters Local 639 under a three-year agreement which expires on September 30, 2017.

Reston-Herndon Division (North County):

- Operators: ATU Local 1764 under a four-year agreement which expires on November 30, 2016.
- Mechanics: ATU Local 1764 under a four-year agreement which expires on November 30, 2016.

West Ox Division (West/Central County):

- Operators: ATU Local 1764 under a four-year agreement which expires on November 30, 2016.
- Mechanics: ATU Local 1764 under a four-year agreement which expires on November 30, 2016.

All road and station supervisors, dispatchers, and classroom instructors are members of the Office and Professional Employees International Union (OPEIU) Local 2 under a three-year agreement which expired on November 9, 2015. Local 2 contract negotiations are underway.

1.3. Transit Services Provided and Areas Served

Context

Based on the American Public Transportation Association's ranking of 2013 National Transit Database data, Fairfax Connector service ranks 74th nationally in unlinked passenger trips, 55th in annual vehicle revenue hours, and 57th in vehicles operated during maximum service.² When comparing these indicators across systems within the Commonwealth of Virginia, Fairfax Connector places second behind Hampton Roads Transit. When considered in conjunction with Metrobus service in Fairfax County, however, the total service level surpasses that of Hampton Roads Transit.

Metrobus service in Fairfax County provides the major connections for Fairfax County residents into the District of Columbia and other Virginia jurisdictions to the east of Fairfax County. Metrobus in Fairfax County radiates from downtown DC to points northwest, west and southwest. There are 36 Metrobus routes that at least partially serve the county, offering over 500,000 revenue hours of service annually, representing 42.9 percent of the total bus service in the county. On an average weekday, Metrobus lines serving Fairfax County carry nearly 55,000 passengers on 215 peak buses, while CUE carries nearly 3,500 passengers on eight peak buses serving four routes.

Fairfax Connector Overview

Fairfax Connector is a fixed-route bus system only, funded by County General Funds that are partially reimbursed by grants from the Virginia Department of Rail and Public Transportation

² National Transit Database, 2013 data.

(DRPT) and Fairfax County, as well as fare revenue. The system is managed solely by Fairfax County.

Within the fixed-route designation, there are multiple service types offered to meet the needs of residents and riders. The service types are:

- **Local Routes:** service focused on providing connectivity within and between activity centers, as well as between residential areas and activity centers, in Fairfax County.
- **Express Routes:** service focused on long trips delivering commuters directly to high-employment areas without making regular stops over the trunk of the route.
- **Circulator Routes:** service that provides connections within activity centers between trunk transit lines and ridership generators.
- **Feeder/Distributor Routes:** weekday peak-hour service linking residential areas to Metrorail stations (feeder) and Metrorail stations to employment centers (distributor).
- **Special Routes:** only one route in Fairfax County, the Wolf Trap Express.

For planning purposes there are three distinct service areas within the Fairfax Connector system, as shown in Figure 1-2, Figure 1-3, and Figure 1-4. Fairfax Connector's South County Service Area (Figure 1-2) is in the southeastern portion of the County and is covered by 29 routes and 102 weekday peak vehicles. The West County Service Area (Figure 1-3) is in the central and western portion of the County and is covered by 14 routes and 26 weekday peak vehicles. Service in the North County Area (Figure 1-4) changed significantly in 2014 with the opening of Phase I of the Metrorail Silver Line which expanded Metrorail access to the Tysons/McLean area and the Reston area. With Phase 1 of the Silver Line operational, there are 42 routes and 96 weekday peak vehicles serving the North County Area. The central portion of the county is primarily served by WMATA Metrobus, and is therefore not included as a separate service area for the TDP. The Connector system serves most other residential and commercial areas within Fairfax County. Service does not extend, however, to the lowest-density residential areas of the county which are difficult to serve by fixed-route transit in a cost-effective manner.

Figure 1-2: Fairfax Connector System Map (South Service Area)

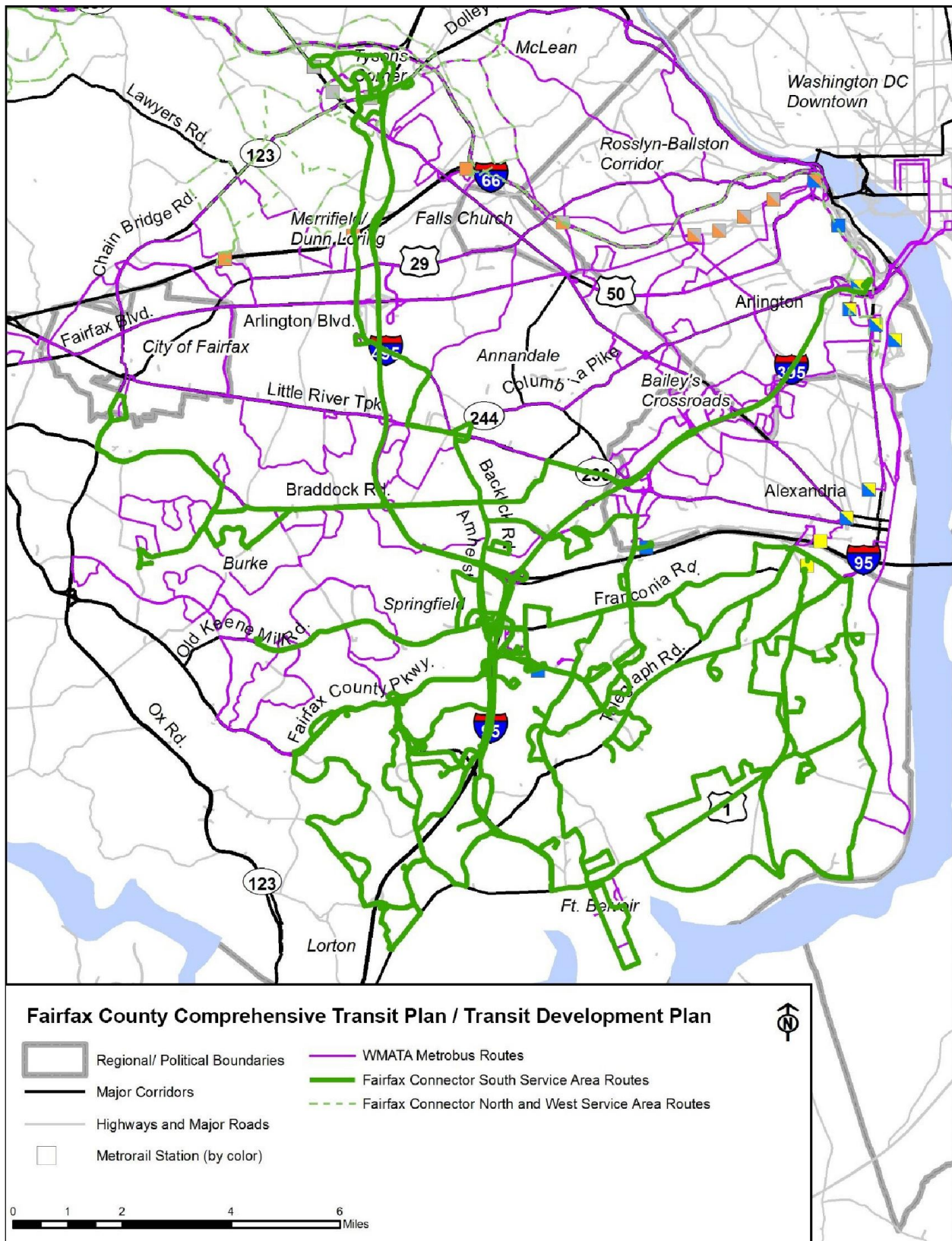


Figure 1-3: Fairfax Connector System Map (West Service Area)

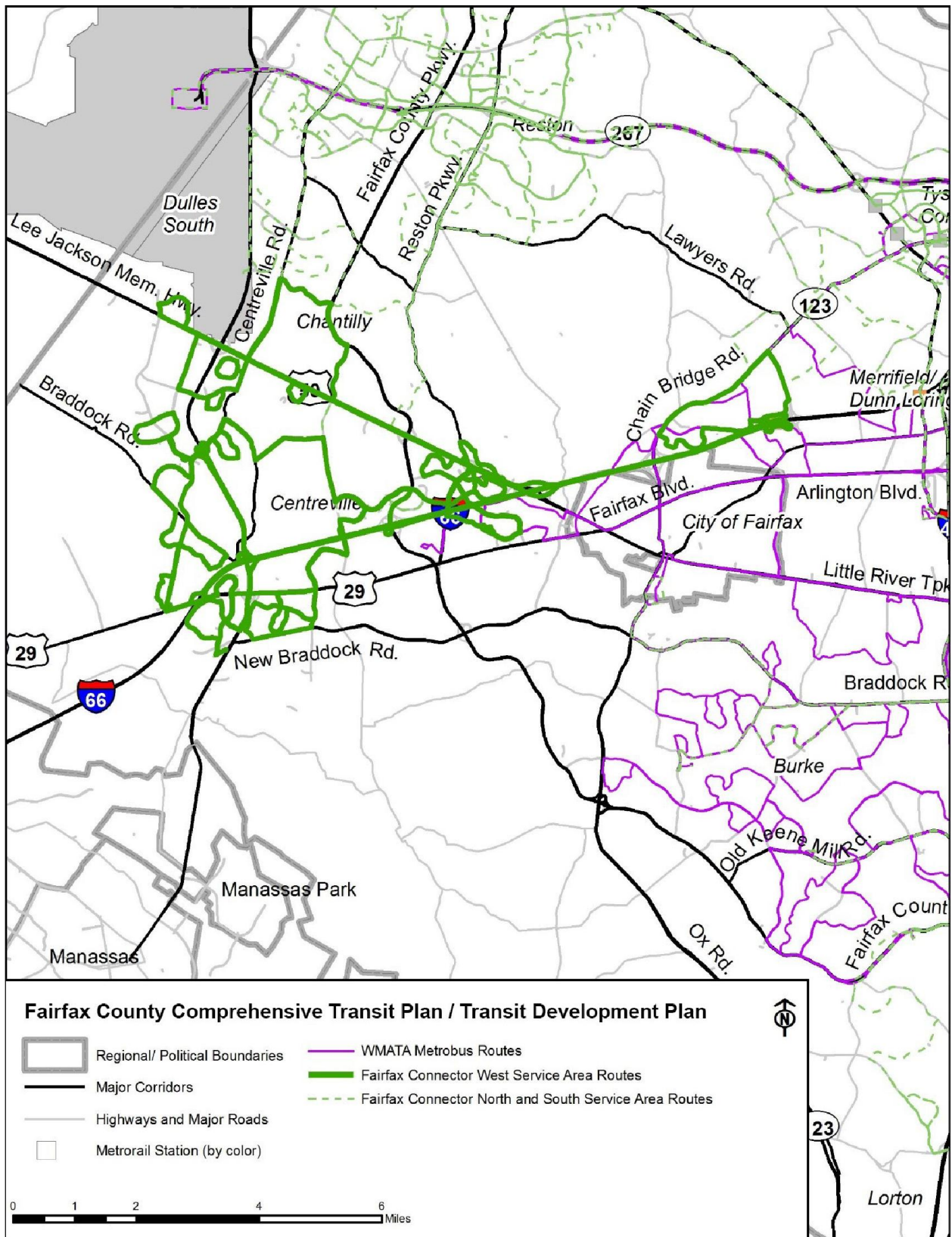
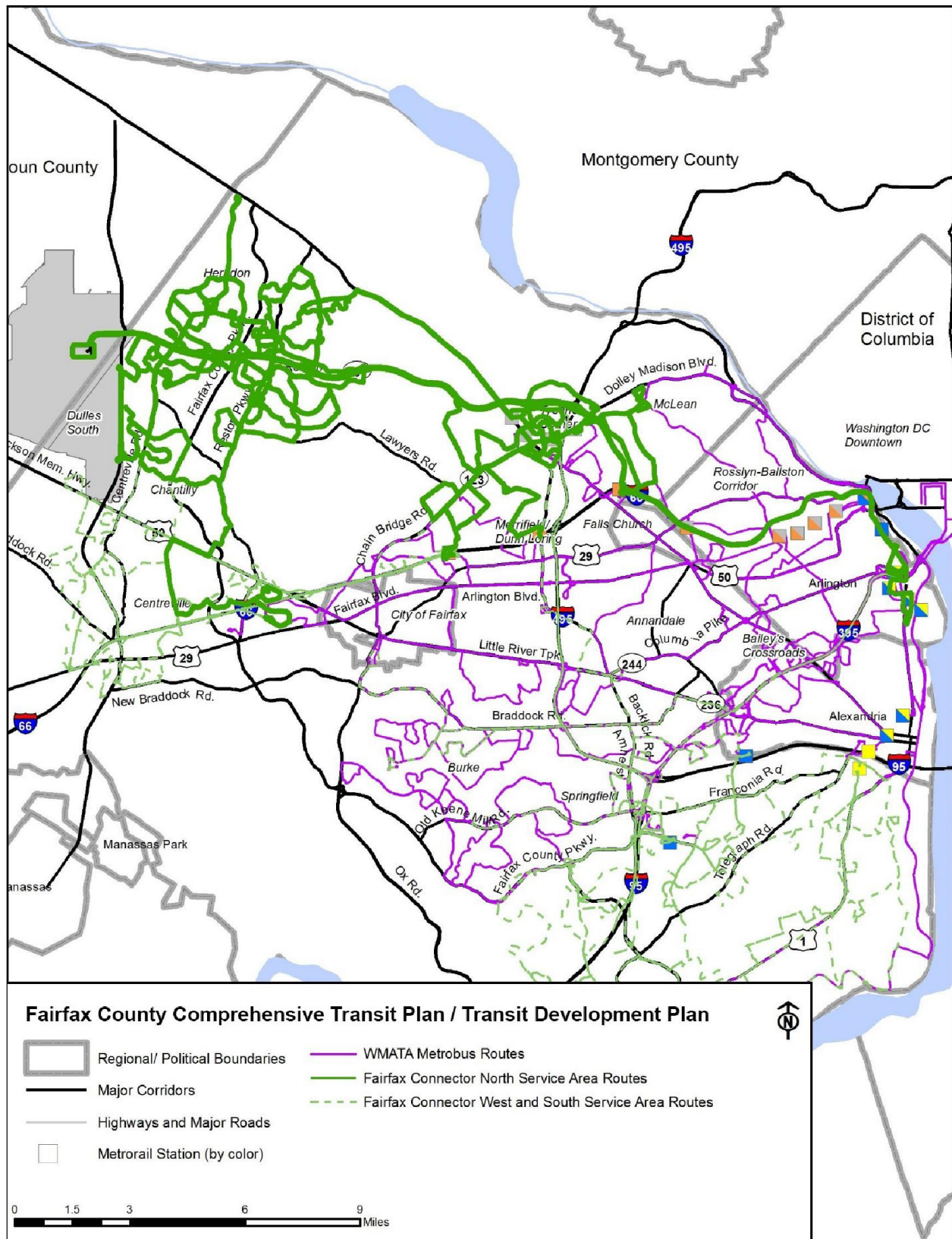


Figure 1-4: Fairfax Connector System Map (North Service Area)



Each of the three service areas within the Fairfax Connector system provides a distinct pattern of service that has been tailored over time to the portion of the County that each covers. Table 1-1 summarizes the service type and number of routes in each of the three service areas. Similarly, Table 1-2 shows the relative share of total service in each service area, as measured by revenue miles, hours, and trips. Both tables reflect Connector service as of the May 2015 service change.

Table 1-1: Fairfax Connector Route Categories by Service Area

Service Area	# of Routes by Service Type					TOTAL
	Local	Express	Circulator	Feeder/ Distributor	Special	
South	19	6	1	3		29
West	4			10		14
North	4	3	14	20	1	42
TOTAL	27	9	15	33	1	85

Table 1-2: Comparison of Fairfax Connector Service Characteristics by Service Area³

Service Area	Percentage of System-wide Service			Average Route Length (miles)
	Revenue Miles	Revenue Hours	Trips	
South	49.0%	48.1%	36.6%	14.3
West	11.8%	8.2%	8.6%	14.2
North	39.2%	43.7%	54.7%	8.2
SYSTEM AVERAGE:				11.2

The South Service Area covers the widest geographic area and is characterized by lengthier routes and more comprehensive service area coverage than the other two service areas. Despite operating only 29 routes compared to the 42 operated out of the North Service Area, South County service totals the most revenue miles (4.6 million, or 49 percent of system total) and revenue hours (345,000, or 48 percent of system total) of any of the three service areas. The South's service area is co-served with Metrobus, with much of the feeder-type service covered by Metrobus. A majority of the South Service Area routes (19 of 29) are categorized as local routes, which connect activity centers within the southern portion of the county and provide connections not covered by Metrobus regional routes. The South Service Area is served by six of the nine Fairfax Connector routes categorized as express service.

³ Data is current as of service changes made in May 2015.

The West Service Area encompasses only 12 percent of system-wide revenue miles and 8 percent of revenue hours annually, although like the South Service Area, its service is characterized by lengthy trips. Most of the routes operated out of the West Service Area (10 of 14) are feeder/distributor routes, indicating that the primary focus of service in the West County is to provide connections for commuters to the county's Metrorail stations in the central part of the county.

The North Service Area was significantly restructured in 2014 to correspond with the opening of Phase 1 of the Metrorail Silver Line. As a result, routes are primarily feeder/distributor (20 of 42 routes) and circulator (14 of 42 routes) service. As the North Service Area features the most concentrated activity centers in the county (Tysons, Reston, and Herndon), it is not surprising that so much of the existing service are circulator and distributor routes. With relatively little Metrobus service in this portion of the County, it is natural that a large proportion of North County service is feeder type service. As a result of this pattern, the North Service Area is characterized by significantly shorter trips on average than the other two service areas.

System Amenities

The Connector system provides amenities and accommodations that make it easier for a variety of passengers to use the system. In compliance with the Americans with Disabilities Act (ADA) requirements, all Fairfax Connector vehicles are low-floor and the Connector's policy is to only purchase low-floor vehicles. The buses are outfitted with ramps and operations and maintenance staff routinely test the function of these systems. Operators currently announce major stops and landmarks along their routes; however, FCDOT is currently evaluating several Intelligent Transportation Systems (ITS) projects that will increase the system's accessibility for disabled passengers, including the installation of technology to automate the audio and visual presentation of those announcements.

Connector also provides amenities and accommodations that facilitate pedestrian and bicycle access to the system. All Connector buses have bicycle racks mounted above the front bumper, and all bus operators are trained in the use of the racks, and are able to assist bicyclists if necessary. Connector bus stops are located to maximize pedestrian access whenever possible. Connector staff evaluates several factors, including the presence of sidewalks and crosswalks, when locating bus stops. These bus stop improvements and sidewalk connections are implemented by other divisions of FCDOT and the Department of Public Works and Environmental Services using a variety of funding sources.

Bus Stop Guidelines

Whenever possible, new and relocated Connector bus stops are located in accordance with the "Fairfax County Bus Stop Guidelines," published in July 2004. These guidelines established new scoring and improvement factors to help inform decision-making and prioritize projects (Table 1-3). The scoring standard is comprised of various factors (e.g., safety, potential ridership, and cost). Locations were scored as either high or low priority, and, in an effort to address sites with immediate needs, all locations scoring in the high priority category have been selected for first consideration for improvements.

Table 1-3: Bus Stop Improvement Site Selection Prioritization Scoring Matrix

Configuration				Estimated and Potential Ridership	Additional Non-Transit Related Benefits	Cost for Improvements	Overall Score
Safety While Walking	Safety While Standing	Vehicular Safety	Combined Safety Score				
1 = Most Safe			1 = Most Safe	1 = Low existing and potential usage	1 = No clear benefit to the community	1 = High Cost – Over \$100,000	1 = Low priority
5 = Least Safe			5 = Least Safe	5 = High existing and potential usage	5 = Clear benefit to the community	5 = Low Cost – Less than \$1,000	5 = Action Recommended

Bus Stop Spacing

Fairfax Connector generally follows its established bus stop spacing guidelines:

- *High density* (750-foot spacing) – primarily commercial with high concentration of employment, or with a population density of more than five people per acre.
- *Moderate density* (1,000-foot spacing) – population density of two to five people per acre.
- *Low density* (spacing based on activity centers rather than distance) – population density of less than 2 people per acre.

However, bus stop spacing is at times predicated on whether or not there is existing infrastructure that can be safely accessed by the general public (i.e., no obstructions, the presence of sidewalks or lighting, whether other accessibility requirements are met) as well as the operational ability of the bus to safely operate and serve a specific or pre-selected stop location.

Bus Stop Facilities

Guidelines for the provision of bus stop facilities are provided below. Bus Stop facilities include: shelters, benches, loading pads, bus stops signs, parking signs, customer information signs, lighting, and bus bays. Bus bench installation generally follows the 2004 guidelines; however, it has become clear that the demand for bus shelters far exceeds the demand for benches alone. Regardless, the provision of benches still is included as part of the improvement program and benches are added when a site location meets the criteria.

- **Shelters may be installed if any one of the conditions below is met:**⁴
 - Stop is at transit center OR at park-and-ride lot
 - Stop is at major activity center (boardings ≥ 100 per day) AND sufficient right-of-way for shelter is available

⁴ Since the Bus Stop Guidelines were developed in 2004, a new bus shelter advertising program was initiated. These shelter locations are selected by the advertising contractor in areas where high potential for shelter advertising sales and revenue exists. However, the shelter guidelines above must still be met for a stop to be considered for a shelter.

- Stop is on arterial street/major collector road (boardings ≥ 100 per day) AND sufficient right-of-way for shelter is available
- Stop is on arterial street/major collector road (boardings < 100 per day) AND stop is in high-density area AND no shelter exists on route within 0.5 mile AND sufficient right-of-way for shelter is available
- Stop is on minor collector road (boardings ≥ 100 per day) AND sufficient right-of-way for shelter is available
- Stop is on minor collector road (boardings < 100 per day) AND stop is in high-density area AND no shelter exists on route within 0.5 mile AND sufficient right-of-way for shelter is available
- Stop is on residential street (boardings ≥ 50 per day) AND sufficient right-of-way for shelter is available
- Stop is on residential street (boardings < 50 per day) AND stop is in high-density area AND no shelter exists on route within 0.5 mile AND sufficient right-of-way for shelter is available
- Stop is on residential street (boardings < 50 per day) AND stop is in residential area AND no shelter exists on route within 1.0 mile AND sufficient right-of-way for shelter is available
- Stop is on rural road (boardings ≥ 25 per day) AND sufficient right-of-way for shelter is available
- Stop is on rural road (boardings < 25 per day) AND stop is in rural area AND no shelter exists on route within 1.0 mile AND sufficient right-of-way for shelter is available
- **Benches may be installed if any one of the conditions below is met:**
 - Stop is at major activity center (boardings ≥ 100 per day) AND sufficient right-of-way for shelter is not available AND sufficient right-of-way for bench is available
 - Stop is on arterial street/major collector road (boardings ≥ 100 per day) AND sufficient right-of-way for shelter is not available AND sufficient right-of-way for bench is available
 - Stop is on arterial street/major collector road (boardings ≥ 100 per day) AND sufficient right-of-way for shelter is not available AND sufficient right-of-way for bench is available
 - Stop is on arterial street/major collector road (boardings < 100 per day) AND stop is in high-density area AND no shelter exists on route within 0.5 mile AND sufficient right-of-way for shelter is not available AND sufficient right-of-way for bench is available
 - Stop is on minor collector road (boardings ≥ 100 per day) AND sufficient right-of-way for shelter is not available AND sufficient right-of-way for bench is available
 - Stop is on minor collector road (boardings < 100 per day) AND stop is in high-density area AND no shelter exists on route within 0.5 mile AND sufficient right-of-way for shelter is not available AND sufficient right-of-way for bench is available
 - Stop is on residential street (boardings ≥ 50 per day) AND sufficient right-of-way for shelter is not available AND sufficient right-of-way for bench is available
 - Stop is on residential street (boardings < 50 per day) AND stop is in high-density area AND no shelter exists on route within 0.5 mile AND sufficient right-of-way for shelter is not available AND sufficient right-of-way for bench is available

- Stop is on residential street (boardings <50 per day) AND stop is in residential area AND no shelter exists on route within 1.0 mile AND sufficient right-of-way for shelter is not available AND sufficient right-of-way for bench is available
- Stop is on rural road (boardings ≥25 per day) AND sufficient right-of-way for shelter is not available AND sufficient right-of-way for bench is available
- Stop is on rural road (boardings <25 per day) AND stop is in rural area AND no shelter exists on route within 1.0 mile AND sufficient right-of-way for shelter is not available AND sufficient right-of-way for bench is available
- **Customer information displays (schedule, system map)**
 - a. Fairfax County utilizes a variety of Customer Information display systems:
 - i. Bus route Ride Information Guides (2-4 sided mounted display units) which contain schedule and individual route maps are installed at all transit stations (bus/rail) and park-and-ride lots where Fairfax Connector bus service operates and have designated service bays
 - b. Bus System maps are installed in bus shelters at most transit stations that are primarily served by Fairfax Connector routes (Bus/Rail), and park-and-ride lots where Fairfax Connector bus service operates and has designated service bays
- **Bus bay – to be considered if at least one of the conditions below is met:**
 - a. The speed limit at the location is 45 miles per hour or higher
 - b. The sight distance at the location is limited by horizontal or vertical curves
 - c. The location is at the bottom of a steep grade
 - d. Bus dwells due to passenger activity generally exceed 10 seconds
 - e. When feasible, bus bays are located far side at signalized intersections to take advantage of traffic stream interruptions

The design of Connector bus transfer centers, bays, shelters, and stops within Fairfax County is governed by the guidelines listed in this section. The design of such facilities used by Connector service outside the County is subject to the guidelines/standards of the responsible jurisdiction or agency. Fairfax County does not have any bus facility design agreements with other jurisdictions.

Fare Structure

Riders can pay fares, shown in Table 1-4, with cash or with a contactless SmarTrip card. The latter is used on most public transit systems throughout the Washington, D.C. region, making it easy to transfer between systems; SmarTrip cards are required in order to receive free or reduced price transfers. In addition to cash and the SmarTrip card, the Connector accepts the following fare media for payment in part or in whole of the fare for the different service types:

- Bus passes issued by other regional bus systems are accepted in lieu of the local cash fare. The balance of express fares must be paid by cash or SmarTrip card.
- Virginia Railway Express (VRE) passes are accepted in lieu of the local cash fare from a VRE station. The balance of express fares must be paid by cash or SmarTrip card.
- A Transit Link Card (monthly card for travel on VRE) is accepted in lieu of the local cash fare from a VRE station. The balance of express fares must be paid by cash or SmarTrip card.
- A WMATA MetroAccess (paratransit) ID card is accepted as full payment on any Connector route for the card-holder and a companion.

Table 1-4: Fairfax Connector Fares

Fare Type	SmarTrip	Cash
Regular Fare	\$1.75	\$1.75
Senior/Disabled	\$0.85	\$0.85
Express Bus	\$4.00	\$4.00
Express Bus - Senior/Disabled	\$2.00	\$2.00
Route 599	\$7.50	\$7.50
Tysons Circulator *	\$0.50	\$0.50
Metrorail-to-Bus transfer	\$1.25	\$1.75
High School / Middle School Student Pass	Valid for free travel Monday through Friday between 6:00 a.m. and 8:00 p.m.	
Bus-to-Bus transfer	Free up to two hours	\$1.75
VRE-to-Bus transfer	One free transfer at a VRE station with valid VRE ticket or pass. Riders using a Fairfax Connector bus system to transfer to the VRE system are required to pay the full fare price.	
Children	Up to two children under the age of four ride for free with a fare-paying adult.	

* Introductory fare.

Connector has an extensive transfer policy with other regional transit agencies. Bus-to-bus transfers are free to SmarTrip users when made within two hours, regardless of operator. Metrorail-to-bus transfers are discounted 50 cents to SmarTrip users when made within two hours. Riders connecting from the VRE commuter rail system to the Connector system receive one free transfer when made at a VRE station.

The most recent change in Connector fares took effect on June 29, 2014. This change equalized fares paid using cash and SmarTrip cards. Previously, the base cash fare was \$1.80 and base SmarTrip fare was \$1.60. The new rate for both cash and SmarTrip fares was changed to \$1.75, resulting in a five cent decrease for fares paid with cash and a 15 cent (nine percent) increase for riders using a SmarTrip card.

FCDOT, in cooperation with Fairfax County Public Schools (FCPS), initiated a student pass program in late August 2015. FCPS issues a pass to any Fairfax County high school or middle school student upon request with parent or guardian approval. The pass is accepted on weekdays between 6:00 a.m. and 8:00 p.m.

1.4. Fleet

The Connector fleet consists of a total of 295 revenue vehicles. A majority of the fleet (72 percent) is 40-foot in length and manufactured by New Flyer. An additional 17 percent are 35-foot New Flyer buses and the remaining 11 percent are 30-foot buses manufactured by Orion.

Table 1-5: Revenue Fleet

	Vehicles	Average Age
NEW FLYER	269	4.6
35 feet	60	3.2
40 feet	209	5.1
ORION	26	7.0
30 feet	26	7.0
Total	295	4.8

Fairfax Connector's fleet averages 4.8 years of age, with the oldest vehicles in the fleet manufactured in 2007.

Table 1-6: Fairfax Connector Fleet Profile – August 2015

Make	Size	Number	Year	Age
New Flyer	35 feet	16	2007	8
New Flyer	40 feet	52	2007	8
Orion VII	30 feet	26	2008	7
New Flyer	40 feet	45	2009	6
New Flyer	40 feet	31	2011	4
New Flyer	40 feet	37	2011	4
New Flyer	35 feet	15	2012	3
New Flyer	40 feet	20	2012	3
New Flyer	40 feet	19	2013	2
New Flyer	35 feet	17	2014	1
New Flyer	35 feet	12	2015	<1
New Flyer	40 feet	5	2015	<1

Fairfax Connector has a comprehensive preventive maintenance and component replacement program which ensures a high level of vehicle reliability. Buses are replaced at the end of their useful life in accordance with Fairfax Connector's fleet replacement plan. *Chapter 6: Capital Improvement Program* provides additional detail on the Connector fleet management and replacement plan.

In addition to these revenue vehicles, Connector also operates 34 non-revenue vehicles including trucks, SUVs, and cars, as shown in Table 1-7.

Table 1-7: Non-Revenue Fleet

	Vehicles	Average Age
Car	16	3.7
SUV	11	7.6
Truck	7	8.1
Total	34	5.9

1.5. Existing Facilities

Fairfax Connector has a wide range of facilities located throughout Fairfax County. These include:

- Administrative, bus operations, and maintenance facilities;
- Transit centers;
- Connector Stores;
- Bus stops and shelters; and
- Park-and-ride facilities.

This section provides details on each type of facility.

Administrative, Bus Operations, and Maintenance Facilities

Fairfax Connector's administrative offices are housed in leased office space located at 4050 Legato Road, Fairfax, VA, 22033. All Fairfax County DOT and County Connector staff are located in this space.

Fairfax Connector currently conducts all bus operations and maintenance activities from its three operating divisions, including repairing, cleaning, fueling, storing, and staging buses, as shown in Table 1-8. All three buildings are open 24 hours a day. While the West Ox facility is open five days per week, the other two facilities are open seven days a week. The contractor that operates Fairfax Connector service, MV Transportation, also has administrative offices at each of the three operating divisions.

Table 1-8: Bus Operations and Maintenance Facilities

Facility Name	Address	Year Built	Maximum Vehicle Capacity	Number of Repair Bays	Number of Fueling Stations
Huntington (South County)	8101 Cinder Bed Road Lorton, VA 22079	1988	85	6	2
Reston-Herndon (North County)	268 Spring Street Herndon, VA 20170	1994	82	6	2
West Ox (West/Central County)	4970 Alliance Drive Fairfax, VA 22035	2009	170	6	3 (1 of these is primarily used by WMATA)
Total			337	18	7

Transit Centers and Connector Stores

Fairfax County owns and maintains two transit centers, one in Reston Town Center and one in Tysons (Table 1-9). Both Transit Centers are fully ADA accessible.

Table 1-9: Transit Centers

Facility Name	Address	Year Built	Number of Bus Bays	Routes Served
Reston Town Center Transit Station	12051 Bluemont Way Reston, VA, 20190	2006	9	Fairfax Connector 505, 574, 605, 950, 981, 983, RIBS 1, RIBS 2, RIBS 3, RIBS 4 and RIBS 5
Tysons West*Park Transit Station	8300 Jones Branch Drive McLean, VA, 22102	1999	10	Fairfax Connector 401, 402, 423, 574

Fairfax Connector stores are retail kiosks where staff are on-hand to provide trip planning assistance and sell regional transit fare media. Schedules, brochures, and informational materials are available for the Connector system, as well as other regional transit systems. There are five Connector Stores in the County; two are co-located with the County's Transit Centers, and the remaining three are co-located with Metrorail stations (Table 1-10).

Table 1-10: Fairfax Connector Stores

Connector Store	Address	Days and Hours of Operation
Reston Town Center Transit Station	12051 Bluemont Way Reston, VA, 20190	Monday - Friday: 6:30 a.m. – 7:00 p.m.
Wiehle-Reston East Metrorail Station	11389 Reston Station Boulevard Reston, VA 20190	Monday - Friday: 6:30 a.m. – 7:00 p.m.
Herndon-Monroe Park-and-Ride	12530 Sunrise Valley Drive Herndon, VA 20171	Monday, Tuesday and Thursday: 6:30 - 10:30 a.m., 3:00 – 7:00 p.m.
Tysons West*Park Transit Station	8300 Jones Branch Drive McLean VA, 22102	Monday - Thursday: 6:30 a.m. – 6:00 p.m.
Franconia-Springfield Metrorail/VRE Station	6880 Frontier Drive Springfield, VA 22150	Monday - Friday: 6:30 a.m. – 7:00 p.m.

Bus Stops and Shelters

There are approximately 4,061 bus stops in Fairfax County, of which 2,500 are served by the Connector system. Of these bus stops, 334 of them have shelters owned by Fairfax County and 223 have shelters owned by WMATA, equaling 557 shelters total shelters in the system.

Park-and-Ride Lots

There are 34 park and ride lots in the Fairfax Connector system, 18 of which are operated by Fairfax County. The remaining 16 lots are maintained by various churches, retail centers, or the Virginia Department of Transportation. WMATA also owns and operates park and ride lots at five Metrorail stations that are located in Fairfax County on the Orange, Blue, and Yellow lines; the lot located at the Wiehle-Reston East Metrorail Station, the only parking facility at a Silver Line station, is owned by Fairfax County. There are 12,364 parking spaces at park-and-ride lots in Fairfax County, 9,128 of which are maintained by the Connector system. Table 1-11 provides a complete list of the 34 park and ride facilities.

Table 1-11: Fairfax County Park-and-Ride Facilities

Name	Address	Owner	Maintenance	Total Parking Spaces	Bus Routes
American Legion	6520 Amherst Ave. Springfield, VA 22150	American Legion Inc. Post 176 Springfield	American Legion	100	310, 321, 322, 18E,G,H,P
AMF Centerville Lane	13814 Lee Hwy. Centerville, VA 22150	ISTAR Bowling Centers I LP	AMF Centerville Lane	35	630, 631
Apple Federal Credit Union	6831 Sir Viceroy Dr. Alexandria, VA 22315	Apple Federal Credit Union	Apple Federal Credit Union	12	231, 232, 321, 322
Autumn Willow Park	13090 Autumn Willow Dr. Centerville, VA 20120	Fairfax County Park Authority	Fairfax County	100	none
Backlick North	6831 Backlick Rd. Springfield, VA 22150	VDOT	VDOT	220	310, 394, 395
Canterbury Woods	5018 Wakefield Chapel Rd. Annandale, VA 22003	Fairfax County Park Authority	Fairfax County	29	306, 17A,B,F,G,H,K,L
Centerville Park-and-Ride (Rt. 29 and Stone Rd.)	14700 Lee Hwy. Centerville, VA 20120	Fairfax County Board of Supervisors	Fairfax County	372	640, 642, 644
Centerville United Methodist Church	6400 Old Centerville Rd. Centerville, VA 20121	Church United Methodist, Centerville	Fairfax County	144	630, 641
Fairfax County Government Center	12000 Government Center Pkwy. Fairfax, VA 22035	Fairfax County Board of Supervisors	Fairfax County	170	605, 621, 623, 1C
Gambrill Road	7321 Gambrill Rd. Springfield, VA 22153	VDOT	VDOT	223	305, 395, 18R
Greenbriar Park	4600 Stringfellow Rd. Fairfax, VA 20150	Fairfax County Park Authority	Fairfax County	60	605, 632, 640
Herndon Monroe Park- and-Ride	12530 Sunrise Valley Dr. Herndon, VA 20191	Fairfax County Board of Supervisors	Fairfax County	1,745	551, 924, 926, 927, 929, 937, 950, 951, 952, 980, 981, 983, 5A

Name	Address	Owner	Maintenance	Total Parking Spaces	Bus Routes
Lorton Market Street	9405 Lorton Market St. Lorton, VA 22079	Bank of America, N.A	Lorton Market	65	371, 372
Lorton Park-and-Ride	9300 Gunston Cove Rd. Lorton, VA 22079	Khan International LLC	VDOT	170	371, 372
Old Keene Mill	7039 Old Keene Mill Rd. Springfield, VA 22150	Fairfax County Board of Supervisors	Fairfax County	278	310, 321, 322, 18E,G,H,J,P
Parkwood Baptist Church	8726 Braddock Rd. Annandale, VA 22003	Church Baptist Parkwood TRS OF	Parkwood Baptist Church	30	306, 495, 17A,F,H,K
Poplar Tree Park	4718 Stringfellow Rd. Chantilly, VA 20151	Fairfax County Park Authority	Fairfax County	279	605, 632, 640
Reston North	11300 Sunset Hills Rd. Reston, VA 20190	VDOT	VDOT	338	599
Reston South	2542 Reston Pkwy. Reston, VA 20191	Fairfax County Board of Supervisors	Fairfax County	412	553, 557, 559, 585, 605
Rolling Valley	9220 Old Keene Mill Rd. Burke, VA 22015	Fairfax County Board of Supervisors	Fairfax County	664	310, 18G,J,P,R,S
Saratoga Park-and-Ride	Intersection of Barta Road and Fairfax County Parkway at Barta Road interchange	VDOT	VDOT	500	333, 393, 394, 494
South Run District Park	7550 Reservation Dr. Springfield, VA 22153	Fairfax County Park Authority	Fairfax County	52	18R
Springfield Plaza	6400 Springfield Plaza Springfield, VA 22150	Springfield Plaza LCC	Springfield Plaza	254	310, 321, 322, 18E,G,H,P
Springfield Town Center	6717 Frontier Dr. Springfield, VA 22150	Franconia Two LP	Springfield Mall	500	310, 321, 322, 334, 401, 402, S80, S99
Springfield United Methodist Church	6501 Springfield Rd. Springfield, VA 22150	Church Methodist, Springfield TRS OF	Springfield United Methodist Church	53	310, 321, 322, 18E,G,H,P

Name	Address	Owner	Maintenance	Total Parking Spaces	Bus Routes
St. Paul Chung Catholic Church	4712 Rippling Pond Dr. Fairfax, VA 22033	Church Catholic, Most Rev John R	Church	100	632, 640
Stringfellow Road	4920 Stringfellow Rd. Centreville, VA 20120	VDOT	VDOT	385	630, 631, 632
Sully Station	4900 Stonecroft Blvd. Centreville, VA 20151	Fairfax County Board of Supervisors	Fairfax County	38	640, 642
Sydenstricker Road	8500 Hooes Rd. Springfield, VA 22153	VDOT	VDOT	170	305
VRE Backlick Road Station	6900 Hechinger Dr. Springfield, VA 22151	Fairfax County	Fairfax County	220	321, 322, 401, 402
VRE Burke Centre Station	10399 Premier Ct. Burke, VA 22015	Fairfax County Board of Supervisors	Fairfax County	1,510	495, 17B,L
VRE Lorton Station	8990 Lorton Station Blvd. Lorton, VA 22079	Fairfax County	Fairfax County	466	171, 305, 371, 372, 373, 494
VRE Rolling Road Station	9016 Burke Rd. Burke, VA 22015	Fairfax County Board of Supervisors	Fairfax County	368	17L
Wakefield Park	8101 Braddock Rd. Annandale, VA 22003	Fairfax County Park Authority	Fairfax County	50	306, 17A,B,F,G,H,K,L
Wiehle-Reston East Park-and-Ride	11389 Reston Station Blvd. Reston, VA 20190	Fairfax County Board of Supervisors	Fairfax County	2,300	505, 507, 551, 552, 553, 554, 556, 557, 558, 559, 585, 924, 926, 929, 950, 951, 952, 980, 981, 983, 985, RIBS 1, RIBS 2, RIBS 3

Source: Fairfax Connector website, <http://www.fairfaxcounty.gov/connector/parkandrides/>

1.6. Transit Security Program

System Security and Emergency Preparedness Plan (SSEPP)⁵

Overview

MV Transportation, the contractor that operates Fairfax Connector service, has developed a System Security and Emergency Preparedness Plan that they update each July to reflect new practices, policies, and procedures. MV Transportation / Fairfax Connector's General Manager has authority for implementing the SSEPP. The program outlines the process for addressing system security and emergency preparedness, defined as follows:

The application of operating, technical, and management techniques and principles to the security aspects of a system throughout its life to reduce threats and vulnerabilities to the most practical level through the most effective use of available resources.

Emergency Preparedness – A uniform basis for operating policies and procedures for mobilizing transit agency and other public safety resources to assure rapid, controlled, and predictable responses to various types of transit and community emergencies.

The SSEPP supports efforts to address and resolve critical incidents on the property or in the community; critical incidents are defined as any event (such as accidents, natural disasters, crimes) that requires emergency response and swift, decisive action from multiple organizations.

Three criteria have been identified that would indicate that a service interruption, or the inability to provide service, is a critical incident:

- The duration of the interruption is two hours system-wide or 24 hours on a particular route; and/or
- Two or more persons sustain injuries requiring hospitalization and/or there are one or more fatalities; and/or
- \$10,000 or more in property damage is sustained.

The following sections outline the key elements of the SSEPP.

Roles and Responsibilities

MV Transportation/Fairfax Connector hopes to ensure that, if confronted with a security event or major emergency, personnel will respond effectively, using good judgment, ensuring due diligence, and building on best practices, identified in drills, training, rules and procedures. No matter what role an employee of Fairfax Connector may have in responding to an emergency, several responsibilities are universal:

- Immediately reporting all suspicious activity, no matter how insignificant it may seem;

⁵ *MV Transportation / Fairfax Connector System Security and Emergency Preparedness Plan, 2016.*

- Immediately reporting all security incidents;
- Using proper judgment when managing disruptive passengers and potentially volatile situations;
- Participation in all security and emergency preparedness training, including drills and exercises;
- Becoming familiar with, and operating within, all security and emergency preparedness procedures for the assigned work activity;
- Notifying his/her supervisor when a physical or mental condition, or required medications or therapies, may impair the ability to perform security or emergency preparedness functions; and
- Accurately completing "Employee Statements" on appropriate reports.

The General Manager has the overall authority to develop and execute the agency's Security and Emergency Preparedness Plan (SSEPP). He or she must also: ensure that the Plan is adequately funded; ensure that there is an effective system in place for reporting incidents and emergencies; communicate the importance of the Plan to all employees; and coordinate with outside organizations that may be informing the agency of a potential emergency, or responding to an incident occurring at the agency.

Although the General Manager holds the ultimate responsibility for the performance of the SSEPP, he or she is not the point of contact for the Plan. Instead, that role is held by the Senior Safety Manager / Area Safety Director. The manager/director oversees the SSEPP on a daily basis and also:

- Is responsible for successfully administering the SSEPP Program and establishing, monitoring, and reporting on the system's security and emergency preparedness objectives;
- Reviews current agency safety, security and emergency policies, procedures, and plans, and identifies needed improvements;
- Develops and implements plans for addressing identified improvements;
- Coordinates with local public safety agencies, local community emergency planning agencies, and local human services agencies to address security and emergency preparedness, including participation in formal meetings and committees;
- Develops, publishes, and enforces reasonable procedures pertinent to agency activities for security and emergency preparedness;
- Provides adequate driver training and continuing instruction for all employees regarding security and emergency preparedness;
- Reviews new agency purchases to identify security related impacts; and
- Ensures performance of at least one emergency exercise annually.

The next level of responsibility of implementing the SSEPP falls to the supervisors. As the party responsible for communicating the Plan to the bus operators, they must have full knowledge of all security plans and policies. In addition, when supporting response to an incident, Supervisors are expected to:

- Provide leadership and direction to employees during security incidents;
- Handle minor non-threatening rule violations;
- Defuse minor arguments;

- Determine when to call for assistance;
- Make decisions regarding the continuance of operations;
- Respond to fare disputes and service complaints;
- Respond to security related calls with police officers when required, rendering assistance with crowd control, victim/witness information gathering, and general on-scene assistance;
- Complete necessary security related reports;
- Take photographs of damage; and
- Coordinate with all outside agencies at incident scenes.

Bus operators, as the likely first responders to an emergency, are called upon to exercise good judgment while awaiting direction from those above them in the chain of command. Specifically, bus operators are expected to:

- Maintain safe control of the vehicle;
- Take charge of a securing incident scene until the arrival of supervisory or emergency personnel;
- Attempt to handle minor non-threatening rule violations;
- Respond verbally to complaints;
- Attempt to defuse minor arguments;
- Determine when to call for assistance;
- Report all security incidents to agency dispatch;
- Complete all necessary safety-related reports; and
- Support community emergency response activities as directed by MV Transportation policies and procedures.

Support staff in the dispatch office are also expected to assist personnel in the field by:

- Receiving calls for assistance;
- Dispatching supervisors and emergency response personnel;
- Coordinating with law enforcement and emergency medical service communications centers;
- Notifying supervisory and management staff of incidents;
- Establishing on-scene communication;
- Completing any required safety related reports; and
- Providing direction to on-scene personnel.

Hazard Identification and Mitigation

To prevent hazards from occurring in the first place, it is incumbent upon the FCDOT and MV Transportation to design for minimum risk. If it is not possible to eliminate the risk through this design process, safety and warning devices should be employed to identify a potential hazard before it occurs. If all of these things fail, employee training can help reduce the severity of the hazard.

While personnel are responsible for either responding to an incident or setting the policies to prevent such an incident, Fairfax Connector as a whole can proactively prevent a future incident from becoming an emergency by:

- Emphasizing agency personnel awareness;
- Analyzing security incidences and suspicious activity to determine a proper course of action including:
 - Identifying potential and existing problem areas
 - Developing action plans
 - Implementing the plans
 - Measuring results;
- Reviewing transit agency emergency plans;
- Reviewing MV Transportation documentation on System Security and Emergency Preparedness; and
- Evaluating of security/emergency response procedures for completeness and accuracy.

One of the first steps in preventing an incident is for employees to identify potential hazards in advance of an incident occurring. All employees are charged with the responsibility of identifying and reporting conditions that have the potential to cause accidents, injuries, or other losses. These conditions may be found in the form of physical hazards, unsafe actions, and policies that create or fail to recognize hazards. In addition to employees, reports from passengers and other individuals through contact with client customer service, field personnel, or management personnel are used to identify hazards. Conditions that have been identified as hazardous or potentially hazardous are reported to the department head and the Safety Department in either written form or verbally. If the department has not been able to correct the condition within 30 days of receipt of the verbal or written report, the item is placed on the agenda of the next meeting with the operations contractor general manager.

The following hierarchy is used to eliminate or control hazards in the system:

Design for Minimum Risk. Provisions are made in all designs for the identification and elimination of hazards through appropriate safety design concepts, such as fail-safe designs and redundancy. If the identified hazards cannot be eliminated, they are controlled through reducing the risk to an acceptable level.

Use of Safety Devices. Hazards that cannot be eliminated through design selection are reduced to an acceptable level of risk through the use of fixed, automatic or other protective safety design features or devices. The design provides for periodic functional checks of safety devices.

Use of Warning Devices. When neither design nor safety devices can effectively control an identified hazard, devices are used to provide timely detection of the hazard and to generate adequate warning signals. The application of these devices shall be designed to minimize the probability of incorrect reaction to the warning by employees or other individuals.

Provide Special Procedures. Where it is impossible to eliminate or adequately control hazards through design, safety devices or use of warning devices, procedures and training are used to control the hazard. Precautionary notation is standardized and safety-critical tasks require certification through completion of MV Transportation-approved training courses.

Risk Assessment

Once a hazard has been identified, its risk potential is identified by the General Manager. Hazards are classified by severity, ranging from “catastrophic” for the most severe to negligible for the least severe hazard. Potential hazards are also classified by their likelihood of occurrence, ranging from frequent to improbable. Using the severity and frequency metrics, a matrix, shown in Figure 1-5, is utilized to assess the threat.

Figure 1-5: Risk Assessment/Frequency Matrix

Frequency	Severity			
	1 Catastrophic: Death or System Loss	2 Critical: Severe injury, severe occupational illness or major system damage	3 Marginal: Minor injury, occupational illness, or system damage	4 Negligible: Less than minor injury, occupational illness or system damage
A – Frequent	1/A	2/A	3/A	4/A
B – Probable	1/B	2/B	3/B	4/B
C – Occasional	1/C	2/C	3/C	4/C
D – Remote	1/D	2/D	3/D	4/D
E – Improbable	1/E	2/E	3/E	4/E

Four choices are available for the agency to resolve any hazard that occurs, based on the threat level. Any “red” level hazard is unacceptable and must be corrected; any “yellow” level hazard is also unacceptable, but a correction may or may not be required, depending on the General Manager’s review; any “green” hazard is deemed acceptable, but only after review by the Project Manager; and a “blue” hazard is deemed an acceptable one.

MV Transportation Threat Assessment

MV Transportation assesses threats and vulnerabilities to identify critical assets and their vulnerabilities to threats, to develop and implement countermeasures, and to monitor and improve program effectiveness. This analysis is guided by clear investigation of three critical questions:

1. Which assets can we least afford to lose?
2. What is our responsibility to protect these assets?
3. Where do we assume total liability for risk, and where do we transfer risk to local public responders, technical specialists, insurance companies, and the Federal government?

The primary method used by MV Transportation to identify the threats to the transit system and the vulnerabilities of the system is the collection of incident reports submitted by drivers and supervisors and information provided by local law enforcement and contractors.

MV Transportation MV has identified the threats most likely to occur as including:

- Drunkenness
- Disorderly conduct
- Disputes
- Minor assaults
- Vandalism
- Inclement Weather

More minor threats include:

- Fare evasion
- Loud radios/behavior
- Smoking
- Littering
- Eating/drinking

Table 1-12 shows the General Manager's assessment of various threats to locations and or employees of the Fairfax Connector. Threats have been evaluated on a scale of one to four, with four representing the most vulnerable to a particular threat.

Table 1-12: Threat Evaluation Matrix

System Elements	Eating & Drinking	Disputes	Intoxication	Minor Assaults	Vandalism	Inclement Weather	Smoking
West Ox	1	2	2	2	3	3	2
Herndon	1	2	2	2	3	3	2
Huntington	1	2	2	2	3	3	2
Vehicles	4	4	4	3	3	3	3
Office Personnel	1	2	1	2	1	2	2
Drivers	1	3	3	3	2	2	2

The approaches to these threats can be either elimination, mitigation, and or acceptable, depending on the threat's risk to the overall security of the system.

Fare Inspection

Fairfax Connector's policy is to ask passengers for a fare twice. If they still refuse to pay, the operator is instructed to continue on the route, avoiding confrontation or an escalated fare dispute.

Security Features

Drivers have the ability to signal for help in case of an emergency on the bus, either by activating a scrolling message on the destination sign saying "Emergency Call 911," or by an open microphone covert button that can be used by a driver as well. Both are currently used by MV Transportation.

Training Programs

The security training program used by the Fairfax Connector is a progressive exercise program, a commitment from the transit provider and community public safety agencies to plan and conduct increasingly more challenging exercises over a period of time to achieve and maintain competency in executing the local crisis management plan. The exercises are intended to allow personnel to practice their roles in a reduced stress situation to better perform their function if an emergency arises, and to improve interagency coordination. Once concluded, the evaluation of the exercise informs the General Manager of potential shortcomings in the agency's response, and allow him or her to act upon that assessment to improve the response.

Types of exercises included in the progressive exercise program include (in order):

- Drill – Supervised activities that test, develop, or maintain skills in a single response procedure (such as: communications, notification, lockdown, fire) and the possible or probable interaction with local government agency functions (such as: incident command posts, rescue squad entry, police perimeter control) which will involve actual field response. Helps prepare for more complex exercises in which several functions are coordinated and tested.
- Exercise – An activity designed to promote emergency preparedness; test or evaluate emergency operations, policies, plans, procedures or facilities; train personnel in emergency duties; and demonstrate operational capabilities.
 - Full-Scale Exercise – Evaluates the operational capability of emergency response management systems in an interactive manner. Includes the mobilization of emergency personnel and resources required to demonstrate coordination and response capability. Tests total response capability as close to a real emergency as possible.
 - Functional Exercise – A fully simulated interactive exercise that tests one or more functions in a time-pressured realistic simulation and focuses on policies, procedures, roles, and responsibilities.

Public Awareness Campaign

Fairfax Connector is a participant in the "See Something, Say Something" program. Grants by the Transportation Security Administration (TSA) were used to purchase ads on the sides of buses and promotional umbrellas that were distributed to passengers. Car cards, shown in Figure 1-6, were also produced to remind passengers to ride buses safely.

Figure 1-6: Safety Car Card



Materials were also produced specifically targeting park-and-ride users. These materials remind people to be aware of their personal safety, how they can prevent accidents, and provide safety tips intended to prevent personal crime, including:

- Always be alert and aware of what is happening around you. You are more likely to become a surroundings.
- Report suspicious persons and activity to the police immediately.
- Carefully note where you parked so you don't spend unnecessary time walking around upon your return.
- Have your car keys in your hand and be ready to unlock the door without delay.
- Check around, underneath, and inside of your vehicle before getting in.
- Try not to carry a lot of packages at once, as this makes you an easy target.
- If you carry a purse, don't dangle it by your side in such a way that a thief can run by you and grab it. Carry your purse close to your body, preferably in front.

To prevent vehicle related crimes, riders are instructed to:

- Park in highly-visible, well-lit areas.
- Have your keys in hand before locking your vehicle.
- Do not leave the windows to your vehicle rolled down even during the summer months.
- Do not leave valuables in your car, especially in plain sight.

The brochure reminds people to be careful when moving through park-and-ride lots. Fairfax Connector recommends:

- Do not exceed posted speed limits
- Obey all pavement markings and signage
- Check mirrors and blind spots to make sure there are no other cars or pedestrians
- When exiting parking spaces proceed slowly, especially when in reverse
- Avoid distracted driving! Do not talk on your cell phone or text
- Use walkways and marked crosswalks whenever possible
- Avoid walking between parked cars

- Be aware of vehicles traveling in lots and pulling into and out of parking spaces
- Avoid talking on your cell phone or texting as you walk through parking lots

1.7. Intelligent Transportation Systems Program

Existing Technologies

The following technologies are currently in use within the Fairfax Connector system:

- DriveCam – All Fairfax Connector buses are equipped with DriveCam. The system captures audio and video inside and outside the vehicle before or after an incident. Incidents are triggered by unusual motion, such as hard braking, swerving, turning too quickly or a collision, or manually triggered by the bus operator in the case of events like a slip and fall or a passenger fare dispute. The focus of DriveCam is to identify risky driving behaviors, so that they can be corrected before an accident or injury occurs.
- Mapping – Fairfax uses ArcGIS 10 from ESRI for map data collection and management. The standard coordinate system used by Fairfax County is State Plane NAD83 and measurement units are in decimal-feet. VB.net or Python are used for custom GIS application development.
- Fixed Route Scheduling and Planning - Fixed route schedules are developed in Trapeze FX (version 14). Work shifts are posted for operator bidding and selection three times per year. In addition to fixed route scheduling, Trapeze PLAN (version 14) is available to analyze potential route changes and modifications. Trapeze INFO-WEB version can compile scheduling data for use on the regional trip planner and to generate general transit feed specification (GTFS) export. The Trapeze FX database is shared with the Trapeze PASS database for ADA corridor analysis.
- Bus Stop Management - All characteristics associated with on-street facilities, such as bus stops and park-and-ride lots, are maintained in Trapeze Bus Stop Manager (BSM). The Connector is in the process of upgrading BSM to version 2.2.x.
- Maintenance Software and Fuel Management Software - Ron Turley & Associates (RTA) is used by the Connector and Fairfax DOT for the management of parts inventory, work orders, tracking mileage, asset management, preventative maintenance and purchase orders. Also, Fleetwatch is used by the Connector to track fuel and fluid used by revenue and non-revenue vehicles.
- Trip Planners – Fairfax Connector service information is incorporated into the regional WMATA trip planner, available online at wmata.com.

Deployment of New Technologies

Fairfax Connector is currently in the process of deploying a range of ITS technologies provided by Clever Devices. These technologies include:

- Computer Aided Dispatch (CAD) / Automatic Vehicle Locator (AVL) systems: CAD/AVL system will provide the following functionalities and will collect and manage data which will be available for review via Clever Reports and the “playback” tool:

- Location tracking of revenue and non-revenue vehicles;
 - Management of voice and data communication between control center and vehicles;
 - Collection and reporting of real-time alarms and events (i.e., incidents); and
 - Route and schedule adherence management for revenue vehicles.
- Automatic Passenger Counters (APC): Revenue vehicles will be installed with passenger counting sensors and controllers to provide boarding and alighting information at every stop. Raw APC data collected by the vehicles will be downloaded over wireless LAN when vehicles are back in the garage. Post-processing of raw APC data and detailed reporting will be provided through Ridecheck Plus APC management software.
 - Automated Vehicle Announcements (AVA): Audio-visual next stop announcements will be provided using in-vehicle equipment installed by Clever Devices. The AVA system will make internal announcements at major stops and intersections and transfer points and will make external announcements at stops when doors are opened.
 - Real time information system: Real-time vehicle tracking data available from the CAD/AVL system will be used to develop predicted arrival information. These predictions will be used to disseminate real-time arrival information via web-enabled devices and electronic displays. Information will also be accessible via phone using an interactive voice response (IVR) system.

Fairfax Connector may deploy the following additional technologies at a later date; they are included as optional items in the County's ITS RFP:

- Automated Vehicle Management: Equipment installed on revenue vehicles as part of the CAD/AVL system deployment can be integrated with vehicle components to provide automated vehicle management (AVM). The AVM can provide real-time and offline status of vehicle components (e.g., engine temperature and oil pressure) based on pre-defined thresholds. Also, AVM software can be integrated with maintenance (RTA) and fuel management software (Fleetwatch) to provide comprehensive reporting and other functionalities (e.g., automated work order creation and odometer readings).
- Yard Management System: Yard management systems (YMS) provide the ability to track vehicles parked inside garage and helps maintenance and dispatch staff to quickly locate vehicles when needed.
- In-Vehicle Surveillance System: Enhanced surveillance systems may be installed to record high-quality video and audio on revenue vehicles. DVRs can also be integrated with the CAD/AVL system for tagging of videos with operational metadata (e.g., run, block and operator id). Further, DVRs can provide the ability to view videos in real-time when needed (e.g., during an emergency situation).

1.8. Data Collection and Ridership and Revenue Reporting Methodology

Upcoming Improvements

As discussed in the previous section, Fairfax Connector is currently in the process of implementing new technologies which will allow for the automation of certain data collection

and analysis. This will both improve operations and streamline reporting efforts. New Automatic Vehicle Locator (AVL) and Automatic Passenger Counters (APC) systems will collect ridership data down to the stop-level, making it possible to evaluate the performance of each route with significant precision. Specific policies and processes for the collection and analysis of this new data have not yet been formulated, but Fairfax Connector staff will address these issues as the technologies become fully operational.

Electronic Registering Fareboxes

The fareboxes aboard Connector vehicles are manufactured by SPX Genfare and the software is supplied by Cubic. These electronic registering fareboxes (ERF) are the current method for producing passenger counts, but as APC technologies are installed in revenue vehicles, ERFs will no longer be solely relied upon for doing so. Instead, they will provide another data point for validation of the APC data.

Scheduling Software

Fixed route schedules are developed in Trapeze FX (version 14), as described in Section 1.7.

Accounting and Payroll Systems

MV Transportation uses PeopleSoft software to manage accounting and payroll for its Connector employees.

Vehicle Condition

Fairfax Connector tracks vehicle usage in two ways. Vehicle maintenance is based on daily odometer readings taken as vehicles are serviced by the maintenance staff. This information is used to schedule part replacement, oil changes, and other routine maintenance activities. In addition, scheduled hours and mileage are tracked using the Trapeze software. Missed trips can be inputted manually to provide as accurate a picture of vehicle condition as possible. As Fairfax Connector improves the technologies aboard vehicles, the ability to automate data collection and reporting will greatly improve.

Operating Expense and Revenue Data

Fairfax Connector is a contract operated transit service. Currently MV Transportation is responsible for bus operations and maintenance using facilities and vehicles owned by Fairfax County. FCDOT tracks its contract and non-contract expenses on a monthly and annual basis. Non-contract expenses include items such as fuel, liability insurance, and professional services. Contract expenses are based on revenue hours operated, and Fairfax County closely tracks actual revenue hours to ensure accurate invoicing from the contractor to Fairfax County.

FCDOT also develops detailed internal revenue reports. Fare revenue from SmarTrip and cash are treated differently: all cash fares deposited into the farebox are counted by an armored car service and deposited into the bank account of the transit contract operator (currently MV Transportation) and netted out of the monthly invoices to Fairfax County. FCDOT staff are to conduct audits of the farebox cash receipts on a semi-annual basis to confirm the accuracy of the farebox revenue, in accordance with the service provider contract with MV Transportation. SmarTrip revenue is reimbursed from WMATA on a monthly basis and posted to Fairfax Connector as revenue. At the end of the fiscal year, all expenditures and their associated

budgets not yet realized but encumbered (obligated) to a purchase order are carried over into the following fiscal year.

Agency Accountability Policy

FCDOT will certify its understanding and compliance with the DRPT data collection standards as part of its grant application process.

Executive Director or Board Certification of Adherence to Standards and Accuracy of Data Submitted

The Director of FCDOT will submit a certification of standards adherence and data accuracy in a format to be determined by DRPT.

Financial Audit Review of Verification Method

As a division of Fairfax County government, Fairfax Connector undergoes the same auditing process as all other County departments. The system's operating expenditures are incorporated into the County's Audited Financial Reports along with other County transportation expenses. The audited report consists of one line item representing Fairfax Connector Operating expenses, special studies, and includes the cash fares netted out of the contract vendor's invoices.

1.9. Public Outreach

When a current service is changed or disrupted, flyers and informational material are developed to promote public meetings held to discuss any changes in service. This information is posted at bus stops, on buses, on the Fairfax Connector website, and handed out to passengers by Connector employees. Information is also posted to social media outlets, including Facebook and Twitter, as well as Fairfax County's subscription alert system, *Fairfax Alerts*, which facilitates the dissemination of information to passengers in near real-time. Public meetings allow for members of the public to submit written and verbal feedback regarding the service change. If the proposed change is approved, additional outreach material is developed to alert riders of the upcoming change or disruption in service. A similar effort is made to post information at bus stops, on buses, the Connector website, and social media.

Translation services are available at public meetings upon request. Information concerning translation services is available in each of the following languages:

- Spanish
- Korean
- Vietnamese
- Chinese
- Amharic
- Hindi
- Arabic
- Urdu
- Farsi
- Tagalog

2. Goals, Objectives, and Standards

2.1. Goals and Objectives

Fairfax County DOT staff have established the following mission statement for the Fairfax Connector:

Mission: To provide safe, reliable, clean and effective public transportation service that complements the other elements of the multi-modal transportation system in Fairfax County and provides a cost-saving alternative to Washington Metropolitan Area Transit Authority (WMATA) Metrobus service.

As a part of the Transit Development Plan planning process, Fairfax County DOT staff established a set of Goals, Objectives, and associated strategies to guide the future provision of Fairfax Connector service (Table 2-1). These goals, objectives, and strategies were adapted from Fairfax County's 2013 Comprehensive Plan's Transportation functional area, the overarching planning document that guides all of the work of the Fairfax County Department of Transportation. The Comprehensive Plan has a single transportation goal and a total of 18 supporting objectives, each with a number of associated policies, which guide the development of transportation infrastructure and provision of transportation services in Fairfax County.

The transportation goal and associated objectives and policies that are included in the 2013 Comprehensive Plan were initially developed with significant public input when they were first adopted by the Fairfax County Planning Commission and the Board of Supervisors in 1988. The transportation goal's reference to the need to provide a balanced transportation system that incorporates expanded bus service and reduces dependence on the automobile speaks directly to the work of Fairfax Connector.

Fairfax County Comprehensive Plan, Transportation Goal

Transportation Goal: Land use must be balanced with the supporting transportation infrastructure, including the regional network, and credibility must be established within the public and private sectors that the transportation program will be implemented. Fairfax County will encourage the development of accessible transportation systems designed, through advanced planning and technology, to move people and goods efficiently while minimizing environmental impact and community disruption. Regional and local efforts to achieve a balanced transportation system through the development of rapid rail, commuter rail, expanded bus service and the reduction of excessive reliance upon the automobile should be the keystone policy for future planning and facilities. Sidewalks and trails should be developed as alternate transportation facilities leading to mass transit, high density areas, public facilities and employment areas.

To develop a useful and actionable strategic framework for this TDP, the goal, objectives, and policies from the County's Comprehensive Plan were used as a starting point for Fairfax County DOT staff to develop the goals, objectives, and strategies for Fairfax Connector bus service; Figure 2-1 explains the hierarchy and definition of these terms. Generally, the goals presented were adapted from Comprehensive Plan objectives, while most of the objectives are directly

from or slightly adapted version of the Comprehensive Plan. Most of the associated strategies are items directly from the Comprehensive Plan that were listed as objectives, but include discrete actions best described as strategies.

Figure 2-1: Goals, Objectives and Strategies Hierarchy

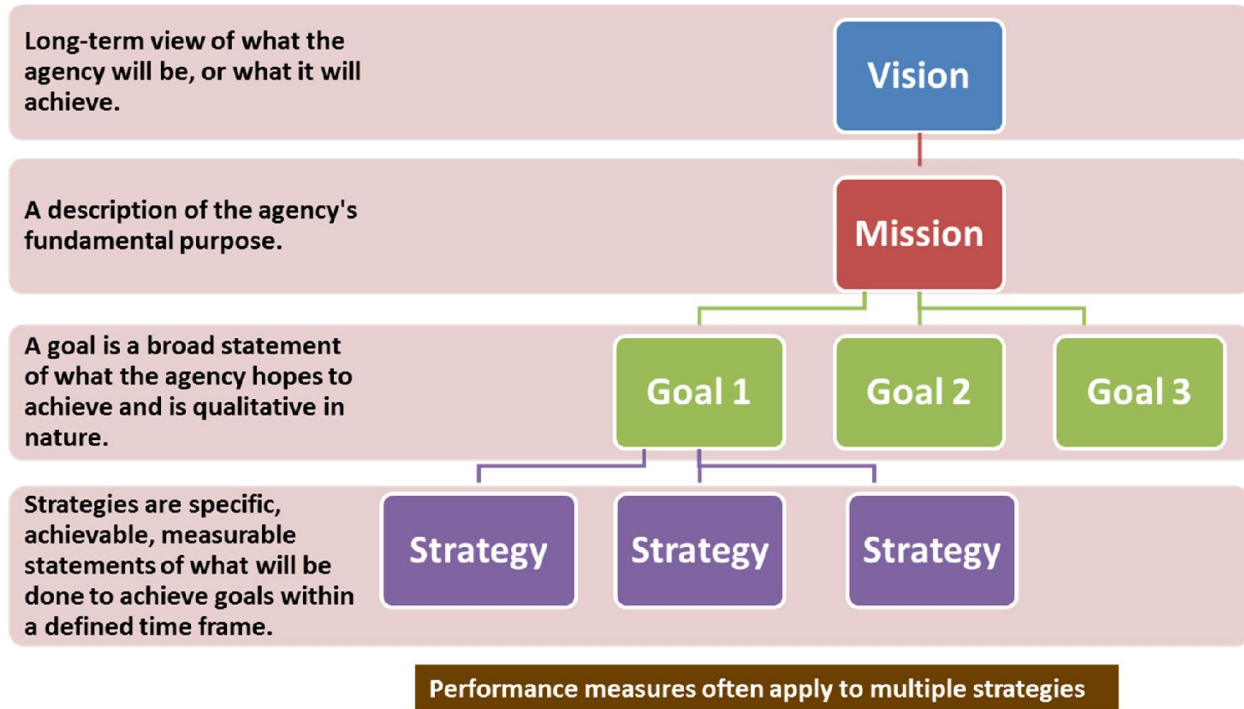


Table 2-1: Fairfax Connector Goals, Objectives, and Strategies

Goal Theme	Goals and Objectives	Strategies
Provide Choices	<ol style="list-style-type: none"> 1. Provide for both through and local movement of people via Fairfax Connector as a component of a multi-modal transportation system that provides transportation choices, and consequently reduces single-occupancy-vehicle (SOV) use and improves air quality. <ol style="list-style-type: none"> 1.1. Increase the use of transit to access large employment sites and retail centers. 1.2. Support the County's designated higher-density, mixed-use developments through the provision of transit service that facilitates internal and external trips. 	<ul style="list-style-type: none"> • Prioritize the planning and implementation of transit services that assist in accomplishing the county's land use goals and objectives, particularly the encouragement of transit-oriented development at Transit Station Areas, Commercial Revitalization Areas, and in the cores of the Urban and Suburban Centers.

Goal Theme	Goals and Objectives	Strategies
Provide high-quality public transportation	<p>2. Provide high-quality public transportation service that meets the needs of Fairfax County residents, workers, and visitors.</p> <p>2.1. Increase the use of Fairfax Connector for all types of trips, including during both peak commute periods and off-peak periods.</p> <p>2.2. Increase the proportion of commute trips made by transit, contributing to a reduction in the use of single-occupancy vehicles for commuting.</p> <p>2.3. Improve the speed, quality, reliability, and convenience of transit service.</p> <p>2.4. Increase awareness of public transportation.</p>	<ul style="list-style-type: none"> Establish a network of multi-modal centers as necessary to facilitate both regional and intra-county travel. Provide feeder and local bus service to connect to mass transit facilities, mixed-use centers, educational facilities and employment centers. Provide local circulation service within mixed-use centers and employment centers. Evaluate and implement innovative services and methods to increase transit ridership. Coordinate with neighboring jurisdictions to promote public transportation usage, and increase the promotion of public transportation in Fairfax County.
System Efficiency	<p>3. Facilitate efficient and cost-effective movement of people via a multi-modal transportation system that provides transportation choices.</p> <p>3.1. Enhance access to Fairfax Connector.</p> <p>3.2. Reduce travel times for trips made by Fairfax Connector.</p> <p>3.3. Maintain and enhance cost-effectiveness of Fairfax Connector service.</p> <p>3.4. Increase on-time performance.</p>	<ul style="list-style-type: none"> Facilitate transfer between modes at transit centers through coordination of services, schedules, fares, communication systems and information. Make appropriate use of advanced transit technologies to provide service information and use data to improve system operations. Provide a range of transit services most appropriate to the specific need.
Safety	<p>4. Ensure safety for users of Fairfax Connector facilities and services and for the general public.</p> <p>4.1 Adequately maintain county transit vehicles and other county transit facilities.</p> <p>4.2 Actively promote a safety culture.</p> <p>4.3 Maintain a low number of safety and security related incidents that occur on an annual basis.</p>	<ul style="list-style-type: none"> Enhance maintenance resources wherever possible. Provide adequate safety training for operators

2.2. Performance Standards

Fairfax Connector has adopted performance standards in accordance with the requirements of Title VI of the Civil Rights Act of 1964, and also developed (although not formally adopted)

performance standards to guide the development of this TDP's recommendations. These performance standards include the following:

- Reliability / On-Time Performance*
- Crowding / Load Factors*
- Service Availability*
- Service Design Guidelines*
- Productivity
- Cost Effectiveness

* = Title VI Program Performance Standard

This section describes each of these standards.

Reliability / On-Time performance

On-time performance is important to all Fairfax Connector riders. For people who depend on the Connector for most or all of their mobility, buses running late or missed trips can result in the loss of a job or missed appointments. Among choice riders, the lack of reliability may be enough to push them back into personal vehicles to avoid the inconvenience of waiting, and missed connections. For this analysis, on-time performance is defined as vehicle arrivals no more than one minute early or no more than five minutes late, measured at time points on a route.

FCDOT takes the issue of reliability seriously and monitors on-time performance continuously. Three strategic buses are deployed every weekday to maintain the schedule in the face of traffic delays and service disruptions, and additional buses are available if necessary to maintain the schedule. The County's contract with its operating contractor notes:

The Contractor shall maintain a minimum standard of "on-time bus trips" for each route of at least 96 percent at each schedule time point on a daily basis. "On-time" shall be defined as between 0 and 5 minutes late leaving scheduled time points as established in the bus route schedule to include the starting point of any scheduled trip; trips shall not leave any scheduled time point ahead of schedule.

The contract cites a number of data sources that can be used to calculate the on-time performance. The only tool that could actually collect all of this data on a daily basis would be an automatic vehicle location (AVL) system--a system which the County is in the process of deployment. In the absence of an AVL or other GPS-based system, periodic checks by County staff and self-reporting by the contractor are used. Sample data reflect on-time performance of between 96 and 98 percent.

The requirement that 96 percent of trips be operated "on time" assumes that the published schedules are reasonable and provide adequate running time—but not too much—between each pair of time points. FCDOT staff is careful to build schedules that are reasonable, but sometimes conditions on the street change due to construction, increased ridership, new development, or other factors. When the County and the contractor find that a route runs behind schedule routinely, its schedule is adjusted to improve reliability. Various strategies for schedule adjustment are discussed below in the section on service planning.

Crowding / Load Factors

The purpose of a crowding standard is to ensure safe and comfortable rides for all Connector passengers. While Connector staff monitors crowding on an ongoing basis through feedback from operations personnel, observations by planning staff, and customer complaints, an official standard provides a transparent method to decide when to add more service to a route.

Crowding is assessed by examining load factors, or the maximum number of people on board (seated and standing) averaged over the peak one-hour in the peak direction. The vehicle load factor is measured as the ratio of average vehicle load to seated capacity (load/seat ratio) during weekday a.m. peak, midday, and p.m. peak periods. Fairfax Connector has established a maximum acceptable load factor of 1.25. This means that on a bus with 40-foot bus with 39 seats, a load of up to 49 passengers is acceptable. Load factors can apply to individual trips and also to time periods encompassing several trips. Generally, load standards apply to a peak hour or peak 30 minutes on a route. Currently, staff monitor crowding on some Route 401/402 and 980 trips, where ridership exceeds the maximum load factor.

Service Availability

Service availability indicates whether a person resides within 1/4 mile of a bus route, either Fairfax Connector, Metrobus, or both. This is measured as an aggregate of how many people in the County have bus service available to them. Currently, 53 percent of the County's population lives within 1/4 mile of a Connector route. This measure is expected to increase as the recommendations for Fairfax Connector service in this TDP are implemented.

Service Design Guidelines

The service design guidelines that the county follows for its Fairfax Connector service are divided into five sections: span and frequency; road types and routings; route numbering; scheduling; and operations planning guidelines. The first two sections related to service levels and routing are summarized here, as those were major inputs to the recommendations, and the existing Fairfax Connector routes were evaluated in this TDP for their adherence to these established guidelines. The results are described in this section. The recommendations in the TDP are expected to improve performance in this area.

Span

Full-day routes

Weekdays	5:00 a.m. to 10:00 p.m.
Saturdays	7:00 a.m. to 8:00 p.m.
Sundays	8:00 a.m. to 8:00 p.m.

Weekday peak-only routes

Morning	5:00 a.m. to 9:00 a.m. (Arrival times at the relevant Metrorail station. Note that buses need to arrive shortly before 5:00 a.m. at the outer terminal stations and slightly later at the downstream stations.)
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Afternoon	3:30 p.m.to 7:30 p.m. (Departure times from the relevant Metrorail station.)
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Headway

Full-day routes

Weekdays	Peak – 30 minutes Off-peak – 30 minutes Late (after 9:00 p.m.) – 60 minutes
Saturdays	Base (9:00 a.m. to 5:00 p.m.) – 30 minutes Fringe – 60 minutes
Sundays	60 minutes`

Peak-only routes

Morning	Peak 2 hours (e.g., 6:30 a.m. to 8:30 a.m.) – 20 minutes Beginning and end of the period – 30 minutes
Afternoon	Peak 2 hours (e.g., 4:30 p.m.to 6:30 p.m.) –20 minutes Beginning and end of the period – 30 minutes

Road Types and Routing

In general, bus routes should be operated on arterial streets that have adequate infrastructure (sidewalks, etc.) and that do not have vehicle parking on one or both sides. Routing should be as direct as possible, except in cases of significant generators off of the main corridor that can yield at least two passengers per additional revenue mile.

In the evaluation of Fairfax Connector service leading into this TDP's recommendations, the evaluation of this standard considered not only whether Connector routes adhere to basic standards for service design, but also whether their performance merited any change in the level of service or route structure. For example, ridership on a route could be poor, indicating that service should be cut or rerouted, or ridership could be so high that crowding occurs frequently, indicating a need for an increase in service. Route performance also encompasses schedule adherence; routes that consistently run behind or ahead of schedule are unattractive to riders. Financial performance of a route is also very important, especially in times of tight budgets.

Productivity

Productivity is defined as ridership per unit of service. There are three commonly-used productivity measures: boardings per vehicle revenue hour, boardings per vehicle revenue mile, and boardings per trip. All of these can offer an assessment on the effectiveness of a bus route, but each one is particularly suited to certain types of services.

- Boardings per trip for commuter-oriented express routes. These routes can operate many miles on limited access roads without stopping. They also tend to have little ridership turnover during the course of the trip; thus, the capacity of the vehicle limits the number of passengers that can board during any one trip.

- Boardings per vehicle revenue hour is appropriate for all other services, namely feeders and local routes in areas that do not experience severe congestion. Since time is a bigger factor in operating cost than mileage (the driver's pay and benefits is the single largest cost factor), it makes sense to use a productivity measure based on time whenever appropriate.
- Boardings per vehicle revenue mile is most relevant to local routes in dense and congested urban areas. These routes make many stops and often face significant traffic congestion. In order not to "penalize" these routes for the time spent in traffic, a productivity measure per mile operated is more appropriate.

Once the productivity measure is calculated, the performance of the Connector routes can be evaluated in two ways: comparing the productivities to some objective standards; or ranking the routes (by type) and classifying those at the bottom of the list, or those whose productivity is less than 50 percent of the system average (by type), as the "poor performers."

While the WMATA Regional Bus Study, 2003 (RBS) proposed productivity thresholds for Connector routes that varied by peak and off-peak periods, this level of disaggregated data isn't readily available for Connector, and as a result this TDP utilized a weekday whole day standard. The standards utilized in the development of this TDP's recommendations were based on the full day standards developed as part of this Regional Bus Study:

- Weekday boardings per vehicle revenue hour: 12.5 (RBS) / 13.4 (FCDOT)
- Weekend boardings per vehicle revenue hour: 10 (RBS) / 11.9 (FCDOT)
- Boardings per trip for express routes: 20 (FCDOT)
- Boardings per vehicle revenue mile for congested routes: 1.0 (FCDOT)

In the development of the TDP's recommendations, the results were used to rank routes in each class by productivity by day type, and then these standards were applied as a reference point to identify routes that are failing to meet the standards.

Cost Effectiveness

There are two primary ways to measure cost effectiveness: farebox recovery ratio and net cost per passenger. The farebox recovery ratio is defined as the fare revenue generated by a route divided by its operating cost. The net cost per passenger, or subsidy per passenger, is calculated by subtracting the revenue generated by a route from its operating cost and then dividing by the number of riders. For the purpose of this calculation, the fully-allocated cost was used, as the resources invested in administration and planning, etc. are all necessary to put service on the street.

Fairfax Connector uses a system-wide average fare and multiplies that by the route's ridership to create a revenue estimate by route. The system-wide average is calculated by taking all of the fare revenue (cash, pass, ticket, etc.) and dividing it by total boardings.

In the analysis leading into this TDP's recommendations, the net cost per passenger by route was compared to the system-wide net cost per passenger. Those routes that have a net cost substantially higher than the system average were flagged for further evaluation. Routes with low ridership were also the ones most likely to have a high net cost per passenger.

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3. Service and System Evaluation

This chapter includes an analysis of Fairfax Connector's performance and performance vis-à-vis peer systems; a summary of the findings of an on-board ridership survey and the public outreach conducted to aid in the planning for this TDP; an analysis of the relationship between Fairfax Connector service and planned land use changes in Fairfax County; information on ITS standards; an evaluation of adherence to the service standards outlined in Chapter 2; and a description of equipment and facility deficiencies.

3.1. System-wide Performance Measures

Data from the National Transit Database was used to analyze Fairfax Connector's existing level of service, including recent changes in patronage, operating cost, and operating revenue, to understand how the system has performed over the last five years. **Table 3-1** summarizes some key system metrics from fiscal year 2013, the most recent year in which NTD data is available.

Table 3-1: 2013 Fairfax Connector Level of Service

Metric	Performance
Service Area Size (Square Miles)	399
Service Area Pop.	1,056,435
Pop. Density (Persons per Sq. Mile)	2,648
Peak Buses	207
Available Peak Buses	263
Vehicle Revenue Miles	9,515,092
Vehicle Revenue Hours	619,656
Total Vehicle Hours	677,863
Unlinked Passenger Trips	10,650,401
Passenger Miles Traveled	80,190,090
Operating Costs	\$72,033,351
Directional Route Mileage	1,651

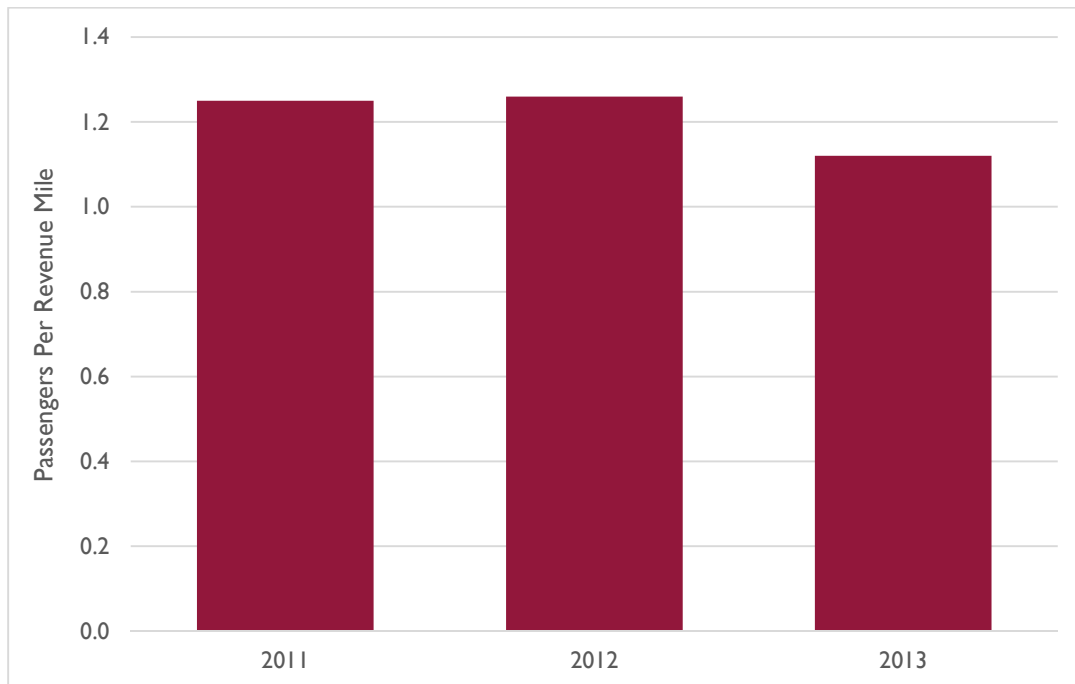
Source: National Transit Database, FY2013

Between the years of 2011-2013, Fairfax significantly increased Connector service, as measured by both vehicle revenue miles and vehicle revenue hours. During that time, total ridership increased as well, but at a more modest pace. As a result, the number of passengers per revenue mile and revenue hour have decreased slightly, as shown in Figure 3-1 and Figure 3-2, respectively. Passengers per revenue mile have decreased from 1.3 in 2011 to 1.1 in 2013, a decrease of 10.4 percent. Likewise, passengers per revenue hour have decreased from 18.4 in 2011 to 17.2 in 2013, a decrease of 6.4 percent.

One factor that is likely to have caused ridership to decline in 2013 was the reduction of the value of the transit subsidy to Federal employees. For several years prior to 2013, the transit subsidy available to Federal employees had the same value as the subsidy for parking that was also available to U.S. government employees in the National Capital Region. However, Congress reduced the value of the transit subsidy (but not that of the parking subsidy) in 2013. It is reasonable to assume that some Connector riders chose to drive to work or carpool because of this change. Recently, Congress corrected this disparity, and, as a result, additional transit ridership is expected.

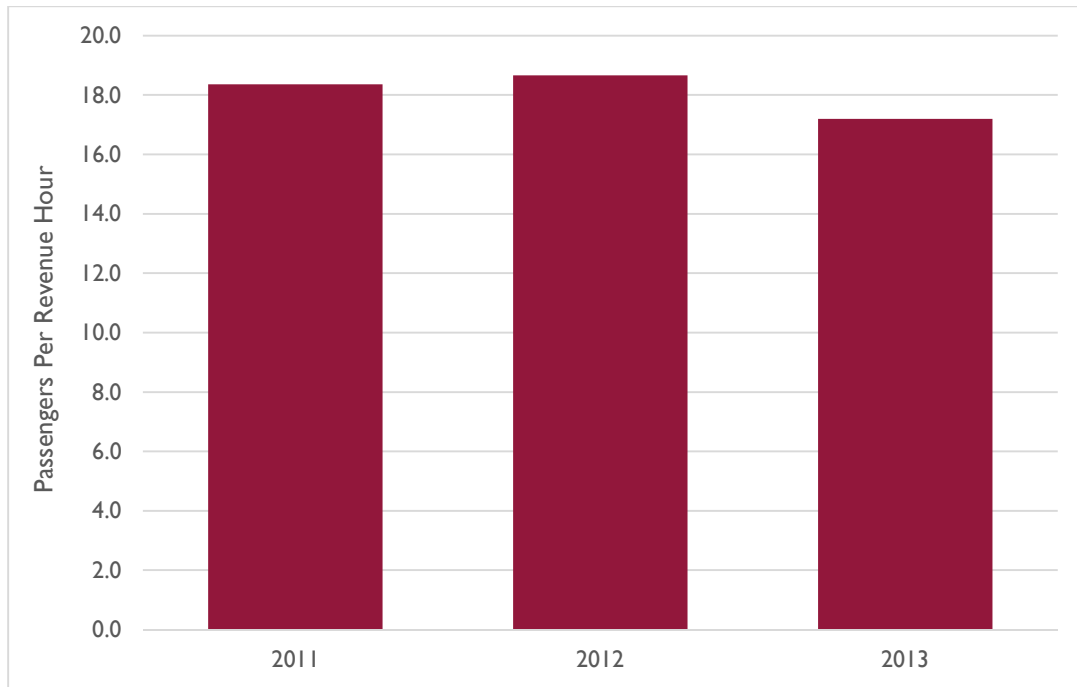
Transit industry experience suggests that ridership on new routes may continue to grow for two years or more before it reaches a state of equilibrium, sometimes referred to as “maturity.” This period may be extended if additional and substantial changes are made once the route(s) begin operation. Similarly, routes that undergo substantial modification (e.g., routes that are changed as part of a feeder bus conversion to support a rail extension) can reasonably be expected to show significant changes in ridership levels as well. In some cases, such service changes may result in an overall transit trip that may take longer, may cost more, or may become less attractive in some other way. Ridership on such routes could decrease initially.

Figure 3-1: 2011-2013 Passengers Per Revenue Mile



Source: National Transit Database

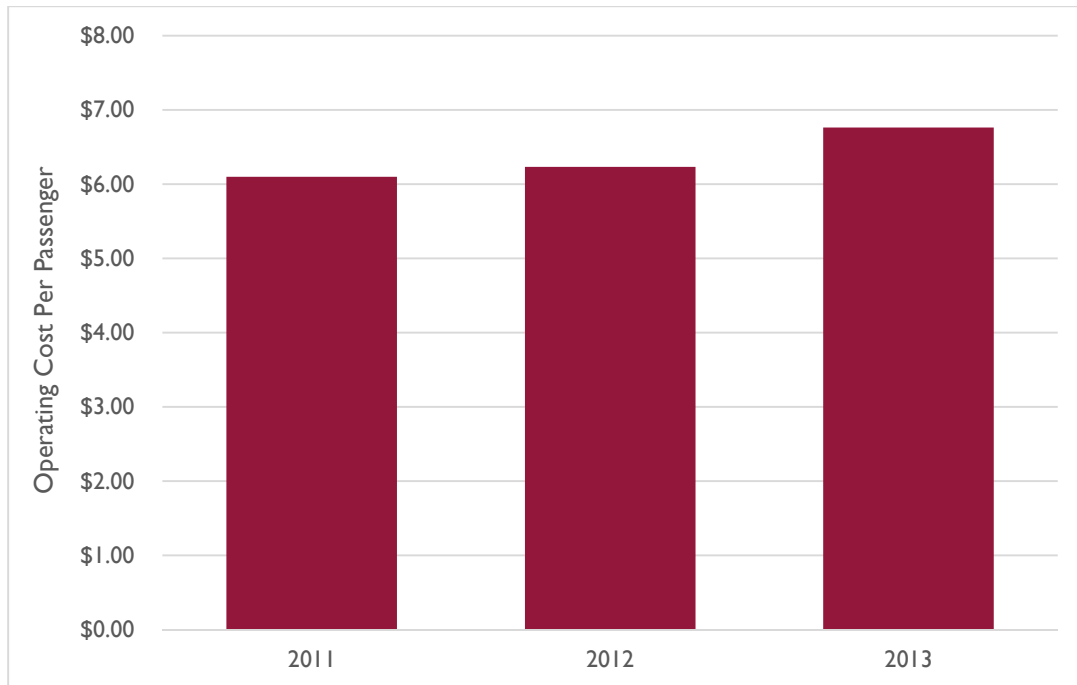
Figure 3-2: 2011-2013 Passengers Per Revenue Hour



Source: National Transit Database

The increase in service across the county has predictably led to an increase in operating costs of 14.8 percent. The operating cost per passenger has, in turn, increased slightly since 2011, as shown in Figure 3-3. In 2011, the cost was \$6.10 per passenger trip. In 2013, this number had risen to \$6.76, an increase of 10.8 percent.

Figure 3-3: 2011-2013 Operating Expense Per Passenger Trip



Source: National Transit Database

3.2. Route Level Performance Measures

Table 3-2 covers several performance metrics at the route level, including vehicle revenue miles, vehicle revenue hours, ridership, and riders per revenue mile and revenue hour. This data represents what was planned for service (vehicle miles and hours) and projections based on prior year performance (estimated ridership and farebox recovery).

Table 3-2: 2015 Route Level Performance⁶

Route	Annual Vehicle Revenue Miles	Annual Vehicle Revenue Hours	Estimated Annual Ridership	Riders per Revenue Mile	Riders per Revenue Hour
101	188,758	11,893	174,108	0.9	14.6
109	113,703	11,673	154,044	1.4	13.2
151	268,518	18,975	412,404	1.5	21.7
152	255,966	16,907	168,300	0.7	10.0
159	71,351	8,419	133,524	1.9	15.9
161	99,681	9,596	150,888	1.5	15.7
162	99,022	7,958	141,936	1.4	17.8
171	517,510	41,796	1,061,004	2.1	25.4

⁶ Estimate based on data collected in September 2014. Monthly number has been annualized to create an annual estimate. Only those routes operated for all of 2015 are included in this table.

Route	Annual Vehicle Revenue Miles	Annual Vehicle Revenue Hours	Estimated Annual Ridership	Riders per Revenue Mile	Riders per Revenue Hour
231	74,618	5,436	57,492	0.8	10.6
232	81,115	5,966	65,676	0.8	11.0
301	76,269	6,022	68,940	0.9	11.4
305	119,680	7,003	44,784	0.4	6.4
306	62,489	3,010	42,276	0.7	14.0
310	384,140	32,347	540,168	1.4	16.7
321	183,339	14,578	276,012	1.5	18.9
322	171,668	13,348	215,652	1.3	16.2
333	78,661	5,372	73,344	0.9	13.7
334	120,871	7,742	37,788	0.3	4.9
335	72,529	3,932	46,608	0.6	11.9
371	183,417	13,410	180,696	1.0	13.5
372	83,116	5,237	65,664	0.8	12.5
373	83,746	5,161	64,944	0.8	12.6
394	94,075	3,890	40,452	0.4	10.4
395	132,362	5,725	133,380	1.0	23.3
401*	345,249	32,329	911,076	2.6	28.2
402*	343,531	32,292	512,712	1.5	15.9
422*	82,629	5,080	19,848	0.2	3.9
423*	122,172	9,499	215,916	1.8	22.7
424*	76,319	11,460	58,200	0.8	5.1
432*	22,613	1,643	7,800	0.3	4.7
461*	40,035	3,218	16,428	0.4	5.1
462*	54,633	5,088	21,120	0.4	4.2
463*	131,513	16,816	99,756	0.8	5.9
466	32,634	2,494	48,528	1.5	19.5
480⁷	19,967	2,837	2,148	0.1	0.8
494*	188,609	7,904	19,884	0.1	2.5
495*	83,805	6,879	13,512	0.2	2.0
505*	68,430	12,411	138,552	2.0	11.2
507*	45,453	4,315	22,692	0.5	5.3
551*	191,005	16,910	163,572	0.9	9.7
552*	29,139	3,485	40,320	1.4	11.6
553*	44,341	3,332	32,832	0.7	9.9
554*	26,459	3,503	45,036	1.7	12.9
557*	26,185	3,503	33,756	1.3	9.6
558*	58,103	4,039	12,828	0.2	3.2

⁷ Route 480 service operates under contract for Wolf Trap National Park for the Performing Arts events.

Route	Annual Vehicle Revenue Miles	Annual Vehicle Revenue Hours	Estimated Annual Ridership	Riders per Revenue Mile	Riders per Revenue Hour
559*	69,549	5,022	17,856	0.3	3.6
574*	267,274	15,367	113,760	0.4	7.4
585*	55,116	4,530	67,392	1.2	14.9
599*	81,950	4,201	62,508	0.8	14.9
605*	231,901	15,108	131,784	0.6	8.7
621	76,865	4,399	44,220	0.6	10.1
622	52,276	3,142	50,700	1.0	16.1
623	64,661	3,823	92,544	1.4	24.2
630	67,404	4,150	44,784	0.7	10.8
631	80,691	4,138	110,784	1.4	26.8
632	93,741	4,796	127,740	1.4	26.6
640	78,961	3,145	37,980	0.5	12.1
641	118,481	5,227	75,336	0.6	14.4
642	122,212	5,839	96,408	0.8	16.5
644	86,637	4,950	104,772	1.2	21.2
650	71,778	3,536	50,640	0.7	14.3
651	78,268	4,582	70,092	0.9	15.3
652	79,855	4,630	73,872	0.9	16
721*	104,558	11,550	54,540	0.5	4.7
724*	33,296	3,132	14,292	0.4	4.6
734*	26,683	2,230	5,148	0.2	2.3
924*	56,144	3,945	56,436	1	14.3
926*	43,228	3,348	24,804	0.6	7.4
927*	31,392	2,060	33,588	1.1	16.3
929*	91,537	5,296	45,804	0.5	8.6
937*	125,591	11,244	39,912	0.3	3.5
950*	337,451	29,235	854,892	2.5	29.2
951*	29,256	2,423	27,636	0.9	11.4
952*	37,968	3,292	29,856	0.8	9.1
980*	46,631	5,496	342,168	7.3	62.3
981*	76,873	5,661	56,160	0.7	9.9
983*	294,405	18,323	163,812	0.6	8.9
985*	68,254	3,653	21,264	0.3	5.8
RIBS 1*	124,498	15,017	155,196	1.2	10.3
RIBS 2*	130,767	5,708	163,176	1.2	28.6
RIBS 3*	132,219	15,006	178,752	1.4	11.9
RIBS 4*	73,398	4,276	53,352	0.7	12.5
RIBS 5*	57,832	6,085	52,488	0.9	8.6
Total	9,349,028	711,998	10,533,048	1.1	14.7

**Route was new or substantially modified following the opening of Silver Line Phase 1. Many have yet to reach maturity.*

Table 3-3 provides an overview of projected financial performance for calendar year 2015 at the route level. This financial data was projected based on the operating parameters of the route and past financial performance. The average farebox recovery ratio for the Fairfax Connector system is 18 percent. The general direction of the county Board of Supervisors' has been to keep fares relatively low to encourage ridership and reduce traffic congestion. The relatively low financial performance of some routes was a consideration in the development of this TDP's recommendations.

Table 3-3: 2015 Projected Financial Performance at the Route Level

Route	Annual Operating Costs	Estimated Annual Farebox Revenue	Recovery Ratio
101	\$1,225,500	\$210,671	17%
109	\$1,202,742	\$186,393	15%
151	\$1,955,231	\$499,009	26%
152	\$1,742,103	\$203,643	12%
159	\$867,463	\$161,564	19%
161	\$988,821	\$182,574	18%
162	\$819,943	\$171,743	21%
171	\$4,306,678	\$1,283,815	30%
231	\$560,084	\$69,565	12%
232	\$614,784	\$79,468	13%
301	\$620,542	\$83,417	13%
305	\$721,566	\$54,189	8%
306	\$310,140	\$51,154	16%
310	\$3,332,985	\$653,603	20%
321	\$1,502,110	\$333,975	22%
322	\$1,375,361	\$260,939	19%
333	\$553,541	\$88,746	16%
334	\$797,727	\$45,723	6%
335	\$405,178	\$56,396	14%
371	\$1,381,799	\$218,642	16%
372	\$539,670	\$79,453	15%
373	\$531,818	\$78,582	15%
394	\$400,851	\$145,627	36%
395	\$589,951	\$480,168	81%
401*	\$3,331,187	\$1,102,402	33%
402*	\$3,327,375	\$620,382	19%
422*	\$523,443	\$5,954	1%
423*	\$978,783	\$64,775	7%
424*	\$1,180,801	\$17,460	1%
432*	\$169,248	\$9,438	6%
461*	\$331,601	\$19,878	6%

Route	Annual Operating Costs	Estimated Annual Farebox Revenue	Recovery Ratio
462*	\$524,228	\$25,555	5%
463*	\$1,732,730	\$120,705	7%
466	\$257,011	\$58,719	23%
480⁸	\$292,343	\$5,370	2%
494*	\$814,428	\$24,060	3%
495*	\$708,807	\$16,350	2%
505*	\$1,278,850	\$167,648	13%
507*	\$444,665	\$27,457	6%
551*	\$1,742,413	\$197,922	11%
552*	\$359,082	\$48,787	14%
553*	\$343,379	\$39,727	12%
554*	\$360,914	\$54,494	15%
557*	\$360,914	\$40,845	11%
558*	\$416,137	\$15,522	4%
559*	\$517,517	\$21,606	4%
574*	\$1,583,450	\$137,650	9%
585*	\$466,769	\$81,544	17%
599*	\$432,919	\$421,929	97%
605*	\$1,556,703	\$159,459	10%
621	\$453,302	\$53,506	12%
622	\$323,750	\$61,347	19%
623	\$393,891	\$111,978	28%
630	\$427,653	\$54,189	13%
631	\$426,344	\$134,049	31%
632	\$494,130	\$154,565	31%
640	\$324,011	\$45,956	14%
641	\$538,623	\$91,157	17%
642	\$601,698	\$116,654	19%
644	\$510,095	\$126,774	25%
650	\$364,316	\$61,274	17%
651	\$472,146	\$84,811	18%
652	\$477,118	\$89,385	19%
721*	\$1,190,143	\$65,993	6%
724*	\$322,717	\$17,293	5%
734*	\$229,821	\$6,229	3%
924*	\$406,454	\$68,288	17%
926*	\$344,949	\$30,013	9%

⁸ Route 480 service operates under contract for Wolf Trap National Park for the Performing Arts events.

Route	Annual Operating Costs	Estimated Annual Farebox Revenue	Recovery Ratio
927*	\$212,256	\$40,641	19%
929*	\$545,690	\$55,423	10%
937*	\$1,158,530	\$48,294	4%
950*	\$3,012,381	\$1,034,419	34%
951*	\$249,682	\$33,440	13%
952*	\$339,191	\$36,126	11%
980*	\$566,366	\$414,023	73%
981*	\$583,325	\$67,954	12%
983*	\$1,888,002	\$198,213	10%
985*	\$376,419	\$25,729	7%
RIBS 1*	\$1,547,331	\$187,787	12%
RIBS 2*	\$588,167	\$197,443	34%
RIBS 3*	\$1,546,186	\$216,290	14%
RIBS 4*	\$440,628	\$64,556	15%
RIBS 5*	\$627,007	\$63,510	10%
System Total/ Average	\$73,364,607	\$13,242,006	18%

**Route was new or substantially modified following the opening of Silver Line Phase 1. Many have yet to reach maturity.*

Source: Fairfax County DOT.

3.3. Peer Review

A peer review was completed to compare Fairfax Connector's performance in key metrics to other bus transit agencies of a similar size and character. This peer review analysis allowed Fairfax County staff to identify areas for improvement and contributed to the recommendations presented in Chapter 4.

Peer Agency Selection Process

The National Transit Database (NTD) was used to create a list of peer agencies whose service provision is similar to the Fairfax Connector system. Six quantitative metrics were used to identify public transportation agencies which operate a similar level of bus service as Fairfax Connector:

- Service Area Population Density
- Fleet Size
- Vehicle Revenue Miles
- Vehicle Revenue Hours
- Passenger Trips
- Passenger Miles Traveled

All public transit agencies that provide fixed-route bus service were ranked in each metric according to how closely they compared to the Fairfax Connector system. A composite ranking was then calculated by adding the rankings for each metric. To score highly on the composite metric, it was necessary to be similar to the Fairfax Connector system in each of the six metrics (i.e., serve an area with a similar population density, similar number of buses in fleet, similar number of revenue hour and miles, etc.). Preference was given to local transit agencies, as well as agencies which operated in suburban jurisdictions located directly outside of major metropolitan areas.

The following agencies were selected as peers:

- Ride-On, Montgomery County, MD
- Hampton Roads Transit, Hampton Roads, VA
- North County Transit District, San Diego, CA

Table 3-4 shows the peer selection metrics for Fairfax Connector and the selected peer group.

Table 3-4: Comparison of Selected Metrics with Peer Group

	Fairfax Connector	Ride-On	Hampton Roads Transit	North County Transit
Service Area Size (sq. mi.)	399	495	515	403
Service Area Pop.	1,056,435	971,000	1,439,666	896,787
Pop. Density (per sq. mi.)	2,648	1,962	2,795	2,225
Peak Buses	207	281	234	137
Vehicle Revenue Miles	9,515,092	12,322,456	9,932,136	5,720,095
Vehicle Revenue Hours	619,656	971,060	781,983	447,578
Unlinked Passenger Trips	10,650,401	26,603,229	16,217,920	8,347,213
Passenger Miles Traveled	80,190,090	96,519,501	86,543,203	39,705,582

Source: National Transit Database, FY2013.

Peer Analysis Caveats

It is important to note the limitations of using NTD data to compare transit systems. Each agency collects and reports its data in different ways, even with FTA's efforts to ensure standardized data reporting. Furthermore, data are not normalized for the agency's geographic region, so fundamental financial metrics such as operating costs are difficult to compare. For example, the cost of living, and therefore bus operator salaries, varies widely depending on the region. However, despite these shortcomings in the NTD dataset, it is the best dataset available that allows for comparative analyses between transit agencies.

In addition to shortcomings in the data, it is also worth noting that each region has its own characteristics that make it unique. As such, it is difficult to draw conclusions from differences in service provision between peer agencies. Regions vary widely in terms of their built environment, presence of trip generators, demographic makeup, and economy. All of these variables affect transit ridership, and yet they are difficult to control for when making comparisons across regions. For example, many of the Fairfax County's highest ridership routes are operated by WMATA's Metrobus service, so the Connector system does not benefit from these trips as reflected in the NTD data. Even within the same region, differences occur: much of Montgomery County developed earlier and more densely than Fairfax County. As a result, Ride-On has had more time to establish a ridership base and serves areas that are more conducive to generating transit ridership. Furthermore, Montgomery County's growth is somewhat constrained through the presence of its agricultural reserve, while Fairfax County's suburban development is more evenly spread throughout the County. Finally, jurisdiction and agency policy toward provision of transit service can have an impact on the performance of each system. For example, Fairfax County has made a conscious effort, through the policies of its Board, to provide broad transit coverage throughout the county, whereas other systems may choose to focus resources on high ridership corridors.

Peer Agencies Overview

Ride-On, Montgomery County, MD

Montgomery County's Ride-On bus system and Fairfax Connector both operate in the Washington, D.C. metropolitan region. Montgomery and Fairfax counties are somewhat comparable in size, demographics, and built environment. Both counties are densely developed inside the Capital Beltway (I-495), more suburban just outside of the Beltway, and relatively rural/ex-urban in the parts of the county furthest from Washington, D.C. Each county has office and retail activity centers located throughout its area (e.g., Bethesda and Silver Spring in Montgomery County, and Tysons, Reston, and Bailey's Crossroads in Fairfax County), but also has large portions of the county characterized by single-use residential housing development. On the whole, however, most of Montgomery County is denser and less car-dependent than Fairfax County, making it better suited for the provision of bus transit.

Both Ride-On and Fairfax Connector coordinate operations with the Washington Metropolitan Area Transit Authority (WMATA) Metrorail and Metrobus systems.

Key facts

- Operates approximately 65 local routes, the majority of which run with headways between 15 and 30 minutes during peak hours and 30 to 60 minutes during non-peak hours. Most routes operate on a limited schedule over the weekend.
- Ride-On directly operates its service and does not contract out to a third party.
- Like Fairfax County, many of Montgomery County's most cost-efficient routes are operated by WMATA.
- Much of Ride-On's service is designed to connect riders with the region's Metrorail system by starting and ending trips at various stations in the county.

Hampton Roads Transit. Hampton Roads, VA

Hampton Roads Transit (HRT) serves a population of 1.4 million in six large cities that make up the Hampton Roads metropolitan region: Hampton, Newport News, Norfolk, Portsmouth, Chesapeake, Suffolk and Virginia Beach, as well as a number of smaller jurisdictions. Although the Hampton Roads metropolitan area lacks as strong of an urban downtown equivalent to Washington, D.C., the overall development pattern in HRT's service area is similar to Fairfax County, with several core activity centers throughout the service area.

Key facts

- Operates 56 local routes, eight express routes, and seven commuter routes. Frequency of service is typically 15 to 30 minute headways during peak hours within urban areas and 30 to 60 minute frequency during non-peak periods and in suburban areas.
- In addition to fixed route bus service, HRT also operates paratransit, ferry, and light rail service, which differentiates it from the Fairfax Connector system.
- The Tide, the only light rail system in Virginia, operates on a single 7.4 mile corridor between downtown Norfolk and the Norfolk / Virginia Beach border.
- HRT directly operates its service and does not contract out to a third party.

North County Transit District. San Diego, CA

North County Transit District (NCTD) provides transit service to the Northern portion of San Diego County. The greater San Diego metropolitan area has 1.4 million residents, approximately 897,000 of whom live in the NCTD service area. North San Diego County is larger and development is generally less dense than portions of Fairfax County, but North County's proximity to an urban downtown and relative affluence to Fairfax County makes it an appropriate peer.

A primary function of NCTD local bus service is to connect riders to both the light rail and commuter rail networks. Although Fairfax Connector plays an important role in linking riders to Metrorail and VRE Commuter Rail service, it differs from NCTD service insofar as more routes are designed to move riders to locations within the county as well as provide feeder services to rail.

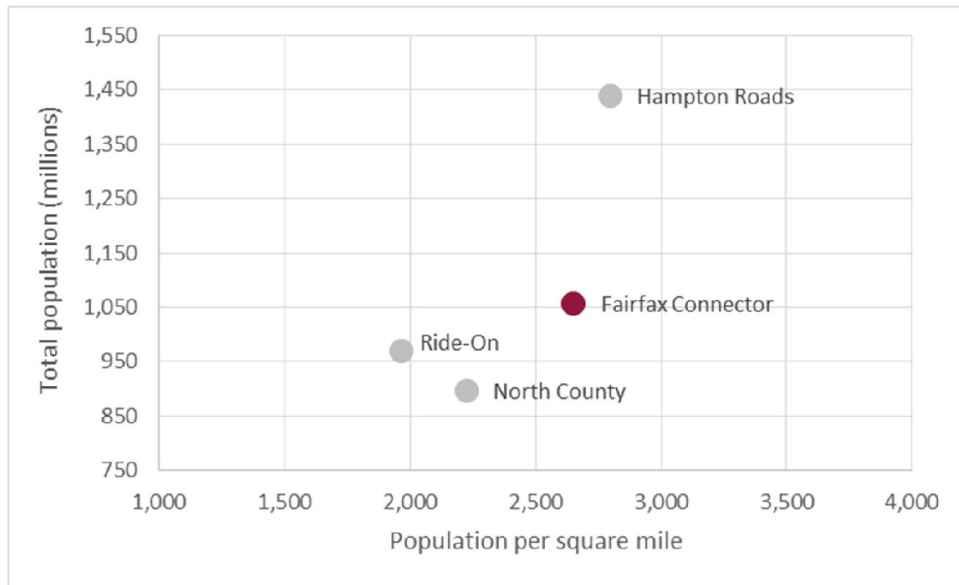
Key facts

- Operates 37 local routes, four flex zones (deviated fixed-route areas), paratransit, light rail, and commuter rail service. Headways range from 20 to 60 minutes, with the majority of service every 20 to 30 minutes during the peak period. Local buses have more limited weekend service.
- NCTD's light rail system, "Sprinter", runs east-west from the Pacific coast to Escondido and is marketed as an alternative to driving on the congested CA-78 highway. It operates every 30 minutes between 4:00 a.m. and 9:00 p.m., with extended service on Friday and Saturday nights. The system has an average weekly ridership of 8,300 trips, 22 miles of track, and 15 stations, all of which provide connections to local bus service.
- NCTD recently converted from a system that was previously directly-operated to one that is contracted out to a third party contractor, First Transit.

Service Area Characteristics

The size of the peer service areas are relatively similar, with a range of approximately 400 to 500 square miles. Service area population varied somewhat more, with 1.4 million people living in Hampton Roads and only approximately 897,000 residents in North County. Population density, a key factor in transit ridership levels, was relatively consistent across peers, with Hampton Roads being the densest and Montgomery County being the least dense; Montgomery County has lands designated as agricultural reserve with little development, and some areas of development that are far more intense than what is typical of the Hampton Roads region. Fairfax County's development patterns are more suburban and closer to those of the Hampton Roads region, with 2,648 persons per square mile, as shown in Figure 3-4.

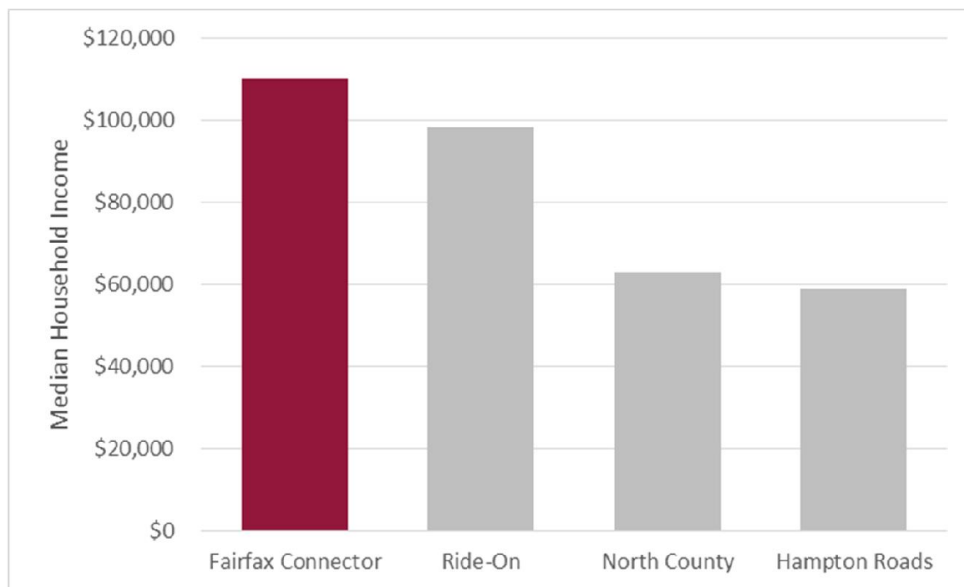
Figure 3-4: Service Area 2013 Population and Density



Source: National Transit Database, FY2013 data.

Another important characteristic of each service area is median household income. Because low income communities generally tend to be more transit dependent, it is important to consider service area median income when evaluating the effectiveness of a transit agency's ability to generate trips. Figure 3-5 shows the 2013 estimated median household income for each transit agency's service area according to the American Community Survey; Fairfax and Montgomery Counties have significantly higher median household income than the other two peers.

Figure 3-5: 2013 Median Household Income



Source: U.S. Census Bureau, American Community Survey.

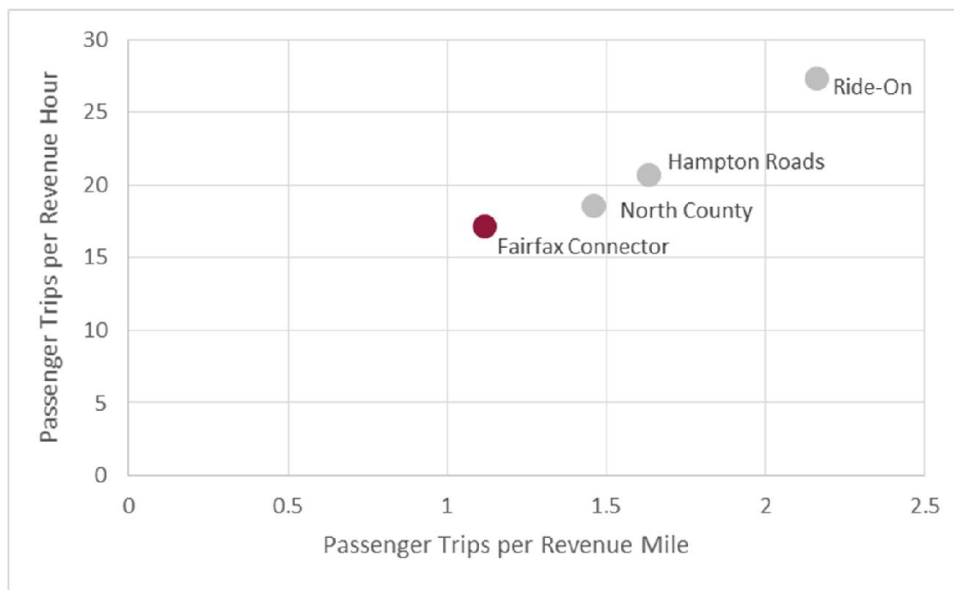
Performance Metrics

Unlinked Passenger Trips per Revenue Mile and Revenue Hour

The analysis compares total annual ridership per revenue mile in lieu of comparing ridership levels alone to control for the different levels of service among the peer agencies. The result, shown in Figure 3-6, shows that Fairfax Connector averages approximately 1.1 passengers per revenue mile, similar to NCTD's 1.5 passengers per revenue mile and Hampton Roads Transit's 1.6 passengers per revenue mile. In addition to its Express routes, Fairfax Connector also operates 13 longer local routes in the I-66 corridor which travel on highways and interstates. While many of these routes are productive, the large number of closed-door miles ultimately impacts the system-wide average.

Figure 3-6 also shows the number of unlinked passenger trips per revenue hour. Fairfax Connector averages 17 trips per revenue hour, which is very comparable among the peers when compared to 19 trips per revenue hour for NCTD and 20 trips per revenue hour for Hampton Roads Transit. Ride-On is an outlier with 27 trips per revenue hour, a level of performance that is likely driven by the higher level of population density in activity centers in Montgomery County vis-à-vis Fairfax County.

Figure 3-6: Unlinked Passenger Trips per Revenue Mile and Revenue Hour

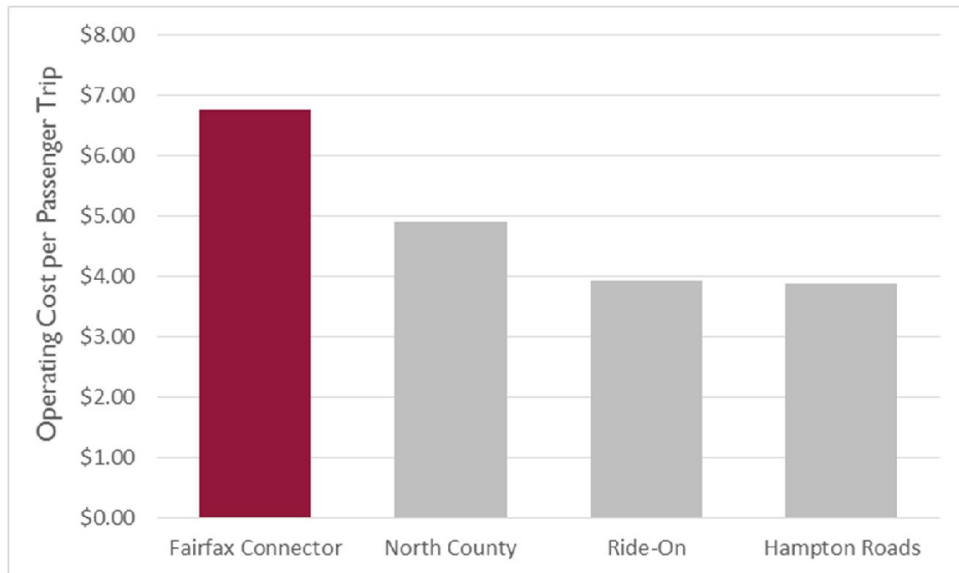


Source: National Transit Database, FY2013 data.

Operating Cost per Passenger Trip

Figure 3-7 shows the operating cost per passenger trip for Fairfax Connector and its peers. Connector spends \$6.76 per passenger trip, compared to a peer group average of \$4.87. One contributing factor to Fairfax Connector's higher operating expenses is the relatively higher cost-of-living in the National Capital region, including higher operator salaries. This contributes to the slightly higher operating expenses per passenger trip experienced by Fairfax Connector compared to Hampton Roads Transit and NCTD.

Figure 3-7: 2013 Operating Cost per Passenger Trip



Source: National Transit Database, FY2013 data.

Summary

Fairfax Connector provides robust transit services to a large, diverse population across a service area which varies greatly in the density of its built environment. Comparing Fairfax Connector to peer agencies that operate in similar service areas in terms of geographic size, population size, and development, can provide Fairfax Connector with a benchmark to measure its provision of service and service efficiency.

The use of NTD data to compare transit systems has some limitations. First, the collection and reporting of operating and financial data may not be consistent for all agencies. Secondly, the cost of living, and therefore bus operator salaries, varies widely depending on the region. NTD data are not normalized for an agency's geographic region. This makes difficult comparisons of fundamental financial metrics, such as operating costs. These issues suggest that comparing differences in service provision among peer agencies, while illustrative and useful, may not be suitable for drawing conclusions.

This peer analysis revealed that Fairfax Connector provides a similar level of service as its peers, as measured by the number of revenue miles and hours. Fairfax Connector is slightly more expensive to operate and appears to generate fewer trips than the peer average. These discrepancies are largely result from the fact that regions can vary widely in terms of their built environment, presence of trip generators, demographic makeup, and economy. Factors affecting these comparisons include:

- Fairfax County's highest ridership routes are operated by WMATA's Metrobus service. The Connector system does not benefit from these trips, which are reported to NTD as Metrobus ridership.

- Much of Montgomery County developed earlier and more densely than did Fairfax County. As a result, Ride-On has had more time to establish a ridership base, and serves areas that are more conducive to generating transit ridership.
- Montgomery County's growth is somewhat constrained through the presence of its agricultural reserve, while Fairfax County's suburban development is more evenly distributed throughout the County.
- In addition, Montgomery County has more Metrorail stations, especially before the opening of Silver Line Phase 1.
- Fairfax County has made a conscious effort, through the policies of its Board of Supervisors, to provide broad transit coverage throughout the County at affordable rates, while other systems may choose to focus resources on high ridership corridors.

3.4. Onboard Survey

In 2013, Fairfax County commissioned a private research firm to conduct an onboard survey among riders of the Fairfax Connector system and Metrobus routes in Fairfax County.

The overall objectives of the onboard survey research were to:

- Determine the demographic profile of bus riders in Fairfax County as part of Federal Transportation Administration (FTA) Title VI reporting requirements;
- Determine the general transportation profile of bus riders;
- Determine the origin/destination and the transportation modes used by bus riders;
- Determine the specific trip profile of bus riders;
- Determine how riders obtain information about the bus system, and
- Identify the most important priorities for improving bus service.

Surveys were distributed and collected on all Fairfax Connector and select Metrobus routes running through the County. The 23-question survey was distributed in three waves (Fall 2013, Spring 2014, and Fall 2014) to a random sample of riders on each route. Out of 73,985 surveys distributed, 20,257 were returned in usable condition, for a response rate of 27.4 percent. The section provides an overview of the survey results.

Origin and Destination

Not surprisingly, trips made in the Early Morning or Morning Peak are most likely by those traveling from home and/or going to work, while the reverse is true for those traveling in the Afternoon Peak or Evening time periods. Overall, 53 percent of trips originate at home and 33 percent from work, while 41percent of trips end at home and 43 percent at work.

Mode of Access

The onboard survey revealed that 54 percent of trips surveyed began with riders walking or using a wheelchair to access the Fairfax Connector system, while 36 percent used public transportation (i.e., the trip on which the rider was surveyed was not the first leg in their transit journey), and only eight percent used a car. The numbers are similar at the destination portion of Fairfax Connector trips: 62 percent of trips end with riders walking to their destination, 30 percent use public transportation (i.e., Fairfax Connector as well as other regional transit

operators), and six percent use a car. Of all trips, 25 percent transferred *from* Metrorail stations while 21 percent transferred *to* the Metrorail system. Trips made in the early morning and morning peak are most likely to end either by transferring to another mode of public transportation or walking to the rider's final destination. Starting at midday, almost three-fourths of Fairfax Connector trips entail riders disembarking from their bus and walking to their final destination.

Transfers

Two-thirds of all Fairfax Connector bus trips (67 percent) entail a transfer between modes of public transportation, with transfers most commonly occurring during the early morning and morning peak period (80 percent and 72 percent, respectively).

Fare Payment

The most common form of payment on the Fairfax Connector system is a SmarTrip card (91 percent). While SmarTrip cards are the ubiquitous means of payment across demographic and socioeconomic groups, the greatest use is seen by those with household incomes of \$30,000 or more. Payment with cash accounts for only six percent of all trips, but this percentage increases as the household income of riders decreases. For riders earning between \$70,000 and \$125,000 in annual income, only three percent use cash for fare payment, whereas for those earning \$30,000 to \$70,000, the percentage increases to six percent. Finally, for those earning less than \$30,000, eight percent of riders use cash. There is little difference between how frequently white and minority riders pay for fares with a SmarTrip card or cash.

Frequency of Trip

Two-thirds of the bus trips taken in Fairfax County (66 percent) are taken by riders who say they take that trip at least five days a week. 25 percent of riders reported that they take that trip only one to four days a week, and six percent do so less than once a week.

Those who make the trip five days a week are more likely than those who make the trip six or more days a week to ride during peak times on weekdays, be between 25 and 64 years of age, have household incomes greater than \$70,000, and/or speak English very well. This indicates that the five-day-a-week riders are more likely professional, white collar employees commuting to or from work, whereas the six-plus day a week riders are more likely students and/or those traveling to and from non-professional, non-white collar employment.

Reasons for Using the Bus

Almost 40 percent of trips are made by those who say they ride because they have no alternative – they either do not have a car and/or a driver's license. Riders who do have an alternative means of transportation report using the bus for economic reasons (27 percent) or because they prefer not to drive (16 percent). The onboard survey also revealed that weekend riders are more likely to ride because they have no alternative (58 percent), whereas fewer weekday riders, most of whom are likely commuters, do so out of necessity (37 percent).

Availability of Automobiles

Thirty-eight percent of trips are made by riders who report that they chose to ride the bus, despite having a personal automobile available to them for the trip. Peak riders, in particular,

are significantly more likely to have an automobile available to them than off-peak riders. Those who said they had an automobile available to them for their trip were more likely to be 25 years of age or older, White and/or speak English very well, and live in a household with annual income over \$70,000. When asked how they would have made the trip if the bus were unavailable to them, 30 percent said they would have driven a car, 18 percent would have carpooled, 14 percent would have taken a taxi, and 10 percent would have walked.

3.5. Stakeholder and Public Outreach

Stakeholder outreach for this TDP was broken into two distinct phases: the objective of the first phase was to understand rider concerns and priorities, and the second to solicit feedback on proposed changes to the Connector system.

Phase One Outreach Summary

Phase One outreach began with meetings with key County stakeholders, including the Board of Supervisors, as well as various County boards and commissions. Below is a list of key County stakeholders that were engaged in Phase One outreach with the dates of each respective meeting.

- **Board of Supervisors**
 - Supervisor Smyth – Providence District - November 4, 2013
 - Supervisor Frey – Sully District - November 4, 2013
 - Supervisor Herrity – Springfield District - November 5, 2013
 - Supervisor McKay – Lee District - November 6, 2013
 - Supervisor Gross – Mason District - November 20, 2013
 - Supervisor Foust- Dranesville District - November 20, 2013
 - Supervisor Hyland – Mount Vernon District - November 21, 2013
 - Supervisor Cook- Braddock District - November 21, 2013
 - Supervisor Hudgins – Hunter Mill District - November 22, 2013
- **County Boards**
 - Transportation Advisory Commission - May 20, 2014
 - Commission on Aging - May 21, 2014
 - Planning Commission - May 21, 2014
 - Mobility and Transportation Commission – May 28, 2014

Once all County stakeholders had been briefed on the scope and purposed of the TDP, outreach efforts focused on the general public. Efforts included six public workshops, four interactive pop-up events held at public locations with a high number of riders, an online live Question & Answer session with Fairfax County staff, and six in-depth focus group sessions with community-based organizations. Table 3-5 summarizes Phase One outreach events.

Table 3-5: Phase One Outreach Events

Event Type	Location	Date and Time
Working Group	George Mason Library	September 15, 2014 6:00 p.m. - 8:00 p.m.
Working Group	Lynbrook Elementary School	September 18, 2014 6:00 p.m. - 8:00 p.m.
Working Group	Southgate Community Center	September 22, 2014 6:30 p.m. - 8:30 p.m.
Working Group	Hutchison Elementary School	September 23, 2014 6:00 p.m. - 8:00 p.m.
Working Group	Chantilly Regional Library	October 9, 2014 6:00 p.m. - 8:00 p.m.
Working Group	Mount Eagle Elementary School	October 14, 2014 6:00 p.m. - 8:00 p.m.
Pop-up	Huntington Metrorail Station	September 9, 2014 4:00 p.m. - 6:00 p.m.
Pop-up	Fairfax Corner	September 20, 2014 11:00 a.m. - 3:00 p.m.
Pop-up	Reston Multicultural Festival	September 27, 2014 11:00 a.m. - 3:00 p.m.
Pop-up	Seven Corners Transit Center	September 30, 2014 4:00 p.m. - 6:00 p.m.
Focus Group	US-1 Coalition	September 15, 2014
Focus Group	Greenbriar Homeowners Association	September 16, 2014
Focus Group	Cornerstones, Inc.	September 18, 2014
Focus Group	Reston Citizens Association	September 29, 2014
Focus Group	Transportation Association of Greater Springfield (TAGS)	October 1, 2014
Focus Group	Dulles Business Park Association	October 1, 2014

Additional outreach was conducted via the website and social media outlets, as well as on-site visits to each of Fairfax Connector's three maintenance facilities to interview a sample of bus operators. Key data collection methodologies included a comprehensive comment database, an intercept survey, and an origin-destination exercise. This feedback informed the decision making of Fairfax Connector staff and contributed to the recommendations made in the Transit Development Plan.

Phase Two Outreach Summary

The focus of Phase Two outreach differed from Phase One, with an emphasis on soliciting public feedback on the proposed service recommendations, rather than existing service. Phase Two's methodology, however, was similar to Phase One and included meetings with the Board of Supervisors, an aggressive marketing campaign (including flyer sessions to inform the public of the opportunity to provide input), public workshops, working groups, and online engagement. A summary of events is summarized in Table 3-6.

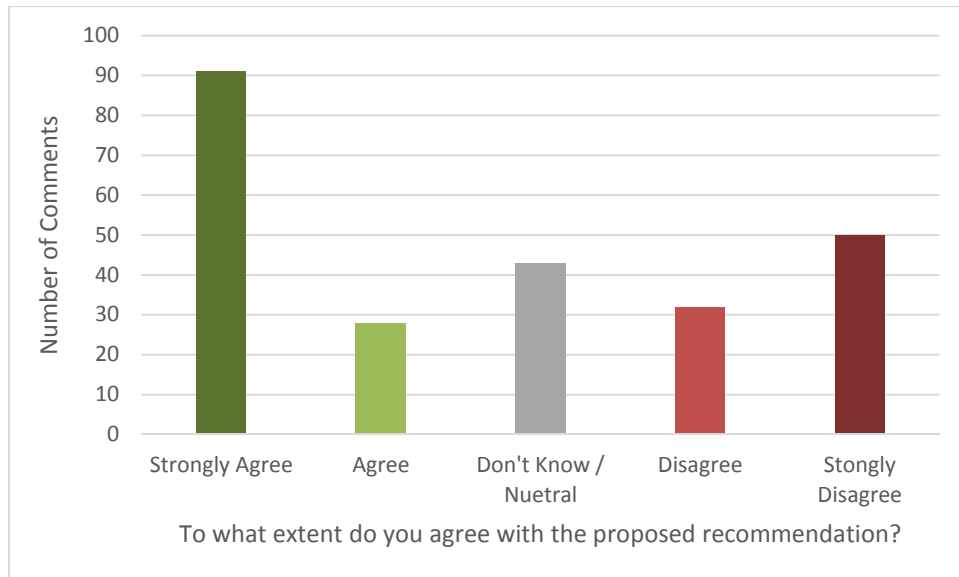
Table 3-6: Phase Two Outreach Events

Event Type	Location	Date and Time
Flyer Session	Fairfax Corner	Saturday, May 9, 2015 11:00 a.m. - 1:00 p.m.
Flyer Session	Reston Town Center	Saturday, May 30, 2015 11:00 a.m. - 1:00 p.m.
Public Workshop	George Mason University	Tuesday, May 12, 2015 6:00 p.m. - 8:00 p.m.
Public Workshop	Hutchison Elementary School	Tuesday, June 2, 2015 6:00 p.m. - 8:00 p.m.
Public Workshop	Huntington Metrorail Station	Thursday, June 4, 2015 6:30 p.m. - 8:30 p.m.
Public Workshop	Fairfax Corner	Saturday, June 6, 2015 11:00 a.m. - 3:00 p.m.
Public Workshop	Franconia Government District Center	Tuesday, June 9, 2015 3:30 p.m. - 6:30 p.m.
Public Workshop	Seven Corners Transit Center	Thursday, June 11, 2015 3:30 p.m. - 6:30 p.m.
Working Group	Civic Organizations	Tuesday, May 19, 2015 7:00 p.m. - 8:30 p.m.
Working Group	Seniors and Disability	Thursday, May 28, 2015 1:00 p.m. - 2:30 p.m.
Working Group	Minority Inclusion, Low Income Community and Limited English Proficiency Support	Wednesday, May 27, 2015 7:00 p.m. - 8:30 p.m.

Similar to Phase One outreach, the main tool used to collect and analyze public comments was a digital feedback form that could be used to submit comments at one of the events or anytime on the project website. The digital feedback form stored all public comments in a database which could be easily sorted and analyzed by route number, feedback topic, and other relevant data points.

Phase Two outreach resulted in 392 total comments, most of which were in agreement with the draft recommendations, as show in Figure 3-8. Almost half of all comments (49 percent) either strongly agreed or agreed with the recommendations, compared to 34 percent which disagreed and 18 percent which were neutral.

Figure 3-8: Comments by Degree of Agreement



Feedback generated during Phase Two was analyzed by Fairfax County staff and incorporated into a set of revised and final recommendations. The project team considered each comment provided on the draft plan in developing the final service recommendations. In some instances, the team determined that the comment's substance did not warrant a change in the recommendations. In other instances, however, suggestions from the public led to re-evaluation and adjustments to recommendations.

3.6. Service Area Land Use

The *Fairfax County Comprehensive Plan, 2013 Edition: Policy Plan, Land Use*, was last amended on April 29, 2014. The plan critiques existing development patterns in the County, stating that:

"Housing and employment uses have not been well integrated. The pattern of land use in Fairfax County reflects a distinct separation among large areas of residential and nonresidential uses. This separation of housing and employment further burdens the roadway system as people must commute long distances between home and work. Transit has not proven a viable alternative for a major portion of these commuters because the housing and employment areas not only are spatially separated from each other, but developed at low densities. Thus, transit service is inherently less efficient and productive than would be likely in more concentrated, mixed-use settings."

The Comprehensive Plan proposes a better balance of employment and residences:

"Bringing together jobs and housing in an attractive, harmonious manner, the opportunity will be created to reduce commuting in both time and distance. Not only will this tend to lessen the burden on a roadway system in need of significant expansion, but it will also lessen the stress of metropolitan living and provide more time for family and leisure pursuits. These are factors crucial to maintaining a high quality of life. If an improved land

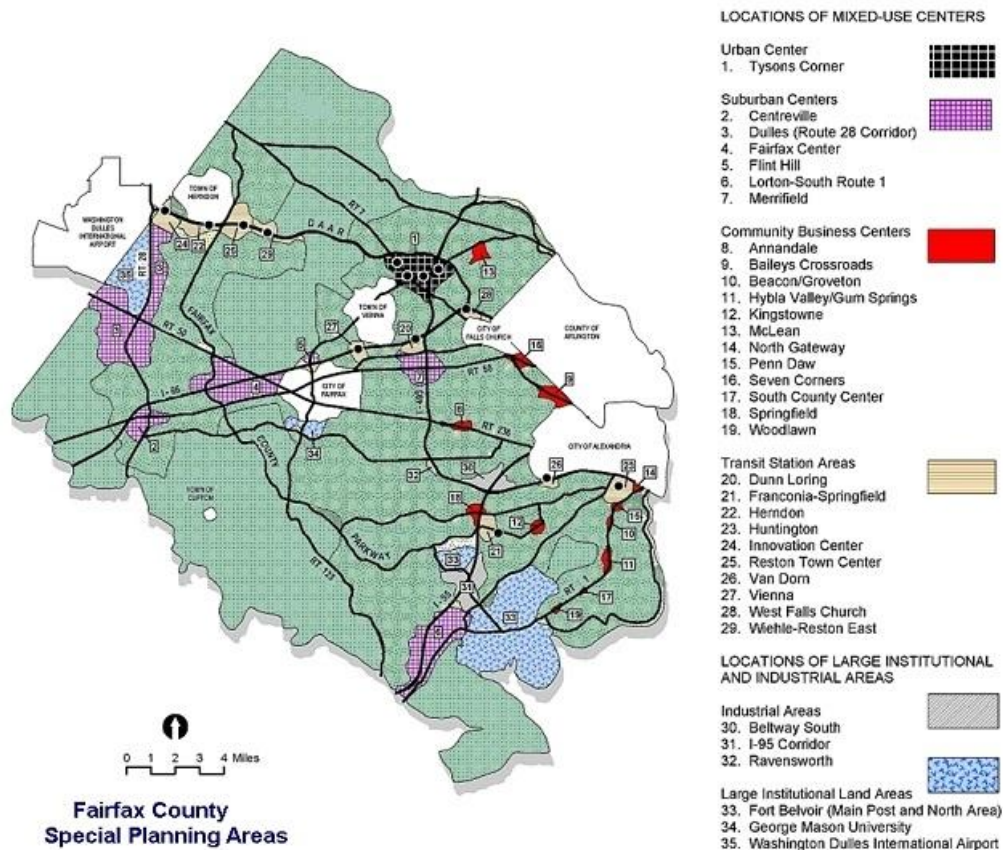
use pattern does not emerge, the transportation system will become increasingly overloaded, creating long range implications for the county's ability to attract high quality development.”

Specifically, the Fairfax County Comprehensive Plan provides for the creation of four types of mixed-use centers as special planning areas:

- Urban centers,
- Suburban centers,
- Community business centers, and
- Transit station areas.

These centers are the types of land uses most likely to be robustly served by transit. The designated mixed-use centers are shown in Figure 3-9.

Figure 3-9 Mixed-Use Centers Planned for Fairfax County⁹



⁹ Source: Fairfax County Comprehensive Plan (2013).

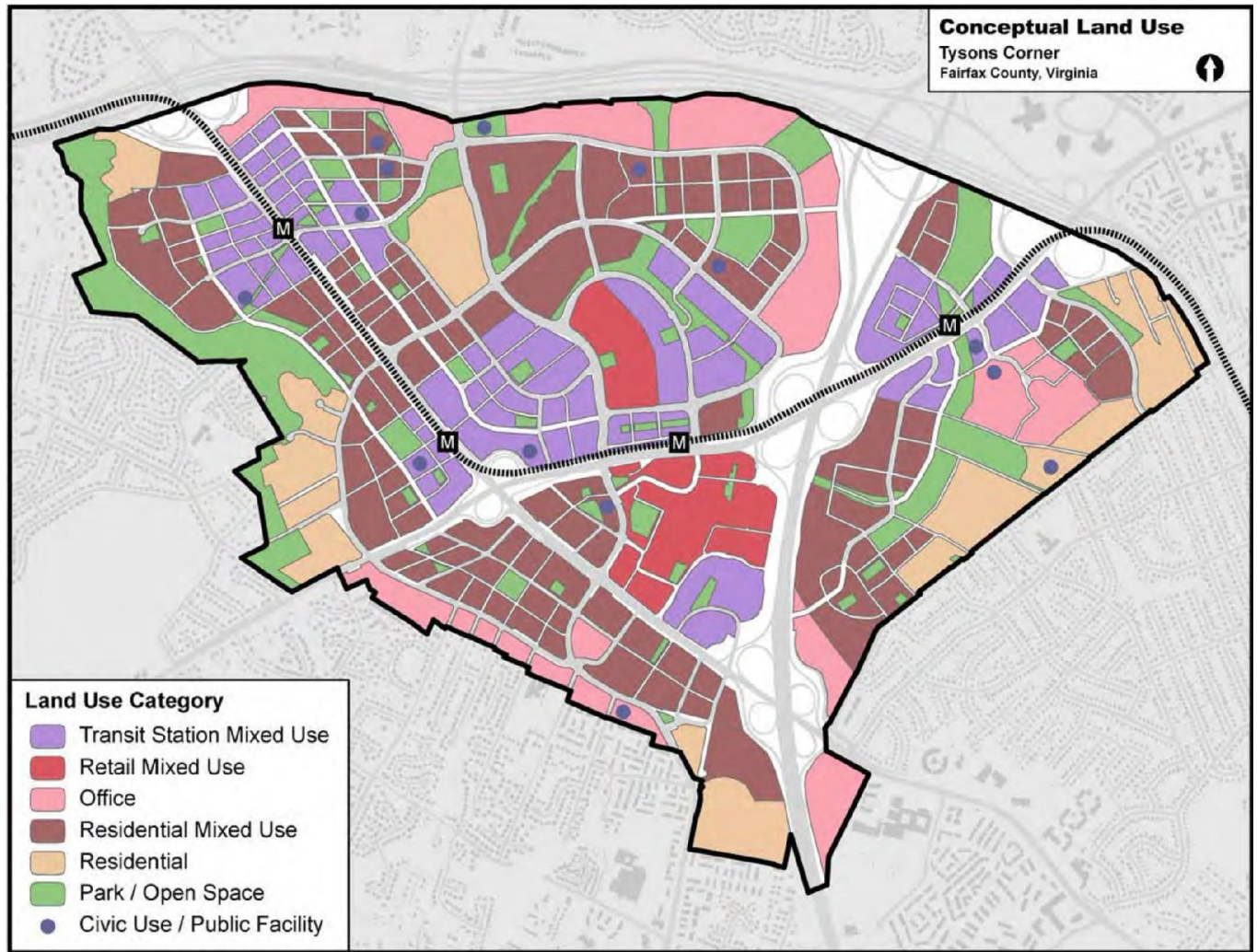
Urban Center - Tysons

The County has identified Tysons as its Urban Center. This area was initially developed as a low-density suburban retail and office center beginning in the 1960s. Tysons land uses are currently heavily office-oriented, with heavy traffic into the area in the morning peak and out of the area in the afternoon peak. Large retail centers in Tysons also attract significant auto travel volumes to the area, on both weekdays and weekends. Around 110,000 people work in Tysons, compared to about 20,000 residents as of the 2010 Census.

In June 2010, the Fairfax County Board of Supervisors approved a Comprehensive Plan Amendment for the Tysons Urban Center to guide the transformation of the area to an urban center with a synergistic mix of uses that would capitalize on the benefits the extension of Metrorail service to Tysons that occurred in 2014. Fairfax County would like Tysons to become a more urbanized, denser, and pedestrian- and transit-friendly area. Ultimately, the County's vision for Tysons is that it will be a place where owning a car may be unnecessary. Within the Tysons Urban Center, there are eight sub-districts, including Transit Station Mixed Use areas centered around the four Silver Line stations, which are planned to contain a balanced mix of retail, office, arts/civic, hotel, and residential uses. Offices are planned to account for 65 percent of developed land, and residences are planned to be at least 20 percent.

To accommodate the transition of Tysons into an urban, mixed-use center where it will be attractive for residents, visitors, and workers to take transit, bike, and walk to their destinations, Fairfax County modified Fairfax Connector service and plans additional local transit service. Fairfax Connector completed a major service change in 2014 in coordination with the opening of the Metrorail Silver Line to provide connections to Silver Line stations including the four stations in Tysons. Several local area circulator routes in Tysons were also established in this service change to distribute people throughout the Tysons area from the four Silver Line stations located there: Route 724 (Lewinsville Road); Route 422 (Boone Boulevard); Route 423 (Park Run-Westpark); and Route 424 (Jones Branch Drive).

Figure 3-10 Tysons Future Land Use



Source: Fairfax County Comprehensive Plan, 2013.

Suburban Centers

Six Suburban Centers were identified in the Fairfax Comprehensive Plan:

- Flint Hill, located on both sides of Chain Bridge north of its intersection with I-66 and near the northern boundary of the City of Fairfax;
- Merrifield, located around the interchange of I-495 and Arlington Boulevard (US-50);
- Centreville, near where Sully and Centreville Roads, Lee Highway, Interstate 66, and Braddock Road converge;
- Dulles, located in western Fairfax County, adjacent to the eastern and southern boundaries of the Washington Dulles International Airport;
- Fairfax Center, located near the interchange of I-66 and Lee Jackson Memorial Highway (US 50); and
- Lorton-South Route 1, located west of Fort Belvoir.

The Suburban Center categorization emphasizes a mix of uses with the primary focus on employment and higher density residential uses. Specific land use recommendations related to transit are summarized below.

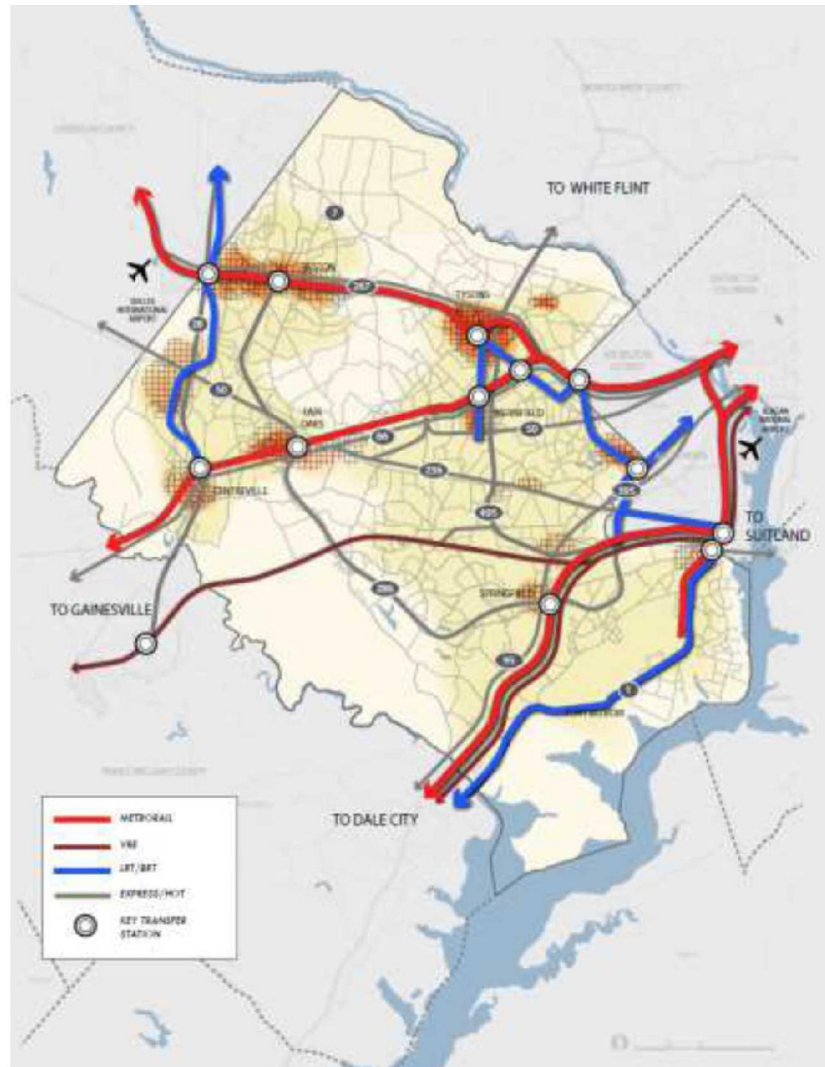
Flint Hill

The majority of development in Flint Hill is commercial, with over 1.7 million square feet of office space including the AT&T Corporate office site at Chain Bridge Road and Jermantown Road and the 35-acre Flint Hill Office Park between Jermantown Road and Chain Bridge Road. This area is adjacent to I-66, just east of Fair Oaks Mall. Building heights do not exceed six stories in the Center area. The Oakton Gable apartments are adjacent to the Flint Hill Office Park and both were developed as part of the same planned unit development. Only one Fairfax Connector route currently serves the Flint Hill area, Route 466, which runs only on weekdays in the morning and afternoon peaks. One peak-only WMATA route serves Flint Hill.

DRPT, in coordination with local jurisdictions and partnering agencies, is currently conducting an I-66 Transit and Transportation Demand Management (TDM) study, which is recommending high-capacity commuter transit on I-66 and enhanced TDM amenities, to accompany the addition of Express Lanes (high occupancy toll lanes) to I-66 slated to open in 2022. The transit service planned for this corridor will provide additional transit service to this area, and is referenced in the recommendations in the TDP.

The Fairfax County Countywide Transit Network Study (CTNS), which is under development, is also recommending the addition of high-capacity transit to the I-66 corridor, as shown in Figure 3-11. The CTNS, which has 2050 as its ultimate horizon year, is evaluating the corridors currently shown as Enhanced Public Transportation Corridors on the Transportation Plan Map to determine what modes might be appropriate in those corridors where modes have not already been implemented, in order to provide a high-quality transit network for Fairfax County. The study will also identify preliminary right-of-way requirements based on the mode(s) deemed appropriate for each corridor, as well as the density of development in different parts of the corridor. The TDP, which has a much shorter horizon, supports the CTNS, as well as other long-range studies (e.g., the Tysons Circulator Study) with recommendations for short-term bus service enhancements that will build toward the long-range proposals made in the CTNS, the Circulator Study, and other County plans.

Figure 3-11 Proposed High Quality Transit Network



Source: Fairfax County Countywide Transit Network Study (in progress)

Merrifield

The area contains a mix of uses, including office, medical facilities, hotel, residential, light industrial, and retail. Major land uses include the Exxon-Mobil Oil office complex, Fairview Park (a mix of office, hotel, and residential uses), the Merrifield Regional Post Office, and Inova Fairfax Hospital. Only one Fairfax Connector route currently serves the Merrifield area, Routes 401/402, which operate from 3:30 a.m. to 2:00 a.m. on weekdays; together, they are the highest ridership service in the Fairfax Connector system. There is also Metrorail (Orange Line) service at the Dunn Loring Metrorail Station and service on four Metrobus routes.

Two core areas are planned, a town center located near the interchange of I-495 and Arlington Boulevard, and a Transit Station Area near Gallows Road and Prosperity Avenue (near the existing Dunn Loring Metrorail Station).

Centreville

The majority of the development in this area is residential and has been constructed since 1970. The pace of development in this area increased dramatically during the early 1980s as builders began to fully exploit the excellent access to major roadways. The development was mainly residential, but the growth of residential options has been matched by an increase in the employment opportunities in and adjacent to the Centreville Area. A full spectrum of retail and commercial services has followed the residential development. Two peak-only Fairfax Connector routes, Route 631 and 641, and one off-peak route, Route 630, serve Centreville currently.

Multifamily residential use at 16-20 dwelling units per acre is planned for much of this area, with office uses remaining low-density.

Dulles

Existing development in this area includes a mix of office, multi-family and townhouse residential, hotel and retail uses. Institutional uses include several churches and the Lutie Lewis Coates Elementary School. There remain areas of vacant land, some of which are located near the future Innovation Center Metrorail Station and over 75 acres located along Frying Pan Road. The Merrybrook Run Stream Valley traverses the land unit and is a natural open space and park amenity for the area. Three Fairfax Connector routes, 937, 983, and 985, run throughout the day on weekdays, with the former two also operating on the weekends. One route, 927, operates during the rush hour only on weekdays.

Metrorail service will be extended to the area when Phase 2 of the Silver Line, including the Innovation Center Metrorail Station, is completed. Proposed modifications to Fairfax Connector service related to this opening are identified in the recommendations section of this TDP. Areas within a quarter mile of the future Innovation Center Metrorail Station are planned for a higher development intensity that tapers off first to the areas within a quarter to half mile of the station, and then to areas beyond a half mile from the station.

To ensure that future options are not precluded by development that occurs in the Dulles Suburban Center over the next 10-15 years, the Fairfax County Comprehensive Plan designated VA-28 as an Enhanced Public Transportation Corridor.

Fairfax Center

The Fairfax Center area is currently characterized by a mixture of uses including a substantial amount of office space, housing of various types, public facilities, and regional- community- and neighborhood-serving retail uses. High quality, multiple-use developments which include housing as a secondary use have been built and more are anticipated. In addition to the mixed-use areas, there is land planned and developed with low-density residential uses, as well as some vacant land. A major regional retail hub, Fair Oaks Mall, acts as a regional transfer center for two Fairfax Connector routes (605 and 630) and two WMATA routes (Metrobus 1C and 2B).

In anticipation of enhanced bus transit or an extension of the Orange Line to the area, the level of development intensity in the area will be permitted to increase, with the mix of uses is envisioned to be residential, retail, and office, with a possible hotel.

Lorton-South Route 1

Much of the land currently in this area is characterized by single-family dwellings. Other existing uses include junkyards, warehouses, storage yards for heavy equipment, cars, boats and lumber, a recycling facility, concrete and paving services, and a truck terminal. Housing types include single-family units and garden apartments. A shopping plaza, scattered commercial uses and public and institutional uses serve these area residents as well as others.

Lorton has a Virginia Railways Express (VRE) commuter rail station that also serves as a major transfer point for Fairfax Connector routes 171, 305, 371, 372, 373, and 494, three of which only operate during rush hours. A mixed use development, the Lorton Station Town Center, was developed centered around the Lorton VRE Station. This development includes local medical offices, single-family, townhome, and multifamily (rental and condominium) housing, open space, and retail space. Amtrak's Auto Train also has a station in Lorton, which is physically separate from the VRE station area.

The Route 1 Multimodal Alternatives Analysis, a recently completed DRPT study, recommends implementing a BRT route between the Huntington Metrorail Station and Woodbridge in three phases, with an extension of the Metrorail Yellow Line from Huntington to Hybla Valley as its fourth phase. The portion between Fort Belvoir and Woodbridge (which includes a station at Lorton) would be in the third phase of implementation, which will not occur until well past the horizon for this TDP.

Community Business Centers (CBCs)

Historically older community-serving commercial areas that emerged along major roadways, Fairfax County's 12 CBCs are areas where redevelopment should encourage a mix of uses focused around a core area of higher intensity, such as a town center or main street in a pedestrian-oriented setting. These CBCs include Annandale, Bailey Crossroads, Beacon/Groveton, Hybla Valley/Gum Springs, Kingstowne, McLean, North Gateway, Penn Daw, Seven Corners, South County Center, and Woodlawn. Transitions in intensity and compatible land uses should protect surrounding stable residential neighborhoods. CBC planning emphasizes design that advances pedestrian amenities and circulation.

Transit Station Areas (TSAs)

There are 10 TSAs in the Comprehensive Plan, including the three future Silver Line stations (Reston Town Center, Herndon, and Innovation Center), as well as existing stations (Wiehle-Reston East, Vienna, Dunn Loring, West Falls Church, Franconia-Springfield, Van Dorn Street, and Huntington). In general, Transit Station Areas consist of a Transit Station Mixed Use area and a Residential Mixed Use area. The former is intended to be a compact, mixed-use, walkable transit-oriented environment with a mix of uses including office, retail, hotel, institutional, and public facility and with higher level of development intensity. The Transit Station Mixed Use areas are planned for 50 percent residential and 50 percent non-residential uses, while the Residential Mixed Use areas are generally planned for existing and approved office uses, significant new residential uses and new retail and hotel uses, with a target of 75 percent residential and 25 percent non-residential. As these areas are home to Metrorail stations, they also have extensive bus service to provide access to Metrorail.

3.7. ITS Technologies

Fairfax Connector is currently in the process of implementing a new Computer Aided Dispatch / Automated Vehicle Locator (CAD/AVL) system that will generate system performance and ridership data that will be archived for offline analysis and reporting. The CAD/AVL system being implemented includes off-the-shelf tools that provide standard reports and also provide the ability to develop custom reports as needed. One of the key goals of the system being deployed at Fairfax Connector is to enhance regional interoperability. The system will generate GTFS and GTFS-Real Time feeds that can be used by regional partners and third party developers to develop custom applications that help with regional trip planning and service coordination.

3.8. Deviations from Service Standards

Fairfax Connector has adopted performance standards in accordance with the requirements of Title VI of the Civil Rights Act (1964), and also developed (although not formally adopted) performance standards to guide the development of this TDP's recommendations, as described in Chapter 2. These performance standards include the following:

- Reliability / On-Time Performance*
- Crowding / Load Factors*
- Service Availability*
- Service Design Guidelines*
- Productivity
- Cost Effectiveness

* = Title VI Program Performance Standard

This section details deviations from these service standards, while Chapter 4 defines improvements that Fairfax County has planned to address some of the deviations.

Reliability / On-Time Performance

In the Title VI Program service standards, on-time performance is defined as an arrival no more than one minute early and no more than five minutes late measured at the first and last time point on a route. The run times for trips were manually checked for this TDP, with a total sample of 5,451 trips, representing every scheduled trip in each scheduled period (weekday, Saturday, and Sunday). The percent of trips on time at the origins or destinations is shown in Table 3-7. Overall, 83 percent of the trips departed on time in the sample (meaning no more than one minute early and no more than five minutes late), and 50% arrived at the end point on time. For many routes, 90 percent or more of the trips were on time at the origin. However, some routes (101, 402, 463, 494, 605, 632, and 929) had no more than two-thirds of trips depart on-time at the starting point. Very few of the routes had more than 75 percent of trips checked arrive on time. However, it is possible that many of these trips failed the standard because they arrived at the end of the route early (rather than arriving 6 or more minutes late). This could be particularly true for feeder service into Metrobus stations, such as in the I-66 and Dulles corridors. Since the data was collected, schedule adjustments were implemented on the routes listed above to improve on time performance. It is also important to consider that these

time checks were manually collected over the course of several service days, with only one time check per trip, e.g., the 7:00 a.m. departure of Route X was only checked once. The results are not as accurate as on-time performance averaged over the course of a month or even a year. Once Fairfax Connector has its AVL system implemented, on-time performance data will provide a much more accurate picture than the manual collection.

Table 3-7: Percent of Trips Checked On-Time by Route

Route	On-Time at Origin	On-Time at Destination
101	66%	54%
109	93%	51%
151	84%	44%
152	88%	56%
159	94%	52%
161	82%	40%
162	93%	30%
171	80%	33%
231	70%	35%
232	91%	57%
301	69%	62%
305	73%	30%
306	75%	42%
310	87%	49%
321	83%	32%
322	70%	48%
333	80%	40%
334	85%	58%
335	86%	36%
371	76%	43%
372	83%	71%
373	69%	56%
394	79%	29%
395	73%	14%
401	75%	17%
402	65%	23%
422	93%	70%
423	95%	42%
424	92%	46%
432	90%	50%
461	84%	68%
462	83%	70%

Route	On-Time at Origin	On-Time at Destination
463	66%	31%
466	72%	67%
493	88%	42%
494	46%	7%
495	84%	47%
505	88%	77%
507	93%	69%
551	82%	70%
552	91%	83%
553	100%	38%
554	91%	61%
557	91%	55%
558	91%	74%
559	85%	50%
574	92%	58%
585	94%	35%
599	71%	43%
605	58%	27%
621	84%	32%
622	100%	80%
623	85%	50%
630	87%	60%
631	81%	63%
632	63%	17%
640	80%	60%
641	70%	67%
642	93%	54%
644	71%	33%
650	86%	62%
651	65%	35%
652	82%	50%
721	86%	32%
724	86%	41%
734	88%	56%
924	95%	50%
926	100%	39%
927	69%	69%
929	60%	25%

Route	On-Time at Origin	On-Time at Destination
937	77%	52%
950	83%	48%
951	73%	46%
952	83%	52%
980	91%	53%
981	82%	78%
983	89%	73%
985	93%	43%
RIBS 1	88%	53%
RIBS 2	86%	46%
RIBS 3	90%	59%
RIBS 4	87%	69%
RIBS 5	90%	63%
AVERAGE	82%	49%

The recommendations in Chapter 4 of the TDP include a number of proposals that would improve on-time performance. Some of these are listed in Table 3-8.

Table 3-8: TDP Recommendations to Improve On-Time Performance

Route	Finding	Recommendation
101	Ride checks found variability in running times.	Add more time to schedule as of February 2016.
151/152	Ride checks showed problems with on-time performance during the morning peak.	Adjust schedules.
161/162	Ride checks showed that these routes frequently run late throughout the day.	Address operational issues, maybe add running or recovery time by lengthening the headways.
231/232	Poor on-time performance.	Reduce deviations.
321/322	Poor on-time performance.	Reduce deviations.
371/372/373	Ride checks showed early trips.	Adjust schedule.
605	Ride checks showed it running late all day.	Add running/recovery time.

Crowding / Load Factors

The crowding standard is that the maximum load should not exceed 125 percent of the seated capacity. For a 40-foot bus with 39 seats, this means that the load should not exceed 48 people. The ride checks conducted for this TDP included one check of each daily scheduled trip of each route. Of all the trips checked, there were only 12 instances where the maximum load exceeded the standard of 125 percent of capacity. There were only two routes that had more than one trip that exceeded the standard: Fairfax Connector 401/402 (four trips) and Fairfax Connector 980 (two trips). The TDP recommends adding service to the 401/402, either in the form of limited-stop service or a short-turn route over a heavily used portion. If implemented,

these recommendations would reduce the observed crowding on the route. Short-term changes may be made if the overcrowding on Route 980 persists. However, the TDP also recommends eliminating this route when Phase 2 of the Silver Line opens, because the route follows the alignment of the planned Metrorail extension. The new Metrorail service will provide ample capacity.

Table 3-9: Trips Checked with Loads Exceeding the Standard

Route	Trips Checked with Load > 125% of Capacity
101	1
171	1
401	3
402	1
605	1
631	1
632	1
980	2
RIBS 3	1

Service Availability

The Fairfax Connector system, in combination with WMATA's Metrobus, serves a significant portion of Fairfax County (Figure 3-12). In addition to being relatively large, Fairfax County is also characterized by a diverse array of communities which vary in population density (Figure 3-13) and density of minority groups (Figure 3-14). This development pattern makes providing bus service to every part of the County a challenge. There are two primary gaps in existing service: the southwest corner of the County and a small pocket of low-density residential neighborhoods bound by the Dulles Connector Road, Fairfax County Parkway, and I-66. Table 3-10 shows the percentage of residents served by bus transit in Fairfax County.

Note that while service may be available within an area or neighborhood connections to other parts of the county or to adjacent activity centers and communities may be missing. An example of this would be connections between Fairfax, Burke, and Springfield. Bus service is available in each area on its own, generally with orientation to the nearest Metrorail station or the Pentagon, however bus connections between these areas and to other parts of the County do not currently exist. Recommendations in this plan provide for bus service where there are missing intra-county connections.

Figure 3-12: Existing Service Area

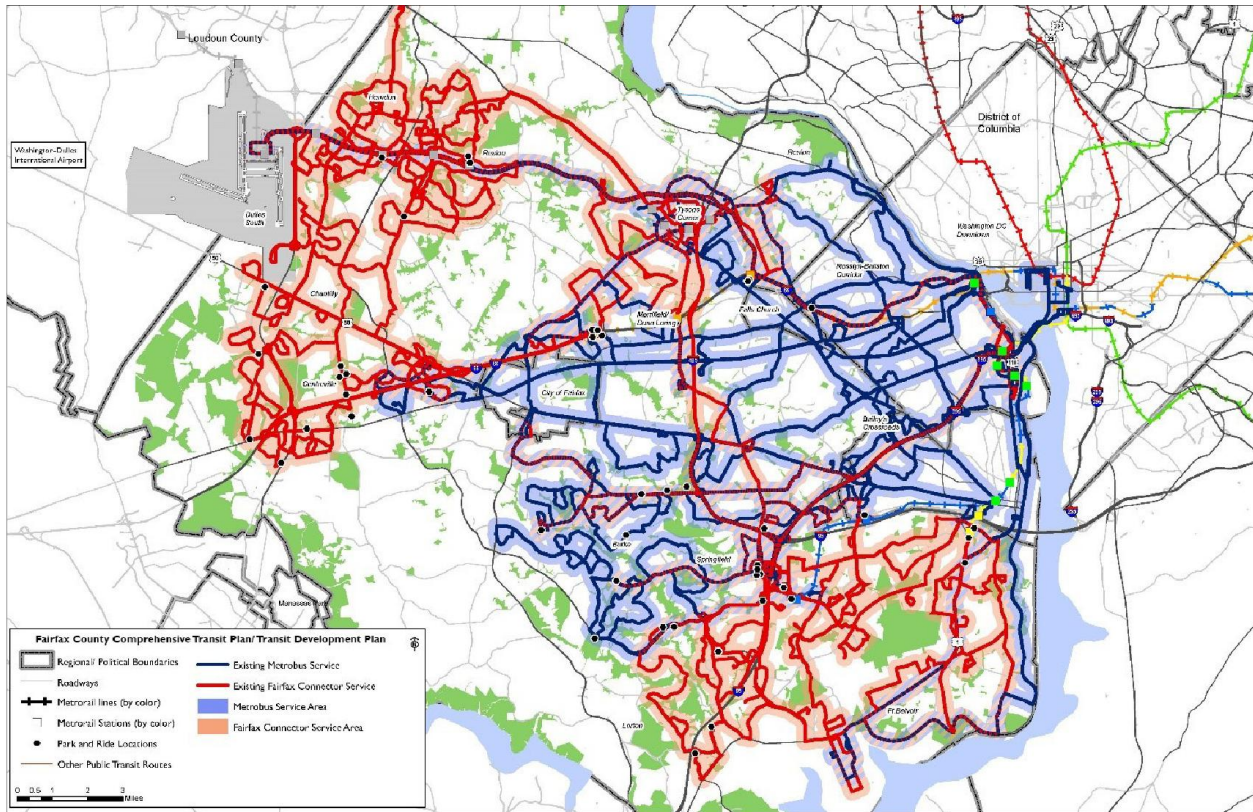


Figure 3-13: Existing Service Area Population Density

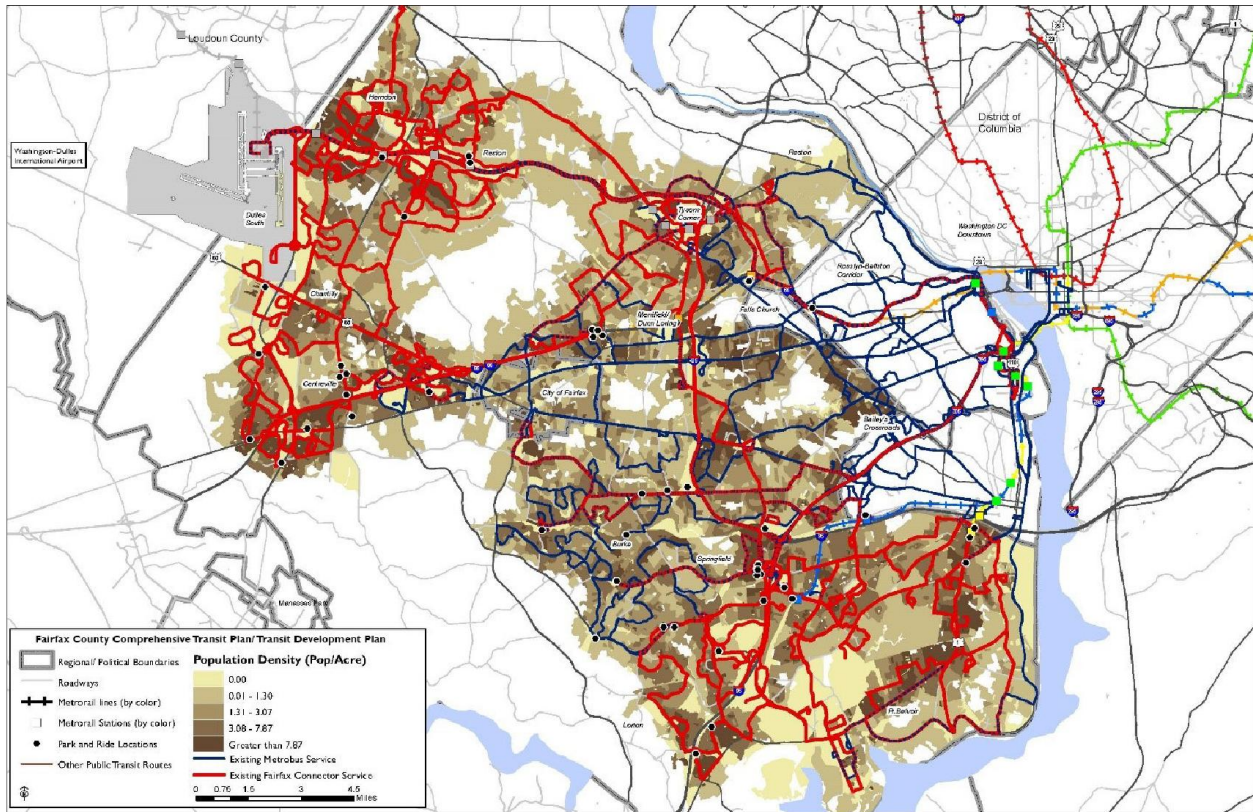


Figure 3-14: Existing Service Area Minority Population Density

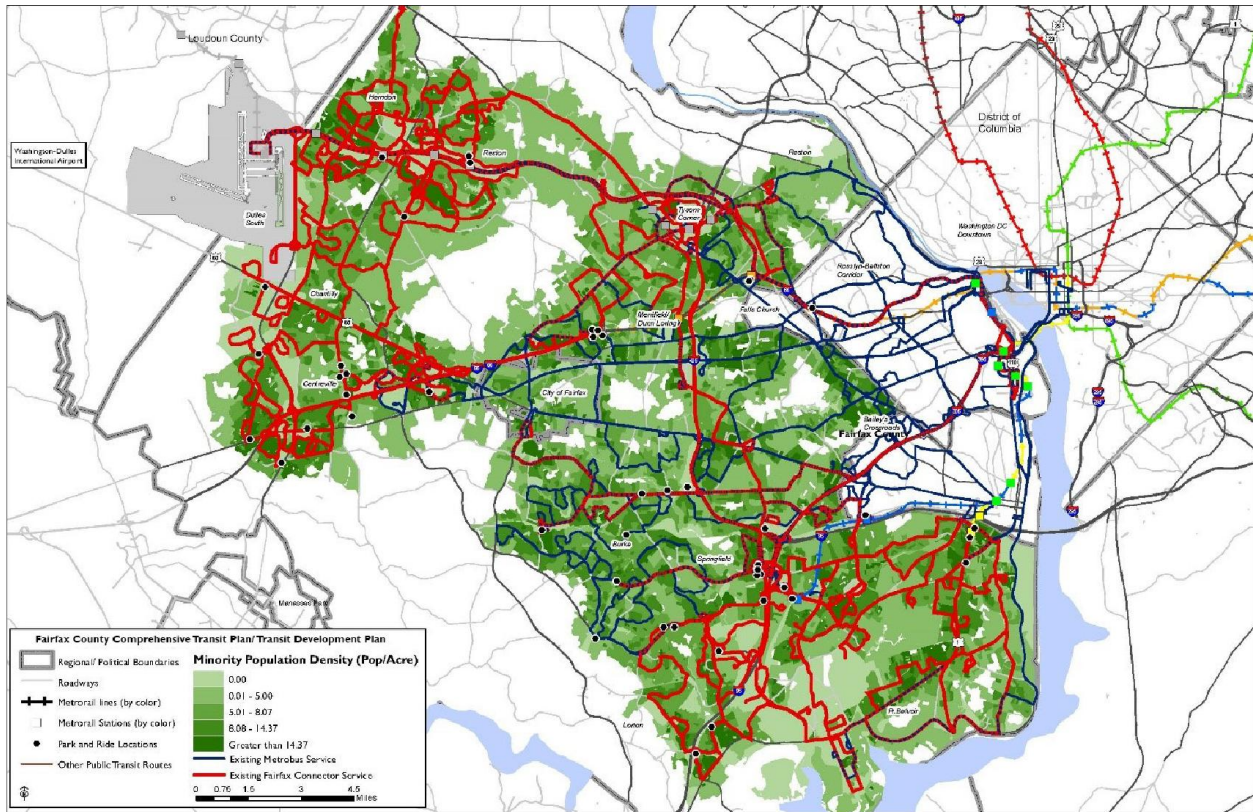


Table 3-10: Percent of County Population Served

	Percent of Population Served	Percent of Minority Population Served	Percent of Non-Minority Served
Connector	68%	73%	66%
Metrobus	53%	57%	51%
All Bus Transit	86%	92%	84%

Service Design Guidelines

The service design guidelines that the County follows for its Fairfax Connector service are divided into five areas: span and frequency; road types and routings; route numbering; scheduling; and operations planning guidelines. The first two sections related to service levels and routing were major inputs to the recommendations, and the existing Fairfax Connector routes were evaluated in this TDP for their adherence to these established standards.

Span of Service

The standards for the span of service are all stated with respect to the Metrorail span of service and differentiated between Commuter/Express, Cross-County, and all other routes (weekday and weekend), as shown in Table 3-11.

For commuter routes, the standard says that *when possible*, service should be provided during the morning and evening peak periods, Monday through Friday, early enough to connect to the first Metrorail train inbound to the District, and to the last train operated at frequent (six minute or otherwise) headways outbound from the District in the evening. The first Metrorail trip from Fairfax County's Metrorail stations is at or near 5:00 a.m. for all stations, implying a 4:30 a.m. start for most commuter routes, assuming a running time of 30 minutes. However, as many commuter routes currently do not operate before 6:00 a.m., a 5:00 a.m. start was used as a standard for monitoring the morning start for commuter service. This modification of the standard reflects the flexibility in how it was structured: developing a route's span of service to meet the first inbound train to the District *when possible*. Likewise, evening peak service operates until 7:00 p.m. Therefore, Fairfax Connector commuter routes were taken as compliant with the service span standards if the last trip left not earlier than 7:00 p.m.

The span of service on Fairfax Connector's Cross-County routes states that service should begin, when possible, within the first hour of Metrorail service to the last train outbound, which equates to starting service no later than 6:00 a.m. (within an hour of Metrorail's 5:00 a.m. opening). Operating until the last train outbound means operating until at least 12:00 a.m.

All other routes, including Local, Feeder, and Circulator routes, adhere to a standard that states that service should begin, when possible, within the first hour of Metrorail service to within two hours of the last train at night on the Monday through Thursday schedule. (Metrorail has late-night service on Fridays and Saturdays, but for the purposes of this standard the last train on the Monday through Thursday schedule is considered the standard throughout the week.) This standard equates to a 6:00 a.m. start (within one hour of the 5:00 a.m. opening of Metrorail) and a 10:00 p.m. end (within two hours of the system's closing at 12:00 midnight). On weekends, Metrorail service begins at 7:00 a.m.; therefore the weekend Fairfax Connector span standard is 8:00 a.m. to 10:00 p.m. The span of service standards also state that for "other ridership generators/attractors" the span of service should be appropriate to serve the demand.

Table 3-11: Service Span Standards

Service Type	Morning Start Standard	Evening End Standard	Morning Start	Evening End
Commuter/Express	Meet first train inbound to the District.	Last outbound train from the District at 6 minute headway.	5:00 a.m.	7:00 p.m.
Cross-County	Within first hour of Metrorail service start.	Last train outbound.	6:00 a.m.	12:00 a.m.
All Others (weekday)	Within first hour of Metrorail service start.	Within 2 hours of last train.	6:00 a.m.	10:00 p.m.
All Others (weekend)	Within first hour of Metrorail service start.	Within 2 hours of last train.	8:00 a.m.	10:00 p.m.
Other ridership generators/attractors	Service should be as appropriate to serve demand.			

Fairfax County currently operates 37 routes that provide service in the peak only, or provide peak plus evening service. Of these, only 10 meet the start standard of same time as Metrorail (5:00 a.m.). However, all but three of the 27 routes that are not yet operating at 5:00 a.m. start before 6:00 a.m. Several Fairfax Connector services operate as route groups, where one

route provides off-peak (and sometimes weekend) service, and one or more peak versions operate under different route numbers. The service span standards were interpreted as considering these route groups together. Only a few routes do not meet the service span standards. These routes are listed in Table 3-12 along with their current span of service.

Table 3-12: Non-Commuter Routes that Do Not Meet the Span Standard

Route	Name	From	To
422	Boone Boulevard	6:00 a.m.	7:56 p.m.
585	Reston South-Franklin Farm	5:00 a.m.	9:06 p.m.
952	Sunset Hills	5:39 a.m.	9:29 p.m.
985	Wall Road-Dulles Discovery	5:00 a.m.	7:40 p.m.
RIBS 2	South Lakes	8:06 a.m.	10:03 p.m.
RIBS 4	North Point	6:40 a.m.	10:26 p.m.

Note: Routes with peak and off-peak versions are considered part of a single group and assessed based on the span of the group.

In the TDP recommendations, Route 952 is proposed to extend service to 10:00 p.m., thereby meeting the standard. Route 985 is proposed for elimination following implementation of the Silver Line Phase 2. For the remaining routes that do not meet the span standards there are particular reasons that additional service was not recommended, such as very low ridership on the first and/or last trips of the day.

As shown in Table 3-13, four routes fail to meet the span of service standard for Saturdays, because they do not have service until 10:00 p.m.

Table 3-13: Routes Not Meeting Saturday Span of Service Standard

Route	Name	From	To
605	Fair Oaks-Reston	7:19 a.m.	8:44 p.m.
937	Coppermine-Elden	7:45 a.m.	8:39 p.m.
RIBS 2	South Lakes	7:32 a.m.	9:24 p.m.
RIBS 4	North Point	7:10 a.m.	8:43 p.m.

As shown in Table 3-14, 12 routes do not meet the Sunday span of service standard. As on Saturdays, all routes fail to have service until 10:00 p.m.

Table 3-14: Routes Not Meeting Sunday Span of Service Standard

Route	Name	From	To
101	Fort Hunt-Mount Vernon	6:22 a.m.	8:19 p.m.
423	Park Run-Westpark	7:00 a.m.	9:04 p.m.
463	Vienna-Maple Avenue	8:00 a.m.	8:27 p.m.
551	South Lakes Drive	6:30 a.m.	9:24 p.m.
574	Reston-Tysons	6:00 a.m.	8:34 p.m.
605	Fair Oaks-Reston	8:12 a.m.	8:35 p.m.
721	Chain Bridge Road-McLean	8:00 a.m.	8:30 p.m.
937	Coppermine-Elden	7:45 a.m.	6:39 p.m.
RIBS 2	South Lakes	7:32 a.m.	9:18 p.m.
RIBS 4	North Point	7:10 a.m.	8:41 p.m.
RIBS 5	Herndon	6:16 a.m.	8:35 p.m.

One additional route, Route 983, does not meet the span standard alone for Weekday, Saturday, or Sunday service. However, because Route 983 is considered to provide complementary service to Route 981, together these two routes meet the span standard. As a result, Route 983 is considered to be meeting the span standard.

Service Frequency

There are two parts to the service frequency standard. The “demand” headway should be “not less than the rail headway and not more than twice the rail headway” during peak periods and “not less than twice the rail headway and not more than three times the rail headway” during other times. The “policy” headway represents a preferred minimum level of service to be maintained during the defined periods. Table 3-15 shows these demand standards in minutes based on current Metrorail headways. However, demand headways only apply when there would be crowding if policy headways are used. Therefore, only the policy headways, also shown in the table, apply in all circumstances.

Table 3-15: Headway Standards (minutes)

	Weekday Peaks	Midday, Evening, Saturday	Sunday	Late Night
Demand	6 to 12	24 to 36	30 to 45	40 to 60
Policy	30	60	60	60

Table 3-16 shows that there are 12 routes that do not meet the peak policy headway standard of 30 minutes or less. Four of them are circulator routes, three are express routes, three are feeders, and only one (Route 605) is a standard local route. Route 605 was recently improved to a 45 minute headway from a 60 minute peak headway, and the TDP further recommends improving it to a 30 minute headway. Route 466 is recommended to be improved to a 15 minute peak headway, and Routes 651 and 652 are proposed to be improved to 20 minute peak headways. Routes 393 and 394 together provide 20-minute service between the Pentagon and the Saratoga Park-and-Ride Lot. No changes are recommended for the other routes, as current ridership patterns do not warrant additional service.

Table 3-16: Routes Not Meeting the Peak Headway Standard

Route	Name	Type	Service Pattern	Peak Headway (min.)
393	Springfield-Pentagon	Express	Weekday Peak	40
394	Springfield-Pentagon	Express	Weekday Peak	40
432	Old Courthouse-Beulah	Circulator	Weekday Peak	40
495	Burke Centre-Tysons	Express	Weekday	35
466	Vienna-Oakton	Feeder	Weekday Peak	35
605	Fair Oaks-Reston	Local	Seven Days	45
651	Chantilly-Brookfield	Feeder	Weekday Peak	35
652	Chantilly-Franklin Farm	Feeder	Weekday Peak	35
937	Coppermine-Elden	Circulator	Seven Days	35
RIBS 2	South Lakes	Circulator	Seven Days	40
RIBS 4	North Point	Circulator	Seven Days	40
RIBS 5	Herndon	Circulator	Seven Days	45

There are four routes, shown in Table 3-17, that do not meet the off-peak policy headway. Only one of these, Route 985, is a regular local route, and it is close to meeting the 60 minute standard. Route 585 is proposed to be modified with the opening of the Silver Line Phase 2, and would have its off-peak frequency improved to meet the standard. Route 985 is proposed for elimination following implementation of the Silver Line Phase 2. The other routes, which are both Express routes, are not recommended for off-peak service frequency improvements as current ridership patterns do not warrant additional service.

Table 3-17: Routes Not Meeting the Off-Peak Headway Standard

Route	Name	Type	Service Pattern	Midday Headway (min.)
494	Lorton-Springfield-Tysons	Express	Weekday	120
495	Burke Centre-Tysons	Express	Weekday	100
585	Reston South-Franklin Farm	Feeder	Weekday	70
985	Wall Road-Dulles Discovery	Distributor	Weekday	65

There is only one route, Route 605, that does not meet the Saturday and Sunday headway standard, as shown in Table 3-18.

Table 3-18: Route Not Meeting the Weekend Headway Standard

Route	Name	Type	Service Pattern	Headway (min.)
605	Fair Oaks-Reston	Local	Seven Days	70

No changes are recommended for Route 605 at this time, as current ridership patterns do not warrant additional service.

3.9. Equipment and Facility Deficiencies

Equipment and Facility Analysis

Fairfax Connector's operations and maintenance activities take place at three operating divisions, Herndon, Huntington, and West Ox. The number of vehicles currently parked at Herndon and Huntington exceeds the facility's design capacity value. At West Ox, there is ample space to park additional buses; however, assuming a target of 15 buses per maintenance bay, West Ox has capacity to maintain only six more buses, and the other two divisions are already exceeding that level. In response to these capacity constraints, renovations or expansions are currently planned or in-progress at all three bus garages. After these renovations are complete, there will be capacity to garage and maintain the current fleet as well as the additional buses needed for service expansion.

In FY2016, Fairfax County began construction on a \$20 million expansion of administrative and maintenance space and service buildings at the West Ox Bus Garage. When the project is completed in mid FY2017, the West Ox operating division will be able to both maintain and park 170 buses.

The County is currently in the design phase of planning for the renovation of both the Herndon and Huntington operating division. The renovation of the Reston-Herndon operating division will include an interior redesign and redesign of the parking configuration. This \$12 million project is expected to start construction late in FY2016 and to be completed early in FY2018.

The renovation of the Huntington operating division will provide additional maintenance bays, a chassis wash, tire shop, additional operator locker room space, and reconfigure the parking area to provide more bus parking. This \$5.2 million project is anticipated to be complete in early FY2017. This expansion project will enable the Fairfax Connector to park and maintain 105 buses at this facility, four more than are currently assigned.

Title VI Analysis of Equipment and Facilities

The 2014 Title VI Program includes the required service standards (as described elsewhere in this chapter) and policies for deployment of transit amenities, including locations of bus stops and amenities such as shelters, benches, customer information displays, lighting, and bus bays. The Transit Service Monitoring section of the Title VI Program compared Minority and Non-Minority Routes. The analysis found that by FTA definitions 40 routes, or 55 percent of Fairfax Connector's 73 routes, are considered minority routes and 33 routes, or 45 percent are considered non-minority. The analysis then compared the two types of routes with respect to:

- Vehicle load
- Vehicle headway
- On-time performance
- Service availability
- Vehicle assignment
- Distribution of transit amenities

The findings were as follows:

- Minority routes are slightly less crowded than non-minority routes for all time periods evaluated (however the average maximum loads for both types were well below the number of seats available on the bus);
- Minority routes had more frequent service than non-minority routes for all time periods except Saturdays (where the minority average was 48 minutes and non-minority 38 minutes);
- Minority routes had slightly worse on-time performance (95%) compared to non-minority routes (97%). (Note that these data were based on a sample of radio dispatch logs, not on the ridecheck data used elsewhere in this report.)
- A higher share of the minority population (80%) lived within walking distance of transit (Fairfax Connector or Metrobus) than non-minority (36%);
- Buses serving minority areas from the Reston-Herndon division were on average two years older (seven vs. five) than buses serving non-minority areas; however, there was no difference in average vehicle age for the other two garages. Many of the buses in the Herndon/Reston garage are scheduled to be replaced in 2015;
- The locations of transit amenities were mapped with respect to minority populations. A review of the map showed that transit amenities are equitably dispersed throughout the Fairfax Connector service area. Areas with high concentrations of minority populations generally have comfortable and safe access to a variety of transit options, including Fairfax Connector, Metrobus, Metrorail, and VRE, which provide convenient access to schools, hospitals, and government and employment centers.

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4. Service Expansion Project Descriptions

4.1. Overview of Demographics

Fairfax County is the most populous county in Virginia, with just over 1.1 million residents in 2012. Persons under 18 years of age make up about 24 percent of the population, while persons 65 years of age and older make up about 11 percent. About 70 percent of County residents own their home and the median household income in 2012 was just under \$110,000, the second highest in the nation, behind only adjacent Loudoun County. Only six percent of the population of Fairfax County lives below the federal poverty line; however, Fairfax County uses a more inclusive definition of low-income, which is persons living households with an annual income below \$53,650, or 50 percent of the average median income for a family of four. Eighteen percent of all households in the County had an annual income of less than \$50,000, and 15 percent of family households (three or more people) made less than \$50,000 in 2012.¹⁰

Population

Density

According to the U.S. Census Bureau, the 2013 population of Fairfax County was just over 1.13 million, living within 390 square miles of land area. Figure 4-2 shows the number of persons per square mile at the block group level and illustrates that most of the County is made up of areas with 1,000 persons or more per square mile. The most sparsely populated areas of the County are those areas in the south near Prince William County, and in the north along the Potomac River across from Montgomery County. In many of the activity centers in Fairfax County, there are block groups with over 15,000 residents per square mile.

One of the most notable features in the development pattern of Fairfax County is that there are two areas of dense population separated by a less densely developed area in the middle. The larger densely populated area, the area east of VA-123, is an extension of the urban development pattern emanating from Washington, D.C., that includes Arlington County and the cities of Alexandria and Falls Church. The second, smaller area in the western part of the County is adjacent to Dulles Airport and includes Centreville, Chantilly, Reston and Herndon.

Growth

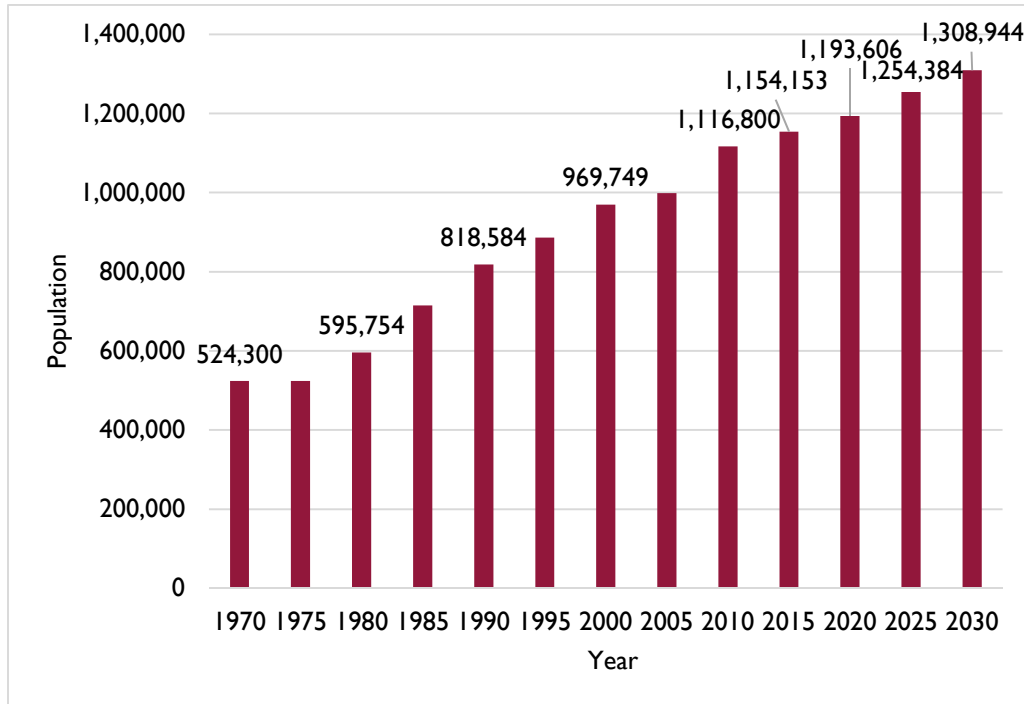
Figure 4-1 shows the County's population growth for the last 45 years as well as the Metropolitan Washington Council of Governments' (MWCOG) projected growth out to the year 2030. Projections of the population and number of households into 2025 were obtained from MWCOG's Round 8.3 Cooperative Forecasts.¹¹ MWCOG's Department of Community Planning

¹⁰ U.S. Census Bureau, American Community Survey 2009-2012 5-year estimates. Income data is reported in \$10,000 increments, the analysis of low-income households captures all households with an annual income below \$50,000.

¹¹ http://www.mwcog.org/publications/departmental.asp?CLASSIFICATION_ID=6&SUBCLASSIFICATION_ID=27

and Services provides public projections at the level of Traffic Analysis Zone (TAZ). The current population is projected to grow more than 13 percent by 2030, to more than 1.3 million people.

Figure 4-1 Fairfax County Population Growth (1970-2030)



Sources: U.S. Census, American Community Survey (ACS), and MWCOG Round 8.3 Cooperative Forecasts

Between 2015 and 2025, the population of Fairfax County (including the City of Fairfax and the City of Falls Church) is projected to grow from 1,154,153 to 1,254,384, a change of nearly nine percent. The number of persons per square mile anticipated in 2025 and the projected percentage growth in population between 2010 and 2025 at the TAZ level are shown in Figure 4-3 and Figure 4-4, respectively.¹² As demonstrated by the maps, the highest percentages of population growth are expected to occur in or adjacent to several areas that are already densely populated, such as the Herndon, Chantilly and Centreville corridor near the airport. In only a small number of TAZs, population is projected to decline.

Households

For the purpose of identifying areas with enough population density to support public transit service, density is generally measured in households per acre, rather than persons per square mile. As shown in Figure 4-5, the majority of the County is covered by areas with fewer than three households per acre, with a significant part of the County having less than one household

¹² Maps for growth in population, households, and employment are based on MWCOG Cooperative Forecasts Round 8.2 (2013, due to the timing of when these were created. Growth numbers in the text for these three numbers refer to Round 8.3 (2014).

per acre. The block groups with three or more households per acre are scattered throughout more the densely populated areas in the eastern and western parts of the County.

Fairfax County's households are projected to grow at a similar rate to overall population; about 14 percent. In 2010, there were 386,103 households in Fairfax County. By 2025, the MWCOG forecasts indicate that there will be 438,812 households. Figure 4-6 shows the projected number of households per square mile at the TAZ level, for the year 2025.

Employment

At the same time, employment in Fairfax County is also expected to grow significantly, from 693,803 jobs in 2015 to 814,740 in 2025 and 866,739 in 2030, increases of 17 percent and 25 percent, respectively, over 2015 numbers. Figure 4-7 shows the anticipated growth in employment by TAZ between 2015 and 2025.

Figure 4-2 Fairfax County Population Density (2012)

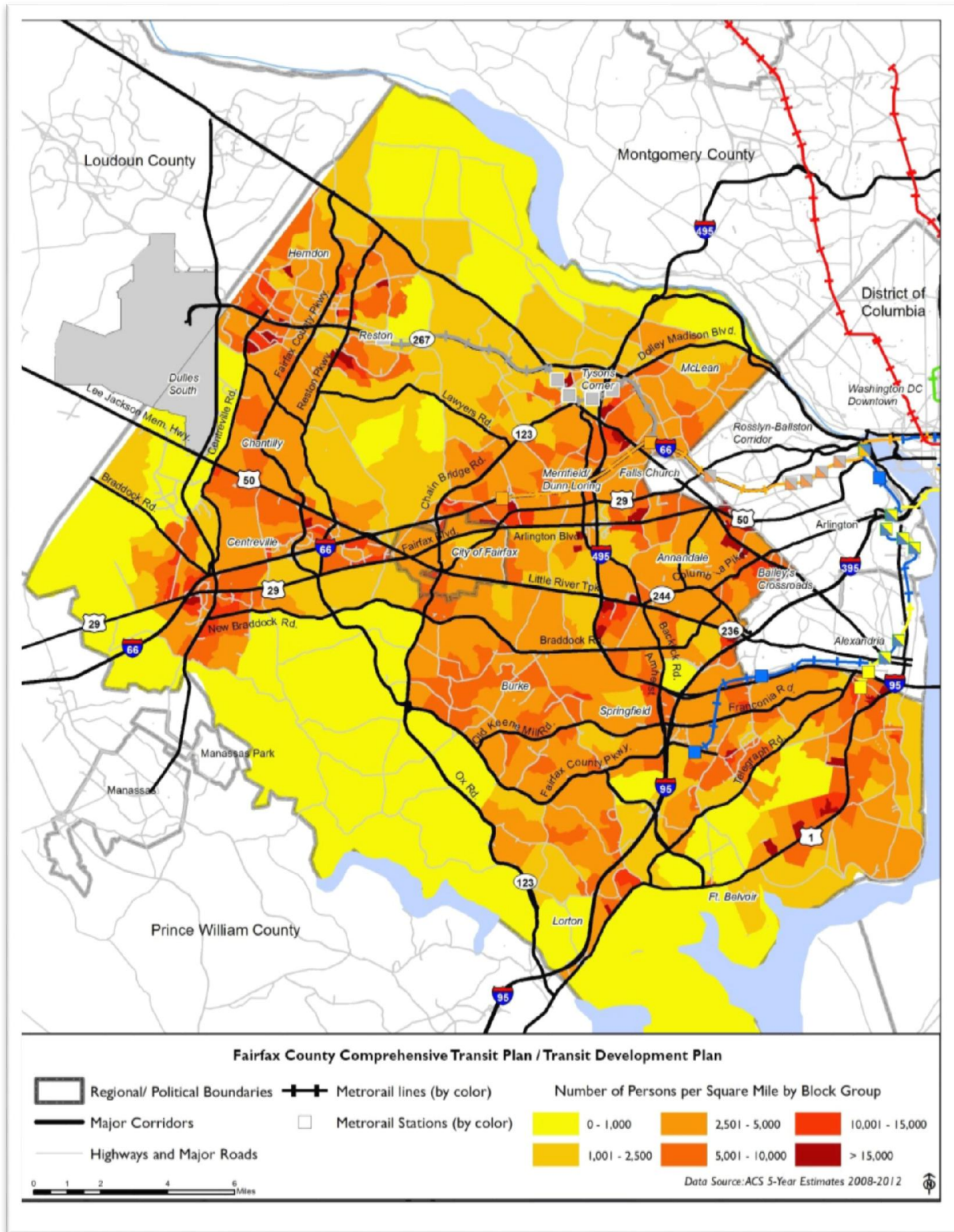


Figure 4-3 Fairfax County Population Density Projected to 2025

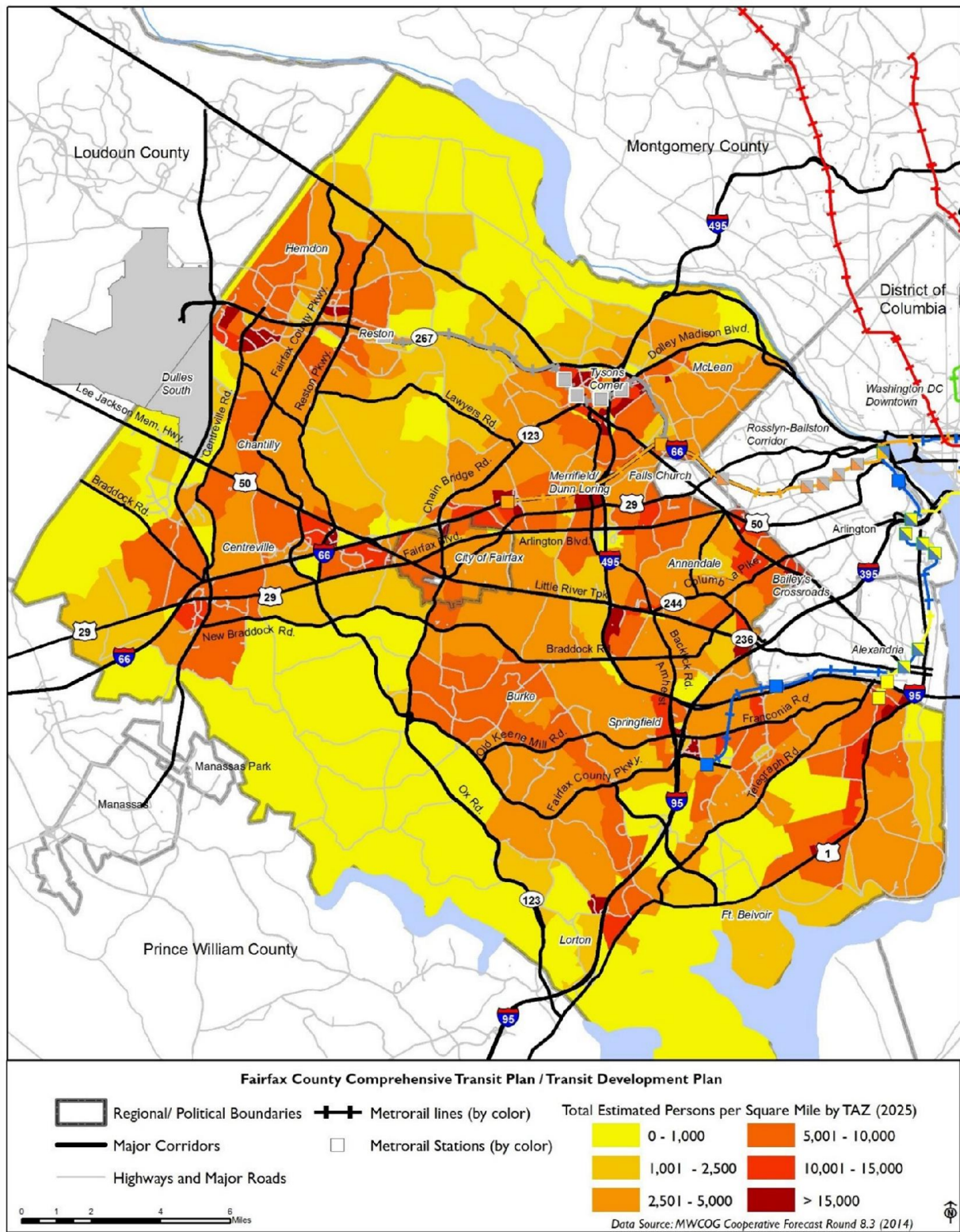


Figure 4-4 Fairfax County Projected Population Growth Rates

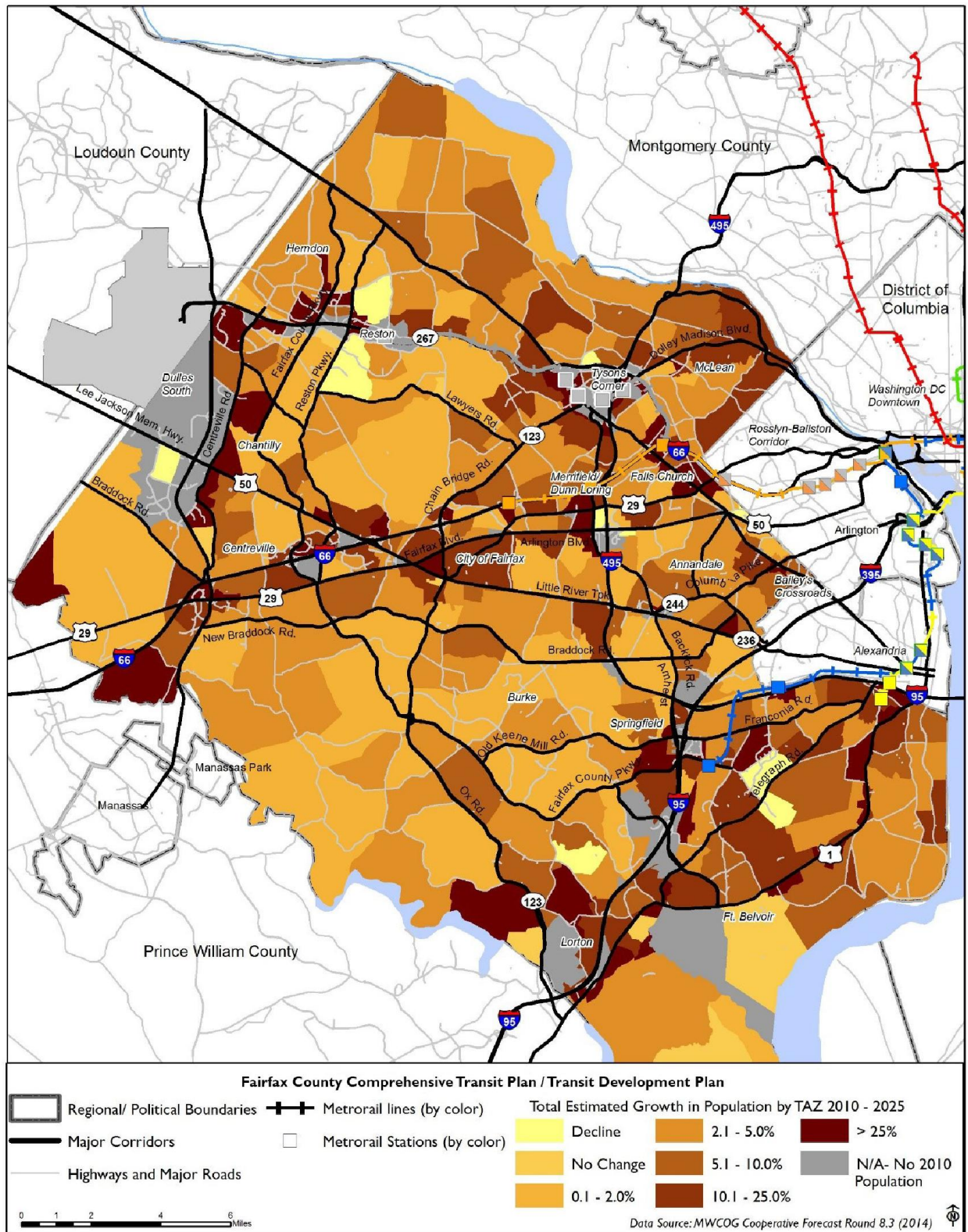


Figure 4-5 Fairfax County Household Density (2012)

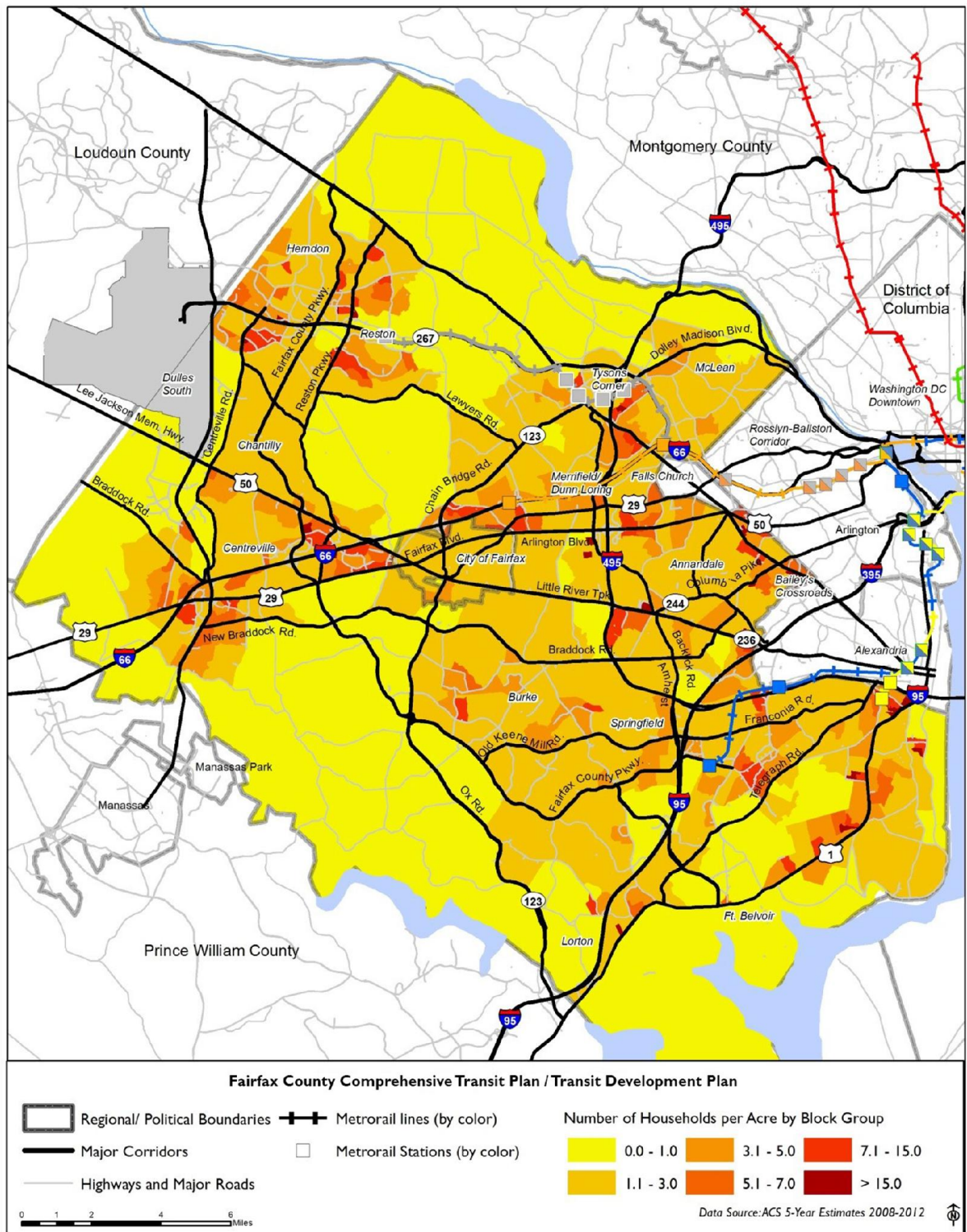


Figure 4-6 Fairfax County Household Density Projected to 2025

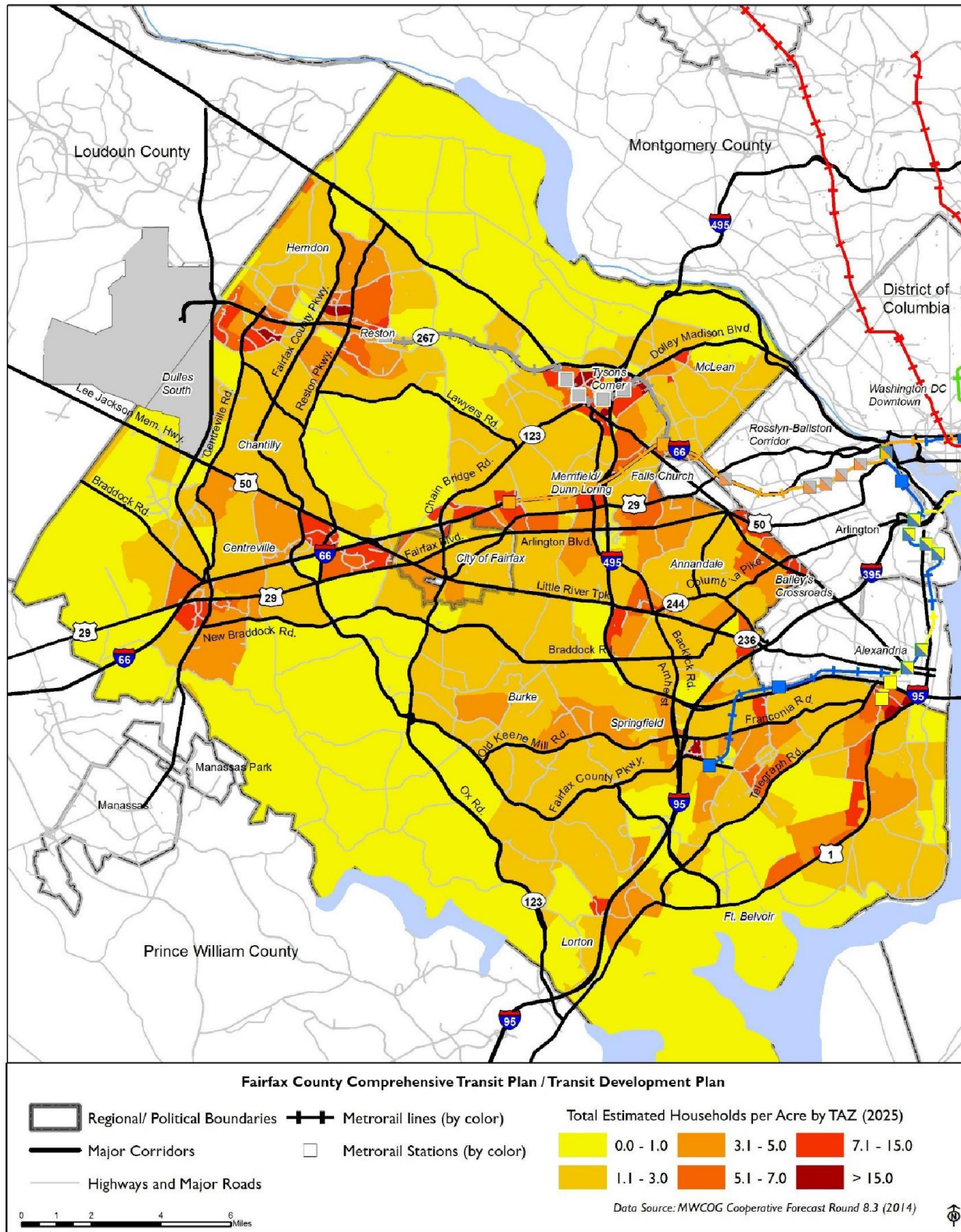
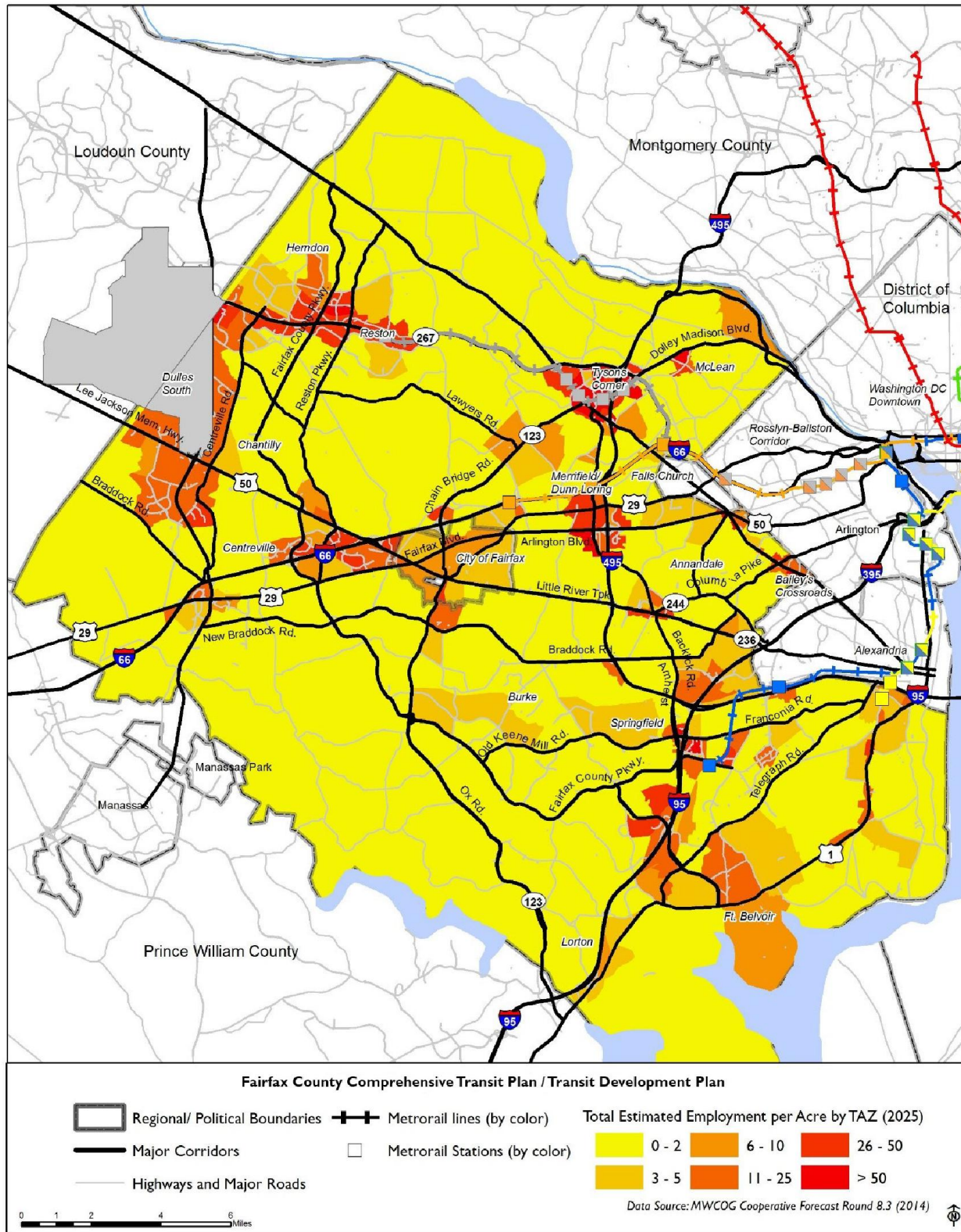


Figure 4-7 Fairfax County Employment Density Projected to 2025



County Demographics

The following section provides a description, with maps, of Fairfax County's demographic characteristics, including population by age, disability status, persons in poverty, median household income, zero-vehicle households, population by race, and Limited English Proficiency (LEP) population. Each of the characteristics addressed plays an important role in analyzing the use of and planning for transit, by acting as indicators of the propensity for transit use. This demographic data was obtained from various sources, including the U.S. Census Bureau's Decennial Census, American Community Survey (ACS) and Population Estimates Program; MWCOG's Cooperative Forecasts Program; and Fairfax County.

Population by Age

Persons over the age of 65 ("older adults") have a higher propensity for transit use than persons of other ages. Figure 4-8 shows the number of persons 65 years and older per square mile by block group. In most of the densely populated areas of the County, there are at least 100 older adults per square mile. Block groups with very high densities of older adults are mostly located east of Route 123, and southeast of Richmond Highway. Unlike total population, the density of older adults appears to be higher in the eastern part of the County (east of Route 123) than in the Dulles Corridor in the west.

Persons with Disabilities

The number of persons with disabilities is captured by the U.S. Census Bureau at the tract level rather than at the block group level. The American Community Survey's definition of disability categorizes types of disabilities into communicative, physical, and mental domains according to a set of prescribed criteria; all types are included in this analysis. As shown in Figure 4-9 there are fewer than 500 persons with disabilities per square mile in most of the County. Higher concentrations of persons with disabilities can be found at a few locations inside the beltway, as well as along Richmond Highway, in Springfield, and at a few locations along the Dulles Corridor.

Persons in Poverty

The number of persons in poverty per square mile by tract is displayed in Figure 4-10. Compared to other regions, the overall County rate of poverty, 5.6 percent, is relatively low. Still, as demonstrated by the map, there are some areas with more than 500 persons in poverty per square mile. In Herndon and Reston, the same areas where there is high density housing, there are tracts with more than 1,000 persons in poverty per square mile. In Centreville, along US 1 in the south, and in Bailey's Crossroads, there are tracts with more than 1,500 persons in poverty per square mile. However, it should be noted that Fairfax County uses a more inclusive definition of low-income, households with an income less than 50 percent the area median income, or \$53,650 for a family of four.

Median Household Income

The median household income in Fairfax County, \$110,000, is extremely high, not only compared to the rest of Virginia, but also to the rest of the nation. This is illustrated in Figure 4-11, which shows the median household income by census tract. Only very small areas of the

County, the same areas with high poverty and high density housing, contain households with median annual earnings of \$53,650 (the County's threshold for defining low-income households) or less. In the least densely populated areas in the north and south edges of the County, median income is well over \$175,000 per year.

Zero-Vehicle Households

As illustrated in Figure 4-12, the vast majority of households in the County have access to at least one personal motor vehicle. Bailey's Crossroads/Seven Corners and along US-1 northeast of Fort Belvoir, as well as parts of Springfield and Annandale, are the areas with the most zero-vehicle households.

Race and Limited English Proficiency (LEP)

While race and English language proficiency are not necessarily direct indicators of transit-usage, those with Limited English Proficiency tend to be first generation immigrants who also tend toward lower income, an indicator of the propensity to use transit. Fairfax County is fairly diverse in terms of the number of non-white persons per square mile. Figure 4-13 shows the percentage of the population that is non-white, again at the census tract level. There is wide variation in the percentage of the total population that is non-white. In areas of the County that are less dense overall, minorities tend to make up no more than 30 percent of the total population. In other areas, typically those with greater population density, there are areas that are 40 percent or more non-white, with some areas where more than 60 percent of the population are minority. One area that has a high minority percentage that is less densely populated than other minority areas, is the I-95 corridor in Newington and Lorton, where between 40 and 75 percent of the population is minority. In most areas of Reston, Chantilly and Centreville, 40 percent or more of the population is minority.

As shown in Figure 4-14, there are many census tracts within the County that contain a higher percentage of persons with limited English proficiency. This is especially true in Herndon, Centreville and Lorton, as well as most of the area inside the beltway between Tysons and Springfield, where most tracts are made up of more than ten percent LEP persons. In much of the rest of the County, ten percent or less of the population speaks English less than well.

Figure 4-8 Fairfax County Density of Older Adults (2012)

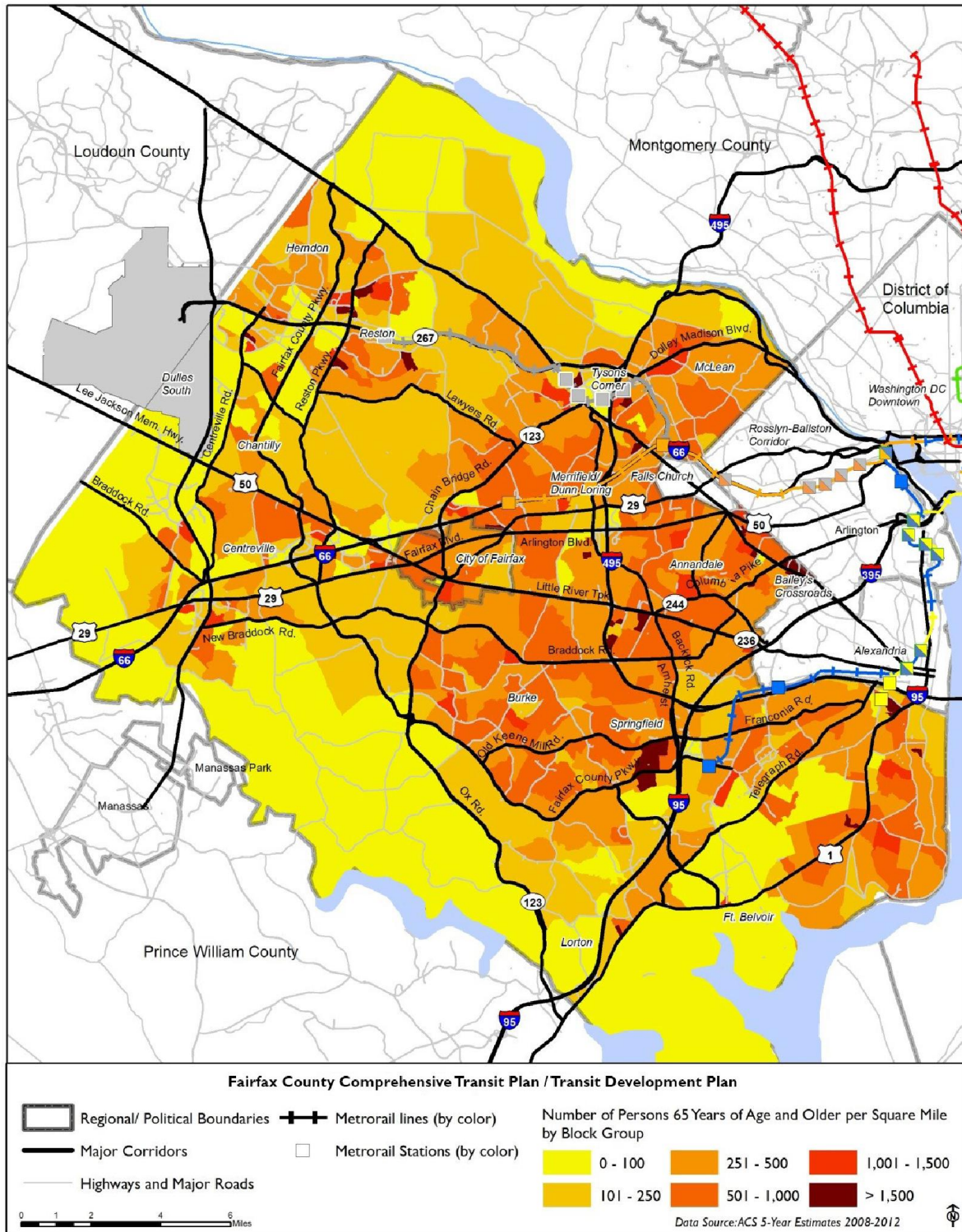


Figure 4-9 Fairfax County Density of Persons with Disabilities (2012)

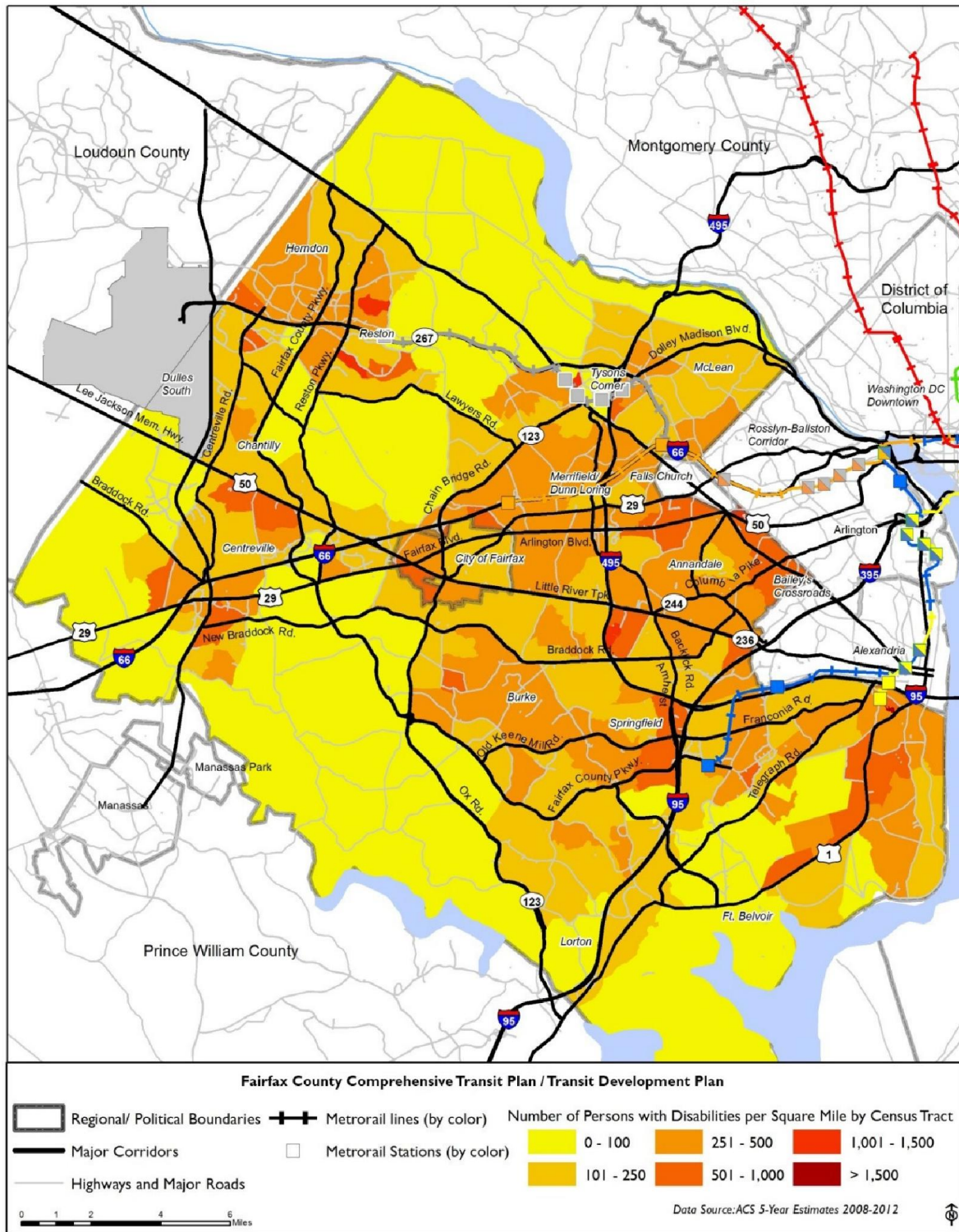


Figure 4-10 Fairfax County Density of Persons in Poverty (2012)

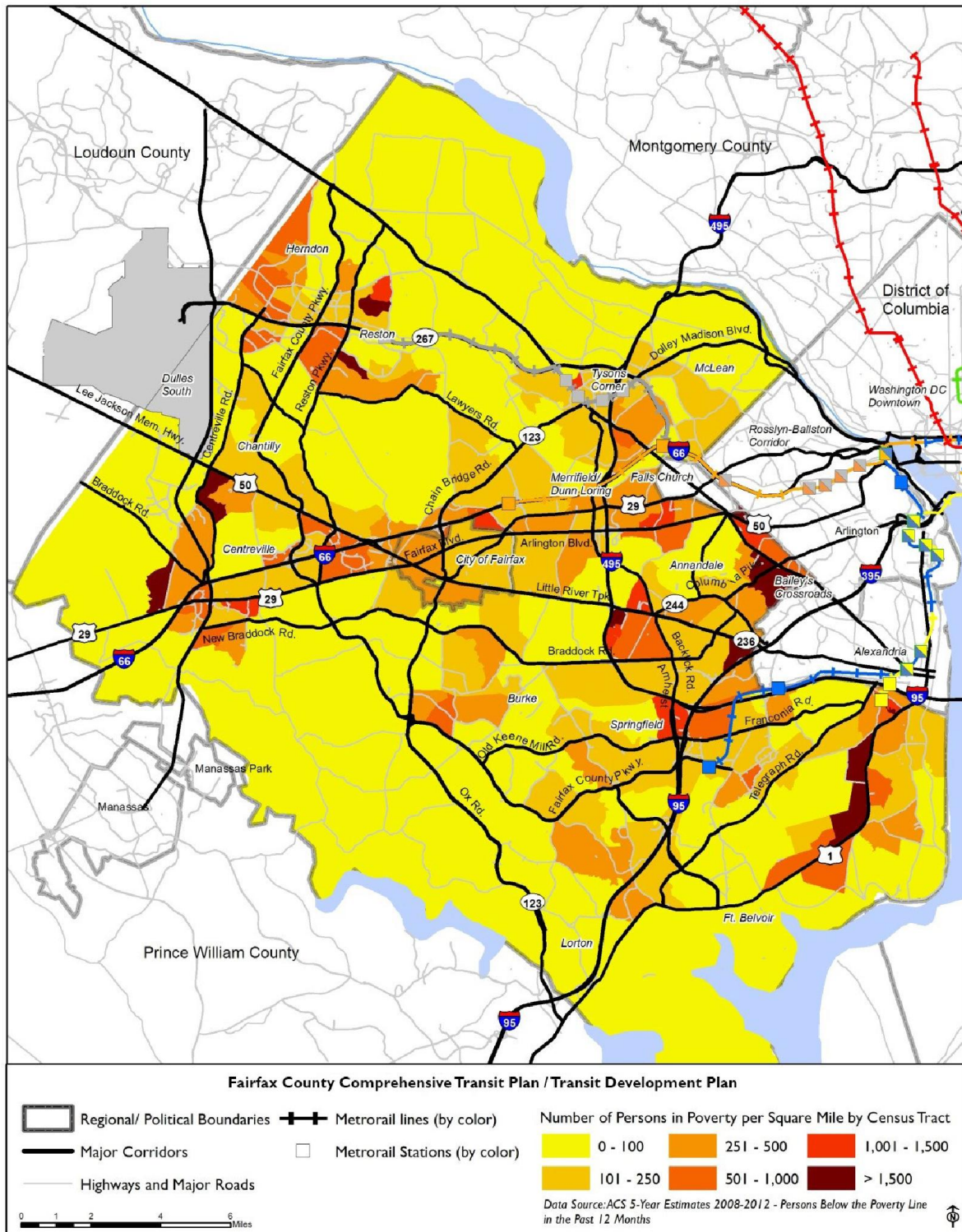


Figure 4-11 Fairfax County Median Household Income (2012)

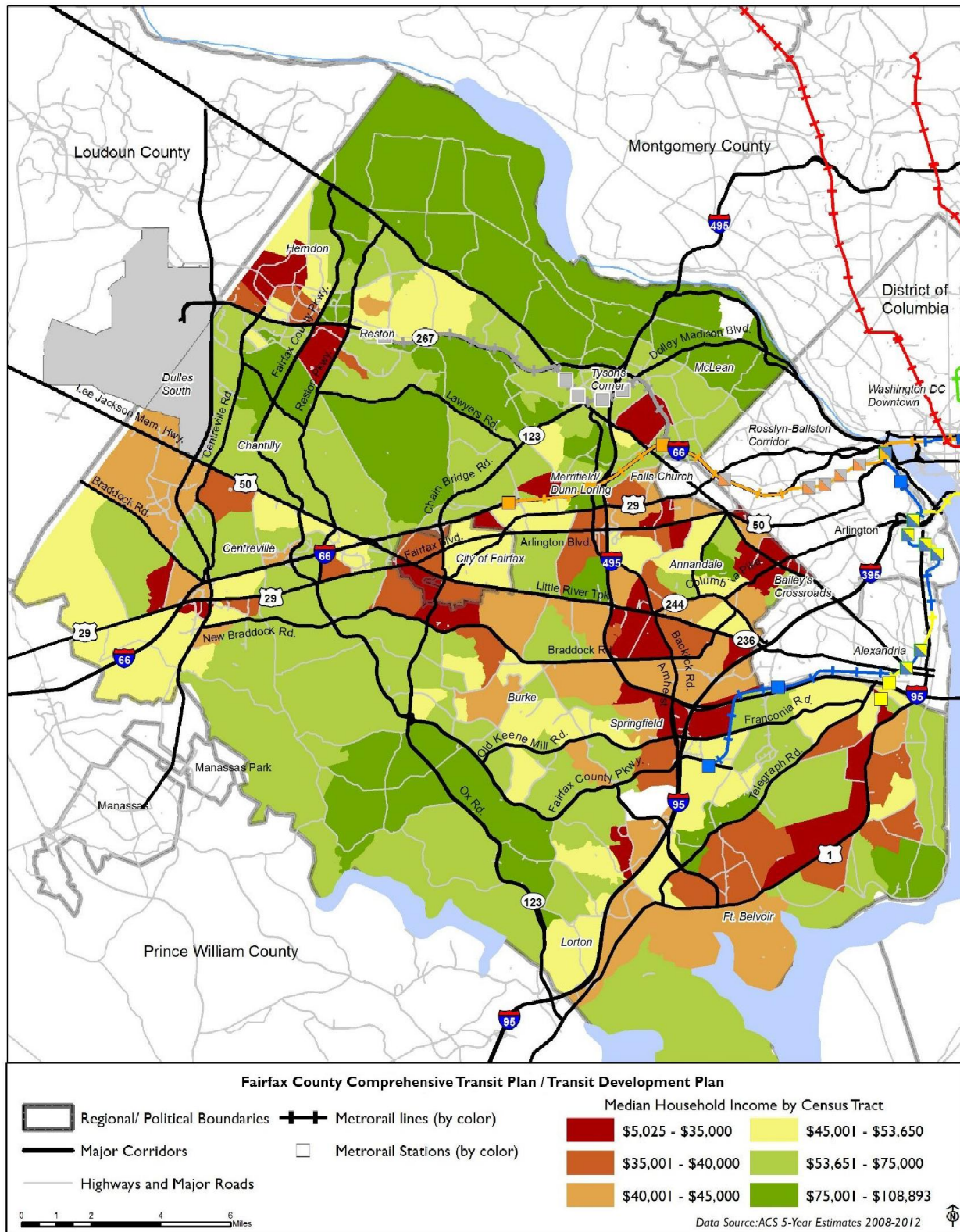


Figure 4-12 Fairfax County Density of Zero-Vehicle Households (2012)

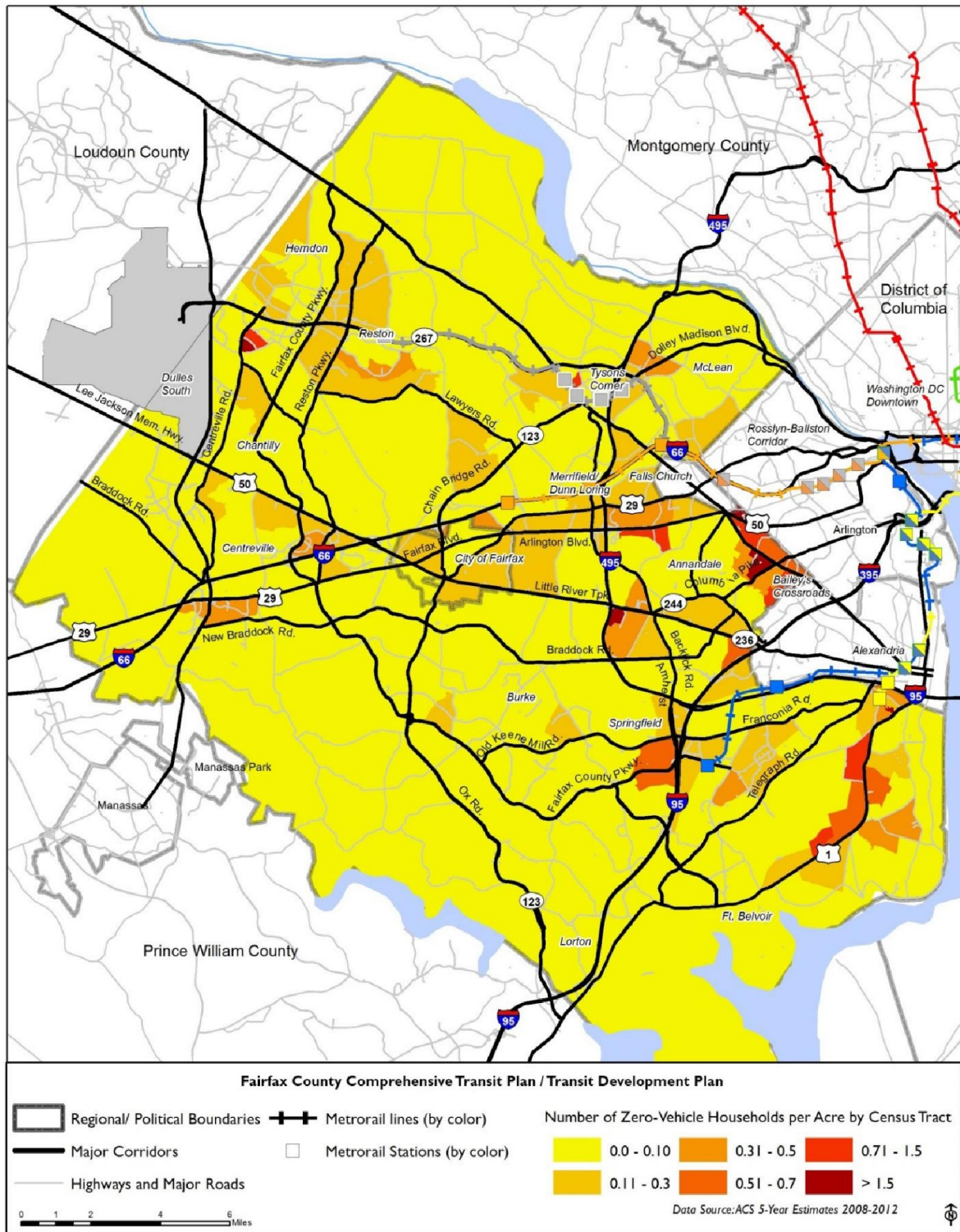


Figure 4-13 Fairfax County Percentage of the Population that is Non-White (2012)

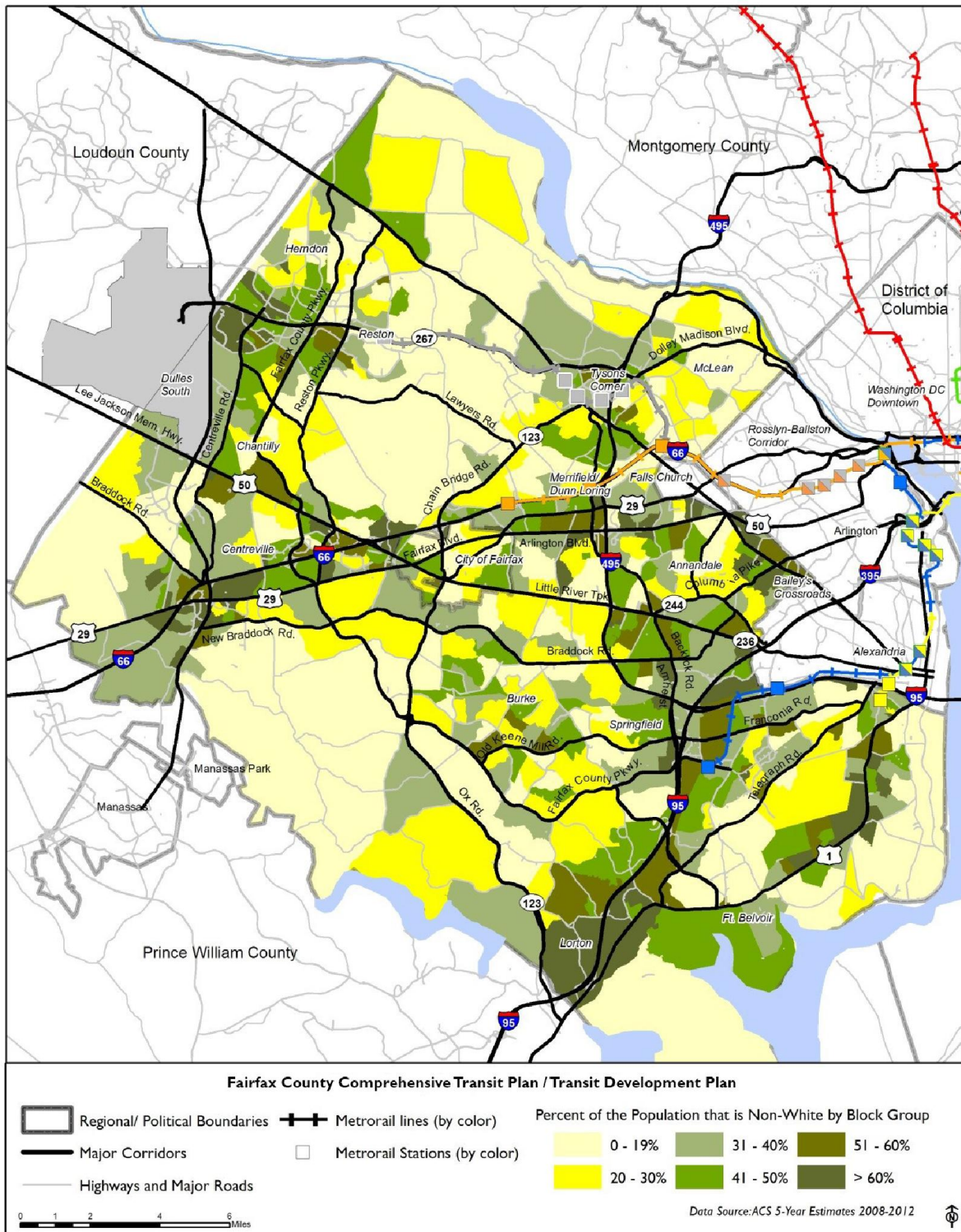
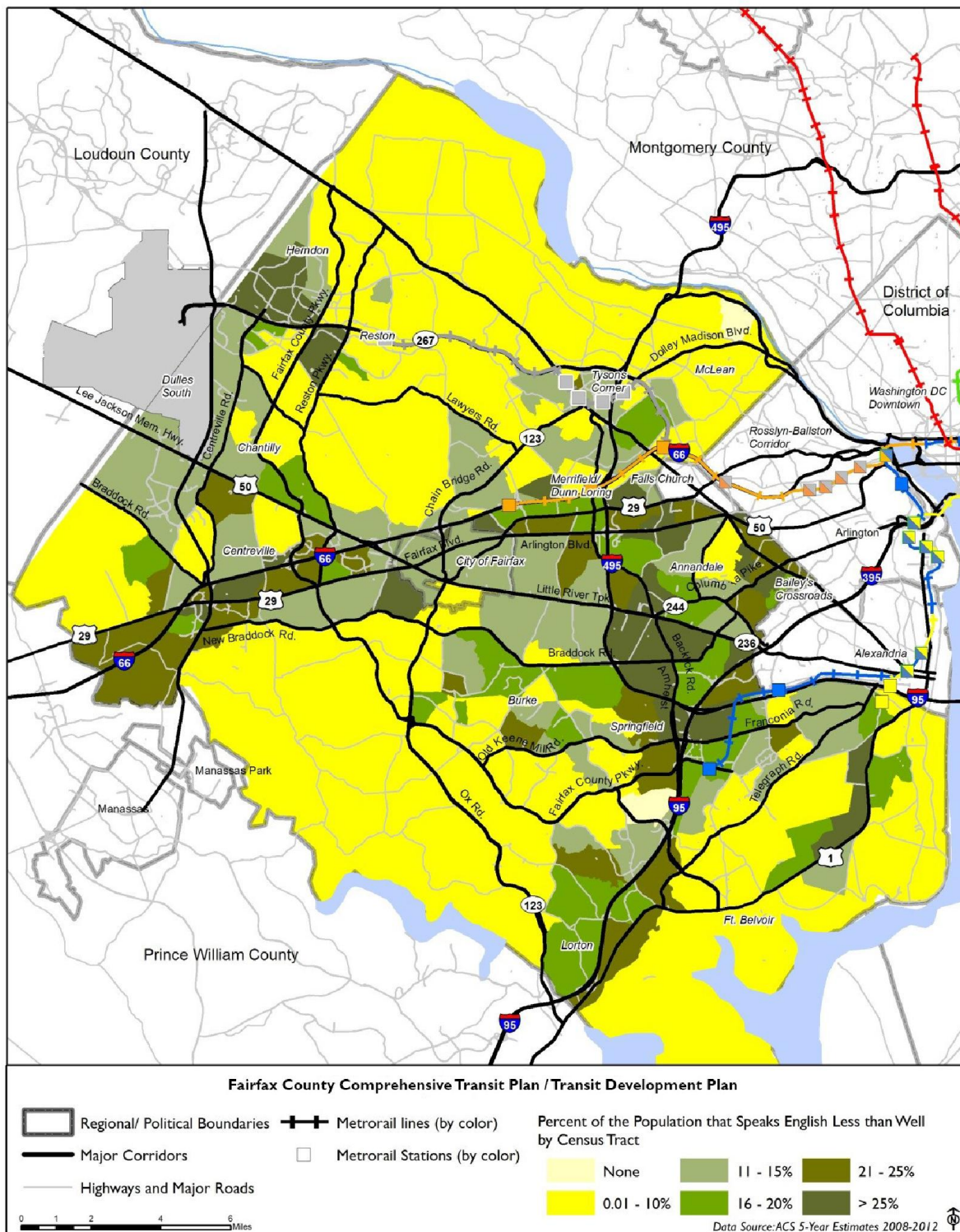


Figure 4-14 Fairfax County Percentage of Limited English Proficiency (LEP) Persons (2012)



4.2. Methods of Ridership Estimation

Route-level ridership estimates are shown in the summary tables at the end of this chapter. They were developed using a variety of techniques, depending on the type of recommendation:

- Changes in headway – The impact of headway (interval between trips) changes was estimated using industry-standard economic analysis tools. These tools were applied to existing ridership data to estimate changes in future ridership.
- Changes in span of service – The impact of the extension of service into a new time period—be it midday, evening, or weekend—was estimated using ratios of ridership in the new time period to ridership in the existing time period. These ratios were drawn from routes operating in the same area with similar service levels. If there were no analogous routes, then the ratios were based on typical industry experience.
- New routes – The ridership on an entirely new service is necessarily more speculative. Whenever possible, the productivity of a similar route serving a similar area was used as the basis for the estimate. That productivity was then multiplied by the projected number of revenue hours to produce a ridership estimate.
- Multiple changes – In some cases, a route was being changed in more than one way, such as revised headways and a new alignment, and perhaps a new span as well. In addition, routes in the northwestern part of the county were strongly affected by the Silver Line Phase 2 implementation. The impacts of each of these changes were accounted for separately. For instance, Route 950 is expected to lose many riders to the Silver Line when Phase 2 opens (specifically, those who currently ride between Herndon-Monroe and the Wiehle-Reston East Metrorail Station), but it will gain riders from Route 505, which it is recommended to absorb. The headway will also be improved. Thus it was necessary to take account of all of these factors in order to estimate the total ridership impact of the recommendations.

4.3. Overview of Service Expansion

Most of the recommendations described in detail in this TDP are centered on improving an already robust bus network. This includes improvements to frequency and span of service, such as additional midday or weekend service. In addition, there are recommendations to reroute buses to streamline operations and provide quicker service or to serve new destinations. Finally, new routes are recommended to connect locations that either do not have transit connections today or do not have a direct connection. In addition to these improvements, the recommendations outlined in this TDP include specific suggestions related to four key areas: inter-jurisdictional services, cross-county services, commuter service on limited access roadways, Silver Line Phase 2 feeder service, and alternatives to fixed-route bus service.

Inter-Jurisdictional Services

Currently Fairfax County residents, employees and visitors are provided with inter-jurisdictional service through Metrorail, numerous Metrobus lines, and Virginia Railway Express (VRE). Additionally, several Fairfax Connector routes provide service into Arlington County, particularly Crystal City and the Pentagon, as well as to Dulles International Airport in Loudoun County.

The Potomac and Rappahannock Transportation Commission (PRTC) also offers several commuter and Metro Direct buses into the county (with separate routes from Woodbridge, Gainesville, and Manassas to Tysons, and Dale City and Woodbridge to Franconia-Springfield). However, those services are only available for trips originating in Prince William County. Loudoun County Transit also provides service into Fairfax County, providing connections on separate routes from Potomac Falls and Leesburg to the Wiehle-Reston East Metrorail Station, with the Leesburg route continuing on to Tysons.

While Metrorail connections are feasible to connect Fairfax County with many other parts of the region, and are expanding with the Silver Line being added, the travel times can be long. This TDP recommends several direct bus connections between parts of the county and other key activity centers in the region, including a direct route from Tysons to Bethesda and another one from the Huntington Metrorail Station to National Harbor.

Cross County Services

One of the most frequent comments provided by stakeholders is the need for more cross-county service to provide transit options for those traveling between the northern and southern parts of the county, both in West County and further east. There are several proposals for new cross-county service discussed in the recommendations that follow:

- Route 313 - Fair Oaks Mall – Franconia-Springfield Metrorail/VRE Station via Judicial Center
- Route 315 – Vienna Metrorail Station – Franconia-Springfield Metrorail/VRE Station via George Mason University
- Route 496 – Herndon Metrorail Station – Franconia-Springfield Metrorail/VRE Station via Fairfax County Parkway
- Route 607- Fair Oaks Mall – Herndon Metrorail Station
- Route 901 - Centreville United Methodist Church – Herndon Metrorail Station

Commuter Service on Limited Access Roadways

Over the past several years, several managed lanes facilities, or High Occupancy Toll (HOT) lanes have opened in Northern Virginia, providing Fairfax County with free-flow highway facilities that can be used for high-speed bus service. In November 2012, The 495 Express Lanes opened between the Springfield interchange to a point just north of the Dulles Toll Road, north of Tysons. In December 2014, the 95 Express Lanes opened between Aquia, just south of Marine Corps Base Quantico in Prince William County, through Fairfax County and into Alexandria on I-395.¹³ Upon opening of these new HOT lanes, Fairfax Connector began service on Connector Route 495 from Burke Centre to Tysons, followed shortly by Routes 493 and 494, which offered service to Tysons from Lorton and Springfield, respectively. This TDP offers recommendations for these services, and also addresses Route 393 that began in May 2015 and

¹³ The newly expanded toll lanes that allow single-occupant vehicles via EZ-Pass payment end prior to the City of Alexandria; at that point buses may use the pre-existing HOV/3 lanes into the District of Columbia.

operates between the Saratoga Park-and-Ride Lot and the Mark Center and Pentagon, utilizing the I-95 and I-395 HOT lanes.

VDOT is currently studying managed lanes west of the Capital Beltway (I-495) along I-66, which are anticipated to open in 2021. VDOT is also developing a plan to implement a revised managed lanes strategy for I-66 inside the Beltway in 2017. FCDOT is an active participant in both efforts. Plans for transit service to be implemented in the I-66 corridor, both outside and inside the Beltway, are under development.

Silver Line Phase 2 Feeder Service

With the July 26, 2014, opening of the Silver Line through Tysons and out to Reston, Fairfax County has continued to monitor and improve bus service that feeds these stations, along with the internal circulator routes in Tysons. Improvements were implemented in January and again in May 2015. This TDP recommends further improvements to continue to ensure that the Silver Line connections are effective over time and continue to serve the growing needs of the county. This TDP also addresses the changes that will need to be made to existing services to best provide access to Phase 2 of the Silver Line, which is anticipated to open for service in 2020. The Phase 2 extension will provide three more stations within Fairfax County: Reston Town Center, Herndon, and Innovation Center, just east of VA-28.

Alternative Services

Fairfax County is considering other tools that go beyond fixed route bus or rail service that can serve portions of the County that do not currently have adequate demand for traditional transit service and are not expected to in the near future. There are several recommendations in this chapter which may be more appropriate for one of these service types, instead of the traditional fixed-route service that is provided in the county by Fairfax Connector and Metrobus. The options for flexible, alternative services are described in the following paragraphs. The County will need to thoroughly study the operating and capital requirements of each type of service described in the paragraphs below. Issues related to facilities, vehicles, operators, and support requirements are among those that will need to be resolved before the procurement process to select a contract operator for such service could start.

Deviated fixed route transit service, noted as "Flex Routes" in this plan, operates along a prescribed route or alignment at generally fixed times, but may leave the route alignment to collect or drop off passengers who have requested the deviation.¹⁴ In route-deviation service, buses maintain scheduled checkpoint stops. However, unlike regular fixed-route service, nonscheduled stops are accommodated, and the bus may leave and return to the route to pick up requests for demand-responsive trips near the route. Passengers may call in advance for a route deviation, or may access the system at predetermined route stops. The limited geographic area where the bus travels off the route is known as the route deviation corridor.¹⁵ For Flex

¹⁴ National Transit Database Glossary <http://www.ntdprogram.gov/ntdprogram/Glossary.htm>

¹⁵ Transit Cooperative Research Program (TCRP) Report 6, *Users' Manual for Assessing Service-Delivery Systems for Rural Passenger Transportation*. http://onlinepubs.trb.org/onlinepubs/tcrp/tcrp_rpt_06-a.pdf

routes recommended in this plan, the deviation corridors were developed using a guideline of a one-quarter mile deviation outside the route, with exact boundaries of roadways, if available, or intersections, if no roadway parallel to the route was near enough to the quarter mile limit.

This TDP has identified three areas that are primary candidates for initial deployment of flexible services in the following parts of the county: Centreville (north and south of Centreville Square), McLean, and Annandale. All of these areas have relatively low transit propensity using the methodology previously described. The specific “flexible service areas” are described and mapped in the corresponding geographic section of this document. Although the specific flexible service type has not yet been determined, the concept for these routes is that they would have a defined route with the ability to deviate within the flexible service area under certain predefined parameters. However, it should be noted that FCDOT does not currently have a flexible route program, and it could take several years to deploy the equipment, labor agreements, and service plans required to put one in place.

The service expansion recommendations that follow are arranged by whether or not they are funded, then by provider, then by route number. The recommendations take into account the demographic information provided in the next section; operating costs, projected farebox recovery ratios, and ridership projections are delineated at the end of each service expansion description.

4.4. Service Expansion Projects with Potential Funding Identified

Service expansion and improvement projects for FY2016 and FY2017 have been identified and are listed below. The new routes proposed are either intra-community routes or routes needed to feed Metrorail riders to new developments that were not present when the 2009 TDP was written. The changes to routes 151, 152, 621, 630, 640, and 650 and new routes 624 and 634 are funded for FY2016; changes to routes 321 and 322 and new routes 308, 313, and 451 were recommended for funding in the FY2017 budget proposal. All these existing and new routes are operated, or are anticipated to be operated, by Fairfax Connector.

Recommended for Implementation in Fiscal Year 2016

Huntington Service Area

Revise Schedule for Routes 151/152/159 Engleside or Groveton – Mount Vernon Lines

Many of the midday and weekend trips, especially on Route 151, experience passenger boardings and maximum loads that are actually greater than those in the peak. Greater passenger activity may cause these off-peak trips to run behind schedule. It is recommended that headways be improved to 30 minutes from 60 minutes on Route 151 as summarized in Table 4-1. Dwell times and running time should decrease with fewer boardings per trip, resulting in improved on-time performance. In addition, this headway improvement will increase the number of trips to serve Mount Vernon Estate visitors.

Route 151 is part of the Transportation Priorities Plan (TPP) South County Feeder Bus Service project. The TPP transit projects are listed in Section 6.6.

Table 4-1: Route 151 Proposed Service Levels

Route 151		
Operator		Fairfax Connector
Span	Weekday	4:00 a.m. – 12:00 a.m.
	Saturday	5:30 a.m. – 12:00 a.m.
	Sunday	5:30 a.m. – 12:00 a.m.
Headway (min.)	Weekday Peak	20
	Weekday	30
	Midday	
	Weekday	30
	Evening	
	Saturday	30
	Sunday	30

Adjust Route 109 Rose Hill Schedule Run Time and Commence Sunday Service

Route 109 offers six-day service; most trips are interlined with the Route 101 schedule. Route 109 serves the Telegraph Road corridor before turning onto Rose Hill Drive to proceed to the Van Dorn Street Metrorail Station. An estimated 96 percent of Route 109 riders start or end their trips at either the Huntington or Van Dorn Street Metrorail Stations. Rose Hill residents rely on Route 109 as their primary transit option and predominately use this route as the first leg of their trip for destinations outside of the immediate area, mostly for work purposes.

Ridership on this seven-mile route has remained constant since its inception, indicating service to a stable residential community. Service productivity is near or slightly below the South County average. The community has indicated a preference for expanded service; however, existing service has ample capacity. Peak-period peak-direction boardings average about 20 passengers per trip and most off-peak trips have about 10 passengers. In response to public requests, and to improve transit connections available in the Rose Hill area, it is appropriate to implement Sunday service on an hourly schedule, as shown in Table 4-2, since ridership on Route 109 is of a similar volume as found on other area routes that have seven-day service (such as routes 161 and 162).

Sunday service can be interlined with Route 101, as it is for the remainder of the week, as a means to address reliability by moving some scheduled running time from Route 109 to Route 101. Route 109 run time data shows a large percent of early arrivals. This can cause prospective riders to miss scheduled trips. Since this route is interlined with Route 101, FCDOT should adjust Route 109 scheduled run times in conjunction with efforts to improve on-time performance on both routes.

Route 109 is part of the TPP South County Feeder Bus Service project. The TPP transit projects are listed in Section 6.6.

Table 4-2: Route 109 Proposed Service Levels

Route 109		
Operator		Fairfax Connector
Span	Weekday	5:00 a.m. – 12:00 a.m.
	Saturday	6:30 a.m. – 11:00 p.m.
	Sunday	7:30 a.m. – 8:00 p.m.
Headway (min.)	Weekday Peak	30
	Weekday	60
	Midday	
	Weekday Evening	45
	Saturday	60
	Sunday	60

Centreville/Chantilly Service Area

Improve Weekday Off-peak Service via I-66 to the Vienna Metrorail Station on Routes 621, 630, 640, and 650

Off-peak headways on routes 621, 630, 640, and 650, which currently operate hourly during the midday and early evening periods, should be improved to 30 minutes as shown in Table 4-3. More frequent and convenient service is anticipated to generate additional ridership.

Routes 621, 630, 640, and 650 are part of the TPP Vienna Metrorail Feeder Bus Service Expansion project. The TPP transit projects are listed in Section 6.6.

**Table 4-3: Routes 621, 630, 640, and 650
Proposed Weekday Off-peak Service Levels**

Routes 621, 630, 640, and 650		
Operator		Fairfax Connector
Span	Midday	9:15 a.m. – 3:15 p.m.
	Early Evening	8:30 p.m. – 11:00 p.m.
Headway (min.)	Midday	30
	Early Evening	30

Initiate Weekend Service via I-66 to the Vienna Metrorail Station on Routes 621, 630, 640, and 650

Connector service to the Vienna Metrorail Station should be expanded to weekends as was envisioned when the original plan to convert Metrobus service to operation by the Connector

was implemented. There is no transit service in these areas on weekends. This has been a long-standing complaint of area residents. During outreach events, local officials and riders have stated their interest and need for weekend service in a region which currently has no weekend transit service. The weekend schedules for routes 621, 630, 640 and 650 should be instituted as summarized in Table 4-4. FCDOT plans to implement weekend service on these routes in FY2016 to provide transit options to local residents who would use weekend services for work, shopping or recreational trip purposes. A link to the Vienna Metrorail Station would facilitate travel to many points within the region. Service is initially recommended to be implemented with a 60 minute headway and a span of service for both days as shown in the following table. Additional trips should be added in the future if necessary in response to ridership and available resources.

**Table 4-4: Routes 621, 630, 640, and 650
Proposed Weekend Service**

Routes 621, 630, 640, and 650		
Operator		Fairfax Connector
Span	Saturday	7:00 a.m. – 8:00 p.m.
	Sunday	8:00 a.m. – 8:00 p.m.
Headway (min.)	Saturday	60
	Sunday	60

New Route 634 Stringfellow Park-and-Ride Lot – Vienna Metrorail Station via I-66 and New Route 624 Fair Lakes – Vienna Metrorail Station via I-66

The expansion to the Stringfellow Park-and-Ride Lot will be completed in 2016, and include approximately 300 additional parking spaces, additional bus bays with bus shelters, covered bicycle storage for about 70 bicycles in a secure facility and standard bike racks to accommodate about 35 bicycles. This will necessitate added bus capacity to satisfy an increase in demand and commuter activity at the site. Rather than adding trips to routes 631 and 632 that currently service this lot, it is recommended to establish a new short-turn variant, designated as Route 634, to operate between the Stringfellow Park-and-Ride Lot and the Vienna Metrorail Station, with service levels as shown in Table 4-5. This route would use the Stringfellow Road HOV ramps to I-66 to provide direct, non-stop service to Vienna, as shown in Figure 4-15. The Route 634 schedule must be synchronized with the existing Route 631 and 632 schedules in order to use this added capacity effectively.

Reverse peak direction trips would run in revenue service as Route 624 Fair Lakes - Vienna Metrorail Station rather than as deadhead moves to and from Stringfellow Road. Given the configuration of the I-66 ramps, these return trips would exit I-66 at US-50 and would follow US-50 to West Ox Road to Fair Lakes Parkway, then to Fair Lakes Circle to serve the Fair Lakes Shopping Center and local businesses. The route would turn back onto Fair Lakes Parkway and then onto Fair Lakes Boulevard to proceed to Stringfellow Road and the Stringfellow Park-and-Ride Lot. Although ridership is not expected to be high on these reverse peak trips, for only a

minor increase in operating cost the route would serve reverse commute riders traveling to job sites in the Fair Lakes area.

Routes 624 and 634 are part of the TPP Vienna Metrorail Feeder Bus Service Expansion project. The TPP transit projects are listed in Section 6.6.

Figure 4-15: Proposed New Routes 624 and 634

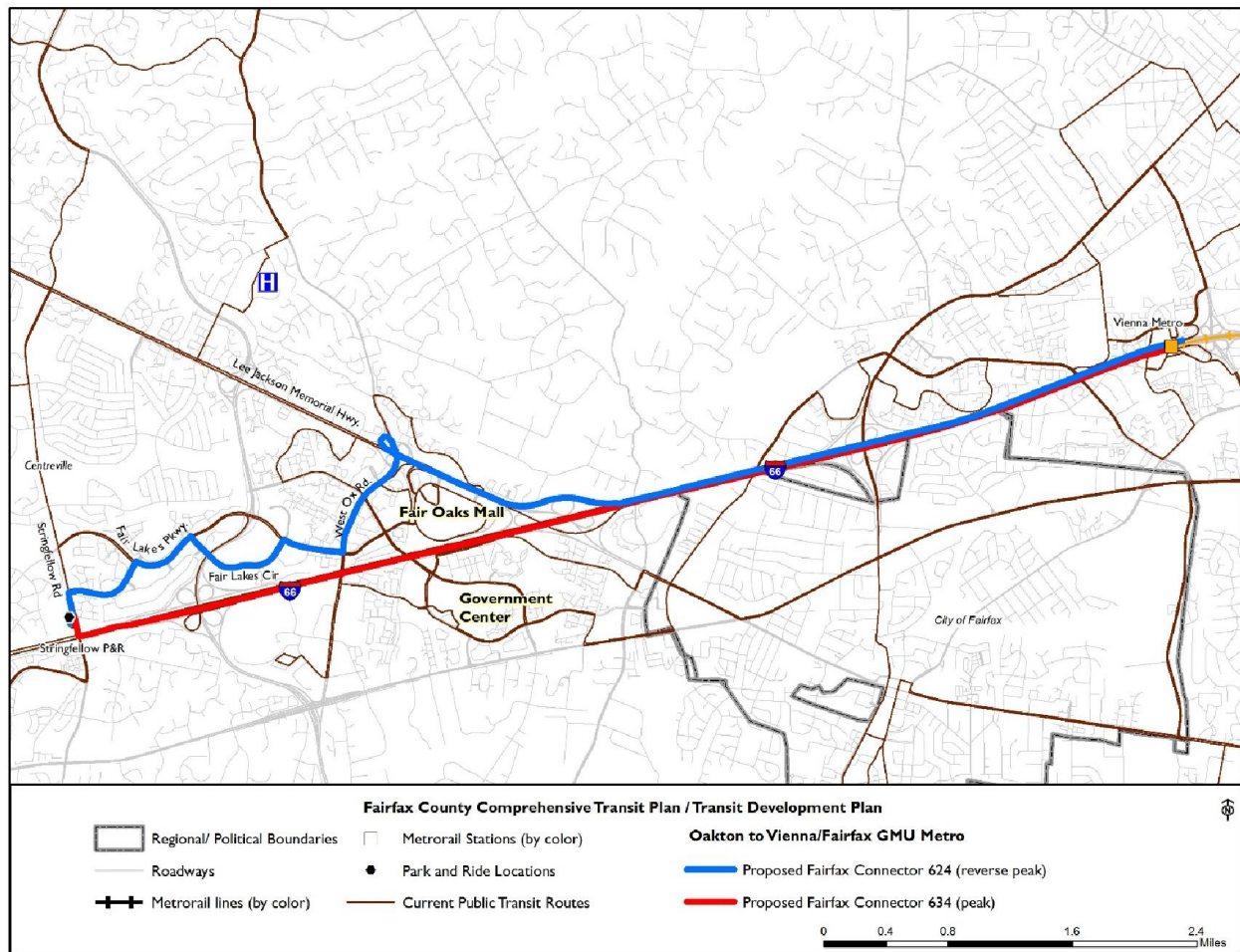


Table 4-5: New Routes 624 and 634 Proposed Service Levels

		Route 634 Near Term	Route 624 Near Term	Route 634 Future	Route 624 Future
Operator		Fairfax Connector	Fairfax Connector	Fairfax Connector	Fairfax Connector
Span	Morning Peak	4:30 a.m. - 9:00 a.m.	5:00 a.m. - 8:30 a.m.	4:30 a.m. - 9:00 a.m.	5:00 a.m. - 8:30 a.m.
	Afternoon Peak	3:30 p.m. - 8:30 p.m.	3:00 p.m. - 8:00 p.m.	3:30 p.m. - 8:30 p.m.	3:00 p.m. - 8:00 p.m.
Headway (min.)	Morning Peak	30	30	20	20
	Afternoon Peak	30	30	20	20

Recommended for Implementation in Fiscal Year 2017Springfield Service Area*New Route 313 Fair Oaks – Franconia-Springfield Metrorail/VRE Station via Judicial Center*

A new Route 313 Fair Oaks Mall – Franconia-Springfield Metrorail/VRE Station via Judicial Center is proposed as part of the County initiative to provide direct cross-county service where connections do not currently exist. This route would allow County residents to reach points via transit within the County that now require multiple transfers. In particular, it would provide a transfer-free link between the Fairfax County Government Center and the Fairfax County Judicial Center that does not presently exist between the Burke and Springfield areas. It would also provide bus service to areas of the County that currently do not have service, including local service to Robinson Secondary School, and commercial and retail establishments in the Burke and Burke Centre areas.

As shown in Figure 4-16, the proposed route would begin at Fair Oaks Mall in Fairfax Center, leaving the mall via Fair Lakes Parkway. The route would turn on Monument Drive towards Lee Highway passing the Fairfax County Government Center and follow Lee Highway (US-29) to Main Street (VA-236) into the City of Fairfax where it would turn onto Judicial Drive to serve the County Judicial complex. After preceding the length of Judicial Drive the route would follow VA-123 into the George Mason University (GMU) campus. The route would serve the campus along George Mason Boulevard and University Drive and return to VA-123 proceeding toward Braddock Road (VA-620). The route would turn onto Braddock Road and then turn down Sideburn Road to Zion Road then onto Roberts Road, serving the Robinson Secondary School, then continuing to the Burke Centre VRE Station. The route would continue on Roberts Parkway to Burke Centre Parkway to Lee Chapel Road to Old Keene Mill Road (VA-644) into Springfield and continuing on Franconia Road to Frontier Drive to the entrance to the Franconia-Springfield Metrorail/VRE Station busway. The proposed level of service for this nearly 19-mile route is presented in Table 4-6.

Route 313 is part of the Transportation Priorities Plan (TPP) South County Feeder Bus Service project. The TPP transit projects are listed in Section 6.6.

Figure 4-16: Proposed New Route 313

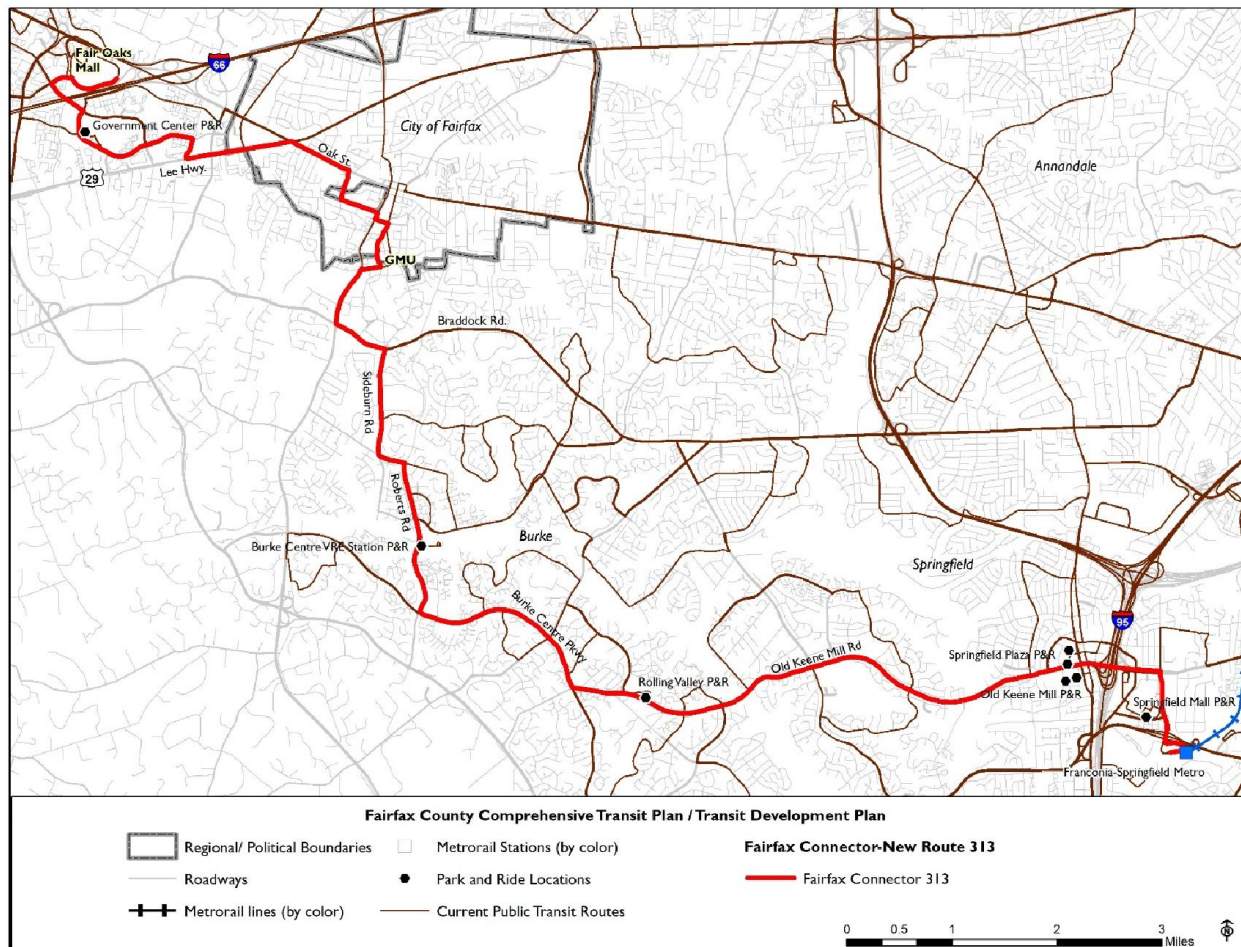


Table 4-6: New Route 313 Proposed Service Levels

Route 313	
Operator	Fairfax Connector
Span	Weekday 5:00 a.m. – 10:00 p.m.
	Saturday 7:00 a.m. – 8:00 p.m.
	Sunday --
Headway (min.)	Weekday Peak 30
	Weekday 60
	Midday
	Weekday 60
	Evening
	Saturday 30/60
	Sunday --

Modify Routes 321/322 Greater Springfield Circulator Service Schedule

It is recommended, as shown in Figure 4-17, that the Manchester Lakes and the Bland Street route diversions be eliminated, saving about six minutes of run time (three minutes per diversion) which should be used to improve on-time performance and reduce travel time for the majority of passengers connecting to major activity centers along the routes. Manchester Lakes service is recommended to be added to Routes 231/232, and riders will still have access to the service at bus stops along Manchester Boulevard. In addition to streamlining the route, it is also recommended to expand the span of service to operate late evenings and improve headways as summarized in Table 4-7. The Greater Springfield Circulator routes carry approximately 22 passengers per trip in the evenings, suggesting a demand for later weekday service than currently offered by the existing schedule. Later weekday evening service would align with existing later service on weekends. All trips after 8:00 p.m. on weekdays and 6:00 p.m. on weekends, including the proposed new late evening trips, would bypass the Industrial Road and Commercial Drive area, where there is no demand for service at these times.

Routes 321/322 are part of the TPP South County Feeder Bus Service project. The TPP transit projects are listed in Section 6.6.

Figure 4-17: Modified Routes 321/322

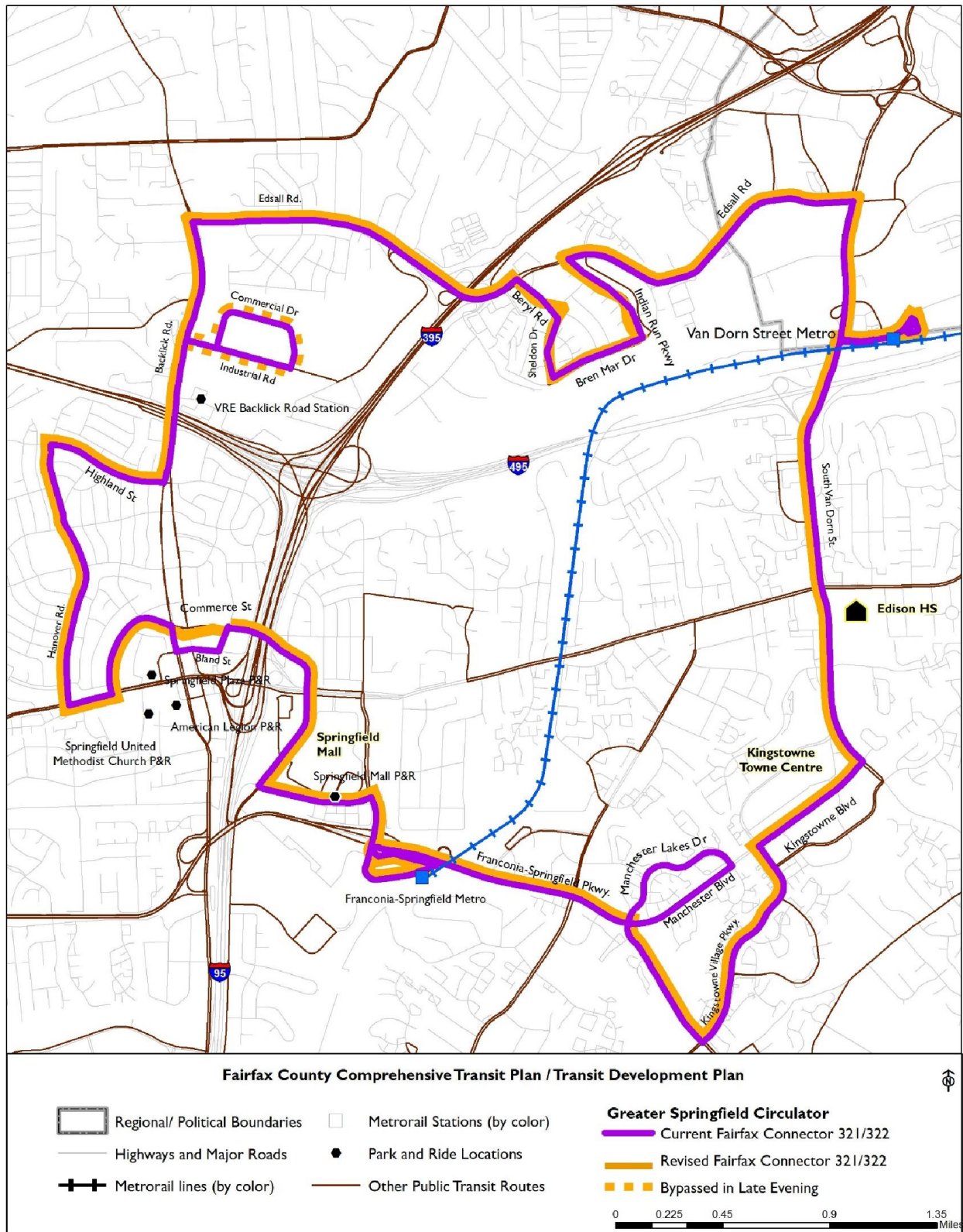


Table 4-7: Routes 321/322 Proposed Service Levels

Routes 321/322		
Operator		Fairfax Connector
Span	Weekday	4:00 a.m. – 11:30 p.m.
	Saturday	5:30 a.m. – 11:30 p.m.
	Sunday	6:30 a.m. – 11:00 p.m.
Headway (min.)	Weekday Peak	20
	Weekday Midday	30
	Weekday Evening	30
	Weekday Late Evening	60
	Saturday	30/60
	Sunday	60

Huntington Service Area

New Route 308 Franconia-Springfield Metrorail/VRE Station – Mount Vernon Hospital via Richmond Highway and Jeff Todd Way

It is recommended to establish a new Route 308 Franconia-Springfield Metrorail/VRE Station – Mount Vernon Hospital via Richmond Highway and Jeff Todd Way. This proposed route has gathered support from public outreach activities. This route serves to provide one-seat connections between several communities and important destinations including:

- Franconia-Springfield Metrorail/VRE Station and neighboring communities;
- Kingstowne Community;
- New Village Hilltop Retail Center, which includes a Wegmans superstore;
- Lansdowne Centre;
- South County Center;
- Retail and commercial establishments along Richmond Highway; and
- Mount Vernon Hospital and neighboring communities.

As shown in Figure 4-18, Route 308 would follow Franconia-Springfield Parkway eastbound upon leaving the Metrorail station. The route would turn southerly onto Beulah Road and then would follow Village Center Drive through the new Hilltop Village Retail Center complex, exiting onto Telegraph Road. The route would then proceed along Telegraph Road to Jeff Todd Way to Richmond Highway to Sherwood Hall Lane to Parkers Lane, and into the Mount Vernon Hospital campus. The new routing would connect greater Springfield and the Kingstowne neighborhoods with the retail, commercial, medical and South County governmental services located along the Richmond Highway corridor. It would also provide a much faster and more direct connection between Richmond Highway and both the Fairfax County Judicial Center and the Fairfax County Government Center in conjunction with proposed Route 313.

The projected travel time for the new 11-mile Route 308 would be 21 minutes from the Franconia-Springfield Metrorail/VRE Station to the South County Government Center, and 30 minutes to Mount Vernon Hospital (a few minutes longer during peak hours to account for Richmond Highway traffic patterns). This projected travel time provides a significant improvement over the current transit travel time using existing transit, which exceeds one hour via the Huntington Metrorail Station. The proposed service levels for Route 308 are presented in Table 4-8.

The proposed routing for Route 308 is similar to the 2009 TDP proposal for Route 329 Franconia-Springfield Metrorail/VRE Station – Fort Belvoir. This new proposal follows the same alignment as the former 329 proposal from the Franconia-Springfield Metrorail/VRE Station until reaching Richmond Highway. Rather than turning right to serve Fort Belvoir's Pence Gate, the new Route 308 will turn left to service multiple destinations along Richmond Highway before turning off to terminate in the Mount Vernon Hospital area.

Route 308 is part of the TPP South County Feeder Bus Service project. The TPP transit projects are listed in Section 6.6.

Figure 4-18: Proposed New Route 308

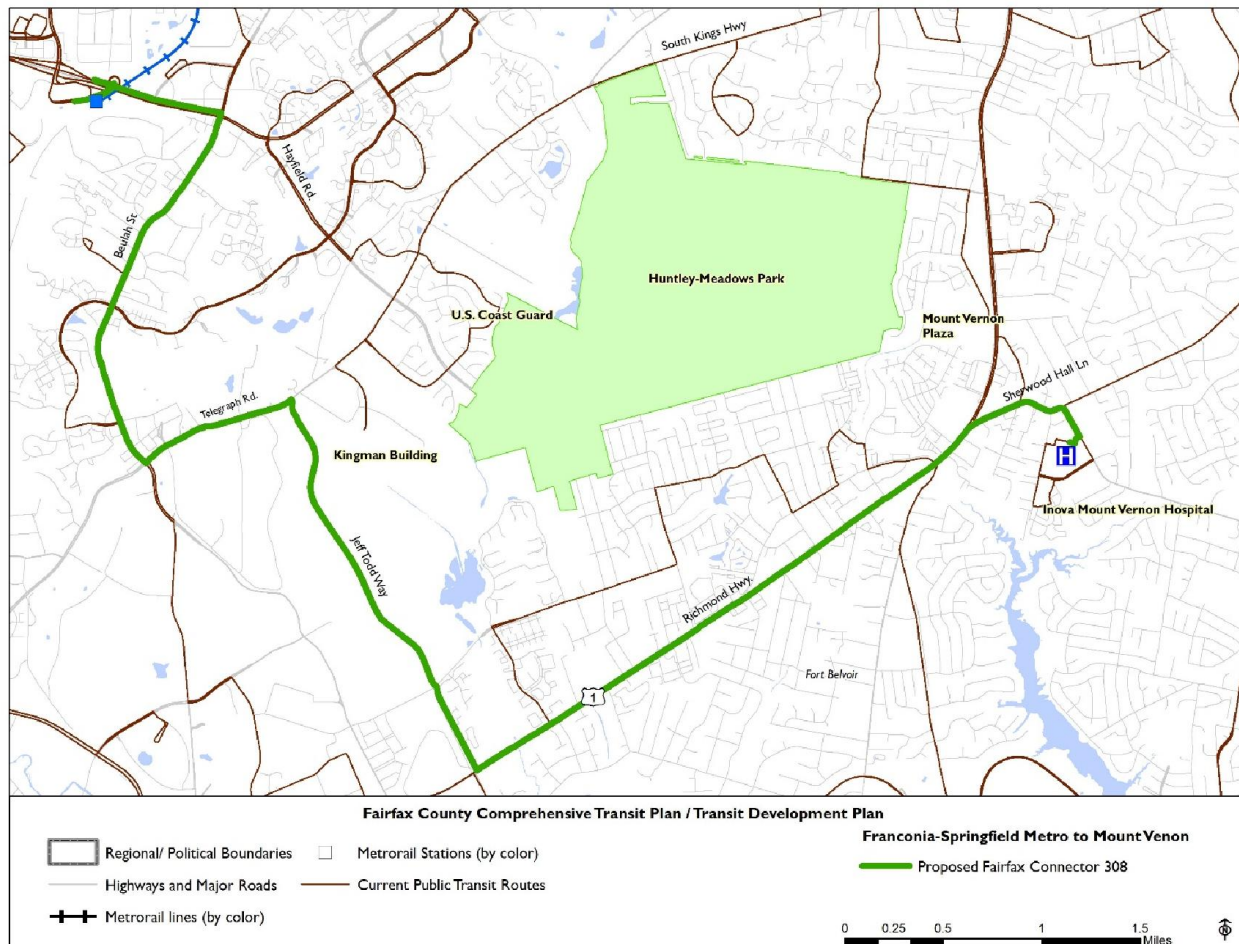


Table 4-8: New Route 308 Proposed Service Levels

Route 308		
Operator		Fairfax Connector
Span	Weekday	5:00 a.m. – 10:00 p.m.
	Saturday	7:00 a.m. – 8:00 p.m.
	Sunday	--
Headway (min.)	Weekday Peak	30
	Weekday Midday	45
	Weekday Evening	45
	Saturday	45
	Sunday	--

Vienna Service Area

Establish Route 451 Merrifield Circulator

The 2009 TDP recommended that a Merrifield Circulator route be established to serve the large amount of new development occurring in the area south of the Dunn Loring Metrorail Station. At that time, the road network was not yet complete, which hindered the efficient operation of a new circulator service. New roadway connections have now been completed, making the implementation of a new route more feasible.

The current TDP has a recommendation that is somewhat different from that of the 2009 TDP. Figure 4-19 shows the recommended alignment for a proposed new Route 451. The route is designed to be both distributor and feeder route; that is, in the morning carry both employees to jobs in Merrifield from the Metrorail station as well as DC/Arlington commuters to the station. The area along Eskridge Road and Willow Oaks Corporate Drive has a significant number of jobs, while the area to the east of Gallows Road (Telestar Court) has very high density housing. Since the completion of the previous TDP in 2009, three substantial mixed-use developments (Mosaic District, Halstead, and Avenir Place) have opened. Mosaic District and Avenir Place are not yet built out, with additional development planned in the future. All three developments include significant residential, retail, and restaurant components. Mosaic District also includes office development.

An optional extension to Inova Fairfax Hospital is also shown, though the hospital already has a high level of service with Fairfax Connector 401/402 and Metrobus 1C connecting it to the Dunn Loring-Merrifield Metrorail Station, and additional service from Metrobus 1A and 1Z along US-50. This extension would require either operating less frequent service with the same number of buses, or adding a bus to maintain the same frequency. Redevelopment of the former ExxonMobil headquarters, now the INOVA Center for Personalized Health, across Gallows Road from the hospital should be monitored to determine if future service is warranted there, either by an extension of the Merrifield Circulator, or by another route.

The initial service level should include peak and midday service, since Merrifield is an active and growing area. Weekend service would only be justified after the route has established a strong ridership base during weekdays. A shorter alignment is shown for potential future evening and weekend service when the businesses and the Mid-County Human Services Center on Willow Oaks Corporate Drive are closed.

Route 451 is part of the TPP Vienna Metrorail Feeder Bus Service Expansion project. The TPP transit projects are listed in Section 6.6.

Figure 4-19: Proposed New Route 451

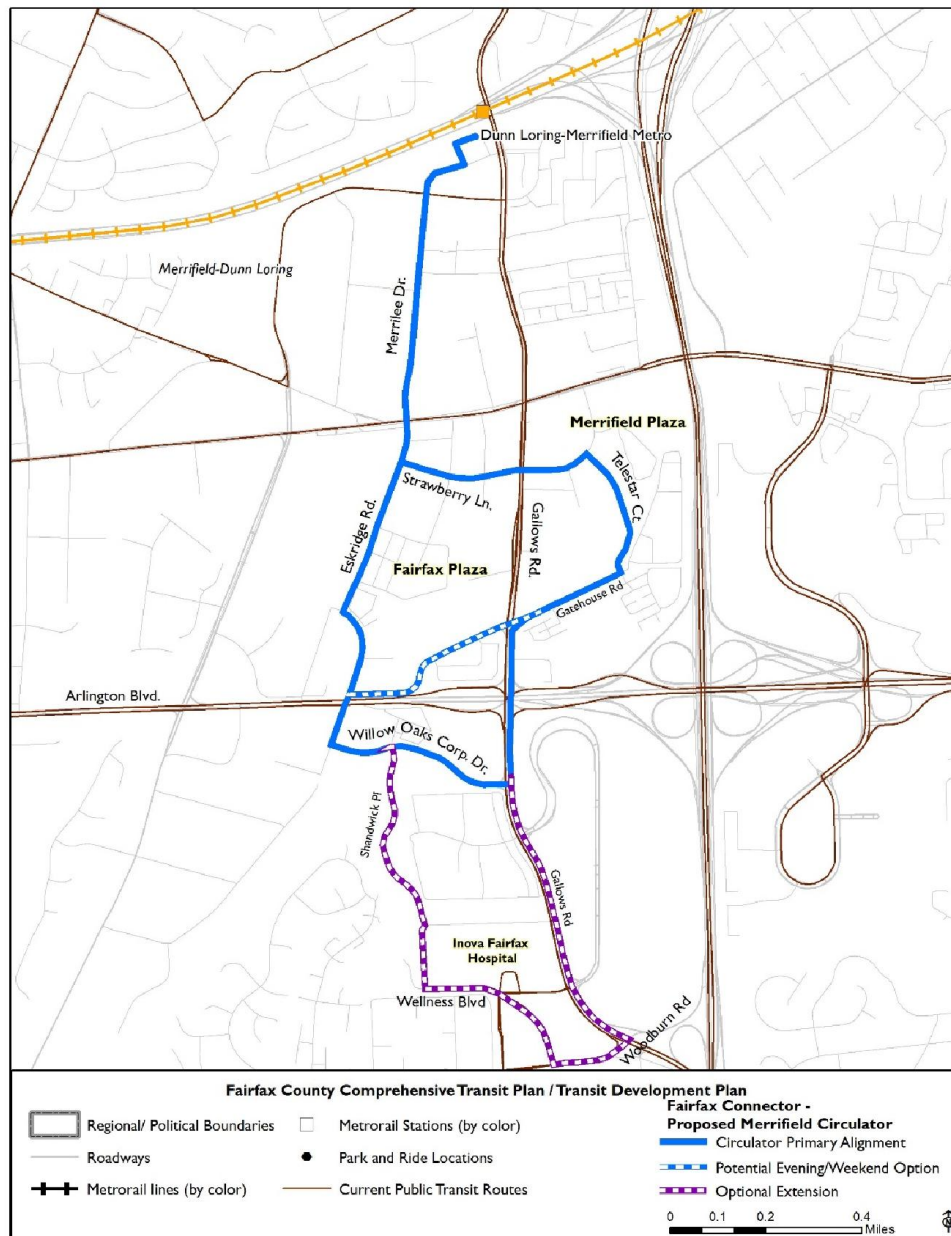


Table 4-9: New Route 451 Proposed Service Levels

Route 451		
Span	Operator	Fairfax Connector
	Weekday	6:00 a.m. – 8:00 p.m.
Headway (min.)	Peak	15-25 (depending on alignment)
	Midday	30

Recommended for Implementation in Fiscal Year 2018

Centreville/Chantilly Service Area

Improve Peak Headways on I-66 Express Routes to the Vienna Metrorail Station – Longer Term

Fairfax Connector's I-66 corridor services have seen a gradual ridership increase since the conversion from Metrobus to Connector Operation in 2009. Anticipating continued population growth in the Fair Oaks, Centreville, and Chantilly areas, based on MWCOG forecasts, over the six year planning horizon of this TDP suggests further gradual ridership growth. Ridership should be closely monitored on the routes 622, 623, 631, 632, 641, 642, 644, 651, and 652. These routes currently operate a frequency of two trips per hour in the peak commuter period.¹⁶ Early next decade the frequency on these routes will likely need to increase to three trips per hour to provide the needed capacity to accommodate the future ridership. Improved frequencies on Route 623 are planned for FY2018 based on projected population growth in the 623 service area, including new residential development, anticipated to increase ridership.

Route 623 is part of the Transportation Priorities Plan (TPP) Vienna Metrorail Feeder Bus Service Expansion project. The TPP transit projects are listed in Section 6.6.

Reston Service Area

Extend Route 552

To improve access to the Silver Line from northeast Reston, it is recommended to extend Route 552 to a loop north of Baron Cameron Avenue on Hunter Gate Way and Gates Meadow Drive to serve relatively dense residential development with no transit service. In addition, a small alignment change for Route 552 is recommended for the portion of the route on North Shore Drive. In response to public comment, and to more directly serve residential development, Route 552 should follow Links Drive to better penetrate the residential area north of North

¹⁶ The combined afternoon existing peak schedules for the 631 and 632 routes for the 5:00 p.m. and 6:00 p.m. hours include one additional trip so that instead of four trips/hour (two each) there are actually five trips/hour.

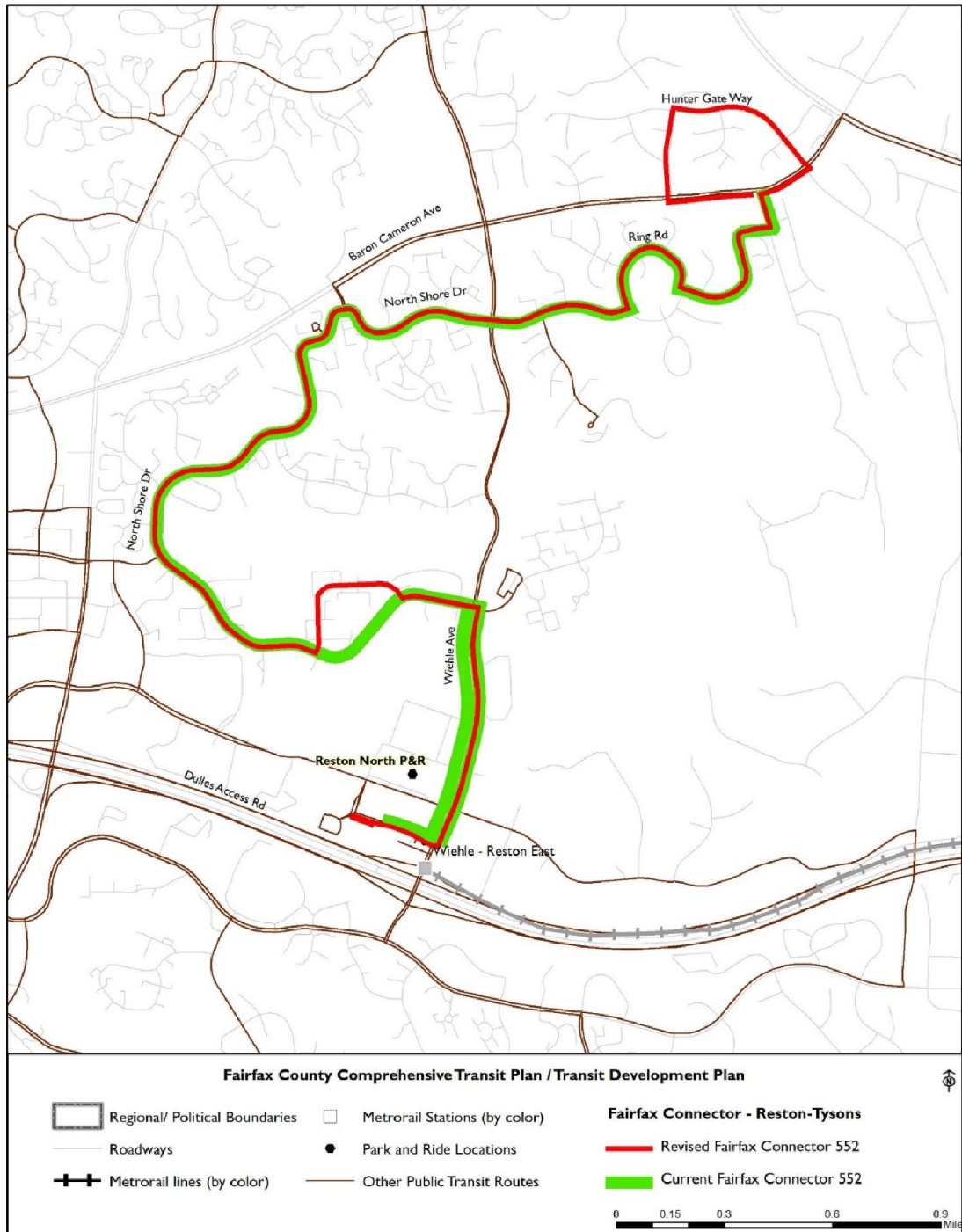
Shore Drive instead of serving the portion of North Shore Drive with few boardings. These changes are shown below in Figure 4-20.

Route 552 would maintain essentially the same service that is operated presently, though the headway would increase from 18 minutes to 20 minutes to accommodate the extra route mileage. Recommended service statistics are shown in Table 4-10.

Table 4-10: Route 552 Proposed Service Levels

Route 552		
Operator		Fairfax Connector
Span	Weekday	5:00 a.m. – 9:00 a.m., 4:00 p.m. – 7:20 p.m.
	Saturday	--
	Sunday	--
Headway (min.)	Weekday	20
	Saturday	--
	Sunday	--

Figure 4-20: Proposed Route 552



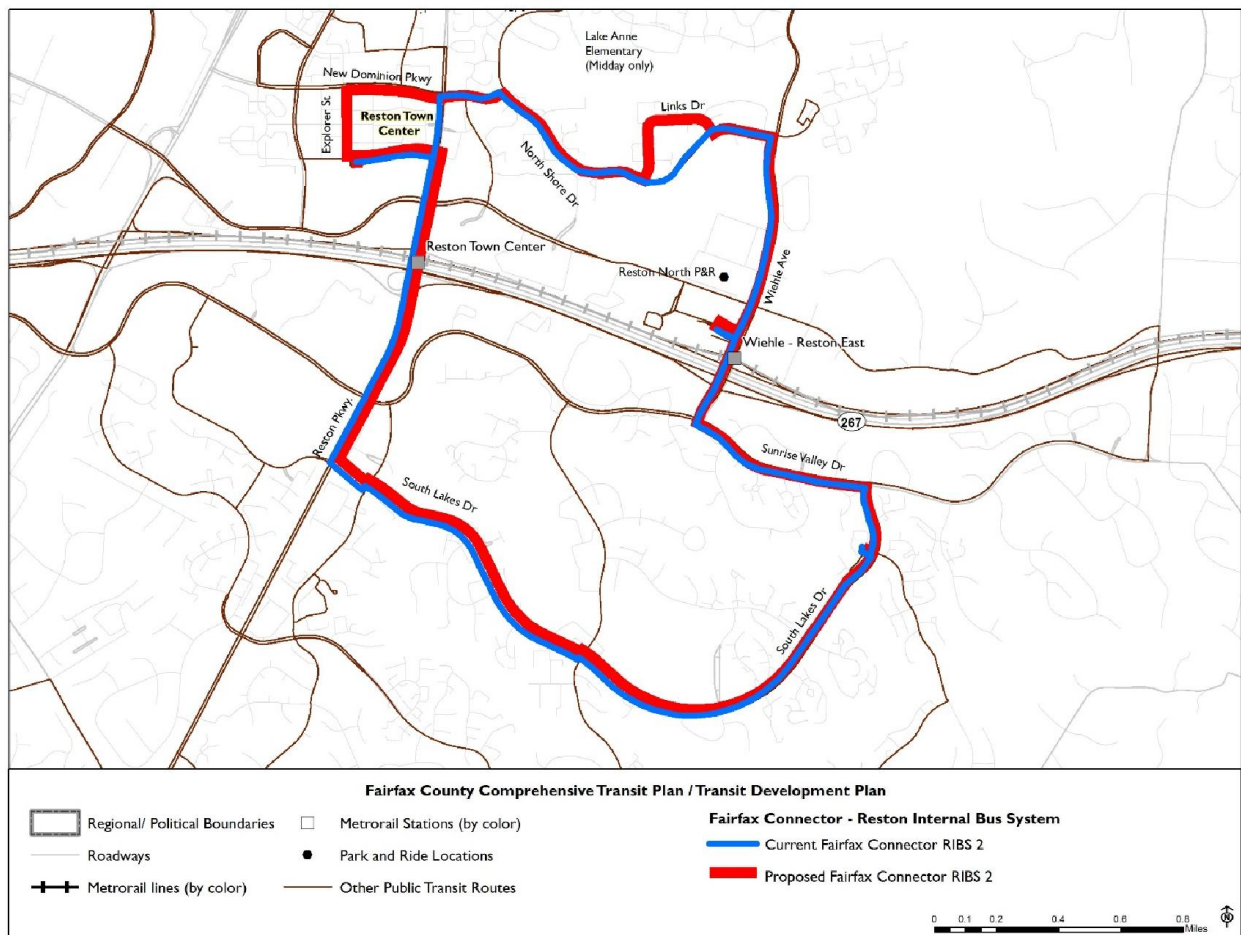
Realign RIBS 2 through Reston Town Center

Reston Town Center is a large private development with a high concentration of activity. There is no current bus service that penetrates the Center; it all circulates around the perimeter. It is proposed that RIBS 2, upon leaving the Reston Town Center Transit Station, use Explorer Street to pass through Reston Town Center to New Dominion Parkway, with a bus stop at Market

Street or Library Street, depending on operational considerations. This will provide improved access to jobs within Reston Town Center. From there it would rejoin its alignment.

In addition, a small alignment change for RIBS 2 is recommended for the portion of the route on North Shore Drive similar to the Route 552 recommendation. In response to public comment, and to more directly serve residential development, RIBS 2 should follow Links Drive to better penetrate the residential area north of North Shore Drive instead of serving the portion of North Shore Drive with few boardings. These proposals are shown in Figure 4-21. There are no changes to the service level proposed.

Figure 4-21: RIBS 2 Realignment



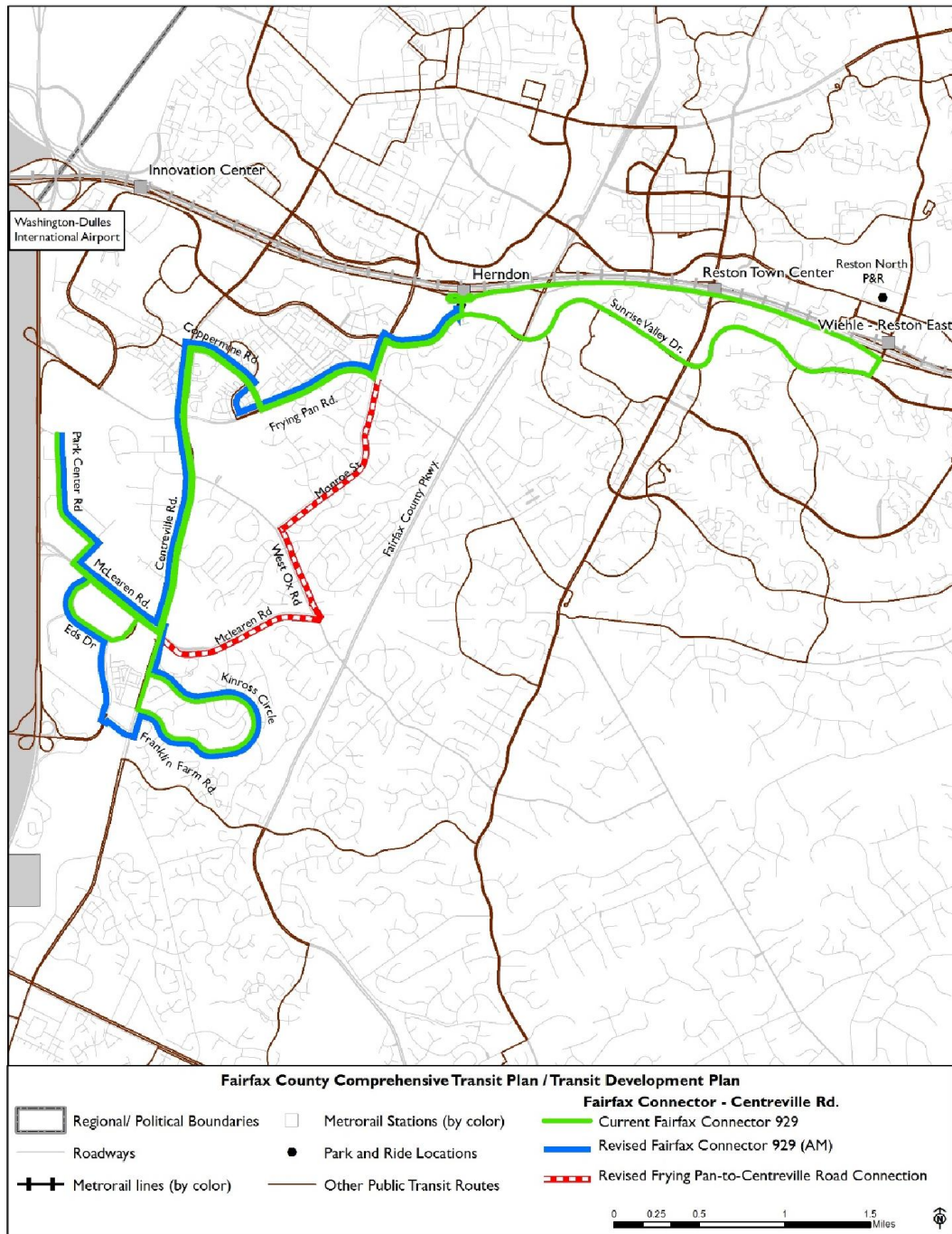
Herndon Service Area

Improve service on Route 929

Route 929 currently connects areas to the east and west of Centreville Road south of the Town of Herndon to the Wiehle-Reston East Metrorail Station via the Herndon-Monroe Park-and-Ride Lot. The changes to Route 929 are recommended to be implemented in four phases.

The Phase 1 changes to the 929 would occur prior to the opening of Silver Line Phase 2 and with the completion of the extension of Air & Space Museum Parkway between Wall Road and EDS Drive. It is recommended that for morning service only, the route should be realigned along this road segment instead of using Centreville Road between McLearen Road and Kinross Circle, as shown in Figure 4-22. In the afternoon, the route should continue to use the present alignment in this area to minimize difficult bus turning movements. One other minor adjustment is to have buses travel via Thomas Jefferson Drive between Coppermine Road and Frying Pan Road in response to suggestions on operating conditions.

Figure 4-22: Proposed Route 929



Huntington Service Area

Increase Headway on Route 161/162 Hybla Valley Circulators

The Route 161/162 Hybla Valley Circulators serve the Hybla Valley area along Harrison Lane and Lockheed Boulevard before crossing Richmond Highway at Fordson Road as it proceeds to its Mount Vernon Hospital terminal. Like the 151/152/159 Engleside and Groveton routes, the

161/162 circulators serve a transit-dependent, largely minority population. Nearly 70 percent of riders use these routes five days a week; more than 75 percent of all riders are destined for the Huntington Metrorail Station.

The ridechecks show excess capacity at all hours and days of service, which is available to support future ridership growth. However, based on input from bus operators and operations staff, and a review of ridecheck data, these routes may operate late. The operators mentioned a number of factors that slow the route including illegally parked cars blocking bus stops that make turns difficult; congestion on Richmond Highway that impedes turns into the Mount Vernon Square Apartments; and traffic signal delays near the Mount Vernon Hospital campus. It is recommended that FCDOT investigate means of mitigating these operational difficulties to improve on-time performance. In the short term the scheduled headway may need to be lengthened to provide adequate run time and recovery time to enhance on-time performance, as presented in Table 4-11. The Route 161/162 recommendation should be implemented sooner if late operation becomes consistent to improve on-time performance.

Routes 161/162 are part of the TPP South County Feeder Bus Service project. The TPP transit projects are listed in Section 6.6.

Table 4-11: Routes 161/162 Proposed Service Levels

Routes 161/162		
Operator		Fairfax Connector
Span	Weekday	4:30 a.m. – 11:30 p.m.
	Saturday	6:30 a.m. – 11:00 p.m.
	Sunday	6:30 a.m. – 11:00 p.m.
Headway (min.)	Weekday Peak	35
	Weekday	70
	Midday	
	Weekday	70
	Evening	
	Saturday	70
	Sunday	70

Create a Summer Schedule for Route 101

Route 101 provides seven-day local service along the length of Fort Hunt Road serving the local community and terminating at George Washington's Mount Vernon Estate. Route 101's local service complements Metrobus 11Y's express service, giving Fort Hunt residents two transit options. Approximately 86 percent of Route 101 riders travel through the Huntington Metrorail Station, and two-thirds of them use the bus five or more days per week. Route 152 provides additional service along the northern segment of Fort Hunt Road.

Routes 101, 151 and 152 all terminate at the Mount Vernon Estate, a popular historical attraction. Many tourists use these routes; Route 101 provides the most direct and quickest transit trip. The ridecheck counted fall season Mount Vernon weekday, Saturday and Sunday

daily boardings of approximately 80, 220 and 150 respectively on the three local routes. Summer ridership is reported by FCDOT and Huntington garage officials as higher especially on weekends. (Routes 151 and 152 are discussed in a separate section.)

Service productivity for Route 101 averages 10 boardings per trip on weekdays and 7 per trip on weekends for much of the year. In the peak period and peak direction the average is 22 boardings per trip, indicating that sufficient frequency is being offered. However, summer boardings are much greater, due to tourist ridership, with some trips experiencing standees (more than roughly 38 passengers per trip). In addition, riders mentioned a need for better on-time performance. The ridecheck found significant run time variability which was confirmed by Connector operators, who noted that frequent delays occur during summer weekends when tourist use is high. In late 2014, FCDOT initiated a run time study of routes 101 and 109 with a goal of implementing schedule improvements. It is recommended that FCDOT develop a unique set of scheduled run times for summer operations for Route 101.

Route 101 is part of the TPP South County Feeder Bus Service project. The TPP transit projects are listed in Section 6.6.

Springfield Service Area

Minor Alignment Change for Routes 231/232

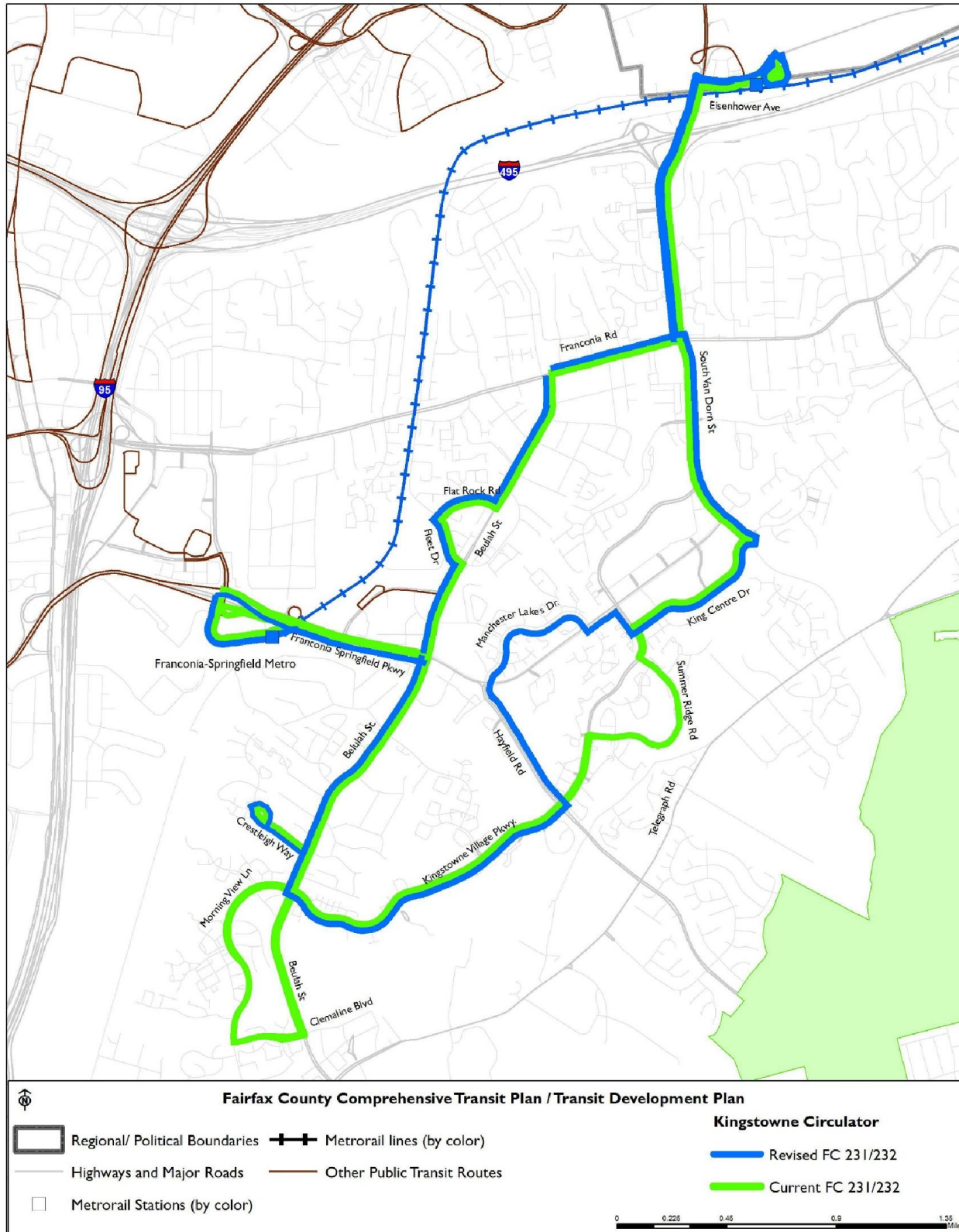
Routes 231/232 serve the Kingstowne community with peak-period local circulator service that brings riders to both the Franconia-Springfield and Van Dorn Street Metrorail Stations. Daily riders average slightly less than 500. Nearly every rider uses these routes to access the Metrorail stations where they transfer to other bus routes or to the Metrorail; there are very few local trips completed along the route. Many Route 231/232 passengers also use the Route 321/322 circulators, which duplicate portions of the 231/232 routing along Kingstowne Village Parkway and South Van Dorn Street to the Van Dorn Street Metrorail Station. The service productivity of the 231/232 is approximately one-half the average for all South County Connector bus routes.

Two minor routing changes to increase ridership are recommended as shown in Figure 4-23.

- Bypass the Morning View Lane and View Lane neighborhood, which is recommended to be more directly served by added short trips on Route 335.
- Serve the Manchester Lakes Drive neighborhood in place of existing service provided by Routes 321/322.

Routes 231/232 are part of the Transportation Priorities Plan (TPP) South County Feeder Bus Service project. The TPP transit projects are listed in Section 6.6.

Figure 4-23: Modified Routes 231/232



Modify Route 334 Schedule and Add New Weekend Service

Route 334 resulted from the 2011 restructuring of local bus services to accommodate expected changes in travel patterns in the area with the expansion of Department of Defense facilities in this region. The route serves as a feeder to the Franconia-Springfield Metrorail/VRE Station where riders transfer between Route 334 and the local and regional transit service options available at the Metrorail station. The Defense Logistics Agency (DLA) building on the Fort Belvoir reservation is the route's southern terminal. Besides transporting DLA personnel and visitors, the route also serves the Newington residential community east of I-95 and makes stops at the NVCC Medical Education Campus and the Gateway 95 commercial area. The route serves fewer than 200 riders per day. Service operates between 5:23 a.m. and 11:15 p.m.

Reduced late evening service on this route is warranted based upon current performance and ridership levels. In particular, trips after 8:00 p.m. carry few riders. The span of service should be adjusted to eliminate these last few trips. However, given that this route offers the only bus service east of I-95 in the Newington area connecting to important educational and employment sites, the existing service (except trips after 8:00 p.m., unless warranted by evening classes at the NVCC campus) should be maintained for a probationary two year period. If ridership does not grow to approach original expectations, FCDOT should consider options to further reduce the level of service, such as eliminating all but peak period trips.

The U.S. Army is constructing a new National Museum of the U.S. Army on Fort Belvoir across from the DLA on Kingman Road. The access drive into the museum site will be off of the Fairfax County Parkway which may limit bus access to the northbound trips only. Once complete, Fort Belvoir and the U.S. Army expect this museum to become a popular tourist venue, and FCDOT staff have envisioned the need for a weekend transit connection to the Metrorail system. Although Route 334 passes the site, it does not currently operate on weekends. Thus, it is recommended to add weekend service when the museum opens. For weekend operations, the 334 routing should be simplified by bypassing the NVCC Medical Educational Campus, if there are no weekend sessions, and the Gateway 95 Industrial Park route segments. It is recommended that one bus be assigned to this route providing service between 10:00 a.m. and 6:00 p.m. on both weekend days as summarized in Table 4-12.

Route 334 is part of the Transportation Priorities Plan (TPP) South County Feeder Bus Service project. The TPP transit projects are listed in Section 6.6.

Table 4-12: Route 334 Proposed Service Levels

Route 334		
Operator		Fairfax Connector
Span	Weekday	5:30 a.m. – 8:00 p.m.
	Saturday	10:00 a.m. – 6:00 p.m.
	Sunday	10:00 a.m. – 6:00 p.m.
Headway (min.)	Weekday Peak	24
	Weekday	45
	Midday	
	Weekday	45
	Evening	
	Weekday Late	ns
	Evening	
	Saturday	60
	Sunday	60

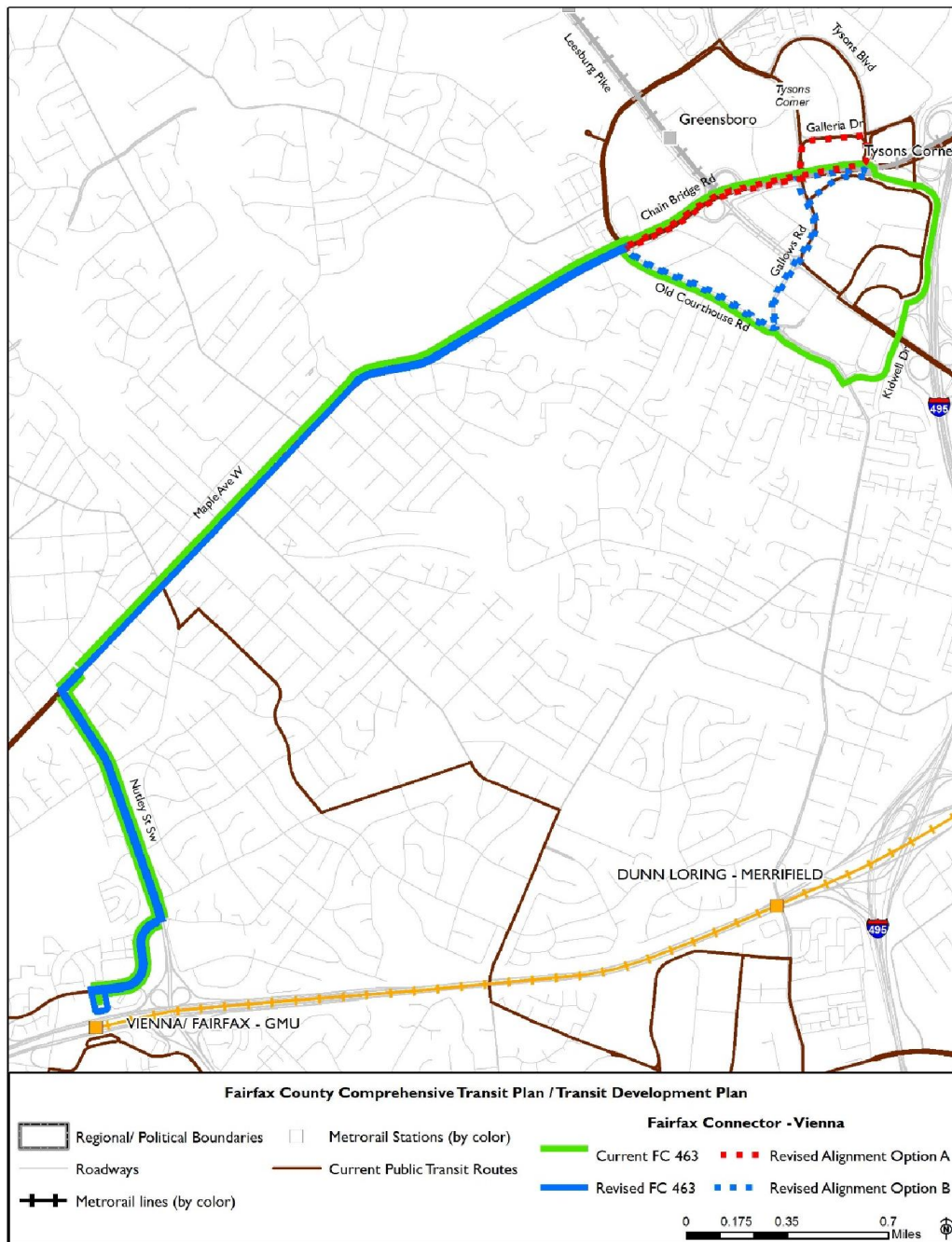
Vienna Service Area

Adjust Route 463 in Tysons

The current alignment of Route 463 departing from the Tysons Corner Metrorail Station is circuitous and adds travel time for riders. If Metrobus 15M is eliminated, as recommended in Section 4.6, and there is sufficient layover capacity on the north side of the Metrorail station, then the 463 route should be changed to follow the path currently used by the 15M upon elimination of the Metrobus route. This change should save 6 minutes or more during times of peak congestion on westbound Route 463 trips. As an alternative, Route 463 could follow the alignment of Route 422, which would still be faster than the current alignment. These possibilities are shown in Figure 4-24. If this change is made, running times should be adjusted accordingly.

Route 463 is part of the TPP Vienna Metrorail Feeder Bus Service Expansion project. The TPP transit projects are listed in Section 6.6.

Figure 4-24: Adjusted Route 463



Tysons Service Area

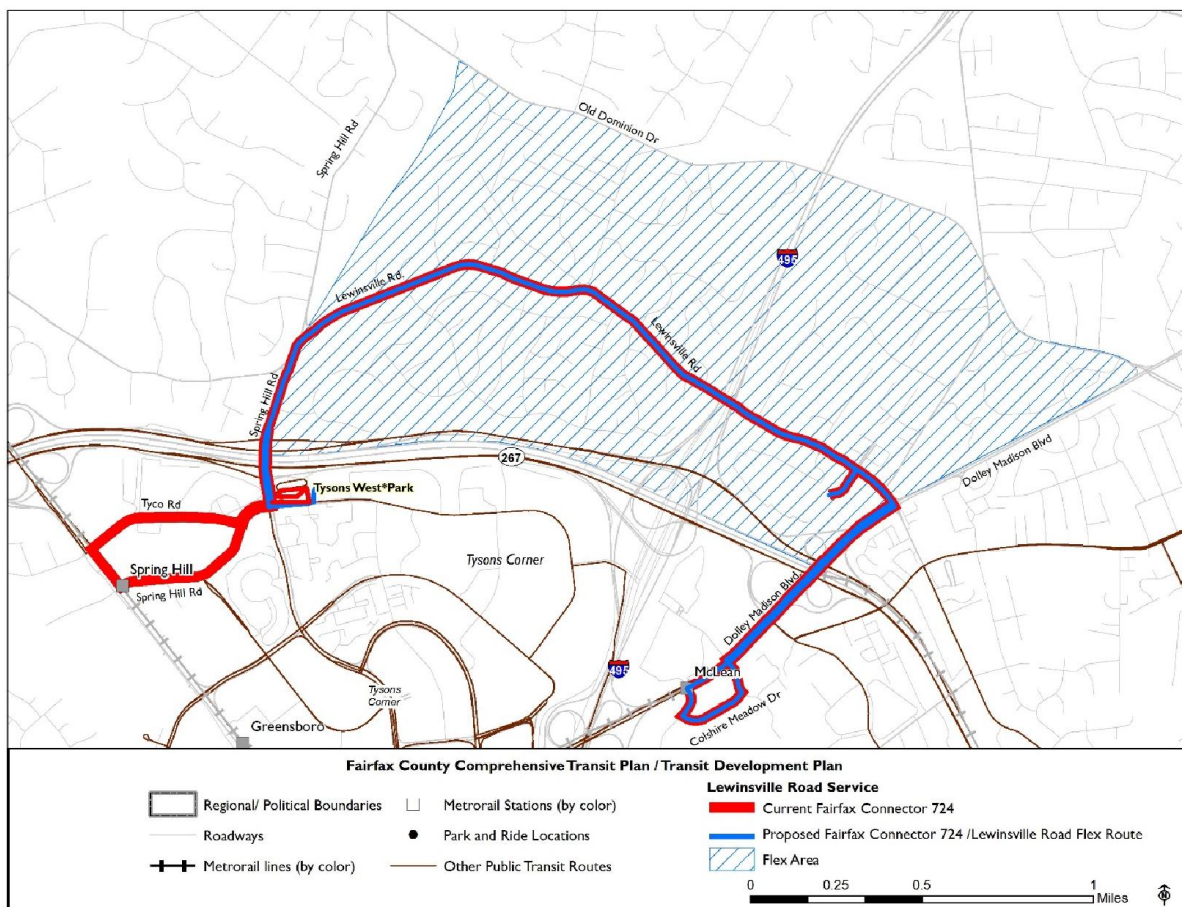
Truncate Route 724 at the Tysons West*Park Transit Station

Service on Lewinsville Road in McLean, surrounding Tysons on the north side, has historically been provided by Metrobus Route 24T. With the Silver Line opening, that route became Fairfax Connector Route 724. The portion of the 24T that is now Route 724 has always had modest

ridership due to low residential density. Service has been maintained in this area because of the Farm Credit Bureau and other federal agencies off of Lewinsville Road.

The bus bays at the Spring Hill Metrorail Station are currently overburdened. Given that Route 724 experiences low ridership on the far western segment of the route along Tyco Road, it is a good candidate to reduce bus congestion at Spring Hill. It is recommended to truncate the route at the Tysons West*Park Transit Station, as shown in Figure 4-25. Riders would continue to have connections to the Spring Hill Metrorail Station by way of transfers to Route 424 and 574 service, and have new connections to routes 401, 402, and 423 at Tysons West*Park. Other than this change the peak period service would remain the same.

Figure 4-25: Proposed Route 724 with Future Flex Route¹⁷



¹⁷ Conversion of Route 724 to a flexible route is a long term, unfunded recommendation. See Section 4.5.

Table 4-13: Route 724 Proposed Service Levels

Route 724		
Operator		Fairfax Connector
Span	Weekday	5:30 a.m. – 9:30 a.m., 4:00 p.m. – 7:30 p.m.
	Saturday	--
	Sunday	--
	Weekday Peak	30
Headway (min.)	Weekday MIDDAY	--
	Saturday	--
	Sunday	--

Recommended for Implementation in Fiscal Year 2019Centreville/Chantilly Service Area*Improve Peak Headways on I-66 Express Routes to the Vienna Metrorail Station – Longer Term*

Fairfax Connector's I-66 express services have seen a gradual ridership increase since its conversion from Metrobus to Connector operation in June 2009. Anticipating continued population growth in the Fair Oaks, Centreville, and Chantilly communities over the ten year planning horizon of this TDP suggests further gradual ridership growth. Ridership should be closely monitored on the routes 622, 623, 631, 632, 641, 642, 644, 651, and 652. These routes currently operate a frequency of two trips per hour in the peak commuter period.¹⁸ Early next decade the frequency on these routes will likely need to increase to three trips per hour to provide the needed capacity to accommodate the future ridership. Improved frequencies on Routes 622 and 632 are planned for FY2019 based on projected population growth in the Route 622 and 632 service area, anticipated to increase ridership.

Routes 622 and 632 are part of the Transportation Priorities Plan (TPP) Vienna Metrorail Feeder Bus Service Expansion project. The TPP transit projects are listed in Section 6.6.

New Route 625 Ridge Top / Random Hills – Vienna Metrorail Station

In the 2009 TDP, a new I-66 route was proposed between the Fair Oaks area and the Vienna Metrorail Station which was designated as Route 625. A new Route 625 is recommended in this TDP, similar to the former proposal, but modified to provide service to Pender Drive, Waples Mill Road, and the Ridge Top Road and Random Hills Road areas. The map in Figure 4-26 displays both the morning and afternoon routings. This route would operate during the peak

¹⁸ The combined afternoon existing peak schedules for the 631 and 632 routes for the 5:00 p.m. and 6:00 p.m. hours include one additional trip so that instead of four trips/hour (two each) there are actually five trips/hour.

commuting hours similar to the existing Route 622. The service level proposed for this new route is shown in Table 4-14.

This route will provide both peak direction commuter service for residents residing near Fairfax Ridge Road north of US-50, and along Random Hills Road and Ridge Top Road using the I-66 HOV lane to access the Vienna Metrorail Station. In addition, commuters will be able to travel in the reverse peak direction to work sites along Pender Drive (e.g., Fairfax County Housing Department and Social Security Administration buildings). As a potential mitigation action for the upcoming I-66 construction, this route could be diverted to serve the Government Center Park-and-Ride Lot located on Government Center Parkway, or other park-and-ride locations identified in the proposed service area.

Route 625 is part of the TPP Vienna Metrorail Feeder Bus Service Expansion project. The TPP transit projects are listed in Section 6.6.

Figure 4-26: Proposed New Route 625

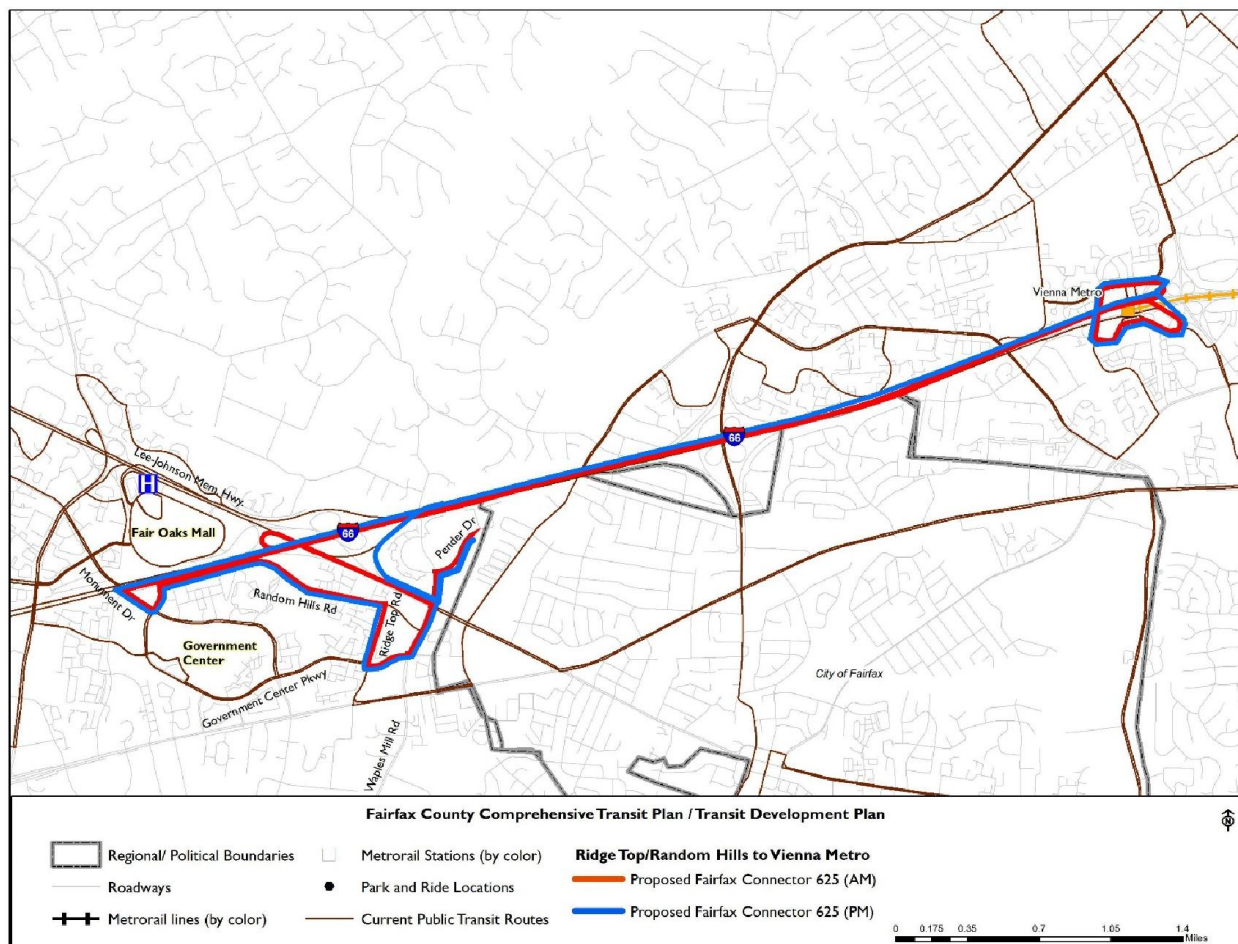


Table 4-14: New Route 625 Proposed Service Levels

Route 625		
	Operator	Fairfax Connector
Span	Morning Peak	5:30 a.m. – 9:00 a.m.
	Afternoon Peak	3:30 p.m. – 7:00 p.m.
Headway (min.)	Morning Peak	30
	Afternoon Peak	30

Vienna Service Area

Restructure Route 466, Increase Peak Frequency, and Add Midday Service

The 2009 TDP recommended a realignment of Route 466 in order to reduce duplication with other services, better penetrate residential neighborhoods, and reduce the cycle time to allow for a 30 minute headway with a single bus in service. Since that time, the alignment of Metrobus 15M was changed so that it diverts from VA-123 into the Vienna Metrorail Station using some of the streets proposed for Route 466. This TDP recommends eliminating the 15M and altering Route 466 to use the alignment proposed in the 2009 TDP and shown in Figure 4-27 to accomplish these goals.

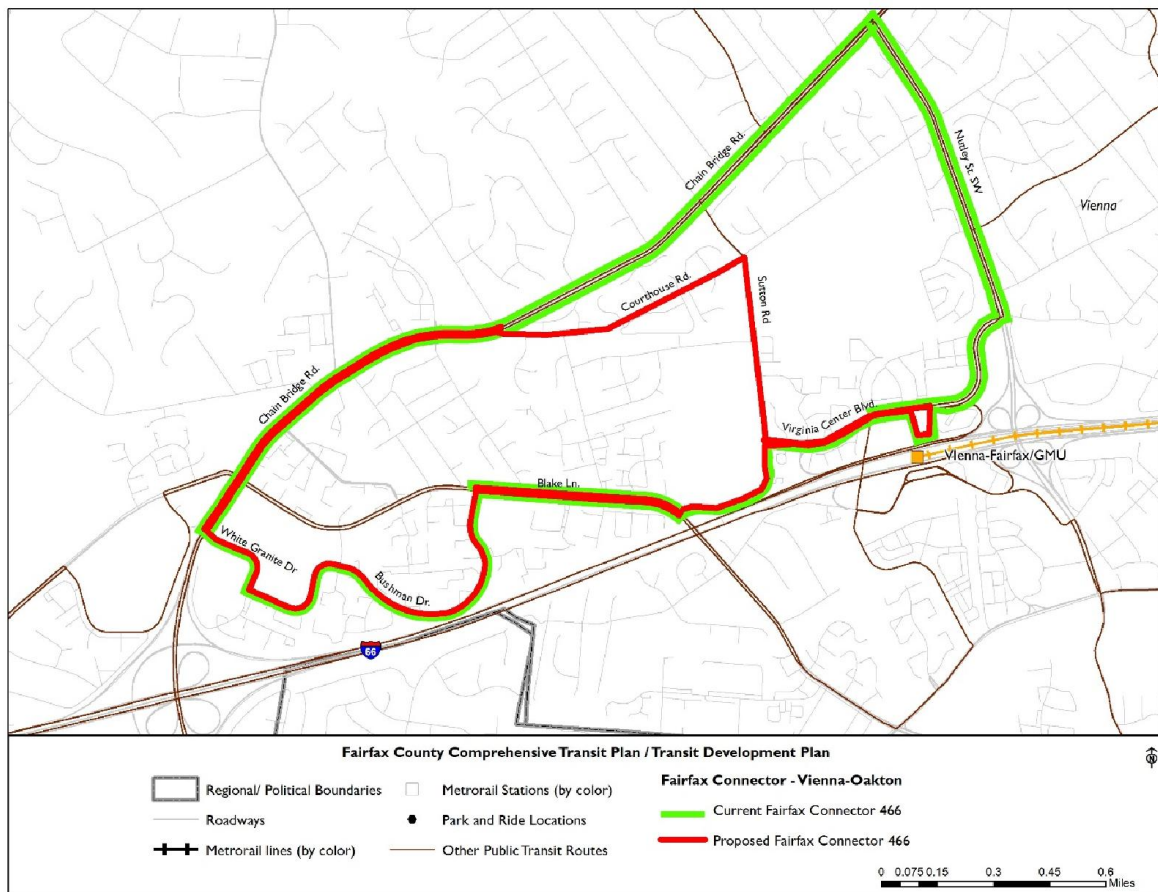
As one of the more productive routes in the Vienna/Oakton area, Route 466 could potentially benefit from additional service. Instituting full midday service would make the route more convenient for residents, as would improving the peak period headway to 15 minutes. To minimize system cost, the headway improvement could include an interline with existing Route 461 to better balance resources between the two routes in response to ridership patterns. The proposed service levels for this restructured route are shown in Table 4-15.

Route 466 is part of the TPP Vienna Metrorail Feeder Bus Service Expansion project. The TPP transit projects are listed in Section 6.6.

Table 4-15: Route 466 Proposed Service Levels

Route 466		
Operator		Fairfax Connector
Span	Weekday	5:00 a.m. – 9:00 p.m.
	Peak	15
Headway (min.)	Midday	30

Figure 4-27: Restructured Route 466



Establish Vienna South Feeder Route 464

The 2009 TDP recommended that a short feeder route into Vienna Metrorail Station be established in the southern part of Vienna. This TDP recommends carrying forward this recommendation. This route would provide better access to the Metrorail station from the area between Lee Highway and Arlington Boulevard which has high residential density. Currently,

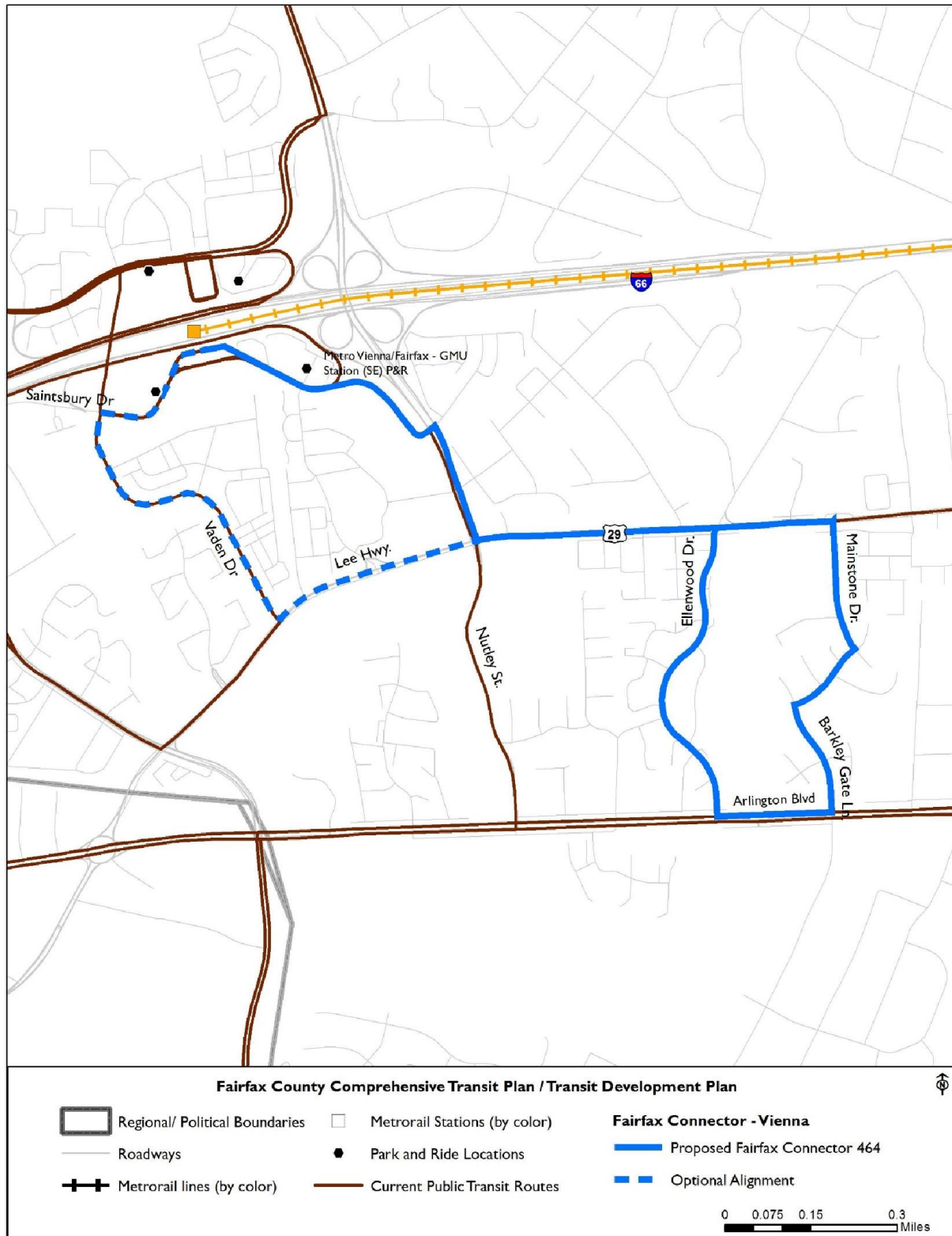
people living in this area need to walk to one of the major arterials to board a bus, meaning that they must cross the arterial on one end of the trip. Eliminating these crossings, and reducing the distance to transit service should result in increased transit utilization in these communities. This new route, shown in Figure 4-28, would serve residences in the area between Lee Highway and Arlington Boulevard east of Nutley Street. An optional alignment would program the route to serve Vaden Drive instead of Nutley Street north of Lee Highway, serving the Providence Community Center, resulting in a slightly longer route. The proposed service level is shown below in Table 4-16.

Route 464 is part of the TPP Vienna Metrorail Feeder Bus Service Expansion project. The TPP transit projects are listed in Section 6.6.

Table 4-16: New Route 464 Proposed Service Levels

Route 464		
Operator		Fairfax Connector
Span	Morning Peak	5:00 a.m. – 9:00 a.m.
	Afternoon Peak	4:00 p.m. – 7:30 p.m.
Headway (min.)	Morning Peak	30
	Afternoon Peak	30

Figure 4-28: Proposed New Route 464



Springfield Service Area

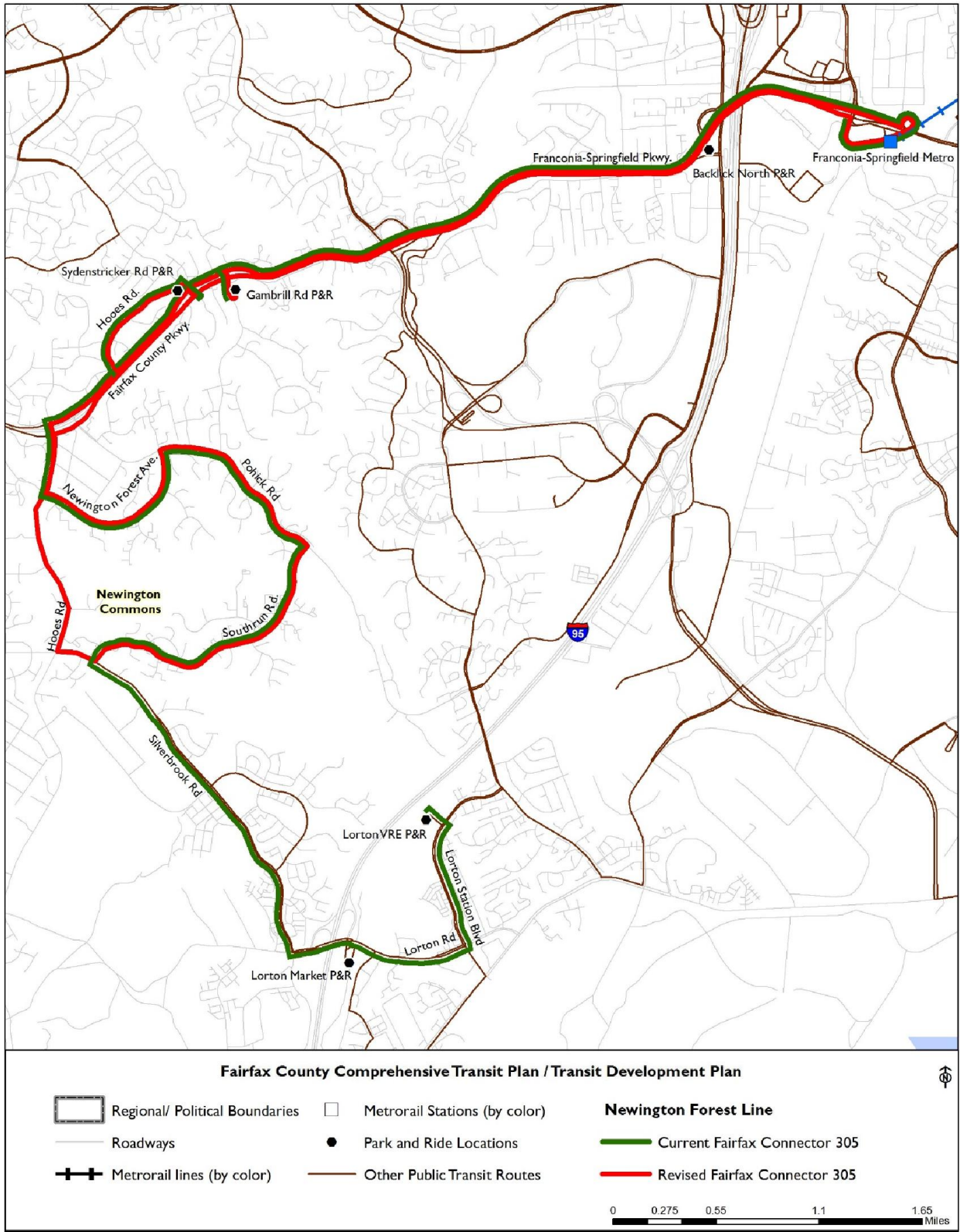
Modify Route 305 Newington Forest-Silverbrook Road

This route operates on a peak-only schedule serving less than 200 daily passengers and providing the only local bus service for much of the diverse Newington community and surrounding area west of I-95. Most riders (78 percent) use this service five days per week to access the Franconia-Springfield Metrorail/VRE Station or the Lorton VRE Station, primarily for home-based work trips. At these stations, riders can transfer to other bus service, Metrorail, or the VRE commuter trains.

Although surveyed riders requested more frequent service, demand does not warrant an expanded schedule. The riders from the Lorton end of the route along the segment between Silverbrook Road and the Lorton VRE Station are also served by Connector routes 371 and 373, with all day service, seven days a week. It is recommended that the current route be replaced with the former Route 305 Newington Forest alignment but maintaining the 30 minute headway. Daily service along the southern portion of Silverbrook Road would continue to be provided by routes 371 and 373. The span of service should be lengthened by one hour for both peak periods, ending later in the morning and starting earlier in the afternoon. The existing route is operated with three peak buses; converting the alignment back to the former Route 305 will require only two peak buses to provide the current level of service. Two-way service would be operated during the extended span, in response to community feedback. A map of the existing and former Routes 305 is presented in Figure 4-29.

Route 305 is part of the TPP South County Feeder Bus Service project. The TPP transit projects are listed in Section 6.6.

Figure 4-29: Modified Route 305



Modify Routing and Schedule of Routes 371/372/373 Lorton – Springfield Line

These routes were created as part of the restructuring of Route 171, which formerly operated between the Franconia-Springfield and Huntington Metrorail Stations. The current Route 171 terminates at the Lorton VRE Transit Center, where it meets Routes 371/372/373 to enable transfers as needed. Where the former Route 171 used I-95 for a portion of its routing into Franconia-Springfield, Routes 371/372/373 operate along local roads that parallel the interstate highway. The restructured routes provide service to Lorton-area neighborhoods as well as commercial and retail sites.

Routes 372/373 operate during peak periods only. Route 371 is a hybrid of the other two that operates during off-peak periods, including weekend services. These routes carry more than 1,000 weekday riders. Route 371 serves approximately 500 riders on Saturdays and 320 on Sundays. Service productivity averages 10 boardings per trip weekdays and about 8 on weekends. Riders are predominately Fairfax County residents connecting to Franconia-Springfield Metrorail/VRE or Lorton VRE Stations. Some 80 percent of riders classified themselves as minority, with approximately 60 percent of all riders reporting low family income and use of the bus route five day per week. The riders have requested improved service reliability. The ridechecks found a high percent of trips operating ahead of schedule, except for the afternoon trips on the Route 373 which tended to run late. Bus operators confirmed the need to adjust schedule times to improve on-time performance, and monitoring adjustments implemented in December 2015 to improve on-time performance.

In concert with the proposed routing change to the existing Route 305, the peak headway on Routes 372/373 should be improved. The bus that is saved by truncating the Lorton segment of Route 305 should be allocated to these routes to improve the service level to better accommodate the additional Lorton riders that are expected to use these routes. The proposed headways are presented in Table 4-17. In addition, Routes 372/373 should be simplified by removing the Boston Boulevard and Patriot Ridge deviations, with these areas continuing to be served by proposed Routes 340/341 (described under Recommendations for New Service).

Routes 372/373 are part of the TPP South County Feeder Bus Service project. The TPP transit projects are listed in Section 6.6.

Table 4-17: Routes 372/373 Proposed Service Levels

		Route 372	Route 373
Operator		Fairfax Connector	Fairfax Connector
Span	Morning Peak	6:00 a.m. – 10:00 a.m.	5:30 a.m. – 9:30 a.m.
	Afternoon Peak	3:30 p.m. – 8:00 p.m.	3:30 p.m. – 8:00 p.m.
Headway (min.)	Morning Peak	25	25
	Afternoon Peak	25	25

Huntington Service Area

Add Alternate Route 172 to Peak Route 171 Service

Connector Route 171 Richmond Highway, the most heavily used Connector service after Route 401/402, serves more than 3,200 weekday riders and approximately 2,300 riders on both Saturday and Sunday for a total exceeding 20,000 passenger trips weekly. The route complements the limited-stop REX along Richmond Highway by providing local service to nearly 50 stops in each direction. The route originates at the Huntington Metrorail Station and continues along US Route 1 past the Fort Belvoir Pence gate where the REX turns into the Fort. Route 171 turns onto Fairfax County Parkway to serve the Defense Logistics Agency (DLA) complex and then continues along Telegraph Road, Pohick Road, and Lorton Station Boulevard to a terminal at the Lorton VRE Station. One-third of Route 171 riders transfer at the Huntington Metrorail Station; the remainder make trips along the local portion of the route with destinations along the Richmond Highway corridor.

Recognizing historical growth in ridership since a major restructuring of South County bus service in 2004, FCDOT increased Route 171 service since the 2009 TDP, largely adhering to that plan's recommendations. Route 171 frequency changes were:

- Weekday peak: from 30 minutes to 20 minutes
- Weekday midday: from 60 minutes to 30 minutes
- Weekday evening: from 60 minutes to 35 minutes
- Saturday and Sunday: from 60 minutes to 30 minutes

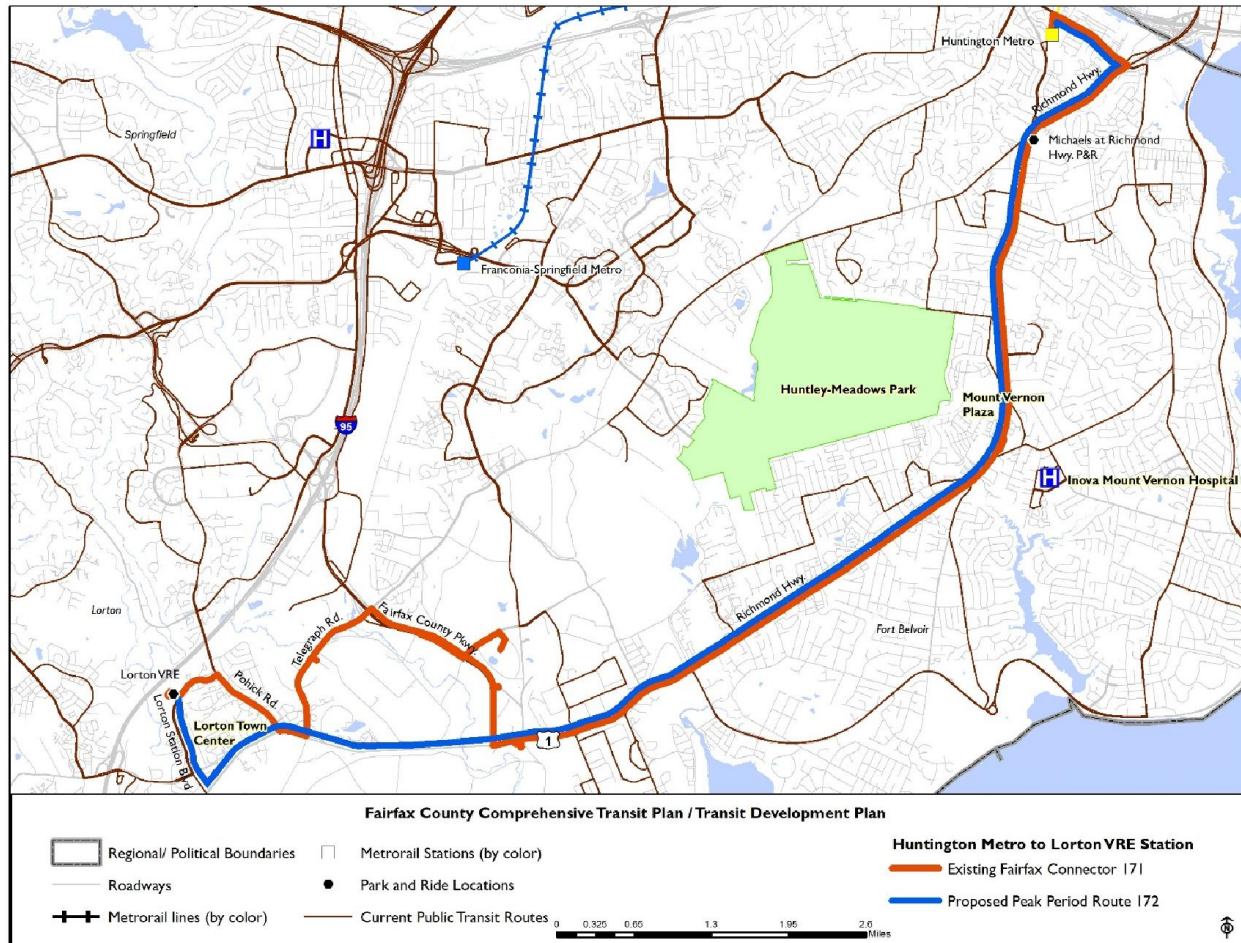
As a result of these headway improvements, scheduled weekday one-way trips increased from 67 to 102, Saturday trips increased from 41 to 80 and Sunday trips increased from 37 to 74. With these increases there is now ample capacity to accommodate ridership growth, likely for at least the next five years.

As noted in the DRPT US Route 1 corridor study, land use changes along the corridor will cause an increase in transit demand. Although most of the development anticipated by this study will occur beyond the six-year horizon of this TDP, the following change is recommended for the later part of the six-year planning period:

Create a peak-period Route 172 that services the portion of Richmond Highway between Fairfax County Parkway and Armistead Road, and then Lorton Station Boulevard for access to the Lorton VRE Station, as shown in Figure 4-30. This new Route 172 will provide direct service to the Inlet Cove Drive community and several other townhouse complexes located along this length of Richmond Highway, and provide more direct access to Gunston Plaza from Richmond Highway. Alternate service between the Route 171 and Route 172 routings so that they have a combined peak headway of 15 minutes (the existing route and the new route segment would each be served with 30-minute headways in the peak). In the portion of the alignment unique to each variant the peak-period headway would be 30 minutes, which would be a reduction from the existing 20 minute peak headway along Telegraph Road and Pohick Road, however capacity exists to accommodate riders, and ridership is lower at bus stops along these segments of existing Route 171.

Routes 171 and 172 are part of the TPP South County Feeder Bus Service project. The TPP transit projects are listed in Section 6.6.

Figure 4-30: Proposed Route 171 and New Route 172



Recommended for Implementation in Fiscal Year 2020

Reston Service Area

Restructure Route 574

Route 574 currently provides a one-seat ride from Reston Town Center to Tysons. The route also serves local travel along various roads in Reston and connects Leesburg Pike both to Reston and Tysons. Within Reston, there is other overlapping local service, but on Leesburg Pike, Route 574 is the only local service available. While the Silver Line will provide a faster connection between Reston Town Center and Tysons once Silver Line Phase 2 opens, Route 574 should be maintained as a one-seat connection from the eastern portion of Reston to Tysons, and to maintain the only transit service to communities along Leesburg Pike between Reston and Tysons.

To provide more direct service, it is recommended to realign Route 574 so that it travels only on the northwestern segment of North Shore Drive rather than on the southern segment and then

on Wiehle Avenue. It would use the rest of its current alignment into Tysons, terminating at the Tysons West*Park Transit Station. This alignment change is shown below in Figure 4-31. Potential park-and-ride locations along Leesburg Pike should be explored and/or revisited to determine if any of them can serve as remote park-and-ride locations for the Spring Hill Metrorail Station in Tysons.

Recommended service statistics are shown in Table 4-18. Peak service on Route 574 should be operated at an approximate 30-35 minute headway, unless new park-and-ride opportunities are available, in which case a 20 minute headway would be recommended.

Figure 4-31: Proposed Route 574

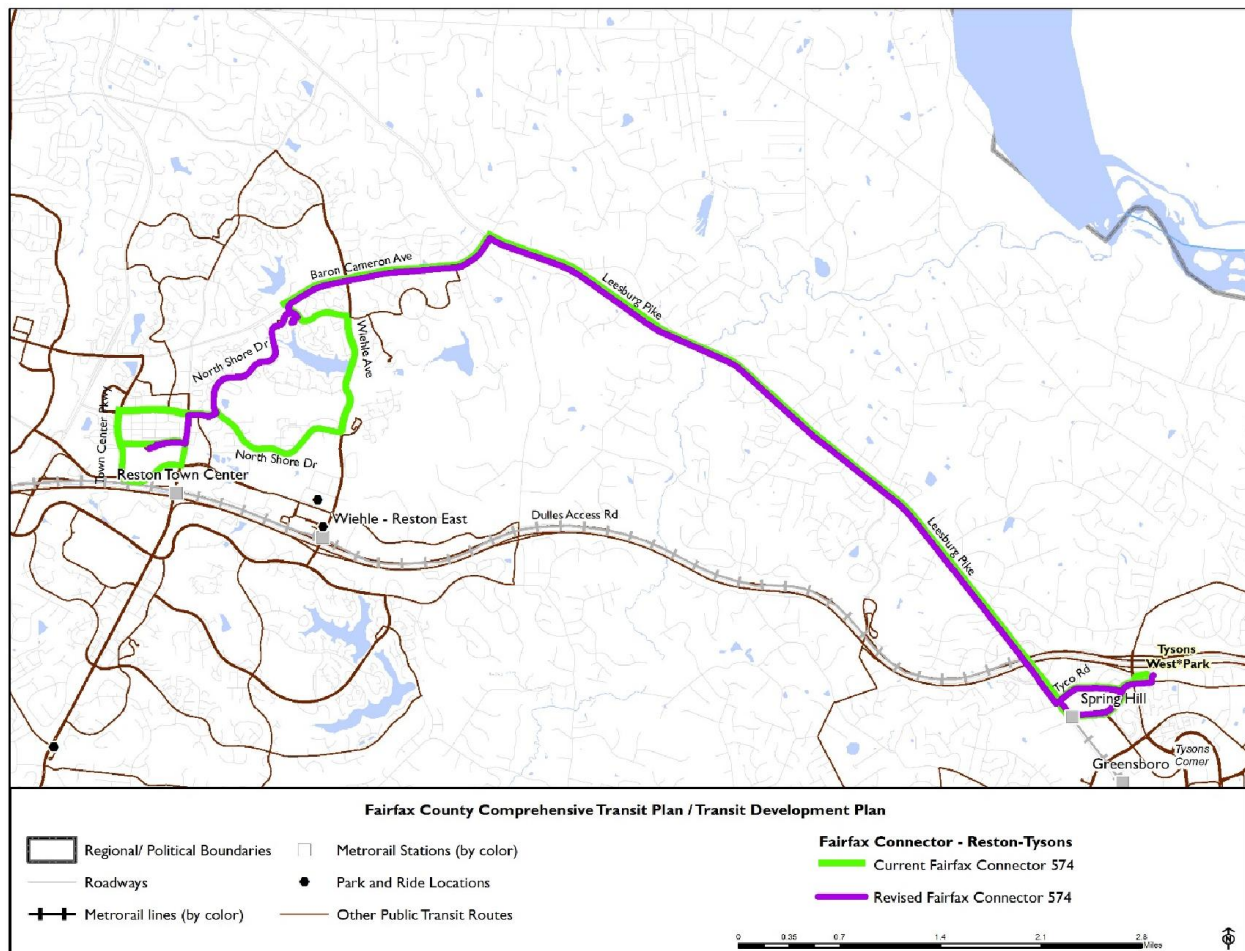


Table 4-18: Route 574 Proposed Service Levels

Route 574		
Operator		Fairfax Connector
Span	Weekday	4:50 a.m. – 12:15 a.m.
	Saturday	6:00 a.m. – 12:15 a.m.
	Sunday	6:00 a.m. – 8:30 p.m.
Headway (min.)	Weekday	30-35 (20 peak with new park-and-rides)
	Saturday	30-35
	Sunday	30-35

Extend Route 585

Before the Silver Line opened, Route 585 was a simple feeder service from Reston South Park-and-Ride Lot into West Falls Church via Reston Parkway. With the Silver Line opening, it was extended to the southwest via Franklin Farm Road to cover some of the territory formerly covered by Route 929. This extension has proved popular with passengers.

When Phase 2 of the Silver Line opens, this route, unlike the other Reston feeder services, will be rerouted from the Wiehle-Reston East Metrorail Station into the south side of the new Reston Town Center Metrorail Station. This change will save a few minutes of running time for the route, allowing passengers to access the Silver Line in a faster and more direct manner. In response to requests for better service to Chantilly, it is proposed to extend the route further to the southwest to a loop at Metrotech Drive, serving the cluster of development at the intersection of Centreville Road and US-50, as shown in Figure 4-32.

With this extension, instead of operating in the peak direction only (paired with the reverse-peak Route 985), the new 585 would operate in both directions, thereby offering job access to Reston residents and other people arriving in Reston on the Silver Line to the employment in Chantilly. It would also offer direct access to Reston for people living along the stretch of Centreville Road south of Kinross Circle, who currently have no service other than Route 652, which travels only to the Vienna Metrorail Station. Finally, the new Route 585 would have increased service during the midday period, with frequency improving from 70 minutes to approximately every 30 minutes.

Figure 4-32: Proposed Route 585

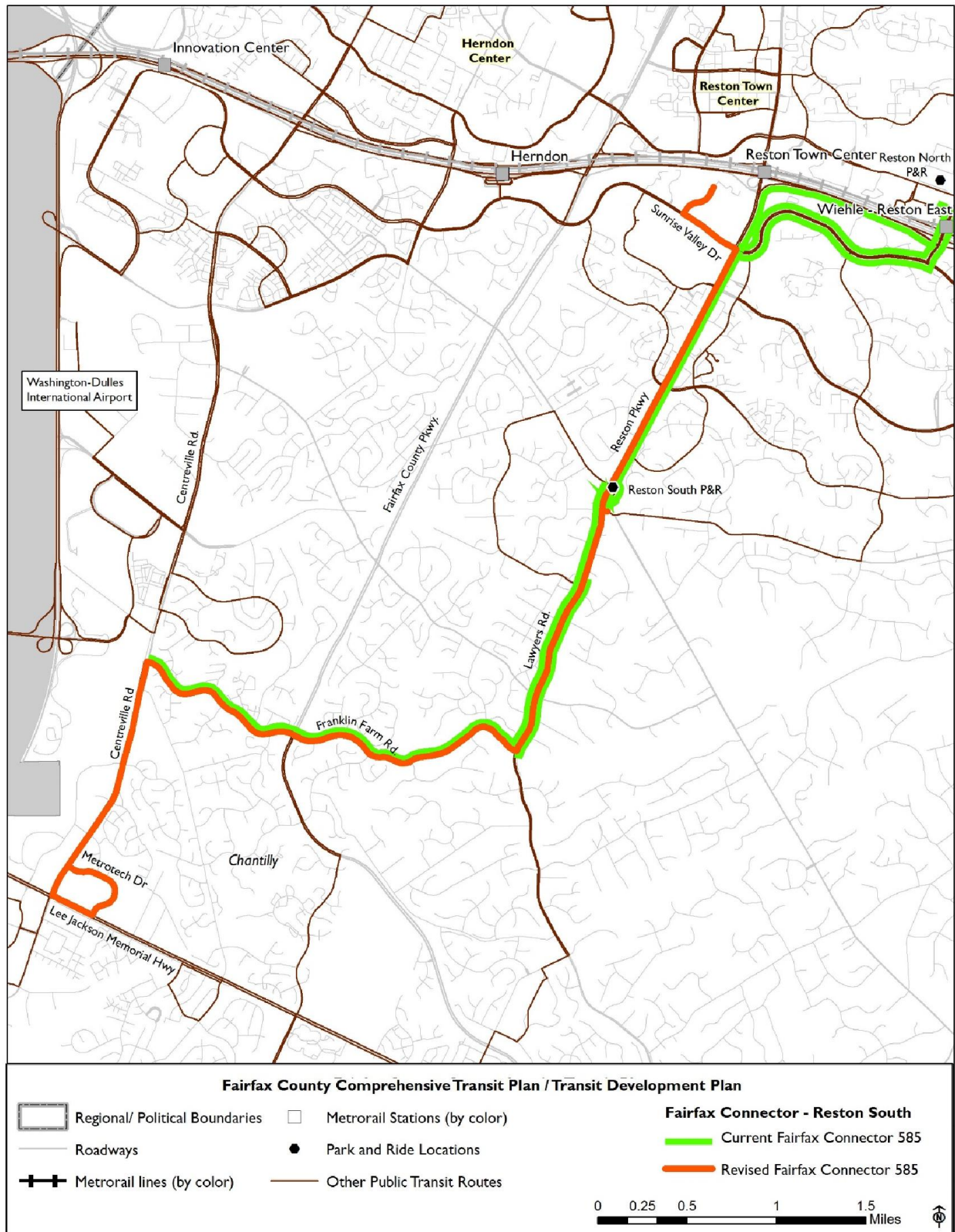


Table 4-19: Route 585 Proposed Service Levels

Route 585		
Operator		Fairfax Connector
Span	Weekday	5:00 a.m. – 10:00 p.m.
	Weekday Peak	20
Headway (min.)	Weekday Midday	30
	Weekday Evening	60

Centreville/Chantilly Service Area

Route 605 Headway Improvement and Routing Change

On January 24, 2015, Route 605 was modified to address public suggestions collected during outreach. The following routing and schedule changes were made:

- The southern terminal was changed from Government Center to Fair Oaks Mall, reducing running time by one minute and providing a more optimal layover location.
- Weekday service frequency was improved from a 60-minute headway to a 45-minute headway between the start of service and 5:15 p.m. The 2014 ridecheck surveys confirmed that this route was running late all day. Therefore, in addition to providing more frequent trips, this change added more time in the schedule to improve reliability.
- The northbound service span was extended, with service starting nearly two hours earlier at 5:07 a.m. to allow residents to reach jobs with early start times.
- The weekend schedules were modified by extending the 60 minute headway to 70 minutes throughout the day to improve service reliability because the route was also frequently running late on weekends.

Route 605 should be rerouted so that it serves the north side of the new Reston Town Center Metrorail Station, then loops around to serve the Reston Town Center Transit Station. At that time, the peak-period headway should be improved to 30 minutes as shown in Table 4-20. In addition, weekend headways should be improved to 40 minutes since the connection to the Silver Line will attract more riders to this cross-county route. Otherwise, the routing between Fair Oaks Mall and Reston should remain unchanged.

Table 4-20: Route 605 Proposed Service Level

Route 605 (Future)		
Operator		Fairfax Connector
Span	Weekday	5:00 a.m. – 11:00 p.m.
	Saturday	6:00 a.m.– 9:00 p.m.
	Sunday	7:00 a.m. – 8:00 p.m.
Headway (min.)	Weekday Peak	30
	Weekday Midday	45
	Weekday Evening	60
	Saturday	40
	Sunday	40

Herndon Service Area

Convert Route 926 to Herndon Downtown Circulator Route 921/922

As mentioned above, Route 926 currently provides reverse-peak service to commercial areas in Herndon as the continuation of peak-direction Route 924 service. With the opening of the new Herndon Metrorail Station at the location of the current Herndon-Monroe Park-and-Ride Lot, the resources employed for the current Route 926 would be better used to provide a quick connection between the Metrorail station and a broader set of employment destinations in central Herndon.

As shown in Figure 4-33, the proposed new service would be a bidirectional circulator loop that serves the north side of the Herndon Metrorail Station. In the clockwise direction, the route would serve employment on Worldgate Drive and then head into the commercial center of Herndon on Elden Street. It would loop through the historic downtown on Center and Station Streets, returning to Elden Street. Finally the route would return to the station via the southeastern quadrant of Herndon Parkway. The counterclockwise direction would trace the same path, except that it would traverse Center and Station Streets in the same direction as the clockwise loop. The tentative numbering for this route pair is 921 and 922.

The round-trip running time of these routes would be between 20 and 25 minutes depending on the time of day. Combined with service on Routes 937 and 950, there would be very frequent connections between the Herndon Metrorail Station and the downtown area of Herndon. Error! Reference source not found. shows the proposed span and frequency for these new routes.

Figure 4-33: Proposed New Routes 921/922

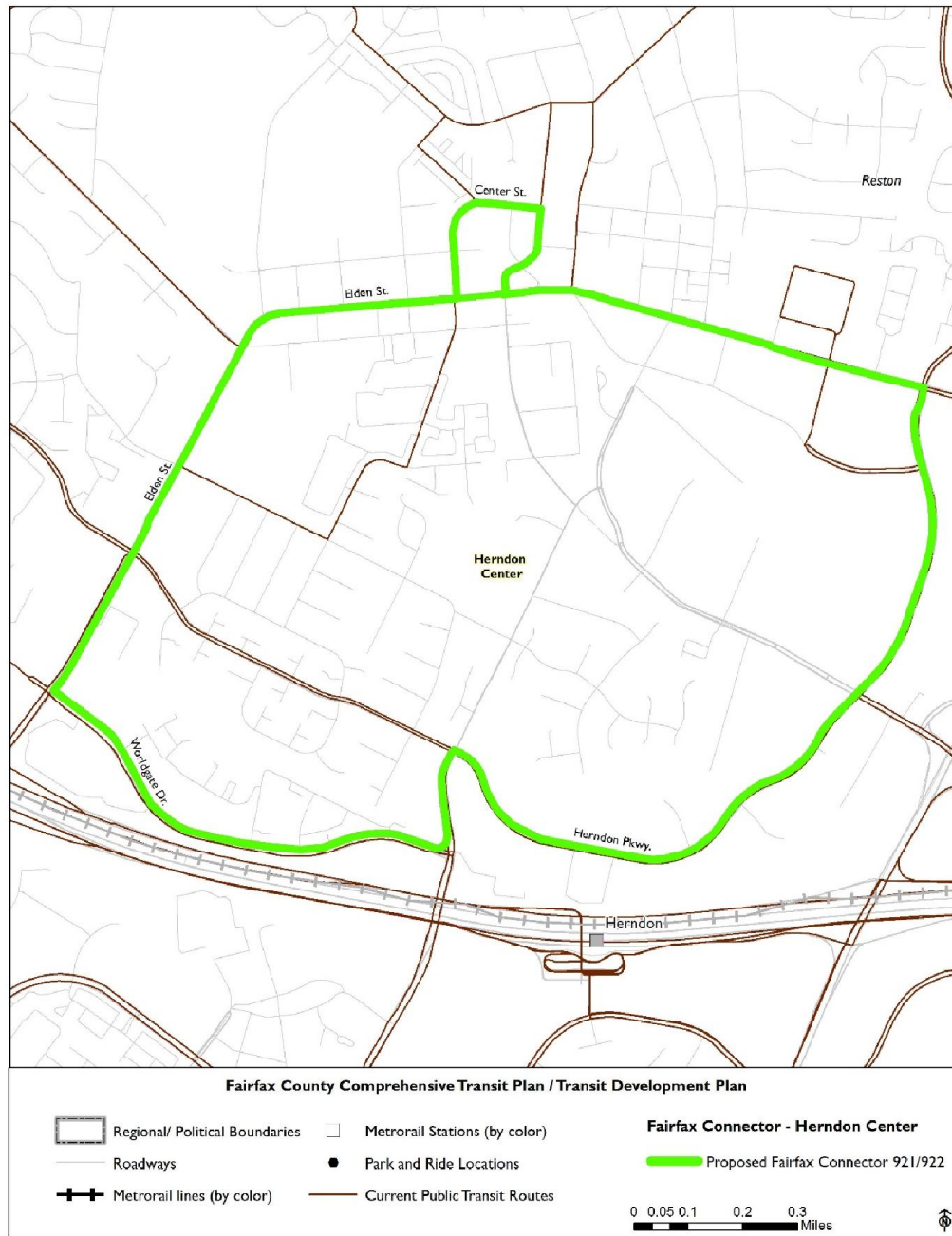


Table 4-21: New Routes 921/922 Proposed Service Levels

		Route 921 (Counterclockwise)	Route 922 (Clockwise)
Operator		Fairfax Connector	Fairfax Connector
Span	Weekday	5:15 a.m. – 11:00 p.m.	5:15 a.m. – 11:00 p.m.
	Saturday	6:30 a.m. – 11:00 p.m.	6:30 a.m. – 11:00 p.m.
Headway (min.)	Weekday Peak	30*	30*
	Weekday Off-Peak	25	25
	Saturday	25	25

* The 30 minute headway during weekday peak periods is to allow buses to operate on time in rush hour traffic.

Truncate and Improve Service on Route 924

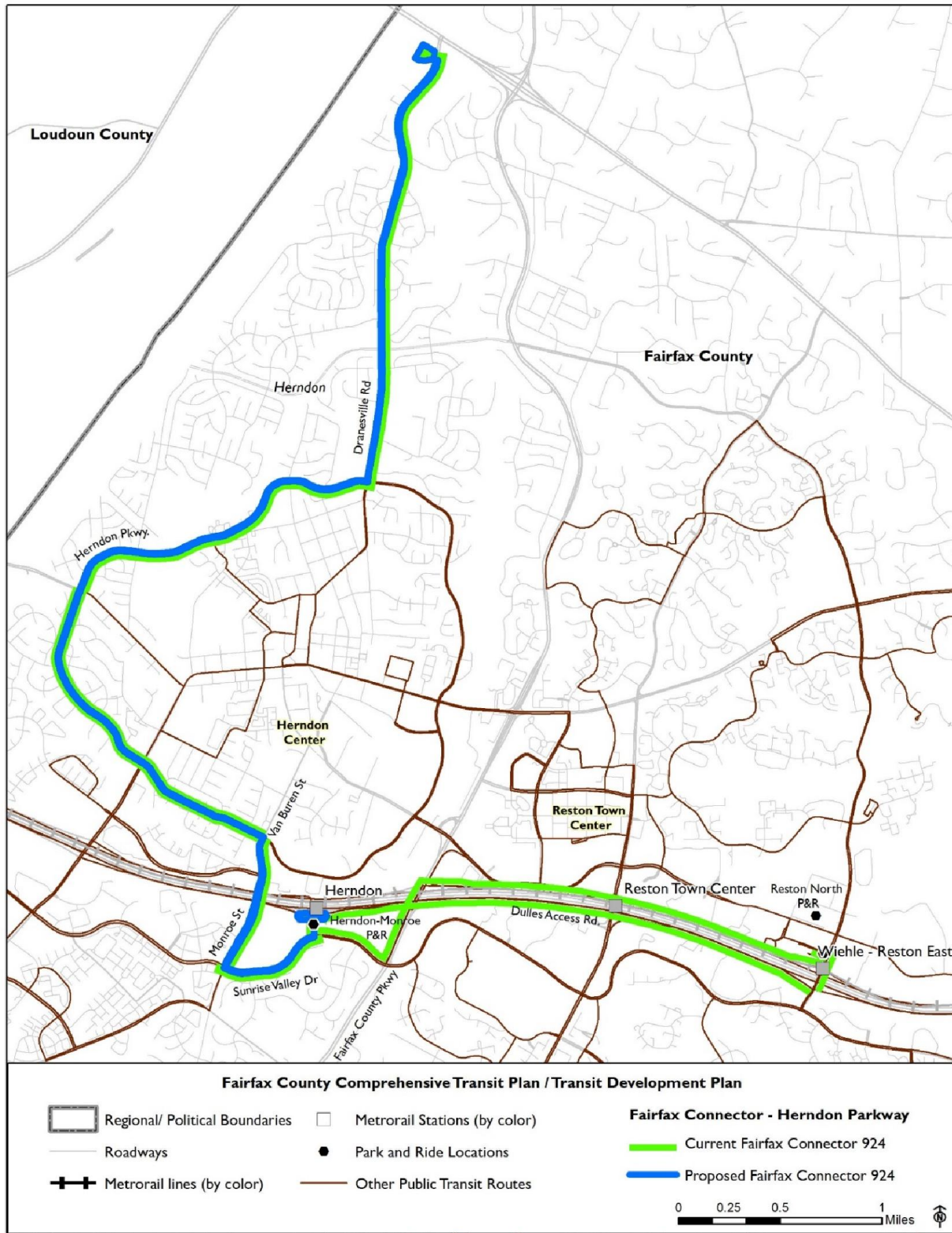
Route 924 is currently paired with Route 926 to provide peak direction commuter service from residential areas of Herndon to the Silver Line, while the 926 provides reverse peak direction service to employment areas in Herndon. In the future, as shown in Figure 4-34, it is proposed that this pair of routes be separated and that Route 924 provide bidirectional service for its alignment on the west side of Herndon Parkway and Dranesville Road to the junction with VA 7. The alignment would stay the same as far as what is presently operated into the bus bays at Herndon-Monroe, the future south side of the Herndon Metrorail Station. The route would terminate there instead of continuing to the Wiehle-Reston East Metrorail Station.

With the savings from the route cut back at the Herndon Metrorail Station, the three buses now in service on the 924/926 pair would stay in service on the new bidirectional 924 to improve from a 30 minute to a 20 minute headway during peak hours. New off-peak service would be operated at a 60 minute headway for an initial period, improving to a 30 minute headway in the future if demand warrants.

Table 4-22: Route 924 Proposed Service Levels

		Route 924 (Initial)	Route 924 (Future)
Operator		Fairfax Connector	Fairfax Connector
Span	Weekday	5:15 a.m. – 10:00 p.m.	5:15 a.m. – 10:00 p.m.
	Saturday	7:00 a.m. – 8:00 p.m.	7:00 a.m. – 8:00 p.m.
Headway (min.)	Weekday Peak	20	20
	Weekday Off- Peak	60	30
	Saturday	60	30

Figure 4-34: Proposed Route 924



Truncate Service on Route 929

Once Silver Line Phase 2 opens, this route will be cut back to the Herndon Metrorail Station. This is Phase 2 of service improvements to Route 929.

Restructure Route 927

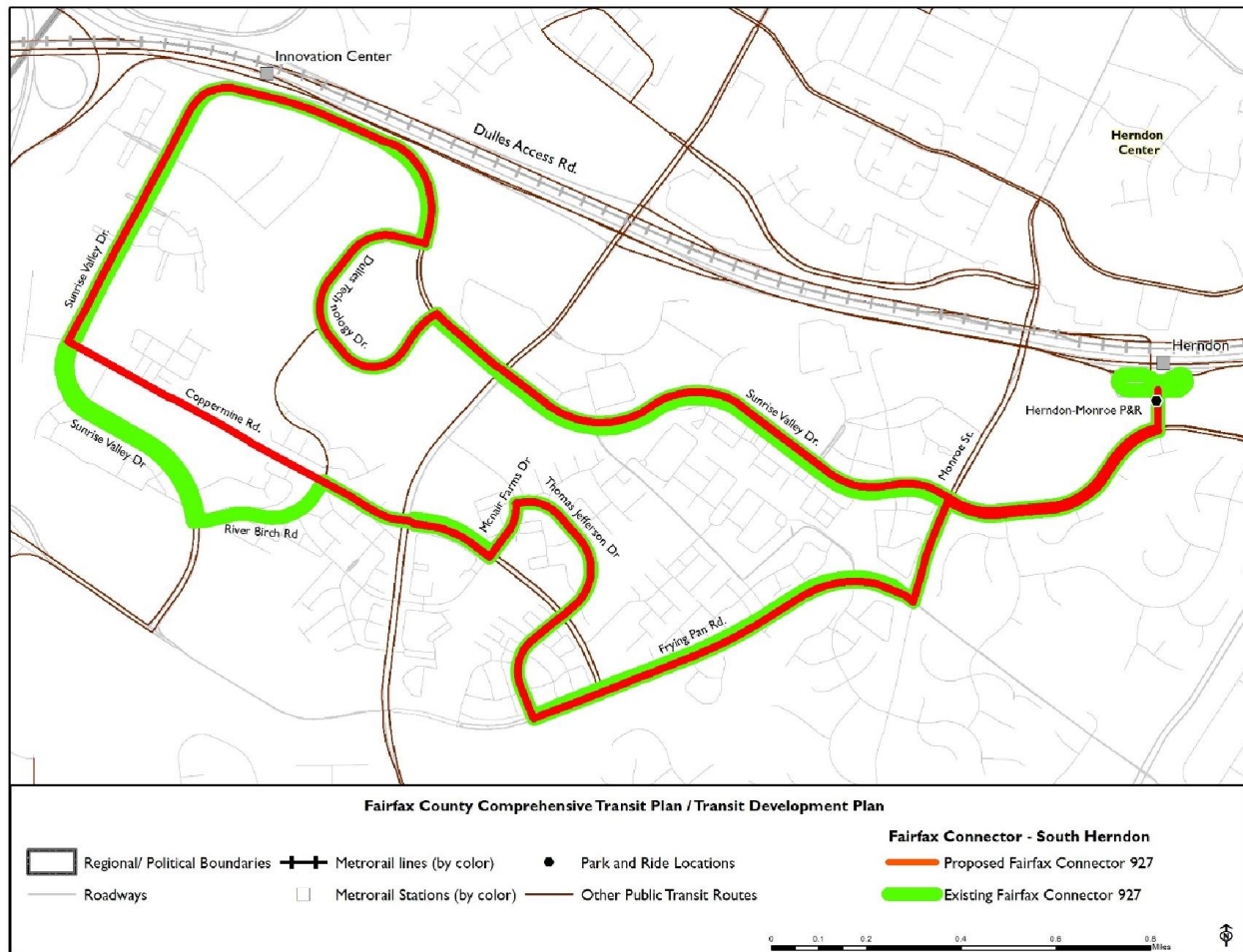
It is recommended that Route 927 be realigned, as recommended in the 2009 TDP, so that it operates on Coppermine Road instead of Sunrise Valley and River Birch – this will allow it to serve the development on Coppermine more directly (it has no other service) and to save a few minutes of running time so that the cycle time could efficiently allow for a 30 minute headway throughout the peak period. Additionally, another route (revised Route 983) is proposed to serve the segment of Sunrise Valley Drive that would be removed from Route 927. The 927 alignment shown in Figure 4-35 should be implemented along with the changes to the Route 983, unless Route 983 service is continued to Dulles International Airport along an optional alignment. It is also proposed to restore midday and evening service on Route 927.

An improved service level should be operated when Silver Line Phase 2 opens to served existing riders, and to help develop transit demand in this area as the route serves residential and commercial developments in the Dulles Corner and Dulles Technology Drive areas. Thus, the peak headway with two buses would be approximately 20 minutes. During off-peak periods, a 35 minute headway would be operated.

Table 4-23: Route 927 Proposed Service Levels

Route 927		
Operator		Fairfax Connector
Span	Weekday	5:30 a.m. – 10:00 p.m.
	Saturday	7:00 a.m. – 8:00 p.m.
Headway (min.)	Weekday Peak	20
	Weekday Off- Peak	35
	Saturday	35

Figure 4-35: Proposed Route 927

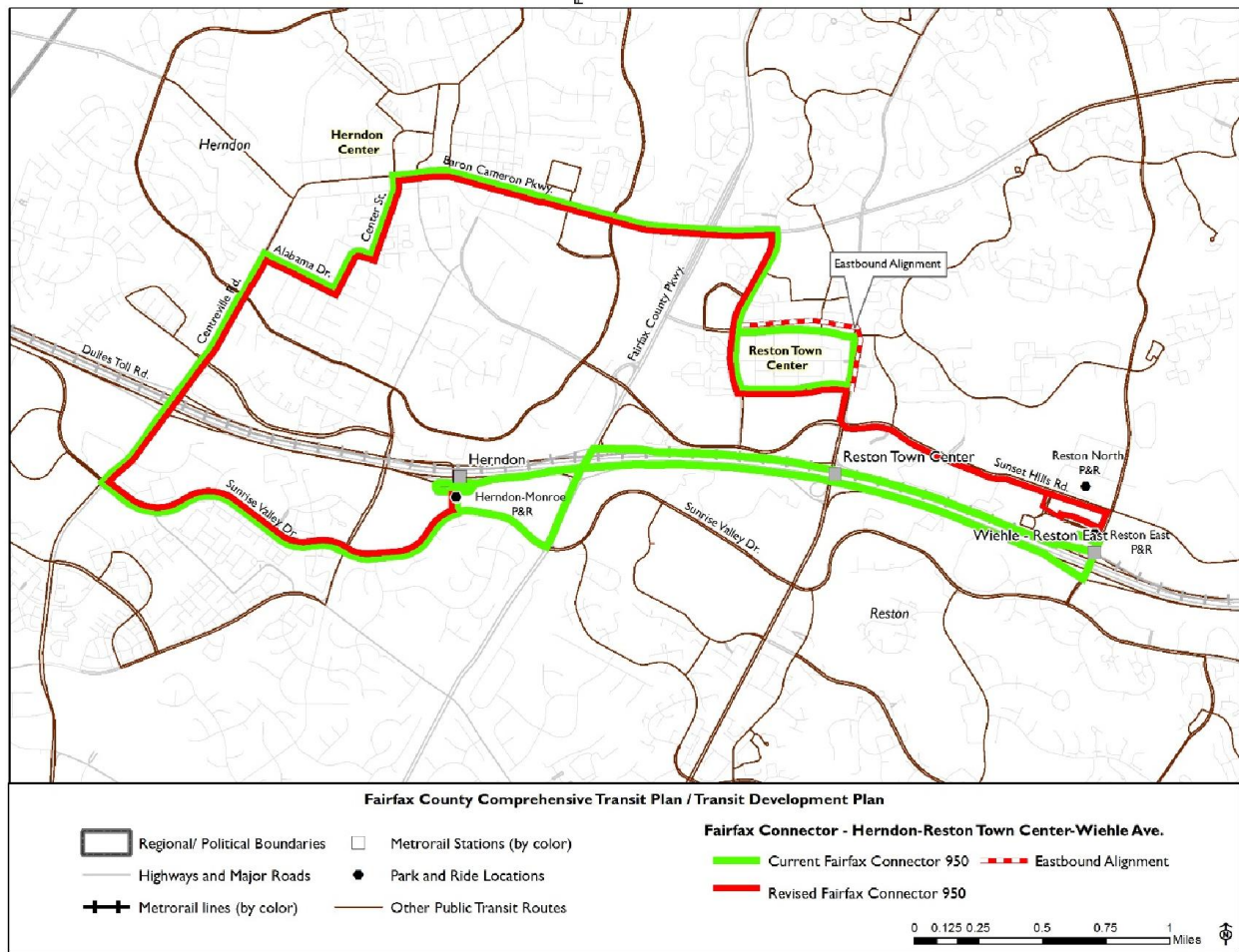


Restructure Route 950

Route 950 is currently the third highest ridership route in the Fairfax Connector system, behind only Route 401/402 and Route 171. In addition to serving as a feeder to the Silver Line at the Wiehle-Reston East Station, it provides essential local service in Reston and Herndon, serving the commercial centers of both communities. When Silver Line Phase 2 opens, it will no longer be necessary for the route to connect the Herndon-Monroe Park-and-Ride Lot to the Wiehle-Reston East Metrorail Station, since the park-and-ride facility will have Silver Line access at the Herndon Metrorail Station.

As shown in Figure 4-36, instead of simply truncating the route at the new Herndon Metrorail Station, this TDP proposes that the Route 950 maintain the connection to the Wiehle-Reston East Station by absorbing the current Route 505, thereby extending 950 service from Reston Town Center Transit Station to the Wiehle-Reston East Metrorail Station. This way, riders in Reston and Herndon along the 950 alignment will have a quick and direct one-seat trip to the Silver Line. The route is not proposed to serve the new Reston Metrorail Station, but would rather take the most direct route between Reston Town Center and the Wiehle-Reston East Metrorail Station, as the 505 does today.

Figure 4-36: Proposed Route 950



Route 950 currently offers 20 minute headways during peak periods and 25-30 minute headways at other times. As shown in Table 4-24, it is recommended to upgrade this service to 15 minute peak headways and 20 minute headways in the midday period. Evening service would remain at 30 minute intervals. Midday service on Saturdays (10:00 a.m. to 5:30 p.m.) should also be upgraded to 20 minute headways from the current 30 minutes.

Table 4-24: Route 950 Proposed Service Levels

Route 950		
Operator		Fairfax Connector
Span	Weekday	4:00 a.m. – 1:30 a.m.
	Saturday	6:00 a.m. – 1:30 a.m.
	Sunday	6:00 a.m. – 1:30 a.m.
Headway (min.)	Weekday Peak	15
	Weekday Mid-day	20
	Weekday Evening	30
	Saturday	20/30
	Sunday	30

Combine Routes 951 and 952 into a Circulator Loop

The 2009 TDP recommended a circulator service on Sunrise Valley Drive and Sunset Hills Road (Route 959) that had first been proposed in the Wiehle Avenue/Reston Parkway Station Access Plan. Route 959 was designed to serve the office concentrations in the corridor. That route extended from Hunter Mill Road in the east to Centreville Road in the west. During implementation planning, it was determined that breaking the long circulator into shorter segments would be more effective, and thus Route 507 was designed to cover the eastern portion (from Hunter Mill Road to the Wiehle-Reston East Metrorail Station), Routes 951 and 952 the middle segment (from the Wiehle-Reston East Metrorail Station to Monroe Street), and Route 950 the westernmost segment.

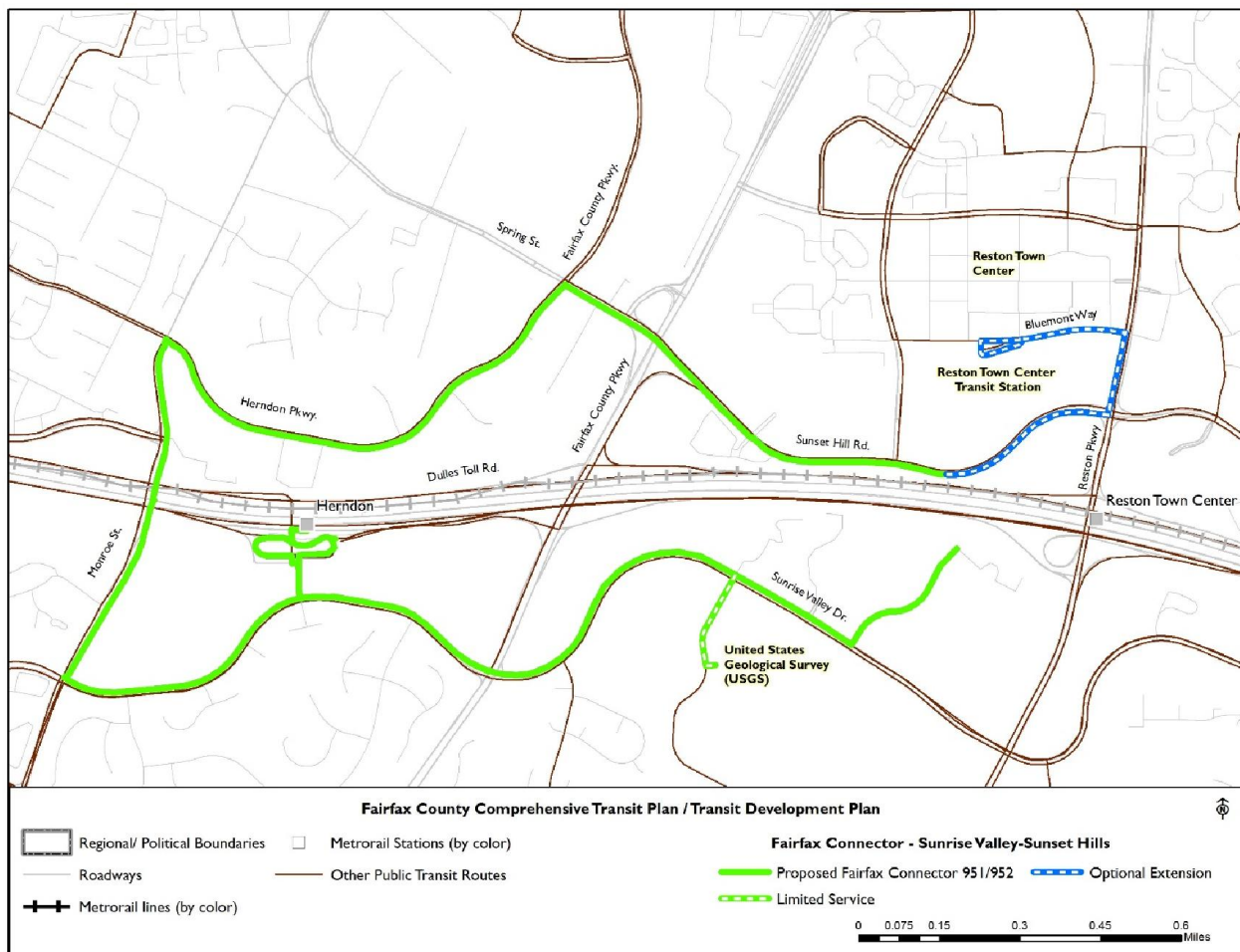
Currently the 951 and 952 operate as independent routes in the morning peak period, as an interlined loop in the midday and evening, and a reverse-peak direction service interlined with Route 980 during the afternoon peak period. As shown in Figure 4-37, the recommendation in this TDP is to truncate the route at the new Reston Town Center Metrorail Station, once it opens, and to run the route as an “open loop” from the north side of the station to the south side of the station via the current alignment to Monroe Street west of the station. Route mileage to the east of the Reston Town Center Metrorail Station will be adequately covered by other routes such as the 950 and 550-series. Optionally, the County could extend the route on the north side to the Reston Town Center Transit Station based on future public feedback.

Route 951 would operate clockwise and Route 952 would operate counterclockwise, and they would be interlined. For the period of the present TDP, these routes would continue to operate only on weekdays. If demand increases significantly, Saturday service could be added in the future when additional development and ridership warrant service beyond the recommended weekday schedule.

Table 4-25: Routes 951/952 Proposed Service Levels

		Route 951 (Clockwise)	Route 952 (Counterclockwise)
Operator		Fairfax Connector	Fairfax Connector
Span	Weekday	5:30 a.m. – 10:00 p.m.	5:30 a.m. – 10:00 p.m.
Headway (min.)	Weekday Peak	20	20
	Weekday Off- Peak	40	40

Figure 4-37: Proposed Routes 951/952



Create New Route 954 for Additional Coverage in Herndon

The current route structure provides good access to the regional transit system for most of the densely developed areas in the Town of Herndon. There is one residential area, however, that has high transit propensity, but no direct access to a bus route. This neighborhood, at the western edge of Herndon north of the Herndon Centennial Golf Course and surrounding Sadlers Well Drive, Builders Road and Clearview Elementary School, is well over a half mile from Route 924 service (on Herndon Parkway).

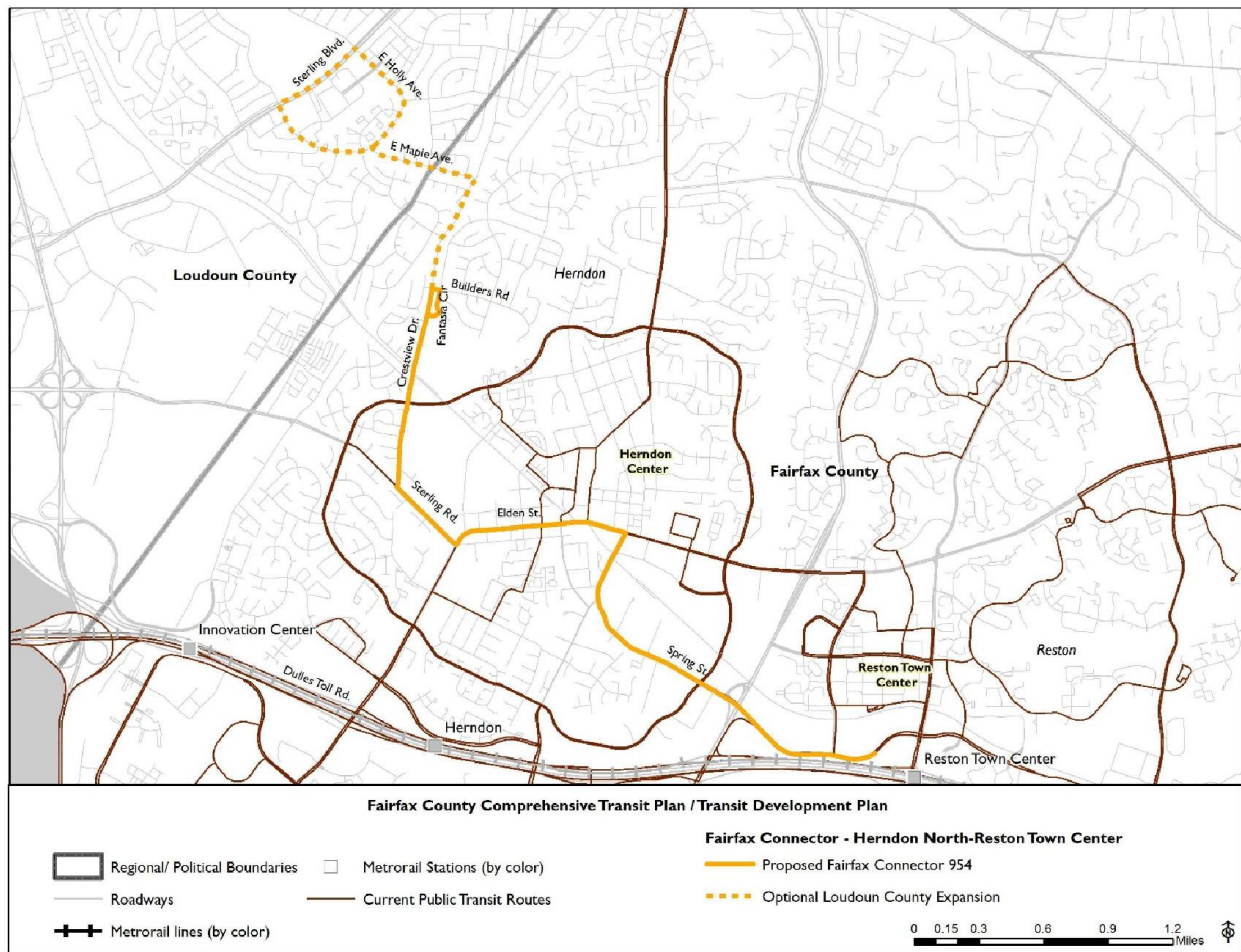
As shown on Figure 4-38, a new route, tentatively numbered 954, is proposed to serve this neighborhood via a short loop on Eldridge, Fantasia and Builders, and then use Crestview and Sterling to reach the center of Herndon. Opposite the golf course on Crestview just north of Herndon Parkway is a neighborhood of townhomes that would likely generate ridership as well. From the center of Herndon, the route would travel via Spring Street to the Reston Town Center Metrorail Station. Spring Street currently has no bus service. This route could be extended into Loudoun County via Crestview Drive/Lincoln Avenue and East Maple Avenue, then looping via East Maple Avenue, Sterling Boulevard, East Holly Avenue, and Circle Drive, to attract additional riders and serve a large commercial center in Sterling proximate to the county line. This extension will be reviewed with Loudoun County officials as part of the service planning for Silver Line Phase 2 bus service modifications.

This route would be implemented in conjunction with the opening of Silver Line Phase 2. For the initial service period, it would operate only during peak periods at a 24 minute headway. If demand justifies additional service, midday and evening service could be provided in the more distant future. The service would operate in both directions in both peak periods.

Table 4-26: New Route 954 Proposed Service Levels

Route 954		
Operator		Fairfax Connector
Span	Weekday Morning	5:30 a.m. – 9:00 a.m.
	Weekday Afternoon	3:30 p.m. – 7:00 p.m.
Headway (min.)	Weekday Peak	24
	Weekday Off- Peak	Future

Figure 4-38: Proposed New Route 954



Eliminate Dulles Toll Road Service; Restructure Service to Air & Space Museum

When Silver Line Phase 2 opens, it will no longer be necessary to operate parallel bus service on and along the Dulles Toll Road. Thus, Metrobus Route 5A and Connector routes 980 and 981 are recommended to be discontinued. Route 983, a variant of Route 981 that links Dulles International Airport and the Udvar-Hazy Center of the Smithsonian Air & Space Museum, has proven to be a popular service with strong ridership and should be continued. The other service in this area, Route 985, the reverse-peak companion to Route 585 serving the Dulles Discovery campus on Wall Road, would also be discontinued, since Route 585 is proposed to be extended and operated in both directions (see Reston section). To maintain service to Dulles Discovery and Udvar-Hazy, a restructured Route 983 is proposed.

As shown in Figure 4-39, the restructured Route 983 would originate at the Innovation Center Metrorail Station and serve Sunrise Valley Drive to reach Sully Road (VA 28). Rather than running directly to the museum, the route would use McLearen Road, EDS Drive, and Air & Space Museum Parkway to serve Dulles Discovery and then the museum. It would return north to the Metrorail station along the same alignment. An optional alignment for Route 983 would be to have the northern terminal be at the future Dulles Airport Metrorail Station, providing connections to the museum for travelers and coming from both the airport and Silver Line.

Figure 4-39: Proposed Route 983

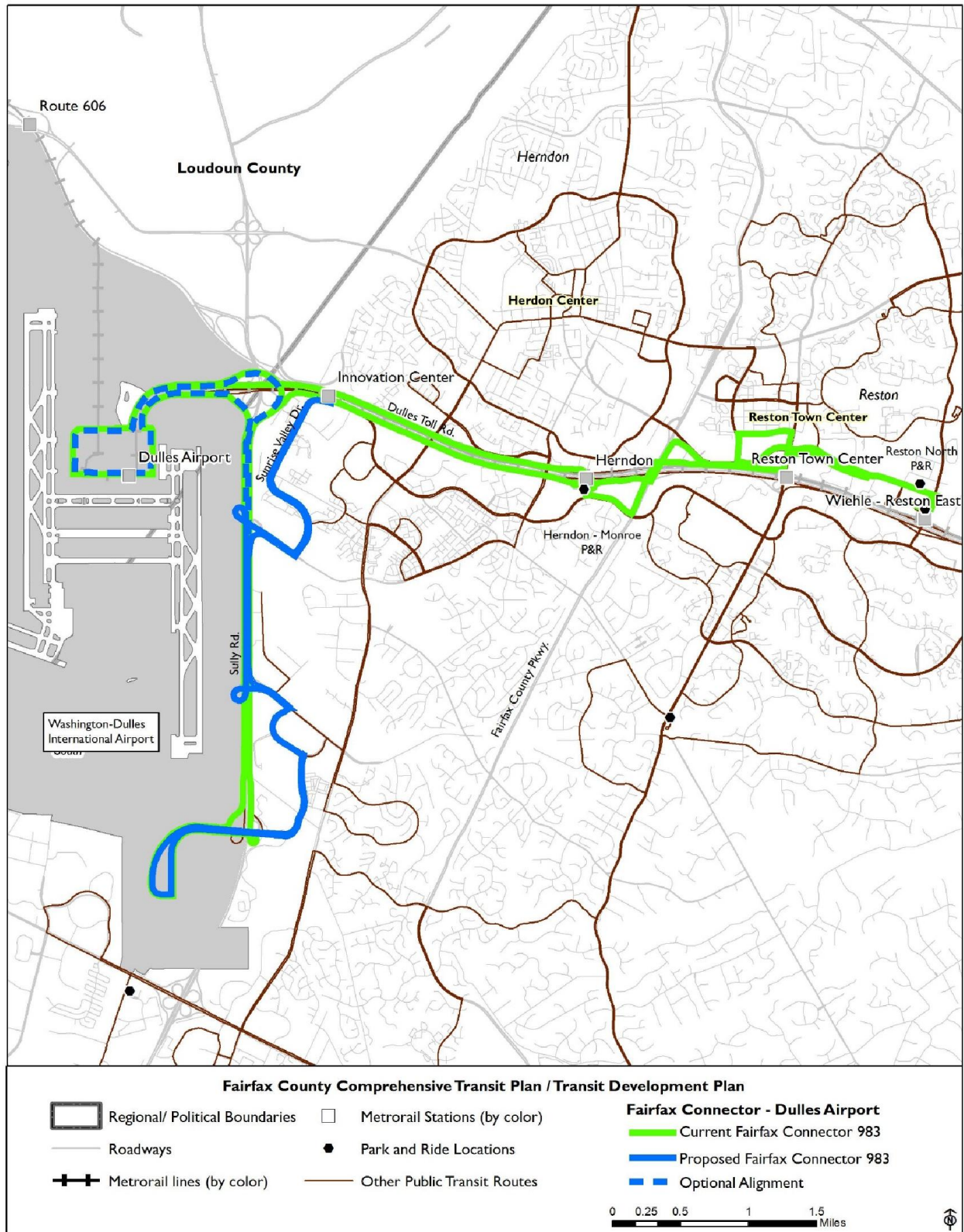


Table 4-27: Route 983 Proposed Service Levels

Route 983		
Operator		Fairfax Connector
Span	Weekday	6:30 a.m. – 8:00 p.m.
	Saturday	9:00 a.m. – 7:30 p.m.
	Sunday	9:00 a.m. – 7:30 p.m.
Headway (min.)	Weekday Peak	20
	Weekday Mid-day	30
	Saturday	20
	Sunday	20

Monitor Service on New RIBS Structure; Adjust Alignments to Accommodate the Reston Town Center Metrorail Station

All of the RIBS routes were changed in May 2015. RIBS 1 and 3 had relatively minor adjustments to their alignments, running times and service levels, while RIBS 2, 4, and 5 were extensively restructured. Moving forward, RIBS 1 and 3 will both be modified slightly upon opening of Silver Line Phase 2 to include a short diversion from Reston Parkway north of the Dulles Toll Road to the Reston Town Center Metrorail Station via Sunset Hills Road. At the time of implementation, the service levels and running times should be examined to determine if additional resources are necessary. No changes are recommended for RIBS 4 or 5.

New Route 496: Herndon Metrorail Station – Franconia-Springfield Metrorail/VRE Station via Fairfax County Parkway

This proposal carries over a cross-county route proposal from the 2009 TDP. However, since the Fort Belvoir Transit Center was not built as proposed, the route, shown in Figure 4-40, would instead serve the Fort Belvoir North Area (National Geospatial Intelligence Agency) and then end at the Franconia-Springfield Metrorail/VRE Station. At the northern end, the service would begin at the Herndon Metrorail Station. This route would provide a long-distance connection between the two Metrorail lines and provide a missing link between two activity centers.

Fairfax County Parkway experiences rush hour traffic congestion. Therefore, this route is unlikely to realize its full potential without the implementation of one or more strategies to minimize bus delays, such as queue jump lanes, bus-only signals, HOV lanes, or other strategies. In addition, investment may be needed to provide passenger access to future bus stops. Stops can be made today where there is a shoulder and crosswalk, or on an access road; several are served by existing bus routes that use a portion of the Parkway. Planning for this route, including the issues mentioned above, should be coordinated with the planned study of Fairfax County Parkway HOV lanes which are included in the county's Comprehensive Plan.

The potential stops on this route are the Herndon Metrorail Station, West Ox Road, Franklin Farm Road, Rugby Road, Monument Drive/Fair Lakes Parkway, Lee Highway (US-29), Old

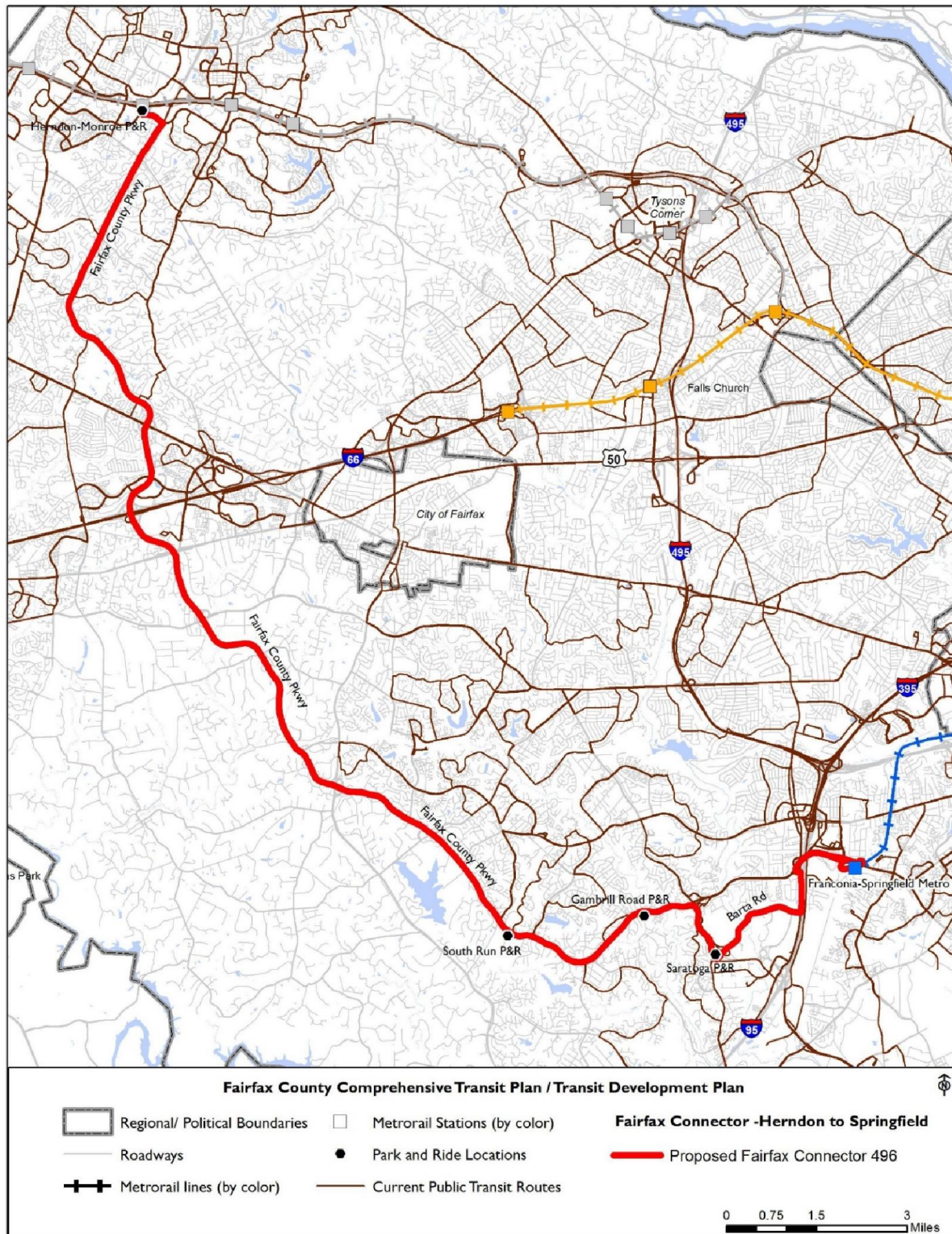
Keene Mill Road (VA-644), Reservation Drive, Huntsman Boulevard, Sydenstricker Road (VA-640), Gambrill Road, Spring Village Drive/Bonnie Mill Lane, Saratoga Park-and-Ride Lot, National Geospatial Intelligence Agency, and the Franconia-Springfield Metrorail/VRE Station. Specific stop locations for this service will need to be further refined during the planning process. The total one-way route distance is approximately 25 miles.

Route 496 is part of the Transportation Priorities Plan (TPP) Fairfax County Parkway Enhanced Bus Service project. The TPP transit projects are listed in Section 6.6.

Table 4-28: New Route 496 Proposed Service Levels

Route 496		
Operator		Fairfax Connector
Span	Weekday	6:00 a.m. – 7:30 p.m.
	Saturday	--
	Sunday	--
Headway (min.)	Weekday Peak	20
	Weekday Midday	30
	Weekday Evening	30
	Saturday	--
	Sunday	--

Figure 4-40: Proposed New Route 496



Recommended for Implementation in Fiscal Years 2021 and 2022

No service changes are recommended at this time for implementation in Fiscal Years 2021 or 2022. Funding to support additional service expansion, beyond that listed above, has not been identified.

Recommended for Implementation, Time to Be Determined

Improve Peak Headways on Routes 631, 632, and 624/634

Ridership has grown on the 630-series routes and the Centreville/Chantilly population is expected to continue to grow over the next decade. The expansion of the I-66 managed lanes will only add to this growth with improved accessibility to Fairfax County. In addition, the Stringfellow Road Park-and-Ride Lot is currently undergoing an expansion in capacity and an upgrade in rider facilities; when complete, the facility will become the Stringfellow Transit Center.

As shown in Table 4-29, for the Transform 66 – Outside the Beltway Project, FCDOT has recommended to increase service on the existing Connector Routes 631 and 632, and proposed Routes 624/634, to provide service from the Stringfellow Road Transit Center to the Vienna Metrorail Station with an effective headway of every 7.5 minutes during peak periods for the life of the project.¹⁹ Implementation of this recommendation will occur when ridership between Stringfellow Road and the Vienna Metrorail Station exceeds the available capacity.

These four routes are part of the Transportation Priorities Plan (TPP) Vienna Metrorail Feeder Bus Service Expansion project. The TPP transit projects are listed in Section 6.6.

Table 4-29: Routes 631, 632, and 624/634 Proposed Service Levels

Routes 631, 632, and 624/634		
Span	Operator	Fairfax Connector
	Weekday Morning	6:00 a.m. – 9:00 a.m.
	Weekday Afternoon	3:00 p.m. – 6:00 p.m.
Headway (min.)	Weekday Peak	7.5 Effective
	Weekday Off-Peak	--

¹⁹Initial implementation of the new Route 624/634 at 30 minute headway and the current 631 and 632 at 30 minute headways would bring this corridor to an effective headway of 20 minutes. Further increases to the frequencies of these routes, (15 minutes for the 624/634 and 20 minutes each on the 631 and 632), would bring the service to an effective headway of 6 minutes.

Additional bus routes are being developed for implementation after the improvements to I-66 have been completed. Insufficient data for these routes is available to permit them to be included in this document; however, when data is available, they will be incorporated in this TDP through a subsequent annual TDP Update Letter. FCDOT staff continue to work with VDOT, DRPT, and the I-66 project stakeholders on service concepts for the corridor. In addition, it is anticipated that additional service will be funded with I-66 toll revenue.

4.5. Service Expansion Projects without Potential Funding Identified

Major Service Enhancements

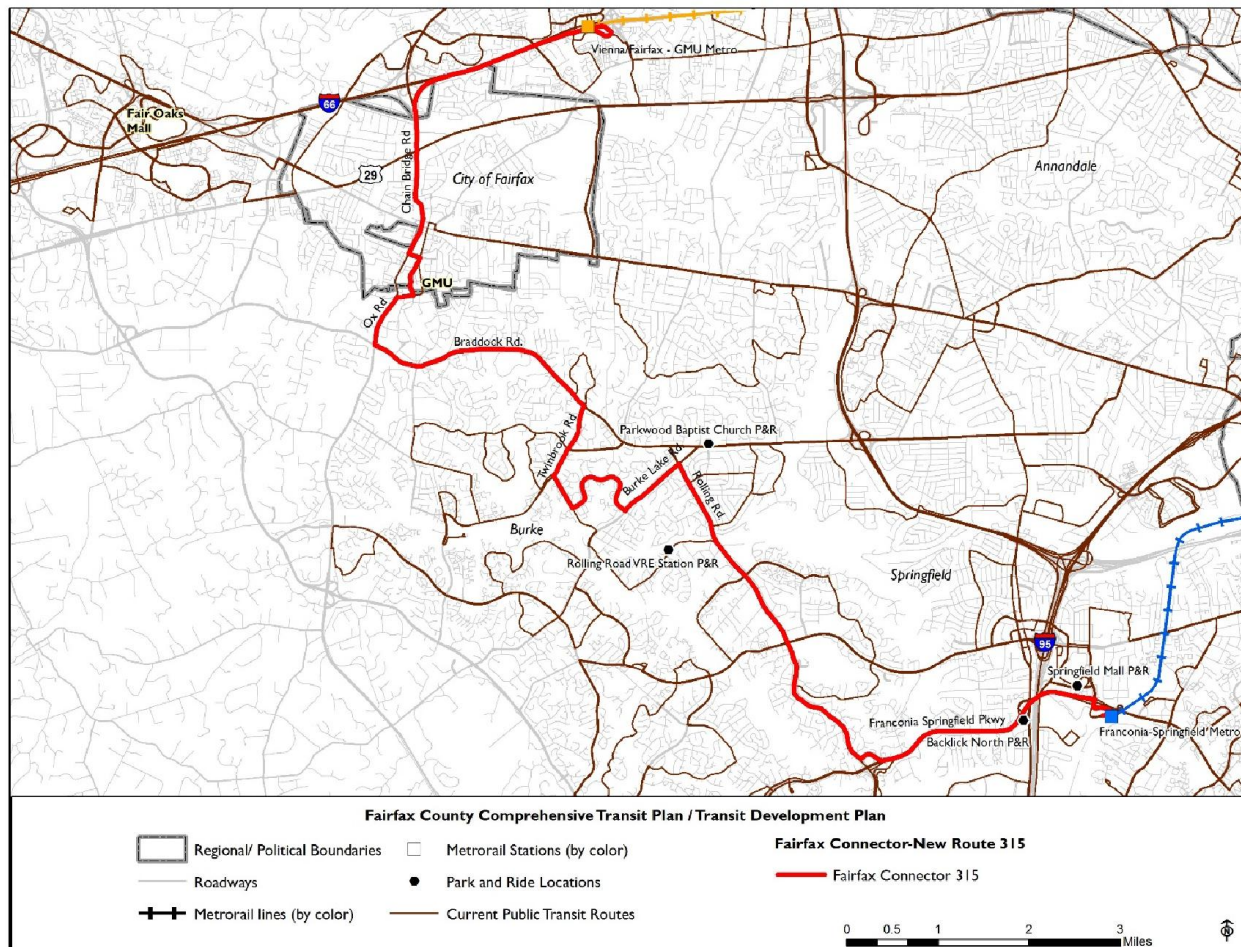
New Route 315 Vienna Metrorail Station – Franconia-Springfield Metrorail/VRE Station via GMU

A new Route 315, Vienna Metrorail Station – Franconia-Springfield Metrorail/VRE Station via George Mason University, is also recommended to provide direct cross-county service. This route would begin at the Vienna Metrorail Station. As shown in Figure 4-41, the route would leave the Metrorail station via I-66 to the Chain Bridge Road (VA-123) exit and follow Chain Bridge Road southerly to the George Mason University campus. The route would serve the campus along Armstrong St, George Mason Boulevard and University Drive and then return to VA-123 proceeding toward Braddock Road (VA-620). The route would turn east on Braddock and proceed to Guinea Road (VA-652) to Lake Braddock Drive to Burke Lake Road (VA-645). The route would then follow Rolling Road (VA-638) to Franconia-Springfield Parkway into Springfield continuing to the entrance to the Franconia-Springfield Metrorail/VRE Station busway. Service should be operated all day Monday through Saturday with the proposed level of service shown in Table 4-30. If a proposed transit center is constructed in the Braddock Road corridor, the route should serve the transit center to facilitate transfers to other routes as this proposed route would provide a north-south connection in the Burke area to activity centers in Fairfax and Springfield.

Table 4-30: New Route 315 Proposed Service Levels

Route 315		
Operator		Fairfax Connector
Span	Weekday	5:00 a.m. – 10:00 p.m.
	Saturday	7:00 a.m. – 8:00 p.m.
	Sunday	--
Headway (min.)	Weekday Peak	30
	Weekday Midday	60
	Weekday Evening	60
	Saturday	60
	Sunday	--

Figure 4-41: Proposed New Route 315



Extend the Span of Service of Route 335 Fort Belvoir "The Eagle"

"The Eagle" was instituted in response to the expansion at the Fort Belvoir south post and the Fort's request for a direct transit service for military personnel and visitors from the Franconia-Springfield Metrorail/VRE Station. The route provides seven morning peak and seven afternoon peak trips and serves about 100 riders during each peak with an average performance of 11 passengers per trip. This special-purpose service should continue to operate as currently configured, but with a minor extension to the afternoon span of service. Two additional short trips to the Morning View Lane loop should be added with departures from the Franconia-Springfield Metrorail/VRE Station at approximately 6:35 p.m. and 7:00 p.m. to provide more direct service to the Island Creek community. Ridership on the route should be further studied to determine if a stop closer to the commissary would be utilized during the midday.

New Route 610 Centreville – George Mason University

Transit trips between the Centreville area and points within the City of Fairfax (such as George Mason University) and the South County areas currently are circuitous and require at least one transfer. The GMU campus continues to expand, providing educational, social and recreational

programs to students and area residents. Centreville residents have indicated it is difficult to reach county government offices by transit.

The 2009 TDP, following a suggestion from the County's 2009 Centreville/Chantilly/Oakton Plan, recommended a new route to connect Centreville with the George Mason University area with service passing through the Government Center complex. This recommendation has not yet been implemented, and it is again recommended in this TDP. The proposed Route 610, shown in Figure 4-42, would begin at the Centreville Park-and-Ride Lot at Lee Highway (US-29) and Stone Road and then proceed through the Centreville Square area and continue with service to Centreville Farms Road, the Stringfellow Road and the Stringfellow Road Park-and-Ride Lot, Katherine K. Hanley Family Shelter, Fairfax County Government Center, providing direct access to residential and retail areas, and civic services. Upon leaving this area the route would travel to the City of Fairfax, serving Judicial Drive to pass through the County's judicial campus, and continue to a terminal at GMU. This route would provide a connection to other bus routes serving the Pentagon, and the Annandale, Burke, Lincolnia, Springfield, and Vienna areas. Table 4-31 summarizes the service levels recommended to be implemented over a six-year horizon.

Figure 4-42: Proposed New Route 610

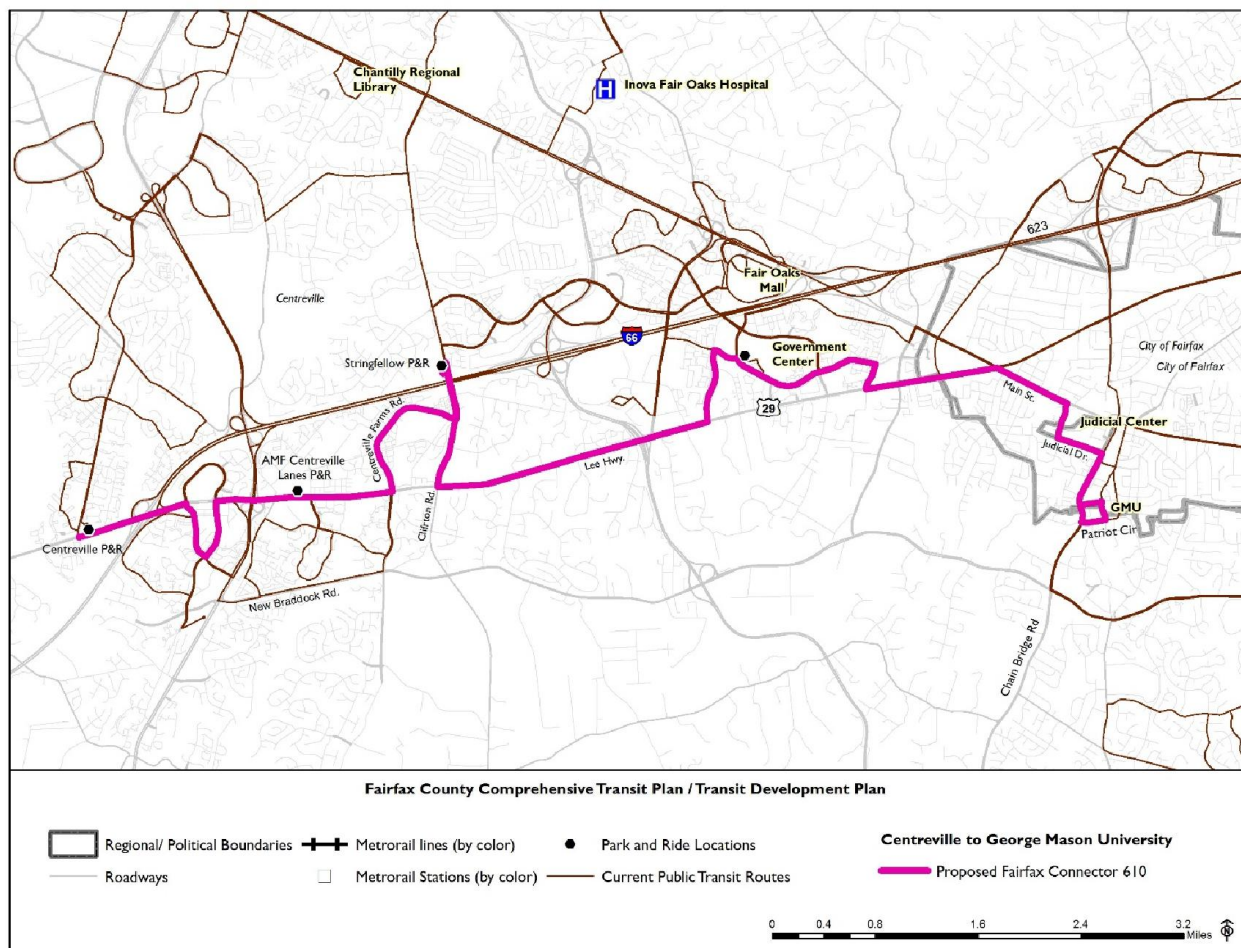


Table 4-31: New Route 610 Proposed Service Levels

		610 (Initial)	610 (Future)
Operator		Fairfax Connector	Fairfax Connector
Span	Weekday	5:00 a.m. – 10:00 p.m.	5:00 a.m. – 11:00 p.m.
	Saturday	--	7:00 a.m. – 8:00 p.m.
	Sunday	--	--
Headway (min.)	Weekday Peak	30	20
	Weekday Midday	60	30
	Weekday Evening	60	60
	Saturday	--	30/60
	Sunday	--	--

Improve Peak Headways on I-66 Express Routes to the Vienna Metrorail Station – Longer Term

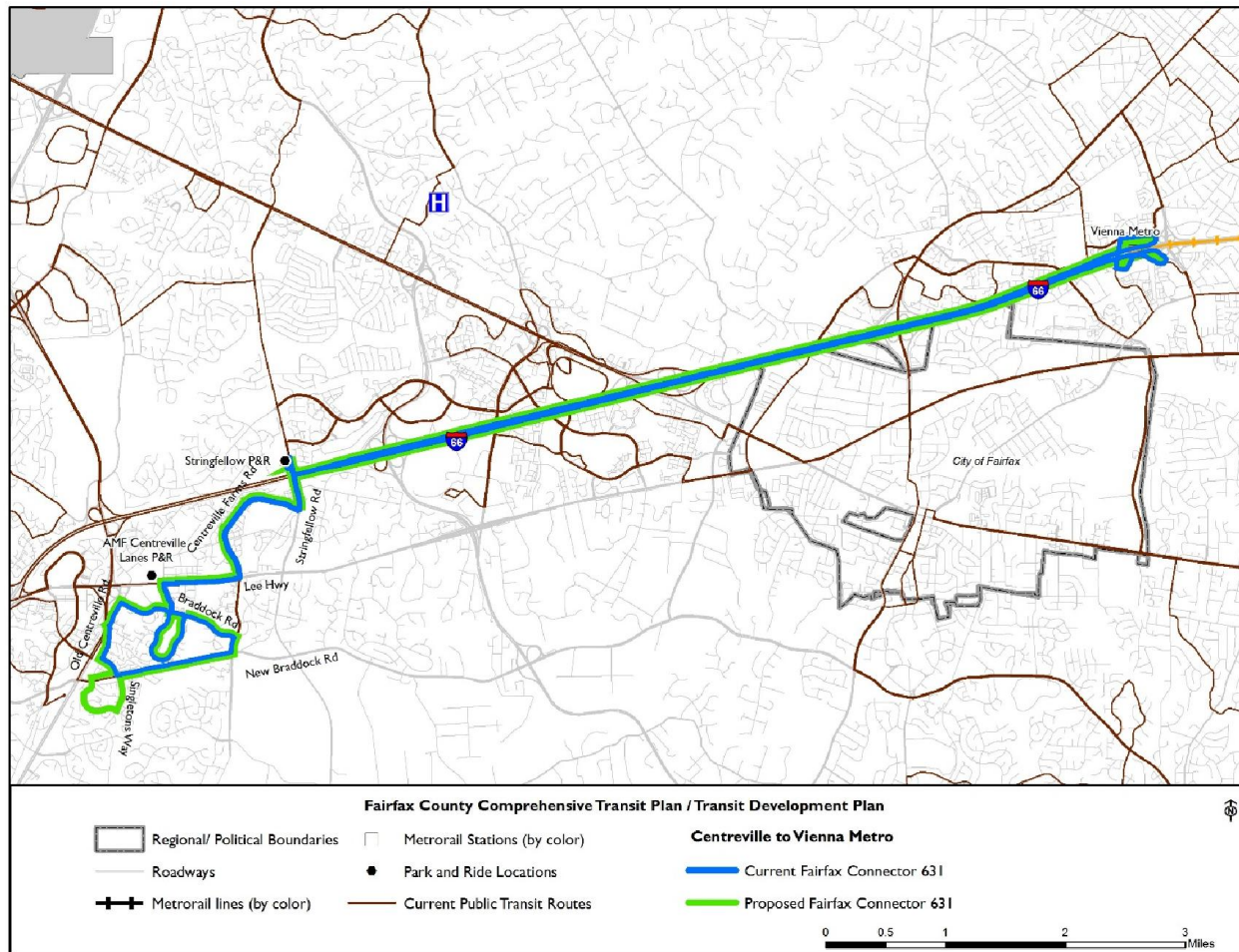
The Connector I-66 express services have seen a gradual ridership increase since its conversion from Metrobus to Connector operation in 2008. Anticipating continued population growth in the Fair Oaks, Centreville, and Chantilly communities over the ten year planning horizon of this TDP suggests further gradual ridership growth. Ridership should be closely monitored on routes 622, 623, 631, 632, 641, 642, 644, 651, and 652. These routes currently operate a frequency of two trips per hour in the peak commuter period.²⁰ Early next decade, the frequency on these routes will likely need to increase to three trips per hour to provide the needed capacity to accommodate the anticipated future ridership. While improved frequencies on Route 623, and Routes 622 and 632, are recommended for funding in FY2018 and FY 2019 respectively, improvements to routes 631, 641, 642, 644, 651, and 652 are not currently programmed.

Additional Coverage and Off-Peak Service on Route 631

Two enhancements to Route 631 are recommended. In response to public requests, a loop along Singletons Way and Federation Drive off of New Braddock Road in the Centreville south area should be added to provide direct service to this relatively dense residential neighborhood, as shown in Figure 4-43. In addition, there were comments requesting additional reverse peak service. There is currently a gap in reverse service between the hours of 4:30 p.m. and 7:30 p.m. It is recommended that existing deadhead trips during this period should be operated in revenue service in response to public feedback during implementation planning.

²⁰ The combined afternoon existing peak schedules for the 631 and 632 routes for the 5:00 p.m. and 6:00 p.m. hours include one additional trip so that instead of four trips/hour (two each) there are actually five trips/hour.

Figure 4-43: Proposed Route 631



Modify Route 651 Routing

It is recommended that the outbound route through the Sullyfield Circle/Willard Road area bypass the Brookfield Corporate Drive loop, since the ridechecks found no passenger activity in this segment, a finding confirmed by bus operator feedback. Instead, Route 651 should follow the same alignment along Willard Road as Route 650 through this area of Chantilly. A projected running time savings of about one minute due to this minor truncation will help to improve service reliability.

New Cross-County Route 901 with Connections to Silver Line and changes to Route 929 Phase 3

Development plans for the Dulles Corridor and Tysons will expand employment, shopping, social and recreational opportunities for county residents over the next decade and beyond. In July 2014, service started on Silver Line Phase 1 and the North County bus routes were restructured, enhancing local and regional transit along the Silver Line corridor for Tysons, Reston, and Herndon residents. Centreville/Chantilly residents would benefit from improved cross-county transit connections to the growing opportunities along the Silver Line corridor when completed. Silver Line Phase 2 will include two new Metrorail stations in Herndon. With new routes connecting to these stations, Centreville and Chantilly residents would have public

transit access to both the Silver Line and other North County bus routes for travel to Dulles, Herndon, and Reston.

A new cross-county Route 901 is recommended, as described below and shown in Figure 4-44. Comments received from residents noted that the current routes 929 and 652 come close to connecting, since both serve portions of Centreville Road; commenters suggested a desire to transfer between these two routes to travel between Chantilly and Herndon. The proposed Route 901 not only provides expanded cross-county services for Centreville and Chantilly residents but makes through travel possible without requiring a transfer. Additional transfer options will be possible between the proposed Route 901 and the existing routes 929 and 652. (A change to the alignment of Route 929 is separately recommended in conjunction with the opening of the Herndon Metrorail Station, as described in Chapter 4.4.) Table 4-32 provides a summary of the service levels for this new route.

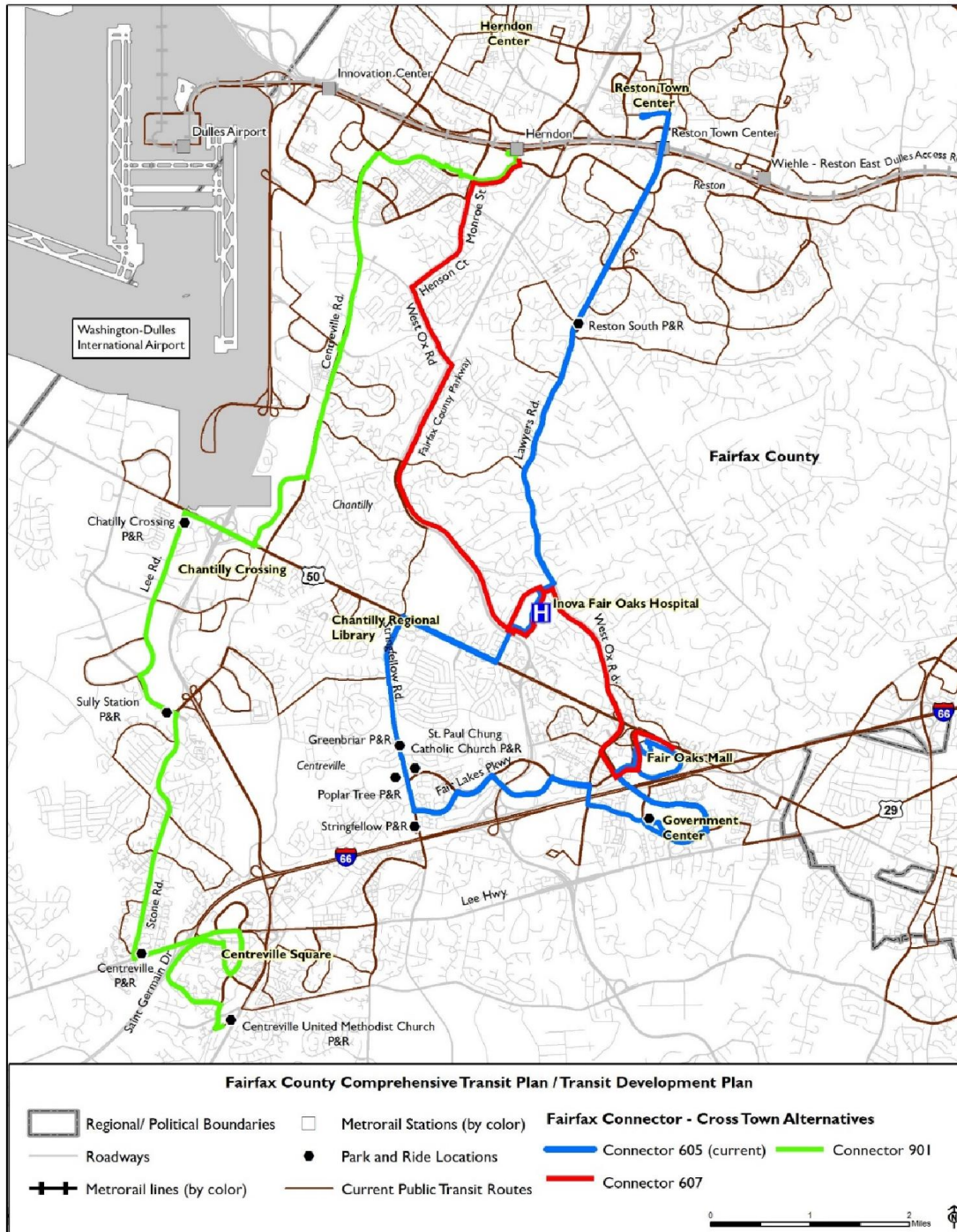
The proposed Route 901 would proceed from the Centreville United Methodist Church Park-and-Ride Lot on Centreviewood Drive, then follow Lee Highway, Stone Road, Willard Road, Lee Road, US-50, Centerview Drive, Centreville Road, Sunrise Valley Drive, to a terminal at the Herndon Metrorail Station. This route is more than 13 miles long and would require a one-way run time of about 50 minutes, varying by time of day. This route would serve the Centreville retail district, the Chantilly Crossing Shopping Center, the office and hotel development along Centerview Drive in Chantilly, McLearen Square, and, joining with Route 607, would also serve office parks along Sunrise Valley Road and the Silver Line at the Herndon Metrorail Station.

Table 4-32: New Route 901 Proposed Service Levels

Route 901 (future)		
Operator		Fairfax Connector
Span	Weekday	5:00 a.m. – 10:00 p.m.
	Saturday	7:00 a.m. – 8:00 p.m.
	Sunday	--
Headway (min.)	Weekday Peak	30
	Weekday Midday	45
	Weekday Evening	60
	Saturday	60
	Sunday	--

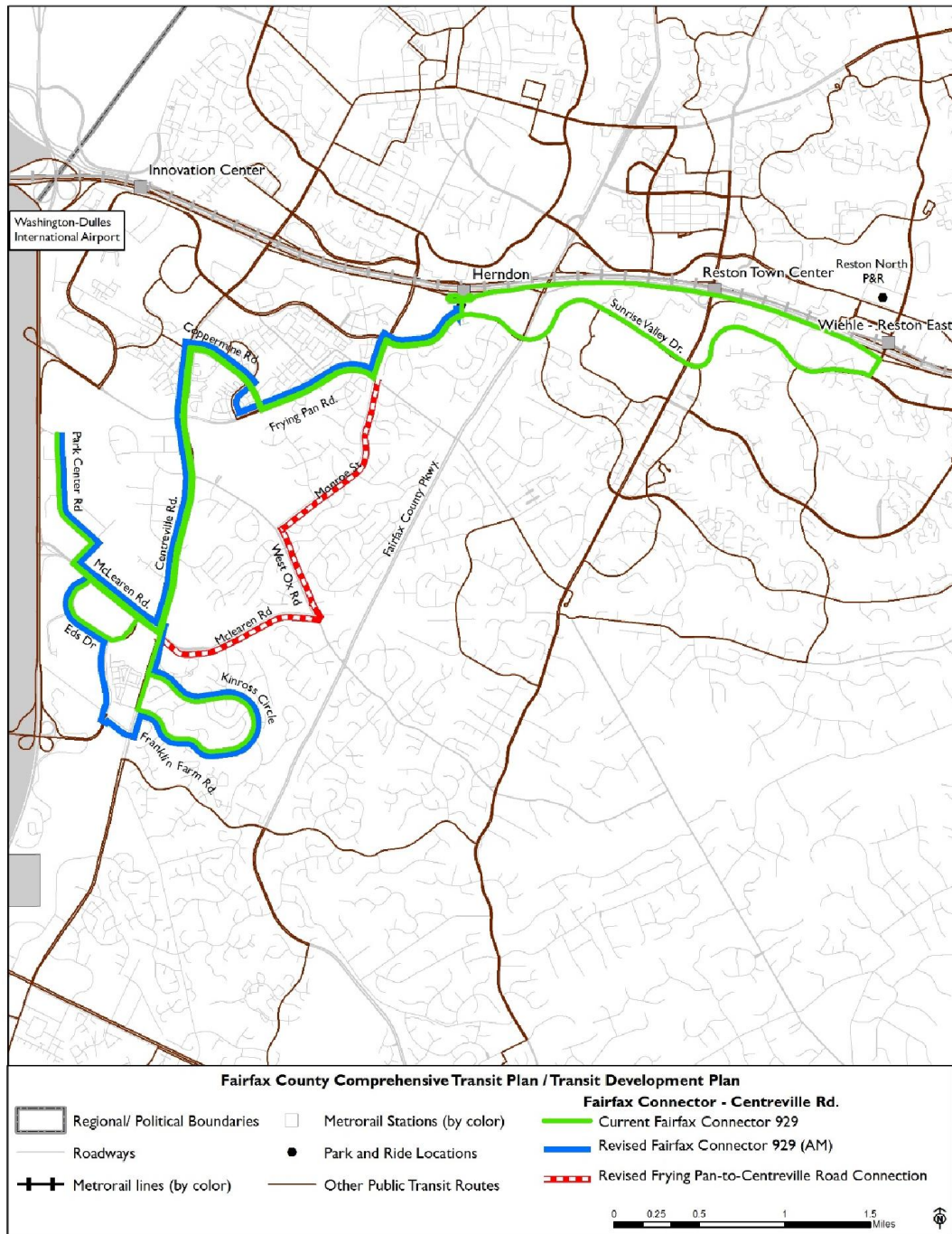
Once Route 901 is implemented, it is recommended for Route 929 to be removed from a portion of Centreville Road to avoid duplication, and instead to use McLearen Road, West Ox Road, and Monroe Street to connect the Kinross Circle/Park Center Road area with the Herndon Metrorail Station, shown in the dotted red line in Figure 4-45.

Figure 4-44: Proposed New Routes 607* and 901



* The Route 607 recommendation is discussed later in Section 4.5.

Figure 4-45: Proposed Route 929



Future Capacity Enhancement for Connector Routes 401/402

Routes 401/402 connects South County with North County as it serves heavily populated areas of the county and provides access to major generators such as Metrorail stations, Fairfax Hospital, the recently redeveloped Springfield Town Center, and Tysons, with its significant and growing retail, commercial and residential properties. With the opening of the Silver Line in 2014, the frequency of Routes 401/402 service were increased. Since these routes have one-

way peak trip times as great as 100 minutes, improving headways further, as may become necessary, is costly. For example, improving the peak headway from the existing 15 minutes to 12 minutes (i.e., increasing frequency from four trips per hour to five) will require four additional buses. Some options, which could be applied to the peak period and possibly the midday period, include:

- Limited-stop service, as recommended in the 2009 TDP. Reverse-peak direction trips could use I-495 for a portion of the return trips between Tysons and Springfield.
- A short-turn route operating between John Marr Drive and the Dunn Loring Metrorail Station. Approximately 40 percent of all passenger boardings and alightings and the maximum load occur within this segment.
- Split the service into two overlapping routes operating between the Franconia-Springfield and Dunn Loring Metrorail Stations and between John Marr Drive and the Tysons West*Park Transit Station.

The limited-stop service option has the most potential to provide supplemental capacity to the entire route. The other two options, although they would not require as many additional buses, may not be as effective a means to add capacity due to the potential to increase the number of transfers required to complete some trips. A comprehensive assessment of Routes 401/402 origin-destination patterns is required to better understand the trade-offs.

As noted previously, FCDOT implemented a new schedule for Routes 401/402 on January 24, 2015. The first months of operation went well and several service problems previously experienced were adequately addressed. However, a concern with weekend service has surfaced. Although Saturday and Sunday service have the same number of scheduled trips, Saturday ridership is about one-third greater than Sunday ridership (2,750 boardings compared to 2,100.) This extra volume on Saturdays results in higher loads and slower trips due to the greater amount of passenger activity. Continued ridership growth may lead to crowding and poor reliability. It is recommended that FCDOT monitor ridership and be prepared to improve the Saturday base headway from the existing 30 minutes to approximately 20 minutes. Proposed future service levels for Routes 401/402 are summarized in Table 4-33.

Table 4-33: Routes 401/402 Proposed Service Levels

		Routes 401/402 (Existing)	Routes 401/402 (Future)
Operator		Fairfax Connector	Fairfax Connector
Span	Weekday	3:30 a.m. – 2:00 a.m.	3:30 a.m. – 2:00 a.m.
	Saturday	4:30 a.m. – 2:00 a.m.	4:30 a.m. – 2:00 a.m.
	Sunday	4:30 a.m. – 2:00 a.m.	4:30 a.m. – 2:00 a.m.
Headway (min.)	Weekday Peak	15	20/20*
	Weekday Midday	20	20
	Weekday Evening	30	30
	Saturday	30/60	20/60
	Sunday	30/60	30/60

* Weekday peak service level should be increased in the future with supplementary limited-stop service; both the regular and limited trips should have 20 minute headways with a combined headway of 10 minutes.

New Centreville Circulators (Flex 1 and Flex 2)

Although Centreville and Chantilly have large residential areas, they have high auto ownership and relatively few low-income households.²¹ The 2009 TDP concluded that the amount of transit demand from these areas during non-commuting hours was likely to be low, so fixed-route transit did not appear to be an effective option for this area during the ten-year timeframe. However the 2009 TDP also suggested that local circulator services be considered in this TDP as the area develops.

Significant population growth, due to both aging in place and employment growth, is expected to occur in Centreville over the next decade, which will spur additional commercial and retail development. Local transit, including reverse peak service, should be added to provide improved transit connections for travel within Centreville and to adjacent areas. Circulators or flexible service routes using small buses, as described in the introduction to this technical memorandum, can better penetrate neighborhood streets and should be implemented in this area. FCDOT has an interest in developing flexible service routes within the region.

As proposed, these routes will have a primary alignment with the ability to deviate to pick-up or discharge passengers by request within a defined service area. Two service areas are suggested as candidates for flexible service (Figure 4-46), each with a proposed common terminal at

²¹ Per Fairfax County's Title VI program, low-income is defined as household income of less than \$53,650 per year, or 50 percent of median household income for a family of four (a typical measure).

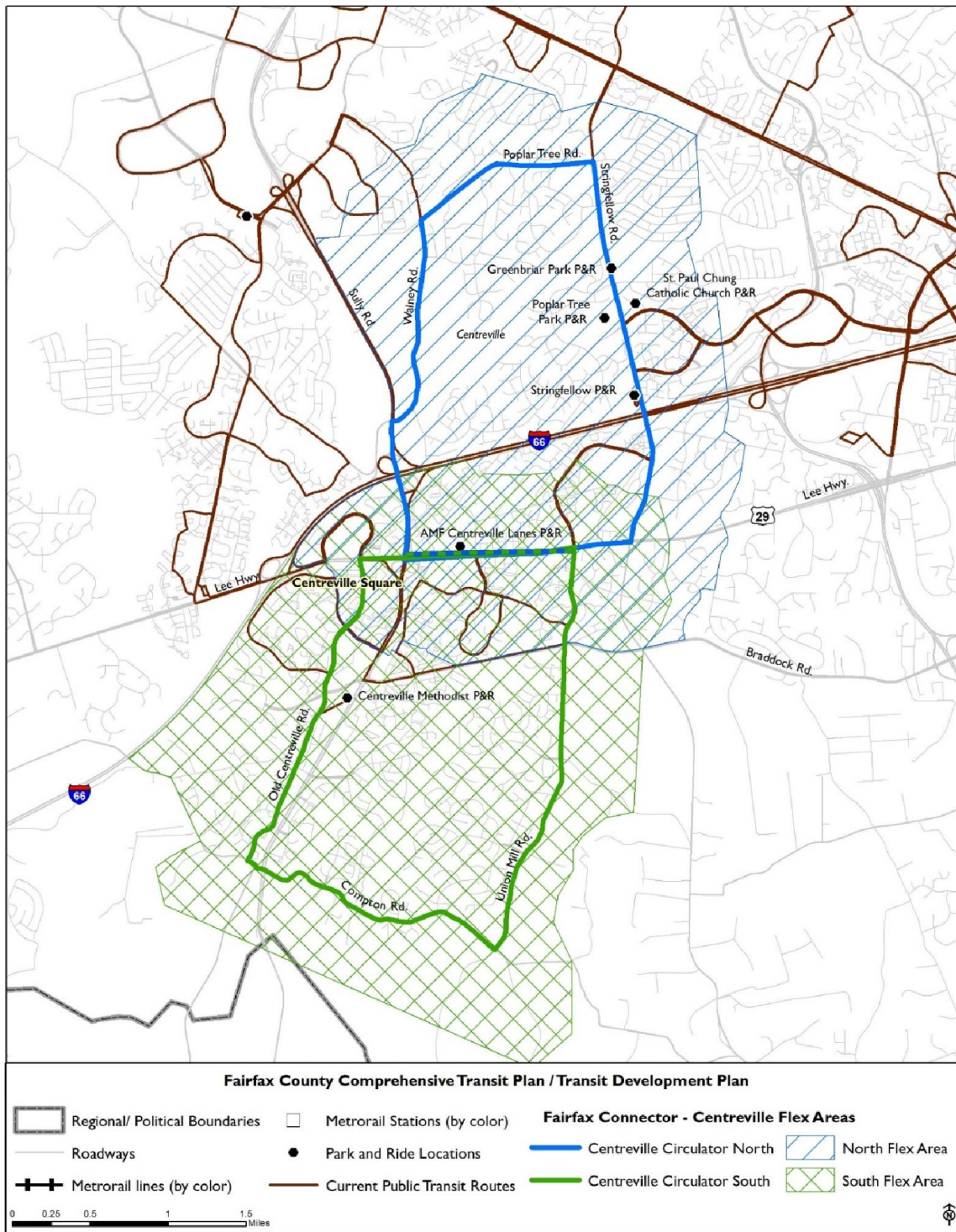
Centreville Square that would serve as a “pulse point,” where service would be timed to connect with other bus routes:

- Centreville South (Flex 1) - This service area would be bounded by Lee Highway to the north, Centreville Drive/Old Centreville Rd to the west, Compton Road to the south and Union Mill Road to the east. The route would generally operate in a clockwise direction around this eight-mile loop and would serve riders anywhere within this area as well as vary up to one-half mile in the territory surrounding this general service area. Bi-directional service could be operated during the peak periods to expedite connections to those routes that serve park-and-ride lots and support connections to I-66 commuter and cross-county routes.
- Centreville North (Flex 2) - This service area would be bounded by Lee Highway to the south, Stringfellow Road to the east, Poplar Tree Road to the north and Walney/Sully Roads to the west with a short extension to the Centreville Square. This route would generally operate in a counter-clockwise direction around the eight-mile loop and serve riders both within this area as well as up to one-half mile in the territory surrounding it. As with the Centreville South route, peak-period service could be operated in both directions to facilitate quicker connections to cross county or I-66 commuter services.

Both flexible service routes would bring commuters to local park-and-ride lots or to Centreville Square where they could transfer to I-66 routes to Vienna, to future cross-county routes, or to local routes for service to Centreville commercial destinations. Routes would operate between 6:00 a.m. and 8:00 p.m. to serve both commuter and local trips.

The current bus service provider contract does not support the provision of flexible service. FCDOT should conduct a study to identify (at a minimum) potential alternative service types to be operated; vehicle, facility, and operating requirements and associated costs; and areas where various service types might be appropriate. The lead time to establish the framework for such service, select a contractor to provide it, and actually field it, is likely to be several years.

**Figure 4-46: Proposed Centreville Flexible Service Areas
(Flex 1 Centreville South and Flex 2 Centreville North)**

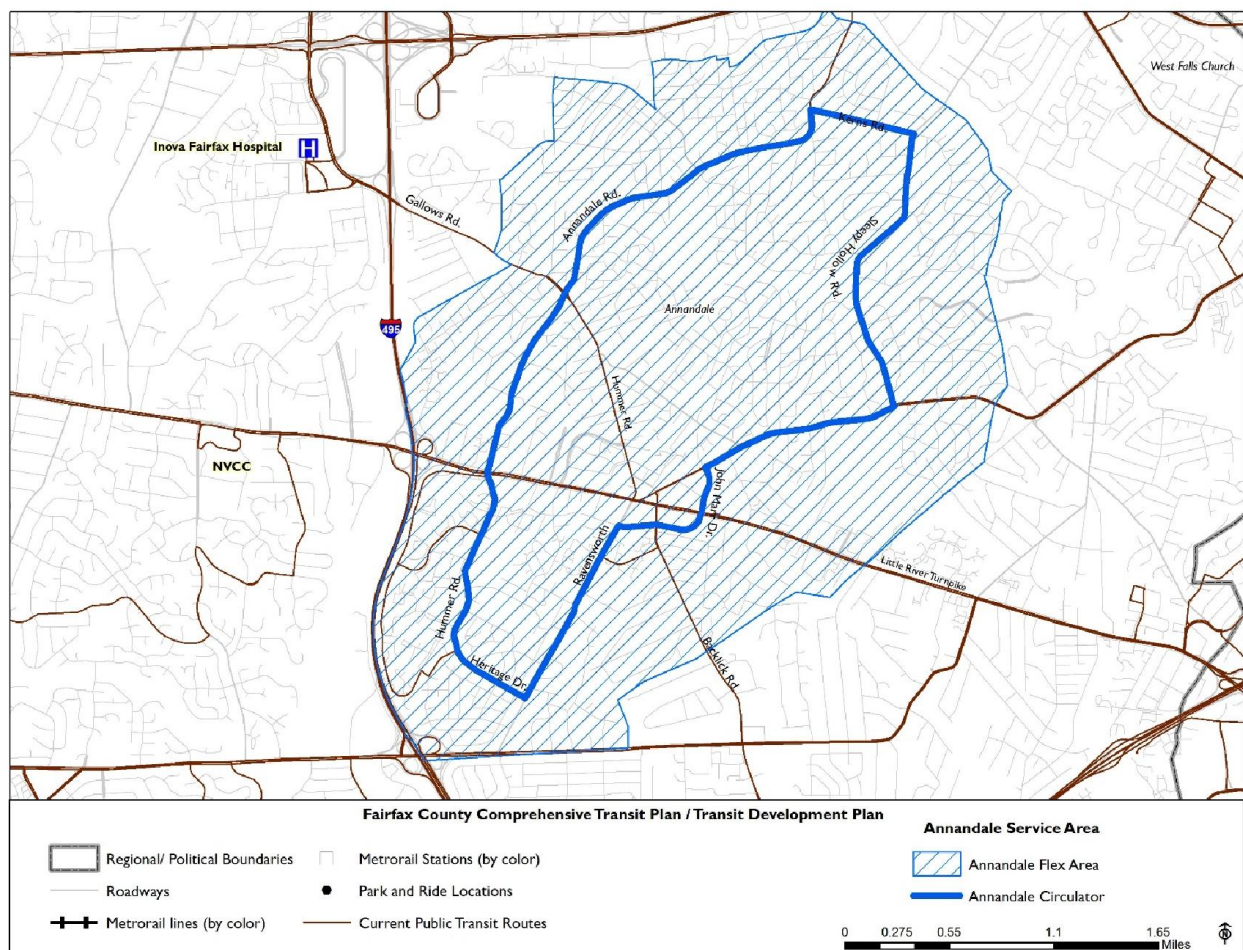


Create new Annandale Circulator (Flex 3)

As recommended in the 2009 TDP, FCDOT should create a circulator service to provide better walk-up transit access for residents of Annandale neighborhoods that are a long walk to major arterials, which currently have the nearest transit routes. The circulator should be operated as a flexible route, anchored at the John Marr Drive stop where passengers can connect to other transit routes. The proposed flexible service area, shown in Figure 4-47, includes neighborhoods within the bounds created by Columbia Pike, Sleepy Hollow Road, Kerns Road, Annandale Road, Hummer Road, Heritage Drive, Ravensworth Road, and John Marr Drive. This flexible route would provide service to K-Mart Plaza, Little River Shopping Center and Annandale High School.

The current bus service provider contract does not support the provision of flexible service. FCDOT should conduct a study to identify (at a minimum) potential alternative service types to be operated; vehicle, facility, and operating requirements and associated costs; and areas where various service types might be appropriate. The lead time to establish the framework for such service, select a contractor to provide it, and actually field it, is likely to be several years.

Figure 4-47: Proposed Annandale Flexible Service Area (Flex 3)



New Routes 340/341 Based on Route 333

Route 333 was established as part of the service restructuring that was implemented in September 2011 to support the Department of Defense expansion under the 2005 Base Relocation and Closure Act (BRAC). The route provides service to the new campus for the National Geospatial-Intelligence Agency (NGA) located at the Fort Belvoir North Area (FBNA). Agency personnel access this route at the Franconia-Springfield Metrorail/VRE Station as the last leg of their journey to work. An estimated 68 percent of riders reside outside of Fairfax County. The remaining 32 percent of riders are mostly local residents who use this bus as a feeder service from the Saratoga Park-and-Ride lot and nearby neighborhoods to access Metrorail. The route also connects the NGA campus with the Patriot Ridge office complex located on property contiguous to the FBNA, which houses the NGA campus. This connection is provided in the off-peak hours only and is intended to facilitate work-related travel between the private office complex and the NGA.

The Patriot Ridge office complex is expected to grow to five buildings, providing prime office space for government contractors, who provide support services to the NGA's mission. Currently, Route 333 serves 150 daily riders; as the area surrounding the FBNA is built-up and NGA activity increases, ridership on Route 333 is expected to grow. In conjunction with a proposal to revise routes 372/373 to bypass the Patriot Ridge office complex and the Boston Boulevard industrial area, it is recommended to convert Route 333 into new routes 340 and 341 with alignments described below and illustrated in Figure 4-48. Route 340 would operate during the midday and early evening hours while Route 341 trips would provide peak-period service, as summarized in Table 4-34.

Route 341 Boston Boulevard – Saratoga Morning Peak Routing

- Outbound: Franconia-Springfield Metrorail/VRE Station to Franconia-Springfield Parkway westbound to Backlick Road southbound to Barta Road to bus loop at FBNA; return to Barta Road westbound to Fairfax County Parkway southbound to Boudinot Road to Fullerton Road westbound to Boston Boulevard to existing turnaround; return Boston Boulevard eastbound to Fullerton Road westbound to Rolling Road northbound to Saratoga Park-and-Ride Lot.
- Inbound: Saratoga Park-and-Ride Lot to Barta Road to Fairfax County Parkway northbound to Franconia-Springfield Parkway eastbound to Frontier Drive southbound to Franconia-Springfield Metrorail/VRE Station.

Route 341 Boston Boulevard – Saratoga Afternoon Peak Routing

- Outbound: Franconia-Springfield Metrorail/VRE Station to Franconia-Springfield Parkway westbound to Fairfax County Parkway southbound to Saratoga Park-and-Ride Lot.
- Inbound: Saratoga Park-and-Ride Lot to Fairfax County Parkway southbound to Boudinot Road to Fullerton Road westbound to Boston Boulevard to existing turnaround; return Boston Boulevard eastbound to Fullerton Road eastbound to Backlick Road northbound to Barta Road to bus loop at FBNA; return to Barta Road westbound to Fairfax County Parkway northbound to Franconia-Springfield Parkway eastbound to Frontier Drive southbound to Franconia-Springfield Metrorail/VRE Station.

Route 340 Patriot Ridge – Saratoga Routing (off-peak only)

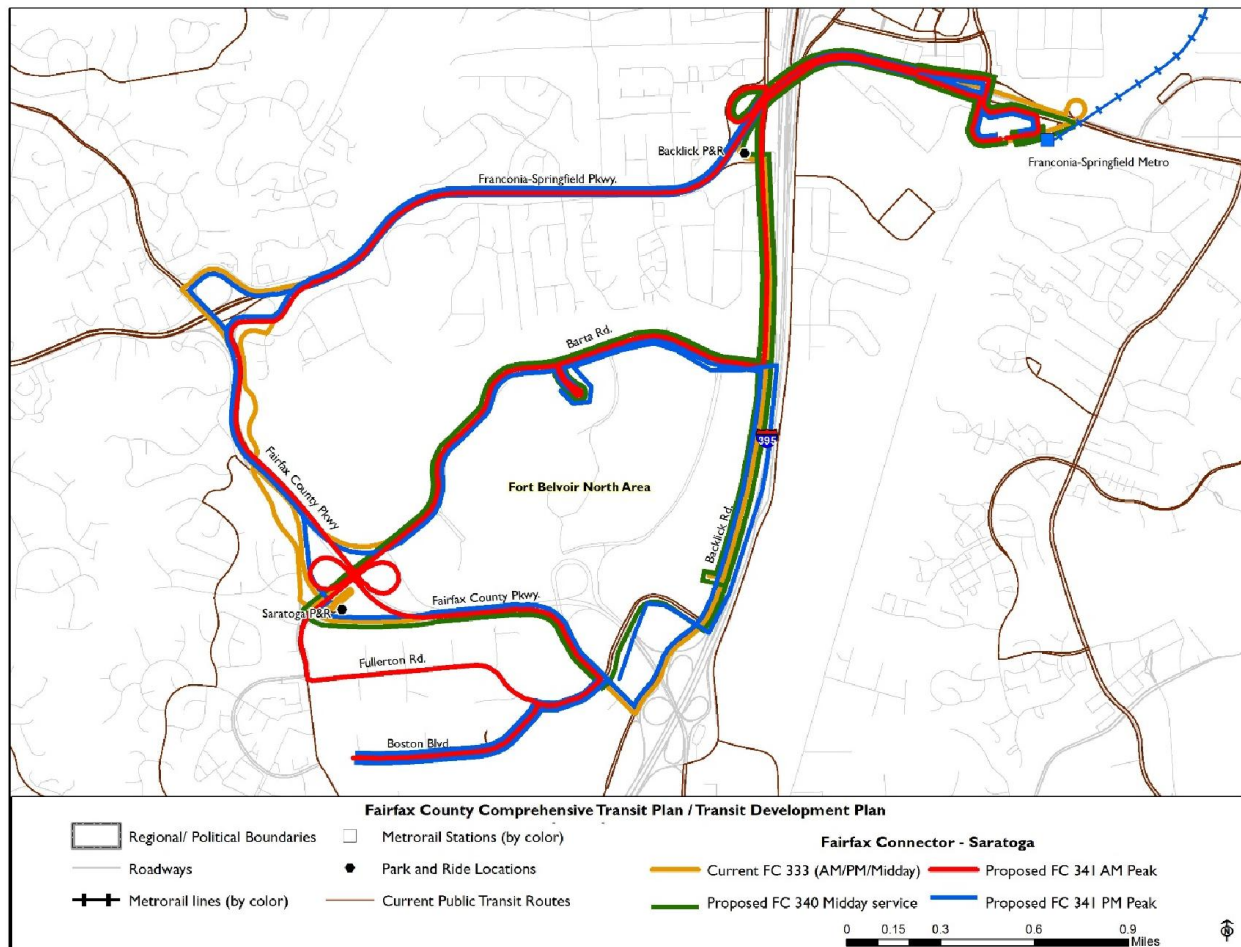
- Outbound: Franconia-Springfield Metrorail/VRE Station to Franconia-Springfield Parkway westbound to Backlick Road southbound; divert to Patriot Ridge; return to Backlick Road northbound to Barta Road to bus loop at FBNA.

- Inbound: Bus loop at FBNA to Barta Road westbound to Saratoga Park-and-Ride Lot to Fairfax County Parkway southbound to Boudinot Road to Fullerton Road eastbound to Backlick Road northbound; divert into Patriot Ridge; return to Backlick Road northbound to Franconia-Springfield Parkway eastbound to Frontier Drive southbound to Franconia-Springfield Metrorail/VRE Station.

Table 4-34: New Routes 340/341 Proposed Service Levels

		Route 340	Route 341
Operator		Fairfax Connector	Fairfax Connector
Span	Weekday	10:00 a.m. – 2:00 p.m. 7:00 p.m. – 9:30 p.m.	5:30 a.m. – 9:30 a.m. 2:30 p.m. – 6:30 p.m.
	Weekday Peak	--	25
Headway (min.)	Weekday	45	--
	Midday		
	Weekday	45	--
	Evening		
	Weekday Late Evening	--	--

Figure 4-48: Proposed New Routes 340/341



Other Route Recommendations

Modify Schedule of Express Routes 394 Saratoga – Pentagon Transit Center Express and 395 Gambrill – Pentagon Transit Center Express

These routes provide express bus service from park-and-ride lots in Newington and Springfield west of I-95. Daily ridership exceeds 600 passengers; boardings per trip exceed 20 passengers on average. Between the two, the Route 395 is preferred by riders because it serves the more conveniently located 225-space Gambrill Park-and-Ride Lot, which is typically filled to capacity. Riders on these routes are nearly all Fairfax County residents.

These routes provide a quick and direct connection to the interstate highway for travel to the Pentagon Transit Center in less than 30 minutes. No change in the routing is needed. The ridecheck observations indicated that later afternoon peak trips operate with standees. Therefore it is suggested to insert a trip on Route 395 at 6:30 p.m. and shift the 6:45 p.m. departure to 6:50 p.m.

In May 2015, Fairfax Connector began operation of a new Route 393. This route begins at the Saratoga Park-and-Ride Lot, serves the Pentagon Transit Center, and then stops at the Mark

Center on the return trip. This weekday service operates 6 morning trips and 6 afternoon trips on 40-minute headways. The initial route configuration is driven by the current configuration of the I-395 HOV lanes access and egress. When the HOV ramp providing access between Seminary Road and I-395 to and from the south is opened, Route 393 will be modified to provide a direct link to and from the Mark Center from the Saratoga lot. The TDP recommends monitoring the performance of new Route 393.

New Cross-County Route 607 with Connections to Silver Line

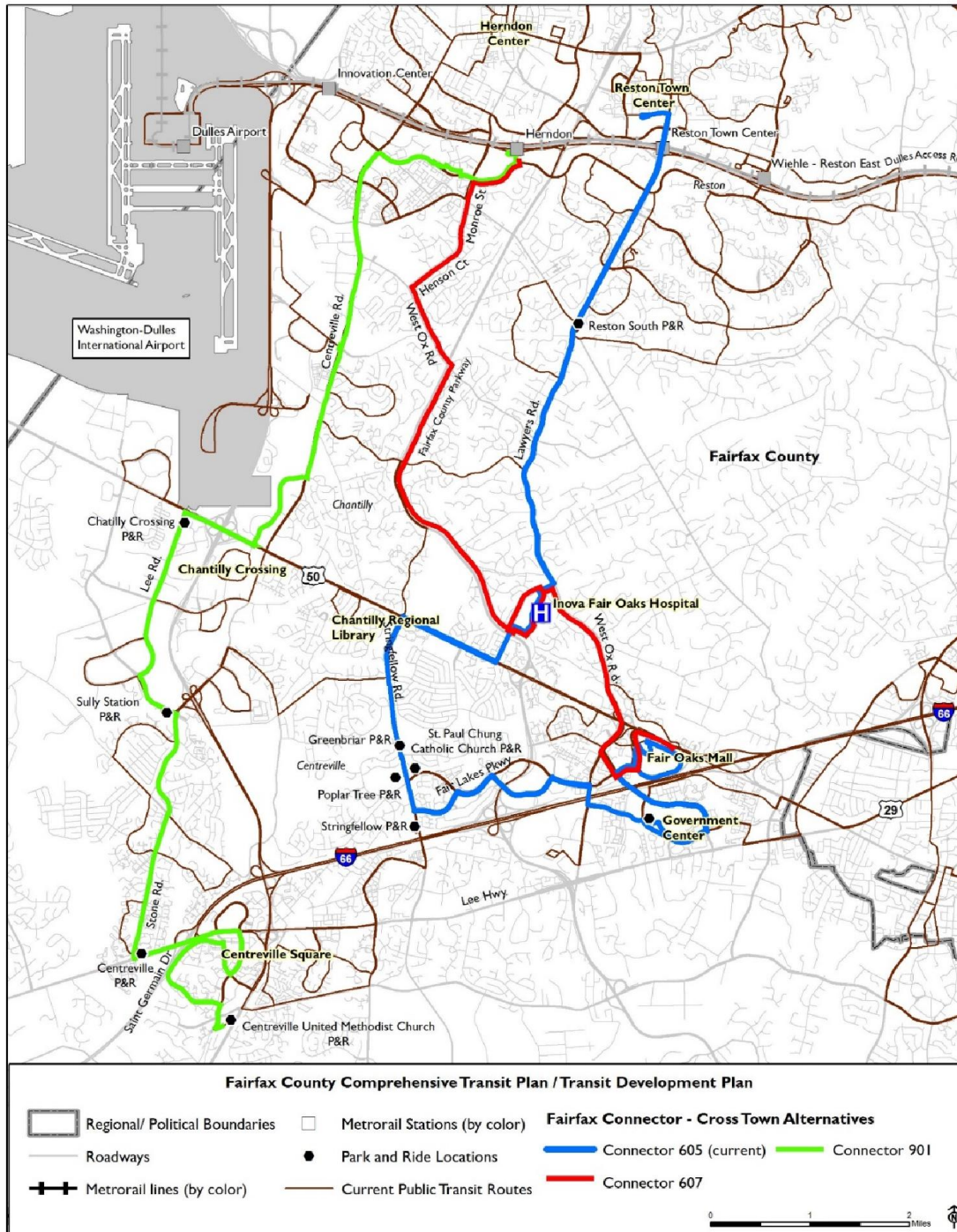
Development plans for the Dulles Corridor and Tysons will expand employment, shopping, social and recreational opportunities for county residents over the next decade and beyond. In July 2014, service started on Silver Line Phase 1 and restructured North County bus routes, enhancing local and regional transit along the Silver Line corridor for Tysons, Reston, and Herndon residents. Silver Line Phase 2, when completed, will include two new Metrorail stations in Herndon. With new routes connecting to these stations, residents would have public transit access to both the Silver Line and other North County bus routes for travel to Dulles, Herndon, and Reston.

A new cross-county Route 607 is recommended, as described below and shown in Figure 4-49. Route 607 would proceed from Fair Oaks Mall along Fair Lakes Parkway, to Monument Drive around Government Center Parkway to return onto Monument Drive, then onto West Ox Road and continuing to the Ox Trail entrance to the Fair Oaks Hospital. The route would depart the hospital on to Fairfax County Parkway to West Ox Road then turn northerly onto Monroe Street to Sunrise Valley Road to a terminal at the Herndon Metrorail Station. The proposed route is 14 miles long and would require a run time of about 60 minutes, varying by time of day. This route would connect Fair Oaks Mall, the Fairfax County Government Center, Fair Oaks Hospital, office parks along Sunrise Valley Drive, and the Silver Line at the Herndon Metrorail Station. Passengers could transfer at the Herndon Metrorail Station to local Herndon bus routes. Proposed service levels for Route 607 are shown in Table 4-35.

Table 4-35: New Route 607 Proposed Service Levels

Route 607 (future)		
Operator		Fairfax Connector
Span	Weekday	5:00 a.m. – 10:00 p.m.
	Saturday	7:00 a.m. – 8:00 p.m.
	Sunday	--
Headway (min.)	Weekday Peak	30
	Weekday Midday	45
	Weekday Evening	60
	Saturday	60
	Sunday	--

Figure 4-49: Proposed New Routes 607 and 901*



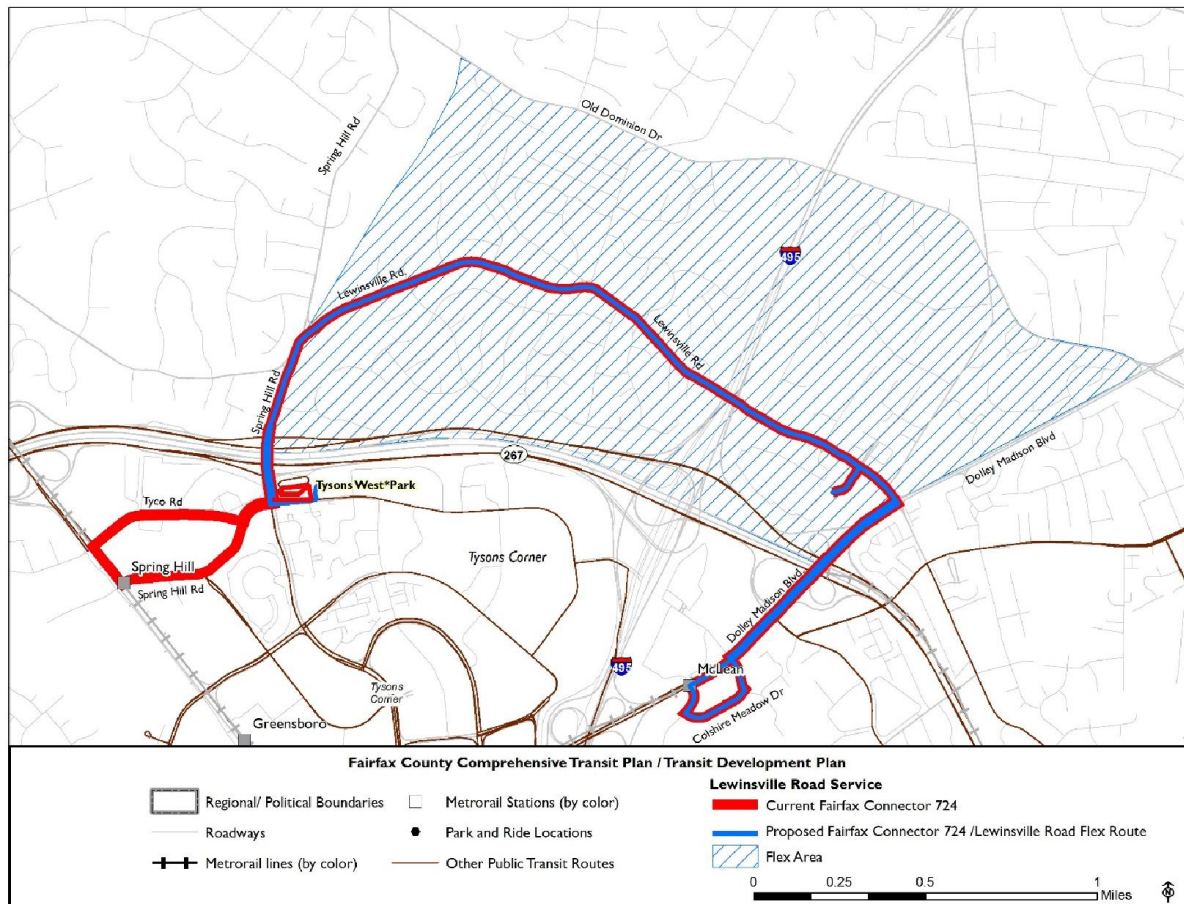
* Route 901 is discussed earlier in Section 4.5.

Add New Midday Flexible Service to Route 724²²

Service on Lewinsville Road in McLean, surrounding Tysons on the north side, has historically been provided by Metrobus Route 24T. With the Silver Line opening, that route became Fairfax Connector Route 724. The portion of the 24T that is now Route 724 has always had modest ridership, due to low residential density. Service has been maintained in this area, because of the Farm Credit Bureau and other federal agencies located near Lewinsville Road.

Although the Lewinsville Road area does not have enough density to support full day fixed route service, it could potentially support a flexible service during the midday hours, because of trips generated by group homes, Sunrise Senior Living and the Spring Hill Recreation Center, as well as the Hamlet. Proposed service levels for Route 724 are shown in Table 4-36; the alignment and proposed flex service area are shown in Figure 4-50.

Figure 4-50: Proposed Route 724 / Lewinsville Road Flex Service Area



²² See Chapter 4.4 for recommendation related to Route 724 proposed for funding in FY2018.

Table 4-36: Route 724 Proposed Service Levels

Route 724		
Operator		Fairfax Connector
Span	Weekday	5:30 a.m. – 7:30 p.m.
	Saturday	--
	Sunday	--
	Weekday Peak	30
Headway (min.)	Weekday Midday	60 (flex)
	Saturday	--
	Sunday	--

Improve Frequencies on Route 929

The current headway of Route 929 is roughly 30 minutes, though some trips are 35 to 40 minutes apart. After Silver Line Phase 2 opens, it is recommended to improve the headway to no more than every 20 minutes. In addition, midday and evening service should be offered and eventually Saturday service as warranted by ridership and development or redevelopment.

Convert Route 734 into Flexible Service (Flex 4)

Connector Route 734 was developed after the 2009 TDP when it was determined that a route on Kirby Road, an east-west road in McLean, was not feasible. Service on Great Falls Road represented new territory for Connector buses, and Westmoreland Street was due to lose service with the discontinuance of the Metrobus 24T. Separately, WMATA decided to reroute the Metrobus 15K/L line along Westmoreland Street into the East Falls Church Metrorail Station. Thus, Fairfax Connector Route 734 now shares the same bus stops with Metrobus 15K/L for riders, while also serving a street that has never had transit service before. The large loop structure of the route means that both of these roads see only one-way service, providing limited utility.

While it is true that new routes need time to mature and build their ridership base, given the competition of the Metrobus 15K/L and the suburban nature of the part of McLean served by Route 734, it is appropriate to consider conversion of this route into a flexible service in the future. As shown in Figure 4-51, a zone of flexible service can be defined in southern McLean. The route could operate along the outer boundary of the service area shown and deviate into neighborhoods upon request (24-hour advance request for pickups and on-board requests for drop-offs). There are other flexible service models available as well, such as defining a set of stops that the route will serve but allowing it to take any path between those defined stops. As FCDOT explores the viability of alternative service models, this area of McLean is a reasonable candidate for a pilot project.

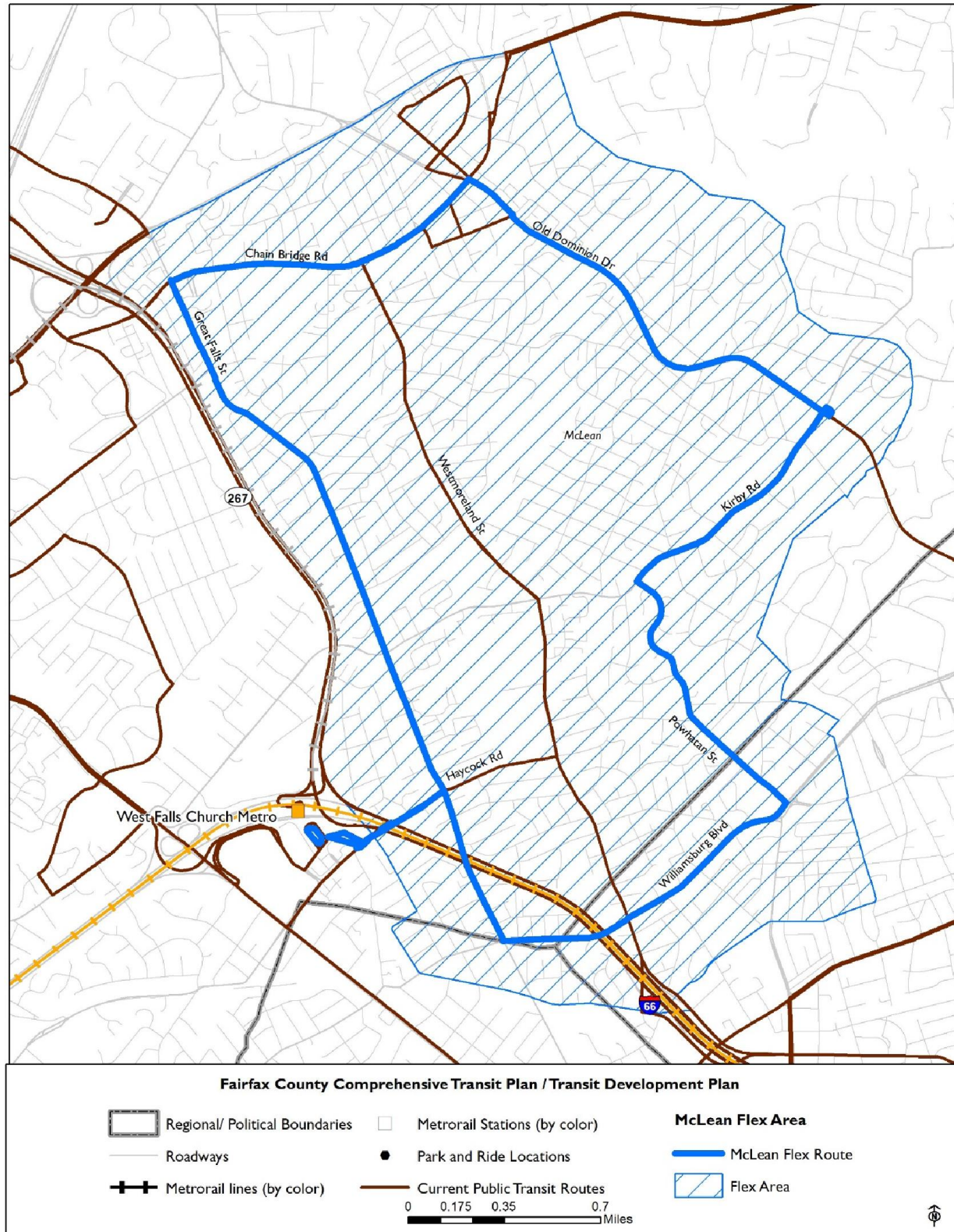
For the purpose of this TDP, it is proposed that this route operate from 6:30 a.m. to 6:30 p.m., as shown in Table 4-37. Peak period service is not necessarily the most appropriate for flexible

routes, because time-sensitive commuters would find route deviations to be unworkable. Midday service may be the best option to complement service on the 15K/L. The service level appropriate to this market area will be determined in the context of a broader study of flexible services in Fairfax County to be undertaken after the TDP. The current bus service provider contract does not support the provision of flexible service. The lead time to establish the framework for such service, select a contractor to provide it, and actually field it, is likely to be several years.

Table 4-37: McLean Flexible Route (Flex 4) Proposed Service Levels

Flex 4		
Span	Operator	Fairfax Connector
	Weekday	6:30 a.m. – 6:30 p.m.
	Saturday	--
	Sunday	--
Headway (min.)	Weekday Peak	60
	Weekday Midday	60
	Saturday	--
	Sunday	--

Figure 4-51: Proposed McLean Flexible Service Area (Flex 4)



4.6. Metrobus Service Expansions

Metrobus REX – Richmond Highway Express

REX is a limited-stop,²³ branded bus service that operates along US-1 between the King Street Metrorail Station in Alexandria and Fort Belvoir Main Post, with a major stop at the Huntington Metrorail Station. REX service along this section of Richmond Highway is complemented by Fairfax Connector Routes 151, 152, 159, 161, 162, and 171. The first five routes directly serve neighborhoods contiguous to Richmond Highway, while Route 171 operates along Richmond Highway until the Fort Belvoir area, serving portions of the North Post before terminating at the Lorton VRE Station. Together, these Connector and Metrobus routes serve approximately 10,000 weekday passengers, making Richmond Highway one of the highest bus transit ridership corridors within the county.

Since the 2009 TDP, WMATA has adjusted the REX service schedule to extend run times to address on-time performance issues, as noted in the previous TDP. Recent data provided by WMATA reports on-time performance of 81 percent. WMATA should identify performance by time of day to determine when and to what extent further run time adjustments are warranted. The BRT service that has been proposed in the Route 1 Multimodal Study will likely use a routing different than currently followed by the REX. The new center running BRT alignment will also include a number of formal station stops that may vary from the stop locations used by the REX. Changes to the REX alignment, such as those considered in the 2009 TDP, are not currently recommended. The first phase of the proposed BRT project is not expected to be operational until 2026. Implementation planning for the proposed BRT is required, including decisions on maintaining access to local stops and whether to transfer the existing REX brand to the new BRT service.

Metrobus 1A/B/E/Z Wilson Boulevard – Vienna Line

The 1A/B/E/Z Wilson Boulevard-Vienna Line has about 4,300 weekday boardings and provides connections to three Metrorail stations—Vienna, Dunn Loring and Ballston-MU—and also serves the Seven Corners Transit Center. More than half of all riders use this line to access one of the three Metrorail stations; most transfer to other transit services at these locations, as reported in the rider survey. The complete route is long, with end-to-end running times of approximately one hour. However, not all of the scheduled trips run the long pattern. The various patterns can be summarized as follows:

- 1A – operates between the Ballston-MU and Vienna Metrorail Stations at all times except the peak period in the peak flow direction. Scheduled running time ranges between 45 and 60 minutes, depending on the time of day.
- 1B – operates a short-turn pattern between the Ballston-MU and Dunn Loring Metrorail Stations, bypassing the 10th Road at Madison Street diversion (which is served by the 1E only). Trips operate in the weekday peak period, in both directions. Scheduled running time ranges between 55 and 60 minutes. The 1B does not operate on weekends.

²³ REX serves 18 bus stops in each direction including terminal and Metrorail stations.

- 1E – operates a short-turn pattern between the Ballston-MU Metrorail Station and the Seven Corners Transit Center during the peak period in the peak direction only with trips times of less than 30 minutes.
- 1Z – operates peak period peak direction trips between the Ballston-MU and Vienna Metrorail Stations in place of the 1A, but bypasses the Seven Corner Transit Center, resulting in trip times of less than one hour.

The primary route is the 1A, with the 1B/E/Z patterns operating in its place during the peak period to better meet passenger travel needs with faster and more convenient schedules. Like the other routes in this service area, the 1A/B/E/Z line serves a transit-dependent population. About 60 percent of the passengers surveyed report using this service five days or more each week. The survey results show that only about one-quarter of the riders have a car available and 67 percent are low-income.

The 2009 TDP suggested a future introduction of a limited-stop enhanced bus service to add a faster service option for some riders. Fairfax County residents and commuters would benefit from improved speeds through the addition of bus priority treatments on the Wilson Boulevard corridor in Arlington County.

WMATA is considering the elimination of the 1Z with modifications to the operation of both the 1A and 1B to simplify the combined schedule. Given the limited use of the 1Z pattern (peak period, peak direction only) WMATA is encouraged to pursue this concept. With this change the 1A would serve the Seven Corners Transit Center area, allowing the 1B to skip this stop during peak periods. This rerouting should not apply during the off-peak, in order to maintain existing connections via Seven Corners. Otherwise no additional changes to this route are recommended.

Metrobus 2B Fair Oaks-Jermantown Road Line

Metrobus 2B offers six-day service and has more than 1,000 weekday riders and nearly 600 Saturday riders. WMATA should add Sunday service, identical to the current Saturday schedule. This line serves a highly transit-dependent ridership community. The other three lines in this service area operate seven-day service, with the 2B line the only exception. The passenger survey shows that the US-29/Jermantown Road corridor has many customers who use transit frequently over the course of the week. Nearly 65 percent of Route 2B riders are African-American or Latino, and a similar percentage are low-income.

Metrobus 3T Pimmit Hills Line

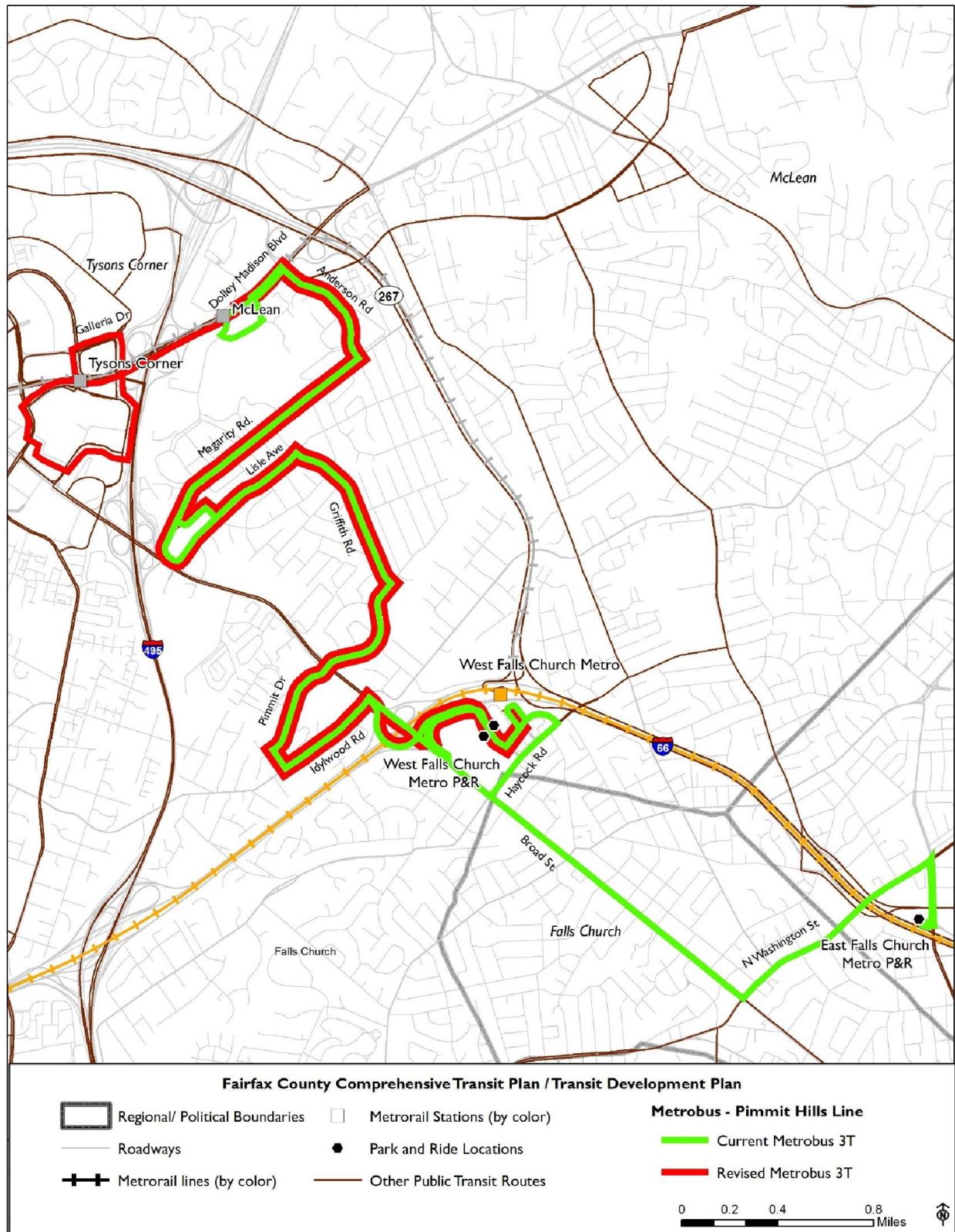
Under this proposal, Route 3T would be extended to Tysons Corner Center (the transit station on Fashion Boulevard) to provide better access to Tysons than the current terminal at the McLean Metrorail Station, as well as freeing up bus bay space at the McLean Metrorail Station, improving connectivity to central Tysons. After stopping at the McLean Metrorail Station, the route would proceed to the West Falls Church Metrorail Station via its current alignment, as shown in Figure 4-52. It is proposed to terminate the route at the West Falls Church Metrorail Station, rather than to continue to operate the extension to the East Falls Church Metrorail Station that was added in December 2013 when Metrobus 3B was eliminated. Both Leesburg Pike and North Washington Street have a significant amount of other bus service available, although there is no route that serves both of those roads as the 3T does now.

The proposed service levels for the restructured Metrobus 3T are shown below in Table 4-38. Responding to the public comments mentioned above, the proposed headways for the 3T represent an upgrade over current service, which has 20 minute peak headways and 60 minute off-peak headways. New Sunday service is also recommended since this route serves areas where connections to the Silver Line would reduce traffic in Tysons, and because the route serves as a neighborhood connection from Pimmit Hills to the McLean Metrorail Station. The streamlining of the alignment will allow for the higher service level without requiring significantly more resources.

Table 4-38: Route 3T Proposed Service Levels

Route 3T		
Operator		Metrobus
Span	Weekday	5:30 a.m. – 11:30 p.m.
	Saturday	6:30 a.m. – 11:30 p.m.
	Sunday	8:00 a.m. – 7:00 p.m.
Headway (min.)	Weekday Peak	15
	Weekday Midday	30
	Saturday	30
	Sunday	60

Figure 4-52: Proposed Route 3T



Proposed Huntington Metrorail Station – National Harbor Service

Currently, travel between Fairfax County and the National Harbor complex located along the Potomac River in Maryland via transit requires a circuitous path passing through the center of the District of Columbia using Metrorail and Metrobus that takes 90 minutes or more. From the Huntington Metrorail Station to the center of the National Harbor complex by motor vehicle is a five-mile journey that can be completed in ten minutes during periods of light traffic by crossing the Potomac over the I-495 Woodrow Wilson Bridge.

The National Harbor complex, a 300-acre waterfront site along the Potomac River in Prince George's County, is a 7.3 million square feet mixed-use development that includes a convention center, several hotels, retail, restaurants, and office and residential buildings. A casino is under construction and expected to open in 2016. The complex also includes Tanger Outlets, which contains almost 100 stores. The various occupants within the complex collectively provide a considerable number of jobs. Limited water taxi service connects National Harbor with Old Town, Alexandria.

During the public outreach, several comments were received noting the importance of creating a transit link to National Harbor to enable Fairfax County residents to reach the numerous opportunities there. In addition, employees of Fort Belvoir living in Prince George's County and even Charles County, Maryland, could use this service to access the REX and other Richmond Highway corridor services. Figure 4-53 provides a map of a proposed NH7 route between the Huntington Metrorail Station and National Harbor via the I-495 Woodrow Wilson Bridge. There was previous Metrobus service linking Virginia and Maryland via the Woodrow Wilson Bridge. This service was terminated more than ten years ago, long before the National Harbor development and interstate capacity improvements with a reconstructed Woodrow Wilson Bridge. The added activity at National Harbor and operational improvements expected with the new Wilson Bridge should improve the market for this service.

The proposed NH7 route would start at the Huntington Metrorail Station, follow Huntington Avenue to Richmond Highway, enter I-495 to cross over the Potomac River on the Wilson Bridge, take the first exit in Maryland to enter National Harbor Boulevard, and circulate the complex by passing through St. George's Boulevard and ending at the Tanger outlets, where there will also be other transit services available (including the Oxon Hill Park-and-Ride Lot).

The proposed service levels for Route NH7 are presented in Table 4-39. The route should begin as a seven-day service. In time as route ridership matures, service levels can be expanded to lengthen the service day and improve headways. Costs and expected ridership are still being determined.

Table 4-39: New Route NH7 Proposed Service Levels

		NH7 (initial)	NH7 (future)
Operator		(to be determined)	(to be determined)
Span	Weekday	5:00 a.m. – 10:00 p.m.	5:00 a.m. – 12:00 a.m.
	Saturday	7:00 a.m. – 8:00 p.m.	6:00 a.m. – 12:00 a.m.
	Sunday	8:00 a.m. – 8:00 p.m.	8:00 a.m. – 10:00 p.m.
Headway (min.)	Weekday Peak	30	30
	Weekday Midday	60	30
	Weekday Evening	60	60
	Saturday	30/60	30
	Sunday	30/60	30

Figure 4-53: Proposed New Route NH7



Metrobus 11Y Mount Vernon Express Line

Metrobus Route 11Y provides direct service between suburban Virginia communities within Alexandria and the Fairfax County Mount Vernon communities and the District of Columbia (DC). The route operates toward DC in the morning peak and brings commuters back to Virginia during the evening peak. Most trips on the limited schedule operate near or at a full

seated load during the morning peak with the first three trips equally loaded during the afternoon schedule. WMATA's data suggests that there are standees on some trips at times. Ridership is split approximately in half between Alexandria and Mount Vernon origins. Most riders, 70 percent, have an automobile available and only 10 percent are low-income. These riders are loyal to the 11Y: about 76 percent of the riders use the bus on a daily basis because, they report, it is a cost-effective and convenient means of travel into DC. These riders would like more frequent service and expanded service hours.

The morning schedule consists of eight trips, four originating at the Mount Vernon terminal and four short trips from Hunting Point. The evening schedule consists of six trips, five of which are routed through Mount Vernon. The loads on the morning trips from Mount Vernon suggest that there are frequently standees, in violation of WMATA express bus loading standards. The early evening return trips to Hunting Point and Mount Vernon also experience standees. The current lack of seats at some times may be discouraging ridership growth. The schedule should be revised to extend two morning short-trips to originate at Mount Vernon to better balance loads as suggested in Table 4-40 (morning) and Table 4-41 (evening). In addition, WMATA should enhance route capacity with the addition of one trip in the evening schedule. Like the 9A, the 11Y is prone to poor reliability, especially during the evening peak period. WMATA implemented a new schedule in March 2015 with adjustments to the scheduled run time to address run time variability. Additional details regarding this recommendation will need to be determined before implementation.

Table 4-40: Route 11Y Proposed Morning Peak Schedule

Existing Route 11Y Morning Schedule		Proposed Route 11Y Morning Schedule	
Leave Mount Vernon	Leave Hunting Point	Leave Mount Vernon	Leave Hunting Point
-	6:40	6:14	6:43
6:34	7:03	6:34	7:03
6:54	7:23	6:54	7:23
-	7:34	-	7:34
7:13	7:45	7:14	7:46
-	7:56	-	7:56
-	8:06	7:34	8:06
7:45	8:17	7:52	8:24

Table 4-41: Route 11Y Proposed Evening Peak Schedule

Existing Route 11Y Evening Schedule			Proposed Route 11Y Evening Schedule		
Leave DC	Arrive Hunting Point	Arrive Mount Vernon	Leave DC	Arrive Hunting Point	Arrive Mount Vernon
4:10	4:49	5:15	4:00	4:39	5:05
4:40	5:27	5:59	4:25	5:12	5:44
5:10	5:57	-	4:50	5:37	6:09
5:15	6:02	6:34	5:10	5:57	-
5:40	6:20	6:50	5:15	6:02	6:34
6:15	6:55	7:25	5:40	6:20	6:50
			6:20	7:00	7:30

Proposed Tysons – Bethesda Service

In the late 1990s, WMATA initiated a series of routes branded as “SmartMover” connecting Tysons to Bethesda and other locations in Montgomery County, Maryland. These routes were operated until December 2003 when they were discontinued due to poor performance. In spite of the failure of that service initiative, there is still a significant travel market between Northern Virginia and Montgomery County. Tysons and Bethesda are the two most significant nodes of activity. The transit connection between these areas is currently long and circuitous via Metrorail through downtown DC. A bus connection via the Beltway would be much faster and more direct.

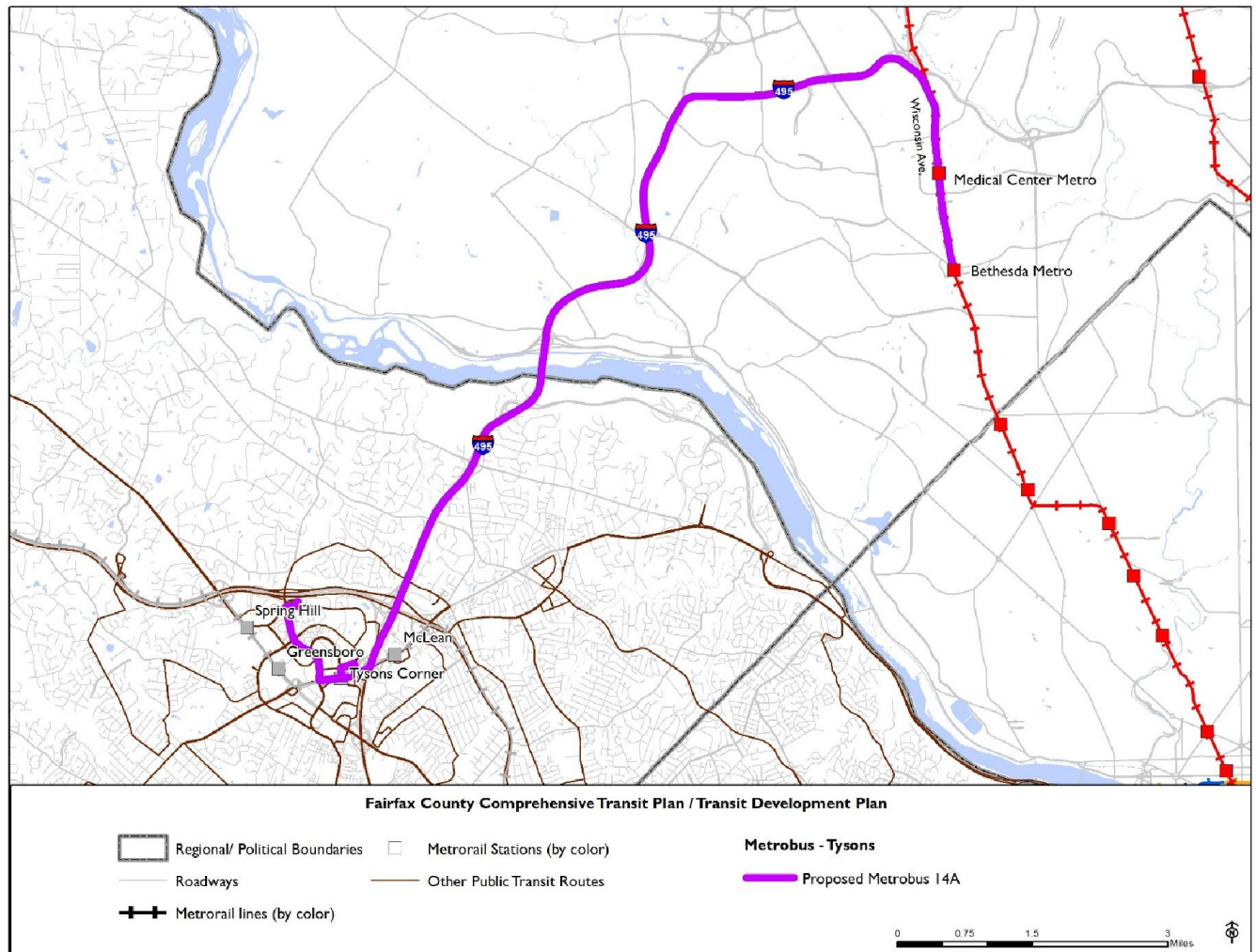
Compared to 15 years ago, Tysons now has Silver Line service and a better local distribution system in Routes 422, 423, and 424. Northern Virginia also has the Express Lanes which extend just north of Tysons, easing travel for buses into and out of the Tysons area. What has not changed is the bottleneck presented by the American Legion Bridge and the fact that without HOV lanes or a bus-on-shoulder policy for the stretch between the northern terminus of the I-495 Express Lanes and the I-270 split, buses would not be able to move faster than general traffic. Therefore, dialogue with Maryland DOT aimed at resolving this problem will be an important element in making this route a success.

As Tysons becomes more urbanized and pedestrian-friendly over time, a transit route connecting Tysons to Bethesda will become more attractive. This TDP proposes a simple connection between the two, as shown in Figure 4-54. The proposed route does not attempt to cover as many destinations as the former SmartMover, which consisted of four different bus routes. It is hoped that a simpler and more focused service would be more attractive than SmartMover, even though its potential market is more limited. The initial implementation of the route would be focused on peak service, with limited midday and evening service so that users would feel they have some flexibility in case of emergency or working late. The proposed span and headway is shown in Table 4-42.

Table 4-42: New Route 14A Proposed Service Levels

Route 14A		
Operator		(to be determined)
Span	Weekday	5:30 a.m. – 7:30 p.m.
	Weekday Peak	20
Headway (min.)	Weekday	60
	Midday/Evening	

Figure 4-54: Proposed New Route 14A



Metrobus 15M George Mason University – Tysons Line

Metrobus 15M was created in 2009 to allow for a lower level of service on the weaker portion of the former 15K, which ran from Rosslyn to Fairfax City. The current 15M runs only during peak periods. While it provides a one-seat ride between George Mason University/Fairfax City and Tysons, the route has almost no unique mileage. The connection it provides between Fairfax City/GMU and the Vienna Metrorail Station is also provided (with a better service level) by the City of Fairfax's CUE system. The connection it provides between the Vienna Metrorail Station and Tysons via Chain Bridge Road is also provided by Connector 463 (again, with a better service level). The productivity and ridership of the 15M is poor compared to other Metrobus services. The resources it consumes could likely be put to better use, since other routes make the same connections. While there is potential for more people to travel between GMU and Tysons, this pattern has not established itself yet, and riders could still accomplish the trip with a transfer between CUE and Connector 463 at the Vienna Metrorail Station.

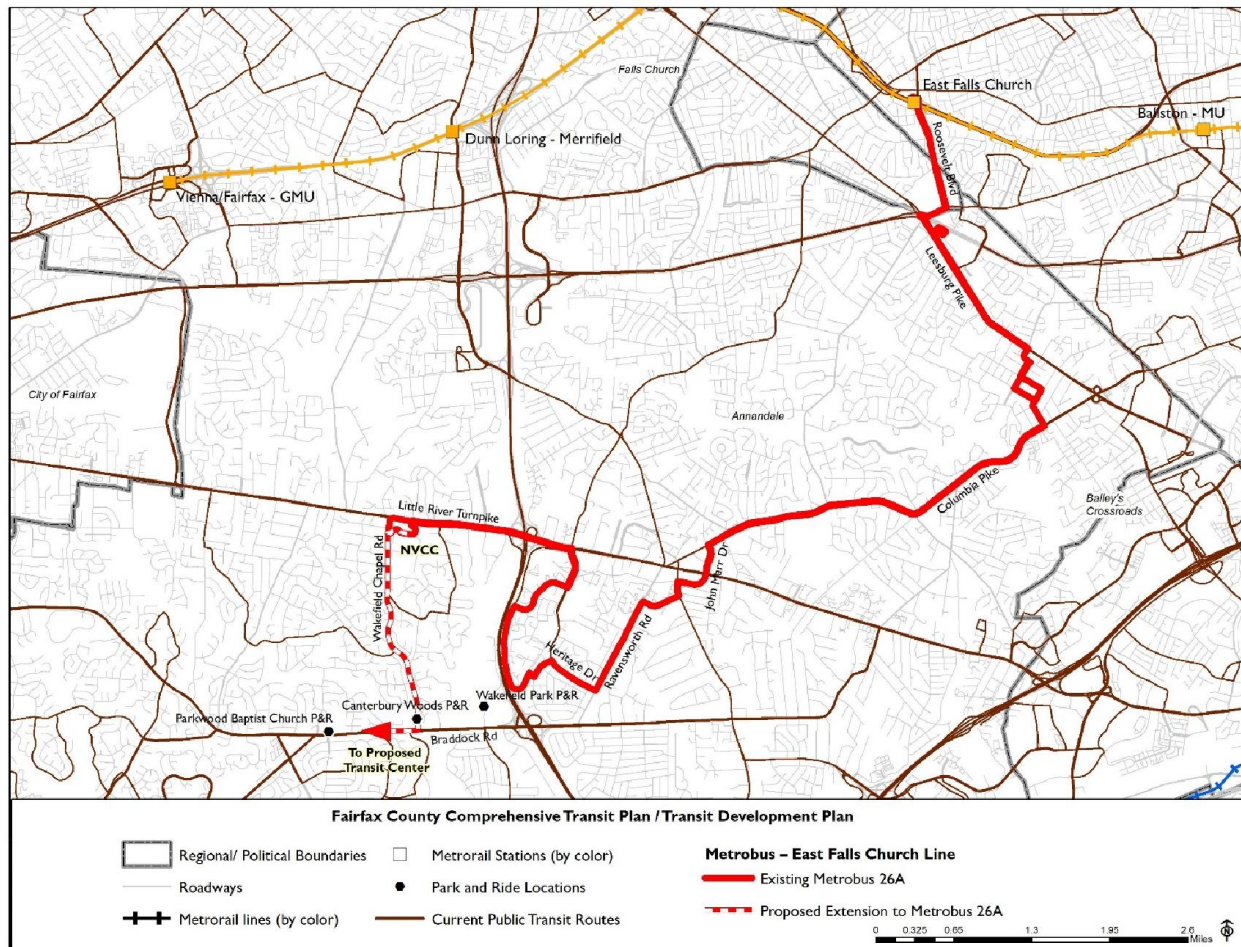
Eliminating the 15M and moving Route 466 to the alignment recommended above would leave a small segment of Maple Avenue with no service. Ridechecks from Fall 2014 showed fewer than 5 boardings per day at all of the stops combined on the segment that would be dropped, and other service would be a short walk away.

Metrobus 26A Annandale – East Falls Church Line

The 26A Line was established in 2013 to connect the Northern Virginia Community College (NVCC) Annandale campus to the East Falls Church Metrorail Station. The 26A should be extended to the planned transit center in the Braddock Road corridor when it opens, currently projected to be no earlier than 2021. From NVCC-Annandale, the extension should be routed along Wakefield Chapel Road (VA-710) and then turn onto Braddock Road to the site of the proposed transit center in the corridor. Service to this facility will provide Annandale residents with a local connection to both West and South County bus routes as recommended in this TDP. Figure 4-55 shows a map of the proposed route extension. As mentioned in the discussion for the Columbia Pike services, WMATA rerouted Metrobus Route 26A in March 2015 to serve the Americana Drive and Patriots Drive area. This rerouting should be reviewed in the future to determine if this change is compatible with the recommended extension to the proposed Braddock Road corridor transit center.

The 2009 TDP had recommended a new Metrobus 28E, the East Falls Church Metrorail Station – Skyline Towers route. Route 28E has not been implemented, but Route 26A service covers a portion of the proposed 28E between East Falls Church and the Seven Corners Transit Center. Therefore, Metrobus Route 28E is no longer recommended.

Figure 4-55: Proposed Route 26A



Metrobus Route 28X Leesburg Pike Limited Line

The 28X Metro Extra route serves 17 stops between the Tysons Corner Metrorail Station and the Mark Center in Alexandria plus a few additional stops in the Tysons area. By avoiding the other stops served by Route 28A, the 28X saves about 7 minutes of running time end to end, reducing a 62 minute trip from Tysons to Southern Towers to a 55 minute trip from Tysons to the Mark Center (which is across Seminary Road from Southern Towers).

An adjustment that should be considered is operating better service in the westbound direction in the morning peak period. Currently, service is oriented for commuters to the Mark Center with 15 minute peak service eastbound in the morning and westbound in the afternoon. Service operates with a 20 minute headway in the other direction in each period (though the route does operate at a 15 minute headway during the 6:00 a.m. hour in the westbound direction). The current morning ridership is 244 passengers in the eastbound (supposedly peak) direction, but 357 passengers in the westbound direction. Afternoon peak ridership is also stronger in the westbound direction. This directional imbalance is likely due to the fact that the 28X runs to the same terminal as the 28A in the westbound direction, but stops short (at the Mark Center) in the eastbound direction. For riders at the stops served by the westbound 28X, the routes may

be equivalent and so they take whichever comes first. For eastbound riders, though, anyone traveling past the Mark Center would wait for the 28A. To better align service with demand, it is recommended to operate morning peak service (essentially the departures in the 7:00 a.m. hour) in the westbound direction at a 15-minute headway instead of the current 20-minute headway.

The Northern Virginia Transportation Committee is conducting a study of alternatives for high-capacity transit, including a bus rapid transit (BRT) alternative, in the Leesburg Pike corridor between Tysons and Alexandria. The study is expected to be completed later in 2016.

Metrobus 29C/G Annandale Line and 29K/N Alexandria – Fairfax Line

WMATA partially addressed the recommendations in the 2009 TDP. As recommended, service levels on the local 29K/N were improved during off-peak periods and Sunday service was added to the Vienna Metrorail Station (29N). Following the changes implemented in March 2015, the Metrobus 29 lines currently include the following:

- 29K/N Alexandria-Fairfax Line, King Street-Old Town Metrorail Station to Vienna Metrorail Station (29N) or George Mason University (29K)
- 29C/G Annandale Line, Pentagon Metrorail Station to NVCC/Lake Drive via I-395 and Little River Turnpike, charging a local fare. The 29G trips are peak trips; the 29C trips are less frequent reverse-peak trips.
- 29W Braeburn Drive-Pentagon Express Line, operating via I-395 and charging an express fare, peak period, peak direction only. These replace the former 29E and 29X trips.

Based on data collected prior to the March 2015 changes, local 29K/N trips experience higher demand than the express trips during the peak period when both are operated. The 29K/N trips averaged 40 boardings per trip while the express averaged only 16 boardings per trip. On segments where local and express trips make the same stops, riders may avoid express buses because of the fare differential. WMATA addressed this problem in March 2015 by reducing the fare on express route 29C/G to the local fare. At the same time, the express trips on 29E/H/X were replaced by fewer 29W trips. The service and fare changes implemented after data collection for this study was complete may partially address the observed service level discrepancy between the 29 express and the 29 local lines. However, no additional trips were added to the local 29K/N, and lowering the 29C/G fare may not be sufficient to balance the loads. Therefore, it is recommended to improve the 29K/N peak-period headways from 30 minutes to 20 minutes and to provide the resources to do this by reducing service on the 29G (specifically, peak headways should be lengthened from 15 minutes to 20 minutes). These changes will result in more balanced loads, fewer occurrences of over-crowded local buses, and faster and more reliable service on the 29K/N while at the same time maintaining reasonable service frequency and loading on the express routes.

5. Operations Plan

5.1. Overview of Services

Chapter 1 provides a detailed breakdown of bus service types and where they operate within the county. In summary, they include:

- **Local Routes:** service focused on providing connectivity within and between activity centers in Fairfax County.
- **Express Routes:** service focused on long trips delivering commuters directly to high-employment areas without making regular stops over the trunk of the route.
- **Circulator Routes:** service that provides connections within activity centers between trunk transit lines and ridership generators.
- **Feeder/Distributor Routes:** weekday peak-hour service linking residential areas to Metrorail stations (feeder) and Metrorail stations to employment centers (distributor).
- **Special Routes:** only one route in Fairfax County, Route 480 Wolf Trap Express. This route operates under contract with the Wolf Trap National Park for the Performing Arts to provide service to and from events at the Filene Center.

Several unfunded recommendations in the TDP for alternative “flex route” service could potentially add another type of service to the County’s options; however, as additional study is needed before that can happen, the operating plan focuses on continuing the County’s existing service types.

Fairfax Connector’s existing bus operating plan requires 711,943 annual revenue hours and 9,269,173 annual revenue miles of service. These figures are used as the baseline to estimate the net costs of all service improvements in the proposed Operating Plan. The Operating Plan is fiscally constrained and represents what Fairfax Connector can expect to implement with the currently available revenue sources. Additional improvements may be implemented depending on the availability of new revenue.

A significant event within the timeframe of this TDP will be the opening of Phase 2 of the Silver Line in FY2020. Although a part of the WMATA Metrorail system, Phase 2 of the Silver Line will have a positive impact on transit ridership within Fairfax County and will necessitate reconfigured Fairfax Connector service to new Metrorail stations. As such, this TDP provides recommendations which address the opening of Phase 2 and attempt to synthesize Connector bus service with this new Metrorail service. The forecasts in this chapter include the operating costs associated with these recommendations.

5.2. Methodology for Prioritizing Recommendations

This TDP takes a number of factors into consideration when deciding which service recommendations outlined in Chapter 4 should be included in the constrained operating plan. The primary criteria for a recommendation receiving a high priority rating is cost effectiveness; the study team calculated projected net costs per rider and change in net costs to determine the return on investment for each service change. In addition, the TDP includes a number of

routes that the county has already committed revenue toward implementing, as well as service changes related to the Phase 2 extension of the Silver Line into the western part of Reston, Herndon, and into Loudoun County.

5.3. Proposed Service Changes – Funding Identified

Table 5-1 lists each service recommendation that can be programmed in the constrained operating plan. The following sections provide a year by year summary.

Service Improvements

FY2016 and FY2017

During the first two fiscal years of the plan, Fairfax Connector will focus on implementing service improvements planned since before the development of this TDP, but included in the 2009 TDP. These improvements are funded through the County's Commercial and Industrial (C&I) tax, a revenue source that can solely be used for *new* bus service, either in the form of frequency and span improvements, or through the creation of an entirely new route.

In FY2016, Connector will implement improvements on routes 109, 151, 152, 621, 630, 640, and 650, and will begin operation of new routes 624 and 634. Routes 109, 151, and 152 are part of the Transportation Priorities Plan (TPP) South County Feeder Bus Service project; Routes 621, 624, 630, 634, 640, and 650 are part of the TPP Vienna Metrorail Feeder Bus Service Expansion project. In FY2017, Fairfax Connector plans to improve service on routes 321 and 322, and to implement new routes 308, 313, and 451. Routes 308, 313, 321, and 322 are part of the TPP South County Feeder Bus Service project; Route 451 is part of the TPP Vienna Metrorail Feeder Bus Service Expansion project. Connector expects to implement FY2016 service changes at the start of the fourth quarter of FY2016, and FY2017 changes at the start of the third quarter FY2017.

FY2018

In FY2018, due to renovations at the West Ox operating division, Connector has limited capacity to implement service improvements that lead to a net increase in revenue hours and peak bus needs. Any increase in service during FY2018 will be matched by complementary service reductions and efficiency improvements. Service changes are proposed for the following routes in FY2018: 101, 161, 162, 231, 232, 334, 463, 552, 623, 724, 929, and RIBS 2. Routes 101, 161, 162, 231, 232, and 334 are part of the TPP South County Feeder Bus Service project; Route 623 is part of the TPP Vienna Metrorail Feeder Bus Service Expansion project. All changes are assumed to begin at the start of the fiscal year.

FY2019

In FY2019, the Operating Plan recommends that Connector implement service improvements to include routes 171, 305, 372, 373, 466, 622, and 632. New services planned to be started in FY2019 include routes 172, 464, and 625. Routes 171, 172, 305, 372, and 373 are part of the TPP South County Feeder Bus Service project; Routes 464, 466, 622, 625, and 632 are part of the TPP Vienna Metrorail Feeder Bus Service Expansion project. All changes are assumed to begin at the start of the fiscal year.

FY2020

In FY2020, Fairfax Connector will implement a package of service changes related to the extension of the Silver Line. These recommendations are anticipated to be near budget neutral. Existing service affected will include routes 574, 585, 605, 924, 927, 929, 937, 950, 951, 952, 983, RIBS 1, and RIBS 3. New service associated with Silver Line Phase 2 will include routes 921, 922, and 954. In addition, a new Route 496 is planned to be implemented with improvements to the Fairfax County Parkway. Route 496 is part of the Fairfax County Parkway Enhanced Bus Service project. All changes are slated to begin at the start of the fiscal year and with the start of Phase 2 Silver Line Metrorail service.

FY2021 and FY2022

The constrained operating plan does not include any service changes after FY2020. As additional funding becomes available, Fairfax Connector can implement further recommendations based on the priorities identified in the unconstrained recommendations shown in Chapter 4, and cost neutral changes in response to ridership and operational concerns.

Planned Service Reductions

The constrained operating plan includes a number of recommended service reductions. Reductions are recommended as part of a package of service improvements that transfer resources from low performing routes to routes where service increases are needed. Many of the proposed reductions are part of the bus service reorganization planned for the opening of Silver Line Phase 2. Metrorail service will allow Fairfax Connector to reapply resources from redundant routes to improve connections to Silver Line stations. Overall, the planned service reductions are minor. In most cases, the reductions are merely small route realignments or headway adjustments. In instances where service is being eliminated, alternative or duplicative service will be available. The following outlines service reductions by fiscal year:

FY2016 and FY2017

No service reductions are planned in FY2016 or FY2017. However, staff monitors the Connector routes on a regular basis. If the need for service reductions is identified, staff will bring recommendations forward to the Board for consideration.

FY2018

- 161/162: Slight reduction in service frequency and run time adjustments to improve on-time performance.
- 463: Alignment modifications to improve service reliability and efficiency to coincide with the elimination of Metrobus 15M.
- 552: Headways will be reduced from 18 minutes to 20 minutes to allow for the lengthening of the route.
- 724: Route will be shortened to Tysons West*Park Transit Station.
- 929: Minor realignment of route to the Air and Space Museum Parkway from EDS Drive to Wall Road.
- RIBS 2: Realign route within Reston Town Center to operate via Market Street for improved efficiency.

FY2019

- 171: Peak period service to be transferred to the new route 172.
- 305: Route will be truncated at its southern end. 371 and 373 will continue to provide service on this segment.

FY2020

A number of routes will see service reductions or elimination as part of the bus service reorganization planned for the opening of Silver Line Phase 2.

- 505: The route will be merged with the 950 due to redundancies with the Silver Line.
- 926: Service will be replaced by the new 921/922 Herndon Circulator and Route 924.
- 980, 981, and 985: Eliminate due to redundancy with Silver Line Phase 2.

Table 5-1: Fiscally Constrained Service Changes by Year

Route	Implementation Year	Type of Change	Annualized Change in Revenue Hours	Annualized Change in Cost (Current Year \$)	Net Change in Peak Vehicles
109*	2016	Improve span or frequency	919	\$97,552	0
151*	2016	Improve service efficiency	8,377	\$889,110	0
152*	2016	Improve service efficiency	348	\$36,923	0
621*	2016	Improve span or frequency	4,038	\$428,528	0
624*	2016	New route	4,208	\$446,547	2
630*	2016	Improve span or frequency	1,739	\$184,524	0
634*	2016	New route	4,845	\$514,206	2
640*	2016	Improve span or frequency	4,438	\$470,973	0
650*	2016	Improve span or frequency	5,900	\$626,208	0
308*	2017	New route	14,502	\$1,539,150	4
313*	2017	New route	15,486	\$1,643,548	5
321*	2017	Improve service efficiency	6,037	\$640,748	3
322*	2017	Improve service efficiency	7,267	\$771,299	±
451*	2017	New route	5,100	\$541,269	2
101*	2018	Improve service efficiency	27	\$2,867	0
161*	2018	Improve service efficiency	-896	\$(95,144)	0
162*	2018	Improve service efficiency	742	\$78,800	0
231*	2018	Improve service efficiency	64	\$6,782	0
232*	2018	Improve service efficiency	-59	\$(6,257)	0
334*	2018	Improve service efficiency	43	\$4,615	0
463*	2018	Improve service efficiency	-1,055	\$(111,925)	0
552	2018	Improve span or frequency	-212	\$(22,540)	0
623*	2018	Improve span or frequency	833	\$88,426	1
724	2018	Improve service efficiency	-263	\$(27,935)	0
929	2018	Silver Line Phase 2	-595	\$(63,191)	0

Route	Implementation Year	Type of Change	Annualized Change in Revenue Hours	Annualized Change in Cost (Current Year \$)	Net Change in Peak Vehicles
RIBS 2	2018	Extend service to new area	-444	\$(47,174)	0
171*	2019	Improve span or frequency	-4,704	\$(499,229)	3
172*	2019	New route	9,053	\$960,753	‡
305*	2019	Improve service efficiency	-2,094	\$(222,242)	-1
372*	2019	Improve service efficiency	1,380	\$146,437	0
373*	2019	Improve service efficiency	1,214	\$128,814	1
464*	2019	New route	1,913	\$202,976	1
466*	2019	Improve service efficiency	3,116	\$330,675	1
622*	2019	Improve span or frequency	1,090	\$115,716	1
625*	2019	New route	2,295	\$243,571	2
632*	2019	Improve span or frequency	2,334	\$247,695	2
496*	2020	New route	19,380	\$2,056,823	6
505	2020	Silver Line Phase 2	-12,411	\$(1,317,216)	-3
574	2020	Improve span or frequency	66	\$7,040	0
585	2020	Silver Line Phase 2	6,078	\$645,068	2
605	2020	Silver Line Phase 2	5,366	\$569,447	2
921	2020	Silver Line Phase 2	5,401	\$573,188	1
922	2020	Silver Line Phase 2	5,401	\$573,188	1
924	2020	Silver Line Phase 2	5,478	\$581,401	0
926	2020	Silver Line Phase 2	-3,348	\$(355,298)	0
927	2020	Silver Line Phase 2	4,252	\$451,241	1
929	2020	Silver Line Phase 2	4,378	\$464,589	1
950	2020	Silver Line Phase 2	4,597	\$487,843	2
951	2020	Silver Line Phase 2	3,314	\$351,755	1
952	2020	Silver Line Phase 2	2,446	\$259,561	1
954	2020	Silver Line Phase 2	3,570	\$378,888	1
980	2020	Silver Line Phase 2	-5,497	\$(583,357)	-2
981	2020	Silver Line Phase 2	-5,661	\$(600,825)	-2
983	2020	Silver Line Phase 2	-6,443	\$(683,803)	0
985	2020	Silver Line Phase 2	-3,653	\$(387,711)	-2
RIBS 1	2020	Silver Line Phase 2	294	\$31,197	0
RIBS 3	2020	Silver Line Phase 2	303	\$32,190	0

* Route is included in a Transportation Priorities Plan (TPP) project.

‡ Net vehicle change combined with previous row.

Note: Implementation year 2016 changes are included in the approved FY2016 budget, and implementation year 2017 changes are included in the proposed FY2017 budget.

Table 5-2 summarizes the net changes in revenue hours, gross and net operating costs, and peak, spare, and total bus requirements from the service levels as of the end of FY2015.

Table 5-2: Net Increase Over Existing Service Levels

	FY2016	FY2017	FY2018	FY2019	FY2020	FY2021	FY2022
Revenue Hours	8,703	59,008	82,097	100,669	133,534	133,534	133,534
Operating Cost	\$923,643	\$6,325,203	\$9,064,151	\$11,225,814	\$15,486,333	\$15,796,059	\$16,427,902
Net Operating Cost	\$786,614	\$5,445,838	\$7,760,680	\$9,518,517	\$13,725,226	\$13,928,624	\$14,554,137
Net Change in Peak Vehicles	4	14	1	10	10	0	0
Spare Vehicles	1	3	0	2	2	0	0
Total Vehicles	5	17	1	12	12	0	0

5.4. Proposed Service Improvements – Funding Not Identified

This TDP has many more service recommendations than can be funded with currently anticipated operating revenue. As new funding becomes available, Fairfax Connector can implement additional improvements. The unfunded portion of the plan does not outline an implementation year for service improvements. As additional revenue becomes available, the County can choose to fund unconstrained recommendations by their rating or observed need.

Table 5-3: Recommendations without Identified Funding²⁴

Route	Type of Change	Annualized Additional Revenue Hours	Annualized Net Operating Cost	Net Peak Vehicles
315	New route	15,486	\$1,595,677	5
333/340/341	Improve service efficiency	4,148	\$427,400	0
335	Improve span or frequency	4,909	\$505,798	0
401 L ‡	New route	10,200	\$1,051,008	5
402 L ‡	New route	10,200	\$1,051,008	*
610 Phase 1	New route	16,320	\$1,681,613	4
610 Phase 2	Improve span or frequency	5,286	\$544,669	2
631	Improve span or frequency	7,312	\$753,441	1
641	Improve span or frequency	6,857	\$706,584	1
642	Improve span or frequency	9,359	\$964,373	1
644	Improve span or frequency	6,756	\$696,118	1
651	Improve span or frequency	9,065	\$934,083	2
652	Improve span or frequency	8,534	\$879,343	2
901	New route	17,061	\$1,757,914	5
924 Phase 2	Improve span or frequency	1,964	\$202,371	0
929 Phase 4	Improve span or frequency	847	\$87,316	0
Flex 1	New service	7,140	\$735,706	2
Flex 2	New service	7,140	\$735,706	2
Flex 3	New service	7,140	\$735,706	2
395	Improve span or frequency	1,415	\$145,754	1
607	New route	17,061	\$1,757,914	5
724 Flex	New service	1,658	\$170,789	0
734 Flex	New service	4,145	\$427,059	0
929 Phase 3	Improve service efficiency	714	\$73,571	0

* Net vehicle change combined with previous row.

‡ Changes for the 401L and 402L are net of related service reductions on the 401 and 402, respectively.

5.5. Related Capital Improvements

Fairfax Connector plans to renovate and expand the West Ox bus maintenance and storage facility. During FY2018, construction at the facility will limit Connector's ability to expand its fleet and operations beyond prior year levels. After the completion of renovations, Fairfax Connector will have the storage capacity to support new service.

²⁴ Costs and revenue hours for phased routes (i.e. 610 Phase 2) show the net between the phase shown and the preceding phase, not existing service.

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6. Capital Improvement Program

This chapter includes an overview of Fairfax Connector's anticipated capital replacement needs for the FY2017-FY2022 period. It includes all replacement needs outlined in Fairfax Connector's Vehicle Replacement Plan, the Tools and Equipment Replacement Plan, the two unique programs that provide and replace bus shelters, as well as major infrastructure projects that are in the Fairfax County Capital Improvement Program, which is adopted by the Board of Supervisors.

6.1. Vehicle Fleet

As of FY2016, the Fairfax Connector revenue vehicle fleet consists of 295 buses, including 12 buses expected to be delivered as of March 2016. Of these, 184 are equipped "mini-hybrids" using engineered machine products, which provide fuel savings by electrifying the engine cooling system. The mini-hybrids in the Fairfax Connector fleet have been getting up to 1 mile per gallon more than standard diesel bus, and sometimes better fuel efficiency than a full hybrid bus. In FY2015, FCDOT received 17 buses to replace its 2002 fleet of buses and to add capacity. The latest buses are also equipped with mini-hybrid technology. FCDOT is researching new technologies that would provide a more efficient and cost effective fleet. One option that may be included in the next order is an all-electric air conditioning system to reduce operating costs and reduce fuel consumption.

As shown in the table below, the Fairfax Connector fleet includes 209 40-foot buses, all manufactured by New Flyer, 60 35-foot buses, also made by New Flyer, and 25 30-foot buses, built by Orion. The 30-foot buses are the oldest, with an average age of 7 years. The 40-foot buses, which constitute the majority of the fleet, have an average age of just over 5 years. All of the 40-foot buses have 39 seats. Most of the 35-foot buses have 31 seats and the rest have 30. The 30-foot buses have 25 seats. As of 2015, all of the buses in the fleet are low-floor. Currently about 70 percent of the fleet consists of 40-foot buses, and the remaining 30 percent consists of 30 or 35-foot buses.

Table 6-1: Fairfax Connector Revenue Fleet, FY16

Length (ft.)	Manufacturer	Seating	Number of Vehicles	Average Age
30	Orion	25	26	7.0
35	New Flyer	30	16	8.0
35	New Flyer	31	44	1.4
40	New Flyer	39	209	5.1
Grand Total			295	4.8

In addition to 295 revenue vehicles, Fairfax Connector has 34 non-revenue vehicles, as shown in Table 6-2 below.

Table 6-2: Non-Revenue Vehicles

Type	Count	Average Age
Car	16	3.7
SUV	11	7.6
Service Truck	7	8.1
Grand Total	34	5.9

Most of the buses in the Fairfax Connector fleet have an expected lifetime of 12 years. However, the vehicles purchased since 2011 have an extended warranty with a lifetime of 18 years and a recommended in-service rehabilitation after 7 to 8 years. FCDOT had previously budgeted \$0.5 million annually for bus powertrain component replacement, but is beginning a new program of comprehensive midlife rehabilitation at an estimated cost of \$115,000 per bus. The table below shows that this program will require approximately \$3 million annually for bus rehabilitations from FY2018 onwards. FCDOT is currently seeking additional funding beyond the \$0.5 million already budgeted for this program.

Table 6-3: Bus Fleet Rehabilitation Schedule (Millions)

Bus Type	Purchase Year	Number	Retirement Year	FY2017	FY2018	FY2019	FY2020	FY2021	FY2022	Future Years
NF 40ft	2007	52	2022	\$1.76	\$2.93	\$1.40				\$0
NF 35ft	2007	16	2022			\$1.84				\$0
Orion VII	2008	26	2023				\$2.94			\$0
NF 40ft	2009	45	2024					\$2.93	\$2.34	\$0
NF 40ft	2011	31	2026						\$0.59	\$3.13
NF 40ft	2011	37	2026							\$4.46
NF 35ft	2012	15	2027							\$1.77
NF 40ft	2012	20	2027							\$2.41
NF 40ft	2013	19	2028							\$2.29
NF 35ft	2014	17	2029							\$2.01
NF 35ft	2015	12	2030							\$1.42
NF 40ft	2015	5	2030							\$0.60
Total		295		\$1.76	\$2.93	\$3.24	\$2.94	\$2.93	\$2.93	\$18.11

Note: NF=New Flyer.

Since the bus fleet is of relatively young, Fairfax County does not anticipate purchasing any replacement vehicles until FY2022. Beginning in FY2022, however, the County will need substantial capital funding to replace vehicles that will have reached retirement age. To fund this projected need, the County established a bus replacement fund with an annual contribution of at least \$5.7 million from state transit assistance. Funding beyond this level is required in future years to ensure the availability of sufficient funds for the replacement program when it begins.

To have sufficient vehicles to accommodate the planned expansion in service in FY2016-2018, as well as changes expected with the opening of Silver Line Phase 2 in FY2020, FCDOT recommends purchasing 47 vehicles as shown in the Table 6-4. The exact number of new

vehicles will be reviewed on an annual basis, consistent with actual service increases approved by the Board. The first 12 of these are on order and expected to be delivered in March 2016 and are already counted in the base fleet as described above. All of the new vehicles are expected to be low-floor, diesel, wheelchair accessible transit buses, with an expected cost of \$520,000 per vehicle including all related on-board equipment and procurement costs.²⁵ Of the FY2017 vehicles, five will be used for I-95 express service, replacing vehicles currently used for that service that are normally part of the spare capacity, and thereby returning the fleet spare ratio to the target level. New service trucks will be purchased in 2016, 2018, and 2020, using state funding. The budget for revenue and non-revenue vehicles is shown in Table 6-4. All vehicles will be purchased using local Fairfax County funding, and subsequently FCDOT will apply for DRPT reimbursement grants to recover a portion of the cost.

Table 6-4: Vehicle Procurement Schedule

Type	FY2016	FY2017	FY2018	FY2019	FY2020	FY2021	FY2022	Total
Buses for Expansion	17	11	0	7	12	0	0	47
Buses for Replacement	0	0	0	0	0	0	68	68
Service Trucks (non-revenue)	0	0	1	0	1	0	0	3

Table 6-5: Vehicle Expenditures (Millions)

	FY2016	FY2017	FY2018	FY2019	FY2020	FY2021	FY2022	Total
Buses for Expansion	\$8.84	\$5.72	\$0.00	\$3.86	\$6.82	\$0.00	\$0.00	\$25.24
Bus Replacement Fund *	\$5.70	\$7.25	\$7.72	\$8.22	\$8.76	\$9.33	\$9.93	\$56.91
Support Vehicles	\$0.00	\$0.00	\$0.10	\$0.00	\$0.10	\$0.00	\$0.00	\$0.20
Bus Rehabilitation	\$0.00	\$3.24	\$2.20	\$2.20	\$2.20	\$2.20	\$2.20	\$14.24
Total	\$14.54	\$16.21	\$10.02	\$14.28	\$17.88	\$11.53	\$12.13	\$96.59

* The bus replacement fund is a reserve for replacing buses in future years. Amounts shown are annual contributions to the fund. The \$40.99 million projected for the purchase of 68 replacement buses in FY2022 will come from the fund.

6.2. Operations and Maintenance Facilities

Fairfax Connector's operations and maintenance activities take place at three operating divisions, Huntington, Reston-Herndon, and West Ox. As shown in the table below, the number of vehicles currently parked at two of the division, Huntington and Reston-Herndon, exceeds the facility's design capacity.

²⁵ This cost was escalated 3% annually to estimate the purchase price of buses for each year through FY2022 (\$602,823).

Table 6-6: Parking and Maintenance Capacity by Division

Division	Peak Pull-out	Fleet Requirement including 20% spares	Design Parking Capacity	Current Design Maintenance Capacity	Maintenance Capacity After Rebuild
Herndon	81	98	82	90	90*
Huntington	83	100	85	90	105
West Ox	68	82	170	90	170

* Maximum number of buses to be parked at Herndon is 90.

In response to these capacity constraints, renovations or expansions are currently planned or in-progress at all three operating divisions. After these renovations are complete, there will be capacity to garage and maintain the current fleet as well as the additional buses needed for service expansion. In FY2016, Fairfax County began construction on a \$20 million expansion of administrative and maintenance space and service buildings at the West Ox operating division. When the project is completed in mid FY2017, the West Ox Division will be able to both maintain and park 170 buses. The County is currently in the design phase of planning for the renovation of the Herndon bus garage. The renovation of the Reston-Herndon Division will include an interior redesign and redesign of the parking configuration. This \$12 million project is expected to start construction late in FY2016 and to be completed early in FY2018. The renovation of the Huntington Division will provide additional maintenance bays, a chassis wash, tire shop, additional operator locker room space, and reconfigure the parking area to provide more bus parking. This \$5.2 million project is anticipated to be complete in early FY2017. This expansion project will enable the Fairfax Connector to park and maintain 105 buses at this facility, four more than are currently assigned.

All of three of these operating division projects are funded entirely by local funds, with funding secured through the adopted Fairfax County Capital Improvement Plan. However, County staff will seek partial reimbursement from the Virginia Department of Rail and Public Transportation.

Table 6-7: Operating and Maintenance Facilities Budget (Millions)

Capital Budget Item	Total Project Budget	Description	FY2016	FY2017
West Ox Garage Expansion	\$20.000	Expansion of the administrative, maintenance, and service buildings	\$15.000	\$5.000
Huntington Garage Renovation	\$6.575	Expansion of the shop area to provide additional maintenance bays, a chassis wash, tire shop; additional operator locker room space; and reconfigured parking area	\$1.875	\$4.700
Herndon Garage Renovation	\$12.000	Interior redesign and parking configuration redesign for more efficient operations.	\$6.000	\$6.000
Total	\$38.575		\$22.875	\$15.700

Note: No projects are budgeted after FY2017.

6.3. Passenger Facilities

Fairfax County has a comprehensive program for new and enhanced transit centers, park-and-ride lots, and bus stop improvements, described in Table 6-9. With the exception of the Bus Stop Improvement Program, all of the projects listed in the table are adopted in the Fairfax County Capital Improvement Program and funded. The Springfield Multimodal Transit Hub is funded by federal sources, but all of the other projects are funded by local and state funds.

In addition to the Bus Stop Improvement Program, Fairfax County DOT contracts with an advertising vendor to procure, install, and maintain bus shelters. The vendor pays for the shelter and the first 20 feet of concrete pad. This contract is structured so that the vendor sells the advertising space, and then pays Fairfax County either a percentage of the advertising revenue or a fixed amount per shelter. As of 2015, approximately 150 shelters have been installed under this program. In addition, the contractor also assumed maintenance of some existing shelters. This program is not included in the capital budget, because the vendor pays all of the capital costs.

Table 6-8: Passenger Facilities Description and Budget (Millions)

Project	Description	Project Budget	FY2016	FY2017	FY2018	FY2019	FY2020	FY2021	FY2022
Springfield Multimodal Transit Hub	Parking garage with 1,100 spaces and bus bays on the ground level.	\$74.6	\$4.8	\$49.7	\$16.6				
Richmond Highway Transit Center	This facility has been budgeted, but will be incorporated into the Bus Rapid Transit improvements for Richmond Highway.	TBD							
Herndon Metrorail Station Parking Garage	In anticipation of the Silver Line Phase 2 opening, Fairfax County will construct this facility with 1,950 parking spaces, bicycle amenities, pedestrian and vehicular bridges connecting to the existing garage, associated stormwater management, roadwork and transportation improvements, including bus bays that will be served by Fairfax Connector buses.	\$56.3	\$5.0	\$5.0	\$24.5	\$19.5			

Project	Description	Project Budget	FY2016	FY2017	FY2018	FY2019	FY2020	FY2021	FY2022
Innovation Center Metrorail Station Parking Garage	In anticipation of the Silver Line Phase 2 opening, Fairfax will construct this facility with 2,028 parking spaces, bicycle amenities, and associated stormwater management, roadwork and transportation improvements, including bus bays that will be served by Fairfax Connector buses. This facility is part of a private mixed-use development.	\$56.3	\$5.0	\$5.0	\$24.5	\$19.5			
GMU Fairfax Transit Center	This project will construct a new transit center at George Mason University with 10 bus bays; bus shelters; benches; trash receptacles; and space for a possible future transit store	\$1.0	\$0.8						
NVCC Transit Center	This project will include four bus bays, bus shelters, benches, trash receptacles, and space for possible future transit store. FCDOT is coordinating with the NVCC campus master planning department.	\$1.0		\$0.8					

Project	Description	Project Budget	FY2016	FY2017	FY2018	FY2019	FY2020	FY2021	FY2022
Stringfellow Road Park-and-Ride Lot	This existing 387 space park-and-ride lot is being expanded by approximately 300 spaces, for a total of 687 parking spaces. The project will also expand the kiss-and-ride area, and provide a transit center, including bike storage, a waiting area, and a Connector Store.	\$7.2	\$3.5	\$2.0					
Braddock Road Park-and-Ride	This project includes the construction of a 500 space Park-and-Ride facility in the Braddock Road corridor west of I-495, in conjunction with a related effort to expand transit and High Occupancy Vehicle (HOV) only lanes along Braddock Road between Burke Lake Road and I-495.	\$7.5		\$0.75	\$3.375	\$3.375			
Bus Stop Improvement Program	This program is budgeted at \$2 million annually, which is sufficient to cover an average of 75 improvements, including bus shelters, boarding and alighting areas, connections from stops to nearby sidewalks, and sidewalks improvements	\$15.5	\$1.75	\$1.5	\$1.5	\$1.5	\$1.5	\$1.5	\$1.5

6.4. Tools and Equipment

Tools and equipment replacement needs for FY2017 and FY2018 have been determined at a detailed level, while in the FY2019-FY2022 period FCDOT has an estimated replacement budget.

In FY2017, FCDOT recommends purchasing the following equipment:

- Floor Sweepers (3)
- Scissor Lift (1)
- Fork Lift (1)

In FY2018, FCDOT recommends purchasing the following equipment:

- Tire Machine (2)
- Lot Scrubber (1)
- Fork Lift (1)

The annual budget for tools and equipment replacement is shown in the table below. Local funding is utilized for tools and equipment.

Table 6-9 Tools and Equipment Budget

	FY17	FY18	FY19	FY20	FY21	FY22
Annual Budget	\$78,000	\$146,000	\$150,000	\$150,000	\$150,000	\$150,000

6.5. Technology Upgrades

Fairfax Connector is currently in the process of deploying a range of Intelligent Transportation Systems (ITS) technologies provided by Clever Devices, as part of phase 1 of the ITS program. As shown in the table below, this project will be followed by a second phase in FY2017. The technologies being deployed as part of phase 1 includes a Computer Aided Dispatch / Automatic Vehicle Locator system that will enable the Fairfax Connector to track the location of its vehicles and communicate with them in the field in real-time, automatic passenger counters which are passenger counting sensors and controllers to provide boarding and alighting information at every stop, automated vehicle announcements, and a real-time information system that provides predicted arrival information via electronic displaced and via phone. In FY2016, FCDOT will expend \$1.8 million to complete the \$6 million Phase 1 of the ITS program.

Fairfax Connector staff is recommending that additional technologies be included in phase 2 of the ITS program, possibly including an enhancement to the CAD/AVL system, automated vehicle management, that provides the real-time status of vehicle components (e.g., engine temperature and oil pressure), a yard management system that will allow Connector to track vehicles parked inside garages, and an in-vehicle surveillance system. Phase 2 is budgeted for FY2017 at \$3 million.

6.6. Transit System Expansion

There are a number of projects that are currently in planning, both led by Fairfax County and others that are collaborations with state and regional transit partners, to expand transit options in Fairfax County.

Fairfax County Projects

All of the transit system expansion projects currently underway by Fairfax County are part of Transportation Priorities Plan (TPP) projects. The TPP was adopted by the Board of Supervisors in January 2014. Each of these projects is partially funded for a six-year (2014-2019) period, with future funding needed for completing the project remaining unfunded.

Richmond Highway Public Transit Initiatives

Funding Status	Total Funding Required	Allocated Funding
Partially Funded	\$55.0 million	\$42.0 million

This project for the Richmond Highway Public Transit Initiative several major and minor transit centers, improving bus stops, implementing Richmond Highway Express (REX) bus service throughout the corridor, enhancing the advanced public transportation system aided by bus signal priority and bus pre-emption signalization, connecting gaps in the pedestrian network and establishing additional park-and-ride facilities.

Fairfax County Parkway Enhanced Bus Service

Funding Status	Total Funding Required	Allocated Funding
Partially Funded	\$47.0 million	\$7.1 million

This project includes funding for further study needed to identify sites and costs for potential transit stations and park-and-ride lots, and route-level planning along the heavily-traveled Fairfax County Parkway. Allocated funding will be used to purchase vehicles and implement enhanced bus service along the Parkway between the Herndon-Monroe Park-and-Ride Lot and Fort Belvoir and Springfield, providing a transit connection along a missing cross-county transit link.

The TDP recommendation listed below would be part of this TPP project. See Section 4.4 for a description of this recommendation.

- FY2020: Route 496.

South County Feeder Bus Service

Funding Status	Total Funding Required	Allocated Funding
Partially Funded	\$106.5 million	\$24.9 million

This project includes purchasing additional buses to improve service levels on bus routes serving Richmond Highway, Kingstowne, and Springfield. This project will be implemented in phases. Current funding levels include three years of operating costs and capital costs for 21 new buses, not all of which would be purchased during the six-year life of the TPP.

The TDP recommendations listed below would be part of this TPP project. See Section 4.4 for descriptions of these recommendations.

- FY2016: Route 109; Route 151.
- FY2017: Route 308; Routes 321/322; Route 313.
- FY2018: Route 101; Routes 161/162; Routes 231/232; Route 334.
- FY2019: Routes 171 and 172; Route 305; Routes 372 and 373.

Vienna Metrorail Feeder Bus Service Expansion

Funding Status	Total Funding Required	Allocated Funding
Partially Funded	\$132.5 million	\$46.8 million

Similar to the effort to improve South County bus service, this project will improve service levels on bus routes serving the Vienna Metrorail Station. Current funding levels include three years of operating costs and capital costs for 63 new buses, not all of which would be purchased during the six-year life of the TPP.

The TDP recommendations listed below would be part of this TPP project. See Section 4.4 for descriptions of these recommendations.

- FY2016: Routes 621, 630, 640, 650; Routes 624/634.
- FY2017: Route 451.
- FY2018: Route 463; Route 623.
- FY2019: Route 622; Route 625; Route 632.

Vienna/Centreville - Cross County Bus Service

Funding Status	Total Funding Required	Allocated Funding
Partially Funded	\$116.5 million	\$31.5 million

This project includes funding for route-level planning and implementation of new cross-county limited-stop/express bus services linking Vienna and Centreville to the Silver Line. Current funding levels include three years of operating costs and capital costs for 33 new buses, not all of which would be purchased during the six-year life of the TPP.

Regional Projects

Fairfax County is participating in the development of several new regional transit options that will serve Fairfax County.

Transform Interstate 66 project

The Virginia Department of Transportation is currently evaluating options to improve traffic conditions along Interstate 66 from the town of Haymarket to the Potomac River. The project is divided into two distinct parts: inside I-495 and outside I-495. Potential improvements include additional road lanes (including express lanes), improved high-frequency bus service, and new park-and-ride lots. The portion of the project covering outside the Beltway focuses on expanding multimodal options along the I-66 corridor, including enhanced bus service, improved bicycle and pedestrian infrastructure, TDM strategies, and conversion of existing regular lanes to toll and HOV-only lanes.

The TDP recommendation listed below would be part of the Traffic Management Plan, being developed to minimize congestion during the construction phase of the project outside the Beltway. See Section 4.4 for a description of this recommendation.

- Time To Be Determined: Routes 631 and 632; Routes 624/634.

More information about potential transit improvements associated with the project outside the Beltway is available at <http://outside.transform66.org/>.

Route 7 Transit Study from Tysons to Alexandria

The Northern Virginia Transportation Commission (NVTC) is conducting a study of alternatives for high-capacity transit in the Leesburg Pike corridor between Tysons and Alexandria. The second phase of the study is currently underway.

New Electronic Payments Program

FCDOT is participating in an effort led by the NVTC to develop the New Electronic Payments Program (NEPP). NEPP will provide additional payment options for transit riders beyond those supported by the current SmarTrip card.

7. Financial Plan

7.1. Assumptions

To create a six year financial plan for the TDP, a financial baseline scenario was established which reflects current revenues and operating costs. This baseline was then escalated to the end of the TDP period (FY2022) according to a number of assumptions. These assumptions are based on past performance and expected cost escalations, some of which are outside the control of Fairfax County.

Revenues

The model used to forecast Connector operating cost in this TDP uses different growth factors depending on revenue source.²⁶ Future fare increases were estimated to be five percent every other year. Fairfax Connector policy is to match WMATA Metrobus fares, including any increases. WMATA policy is to consider fare increases no more frequently than every other year, and historical increases have equaled approximately five percent.

Fairfax Connector is primarily supported with local funding. The TDP assumes General Fund revenue will grow at two percent a year. In addition, General Fund revenue is assumed in the model to be the funding source for Silver Line Phase 2 bus service changes.

County and Regional Transportation is a County Fund that includes HB2313 local revenues and Commercial and Industrial (C&I) tax revenues. These revenues can only be used to support new transit service that reduces traffic congestion. The model assumes that County and Regional Transportation's existing baseline allocation to Fairfax Connector will grow by one percent. In addition, Connector expects to get additional support from County and Regional Transportation through FY2017 that will be used to fund proposed service expansion outside of the Silver Line Phase 2 corridor.

In addition, Fairfax Connector receives funding from the County Fund, Metro Operations and Construction, projected to grow at four percent per year. Lastly, Connector receives funding from WMATA as an annual reimbursement for use of the West Ox operating division by Metrobus.

Ridership

The fare increases which are projected to occur every other year are, in turn, expected to have a negative effect on total ridership if increases are higher than inflation. The exact amount of lost ridership due to fare increases is highly speculative, as there are myriad reasons for people's decision to ride bus transit, with cost being just one of them. Historical data suggests that, in response to fare increases of five percent, ridership will decrease approximately one

²⁶ Fairfax County did not use the uniform five percent revenue escalation rate suggested by DRPT in order to ensure these projections best reflect local fiscal constraints.

percent based on an assumed fare elasticity of -0.245²⁷. These are conservative assumptions as the model assumes no ridership growth per revenue hour of service.

For new services, fare revenue from new service is treated by the TDP model as contingency.

Operating Costs

Fairfax Connector operating costs are driven largely by annual increases in the operating contract, and to a lesser extent by direct expenses such as fuel and program administration. The current contract specifies that the annual cost escalation will alternate between CPI and CPI plus two percentage points. The TDP assumes that CPI will remain uncharacteristically low through 2019, before returning to a long-term average of two percent. Fuel, another major input, is projected to mirror the growth rate in the World Bank's Global Crude Oil Price Projections. All other direct expenses (e.g. utilities, insurance, administrative staff) will grow at an assumed two percent rate.

Fairfax Connector operates on a balanced budget. Any remaining funds after costs are subtracted from revenue represent annual "carry-over," which is operating and capital expenditures obligated in a prior fiscal year, but paid for through future fiscal year funding.

Capital Costs

Capital costs are funded through a variety of federal, state, and local sources.

Federal Funding

Fairfax County uses federal funding to support the development of large transit infrastructure projects. The construction of the Springfield Multimodal Transportation Hub is partially funded by federal Congestion Mitigation, and Air Quality (CMAQ) funding and Regional Surface Transportation Program (RSTP) funding.

The Board of Supervisors has adopted a policy that stipulates that no federal funds be used for bus purchases or specific Fairfax Connector capital costs.

State Funding

State funding includes reimbursement from Virginia Department of Rail and Public Transportation for a portion of replacement vehicle capital costs; state grants; and regional funding from HB 2313, the Statewide Transportation funding plan approved by the General Assembly in 2013.

Local Funding

Local funding typically provides the majority of all Fairfax Connector capital needs. Local funding is allocated on an annual basis through the development of the Fairfax County budget and six-year Capital Improvement Plan. Local funding comes from the Fairfax County General

²⁷ WMATA, *Ridership and Revenue Econometric Forecasting Model Version 3*, 2011.

Fund, the Fairfax County Commercial and Industrial (C&I) Tax for Transportation, HB 2313 local revenues, and General Obligation Bonds.

The C&I tax was approved by the Fairfax County Board of Supervisors in September 2007. On January 28, 2014, the Board of Supervisors approved its Transportation Priorities Plan for FY2015-2020. This six-year plan allocated all available revenues, including local revenues, to transportation projects. The Board set a C&I rate of 12.5 cents, which is expected to generate \$51.6 million.

Fairfax County has created a sinking fund to cover future bus replacement costs, which begin to occur in FY2022. The County initially contributed \$5.7 million to this fund, with contributions increasing in future years.

7.2. Operating and Capital Budget

Table 7-1 and Table 7-2 show, respectively, Fairfax Connector's operating revenue and expenses. Table 7-3 and Table 7-4 show, respectively, Fairfax Connector's capital revenues and expenses.

Table 7-1: Operating Revenue

	FY2016	FY2017	FY2018	FY2019	FY2020	FY2021	FY2022
Fare Revenue	\$12,247,938	\$12,370,390	\$12,494,094	\$12,619,034	\$12,682,130	\$12,808,951	\$12,937,041
Advertising	\$340,000	\$350,000	\$402,000	\$404,040	\$406,000	\$408,222	\$510,386
Miscellaneous Revenue	\$160,000	\$160,000	\$160,000	\$160,000	\$160,000	\$160,000	\$160,000
Metro Reimbursement	\$2,400,000	\$2,200,000	\$2,200,000	\$2,200,000	\$2,200,000	\$2,200,000	\$2,200,000
General Fund	\$34,547,739	\$33,909,649	\$36,648,242	\$37,381,207	\$38,128,831	\$38,891,408	\$39,669,236
County and Regional Trans	\$27,054,388	\$31,603,555	\$36,942,720	\$37,725,489	\$41,732,543	\$42,127,630	\$44,218,597
State Aid (NVTC)	\$21,333,338	\$15,203,928	\$20,320,000	\$21,450,000	\$22,632,500	\$23,874,125	\$25,177,831
Transfer from Fund 30000	\$2,591,895	\$2,695,571	\$2,803,394	\$2,915,529	\$3,032,151	\$3,153,437	\$3,279,574
DRPT Funding	\$322,000	\$283,285	\$371,356	\$371,356	\$371,356	\$371,356	\$371,356
Carryover	\$2,384,292						
Total Revenue	\$103,381,590	\$98,776,377	\$112,341,806	\$115,226,655	\$121,345,511	\$123,995,128	\$128,524,021

Table 7-2: Operating Costs

	FY2016	FY2017	FY2018	FY2019	FY2020	FY2021	FY2022
Contract Operations (All Service)	\$76,526,790	\$76,784,648	\$87,156,534	\$90,800,164	\$96,168,161	\$98,028,373	\$101,758,160
Direct Expenses	\$22,107,115	\$16,896,129	\$19,987,759	\$19,125,028	\$19,769,858	\$20,451,112	\$21,139,906
VRE Payments	\$4,747,685	\$5,095,601	\$5,197,513	\$5,301,463	\$5,407,492	\$5,515,642	\$5,625,955
Total Operating Costs	\$103,381,590	\$98,776,378	\$112,341,806	\$115,226,655	\$121,345,511	\$123,995,128	\$128,524,021
Excluding VRE	\$98,633,905	\$93,680,777	\$107,144,293	\$109,925,192	\$115,938,019	\$118,479,486	\$122,898,066

Table 7-3: Capital Revenue

	FY2016	FY2017	FY2018	FY2019	FY2020	FY2021	FY2022
Federal Funding	\$4,800,000	\$49,725,000	\$16,575,000				
State Funding *	\$10,640,000	\$14,720,000	\$100,000	\$3,861,676	\$6,918,616		
State Aid (C&I and GO Bonds)	\$44,625,000	\$35,322,000	\$63,941,000	\$54,445,000	\$12,610,000	\$13,180,000	\$13,780,000
Total Revenue	\$60,065,000	\$99,767,000	\$80,616,000	\$58,306,676	\$19,528,616	\$13,180,000	\$13,780,000

* Includes regional HB 2313 funding allocated by NVTa.

Table 7-4: Capital Costs

	FY2016	FY2017	FY2018	FY2019	FY2020	FY2021	FY2022
Vehicles							
Bus Fleet Expansion	\$8,840,000	\$5,572,000		\$3,861,676	\$6,818,616		
Bus Replacement Fund	\$5,700,000	\$7,250,000	\$7,720,000	\$8,220,000	\$8,760,000	\$9,330,000	\$9,930,000
Bus Rehabilitation Expenses		\$3,244,000	\$2,200,000	\$2,200,000	\$2,200,000	\$2,200,000	\$2,200,000
Non-Revenue Vehicles			\$100,000		\$100,000		
Operations and Maintenance Facilities							
West Ox Bus Garage Construction	\$15,000,000	\$5,000,000					
Huntington Garage Renovation	\$1,875,000	\$4,700,000					
Reston/Herndon Bus Garage Renovation	\$6,000,000	\$6,000,000					
Passenger Facilities							
Springfield Multimodal Transit Hub	\$4,800,000	\$49,725,000	\$16,575,000				
Herndon Metrorail Station Parking Garage	\$5,000,000	\$5,000,000	\$24,500,000	\$19,500,000			
Innovation Center Metrorail Station Parking Garage	\$5,000,000	\$5,000,000	\$24,500,000	\$19,500,000			
GMU Fairfax Transit Center	\$800,000						
NVCC Transit Center		\$800,000					
Stringfellow Park-and-Ride Expansion	\$3,500,000	\$2,000,000					
Braddock Road Park-and-Ride		\$750,000	\$3,375,000	\$3,375,000			
Bus Stop Improvement Program	\$1,750,000	\$1,500,000	\$1,500,000	\$1,500,000	\$1,500,000	\$1,500,000	\$1,500,000
Tools and Equipment		\$78,000	\$146,000	\$150,000	\$150,000	\$150,000	\$150,000
Technology							
ITS Phase 1	\$1,800,000						
ITS Phase 2		\$3,000,000					
Total	\$60,065,000	\$99,767,000	\$80,616,000	\$58,306,676	\$19,528,616	\$13,180,000	\$13,780,000

8. TDP Monitoring and Evaluation

This TDP has presented a comprehensive summary and in-depth analysis of the Fairfax Connector system. This document represents the culmination of more than two years of data collection, operational analysis, public outreach, and stakeholder meetings, all of which were important steps in the creation of this TDP. Key elements that have been addressed in this TDP include:

- An overview of Fairfax Connector's history, governance, and organizational structure;
- An overview of its existing services, fleet, facilities, policies, and public outreach processes;
- A compilation of goals, objectives, and standards that guide operations and service delivery;
- An overview of established performance standards with specific definitions for each measure;
- A historical analysis of service and financial characteristics and a comparison to peer agencies;
- An on-board passenger survey detailing rider demographics, travel behavior, and opinions;
- Compilation of staff and stakeholder outreach regarding current and proposed changes to existing transit service;
- A summary of existing and future land use, population, and employment trends for the service area;
- An assessment of unconstrained service and facility projects to meet community transportation needs; and
- A fiscally-constrained six-year operating and capital financial plan.

The TDP is intended to be a dynamic document which reflects the changing values and priorities of Fairfax County residents and businesses. It helps to inform decision-makers, acting as a comprehensive source of baseline data and analysis. By summarizing Fairfax Connector's challenges and opportunities, and establishing clear and measurable performance standards, the TDP provides a framework which helps guide day-to-day decisions.

This chapter outlines the steps to be taken to ensure that the TDP remains coordinated with local, regional, and state goals. Information is also included on how Fairfax Connector staff will monitor actual system performance relative to the standards and goals included in this TDP.

8.1. Consistency with Other Plans and Programs

Although the goals and objectives outlined in Section 2.1 are primarily taken from the County's Comprehensive Plan, the Transportation Goal of the Comprehensive Plan should be updated to reflect the goals, objectives, and strategies contained in this TDP.

On a regional scale, Fairfax County should continue to coordinate with MWCOC, the Northern Virginia Transportation Commission, and WMATA to ensure that the County's vision for public

transit is reflected and supported by regional policies (as well as the reverse: regional goals reflected in the Connector service).

Internally, the TDP should be disseminated widely within the agency to ensure that all departments (e.g. service planning, facilities, operations) are aligned and working toward the same goals. All departments will provide input to the annual updates of this TDP, much as they did in the development of this initial document.

8.2. Service Performance Monitoring

Section 2.2 of this document outlines the specific metrics used to continually monitor service performance. Fairfax Connector staff regularly report on these metrics and evaluate the system's ability to meet well-defined performance standards. Corrective measures are to be taken if these monitoring efforts identify service performance degradation (e.g., through route alignment adjustments, headway adjustments, or negotiation with the County's contractor, MV Transportation).

8.3. Annual TDP Update

DRPT requires the submittal of an annual letter that provides updates to the contents of this TDP. Fairfax Connector staff will work with DRPT to provide this information in a timely manner. This annual update represents a valuable opportunity for Connector staff to evaluate and report on the system's progress towards maintaining and expanding transit service which is in line with the County's goals and objectives.

9. Appendices

9.1. Transit Route Maps

9.2. FTA Triennial Review

9.3. Fleet Inventory from OLGA

9.4. Three Year Operating and Capital Expenses and Revenue (audited)

9.5. Fairfax County Title VI Program

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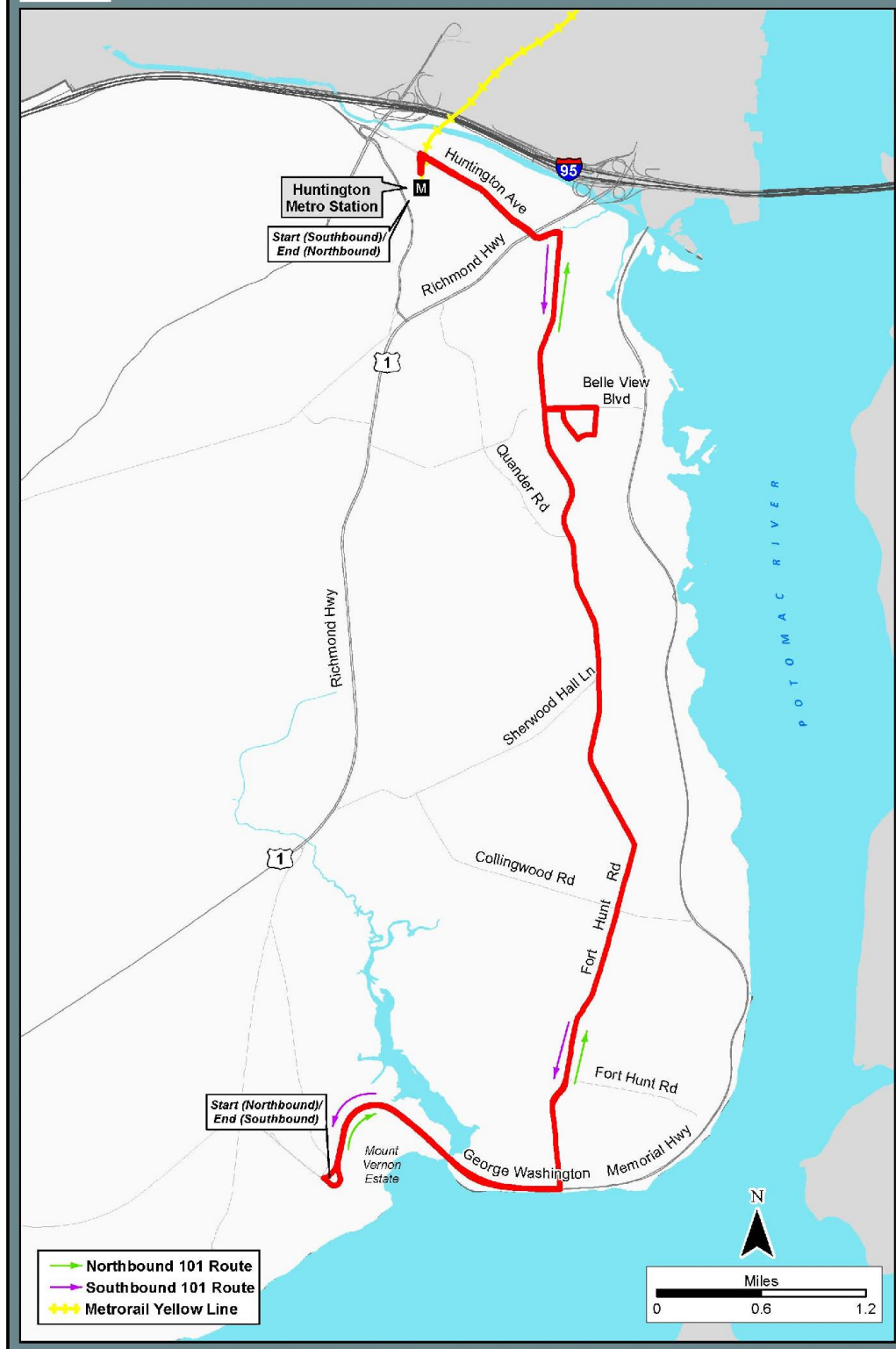
9.1. Transit Route Maps

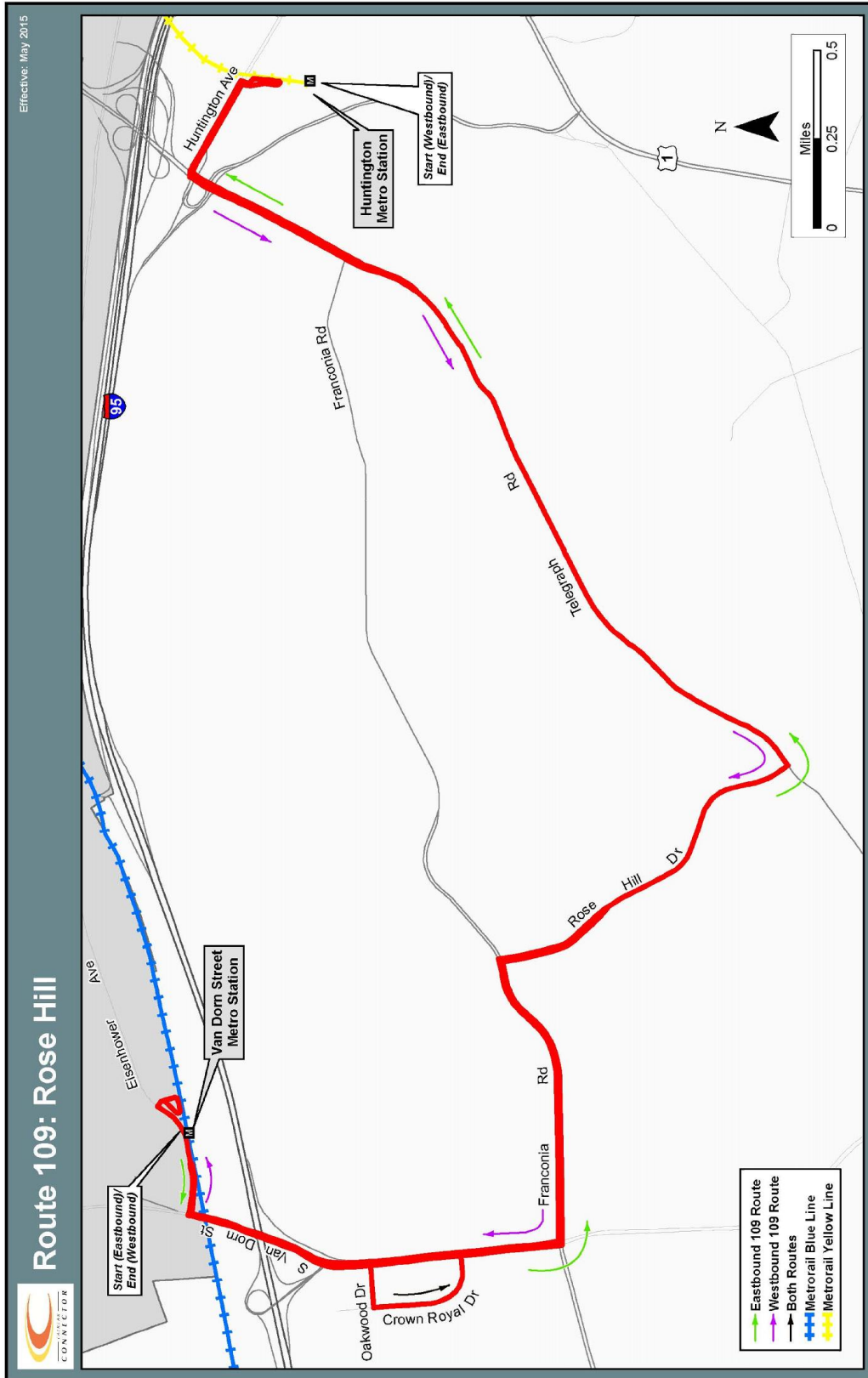
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Route 101: Fort Hunt

Effective: May 2015

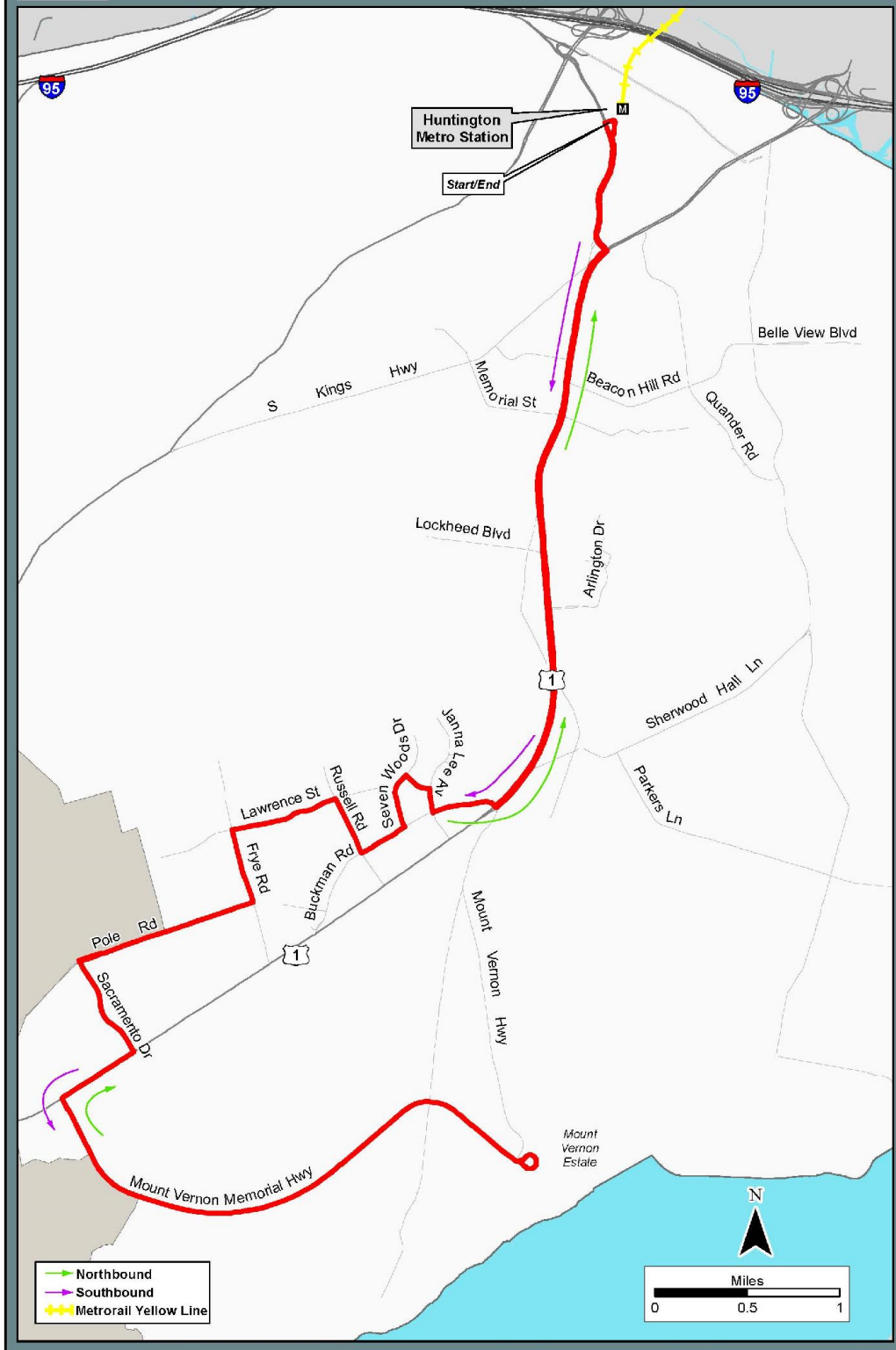






Route 151: Woodlawn

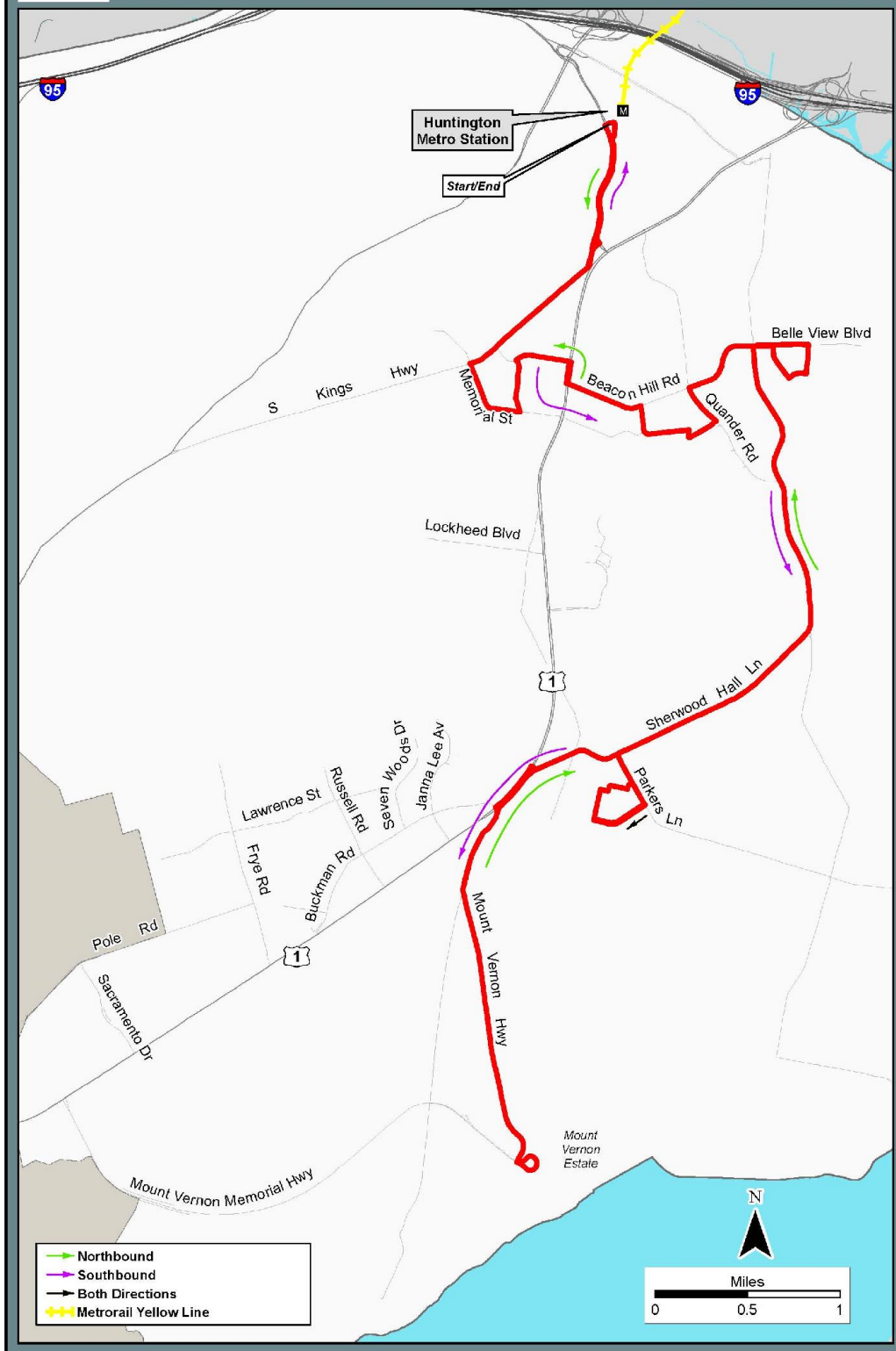
Effective: May 2016





Route 152: Groveton - Mount Vernon

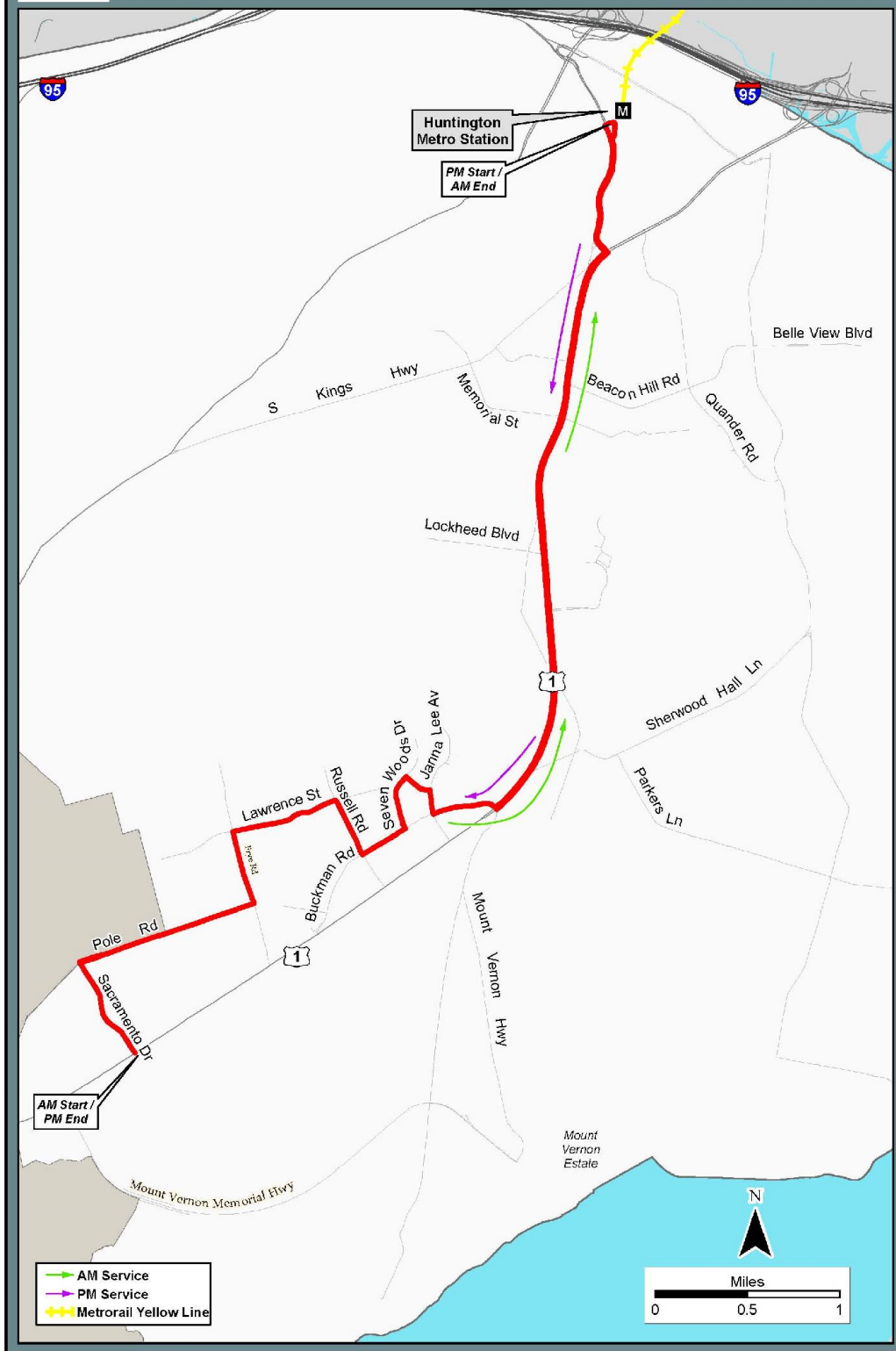
Effective: May 2015





Route 159: Engleside - Mount Vernon

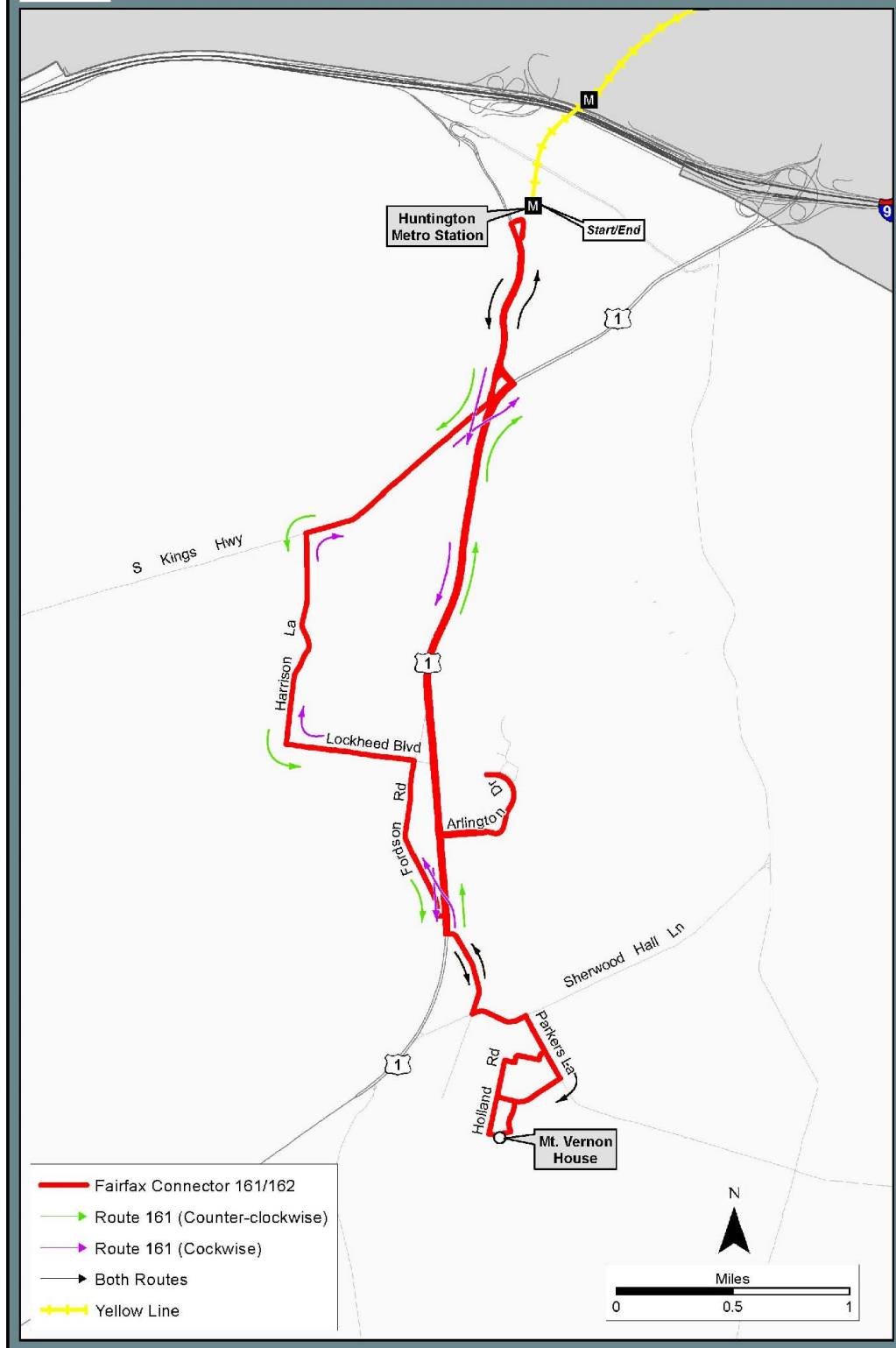
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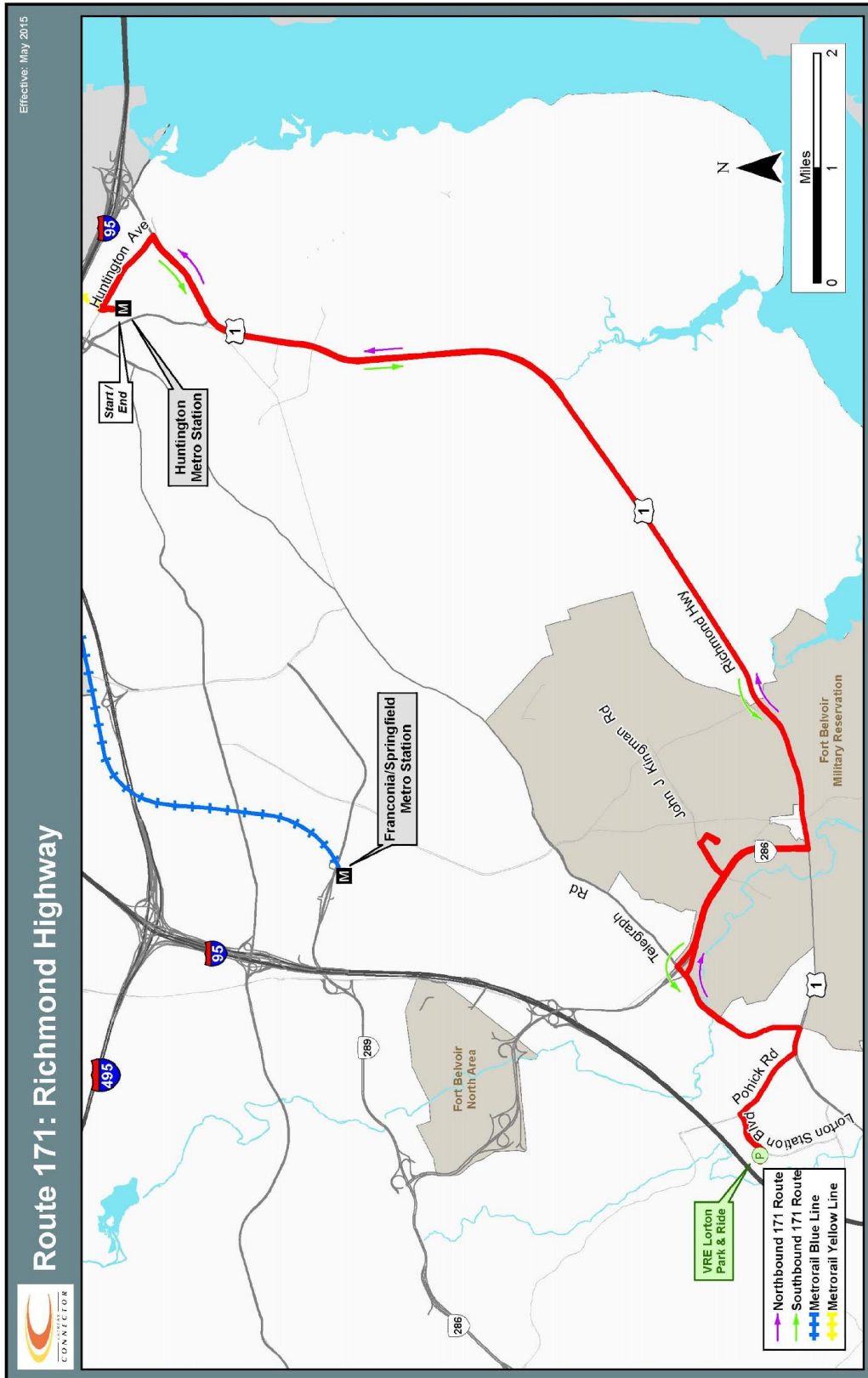


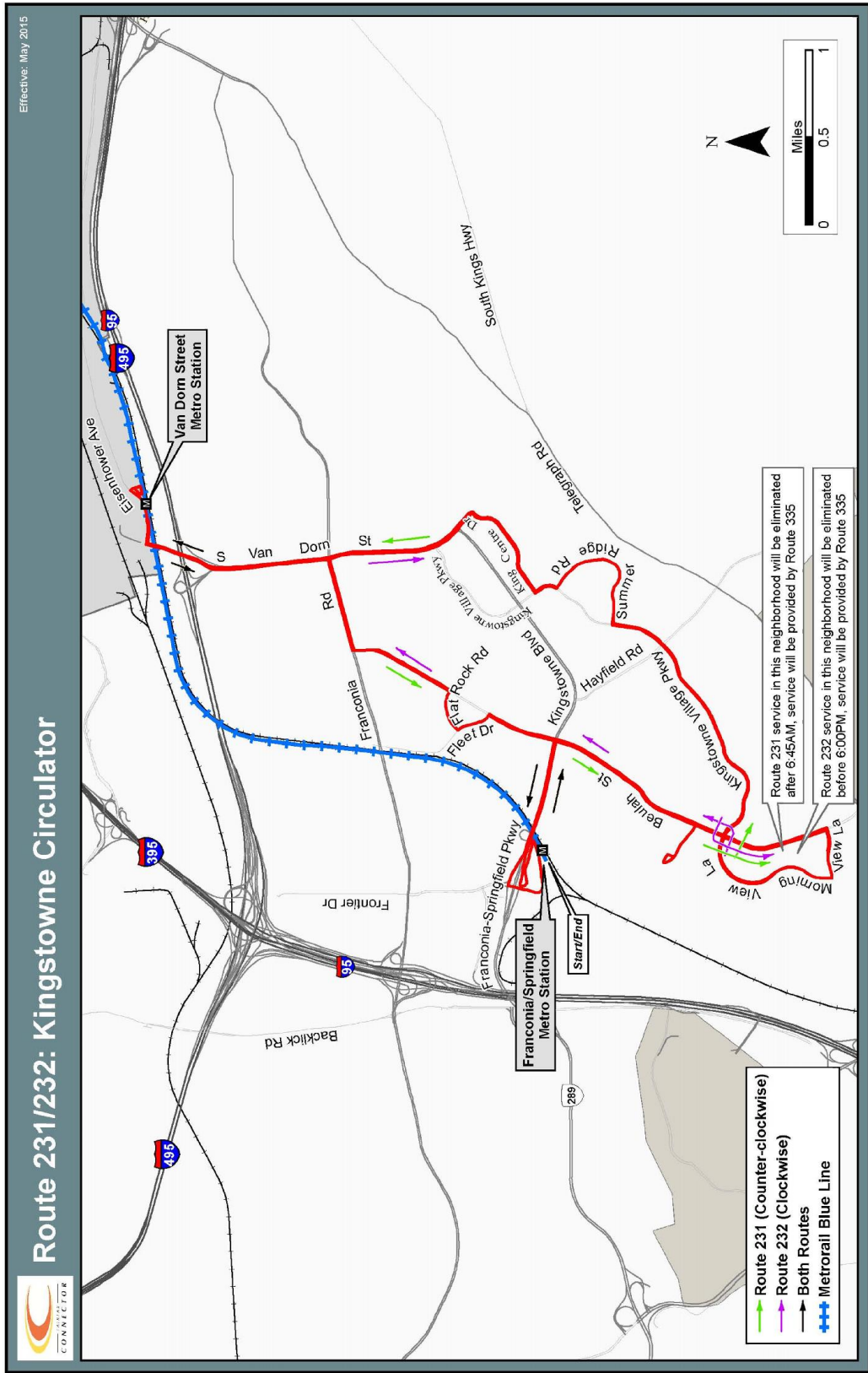


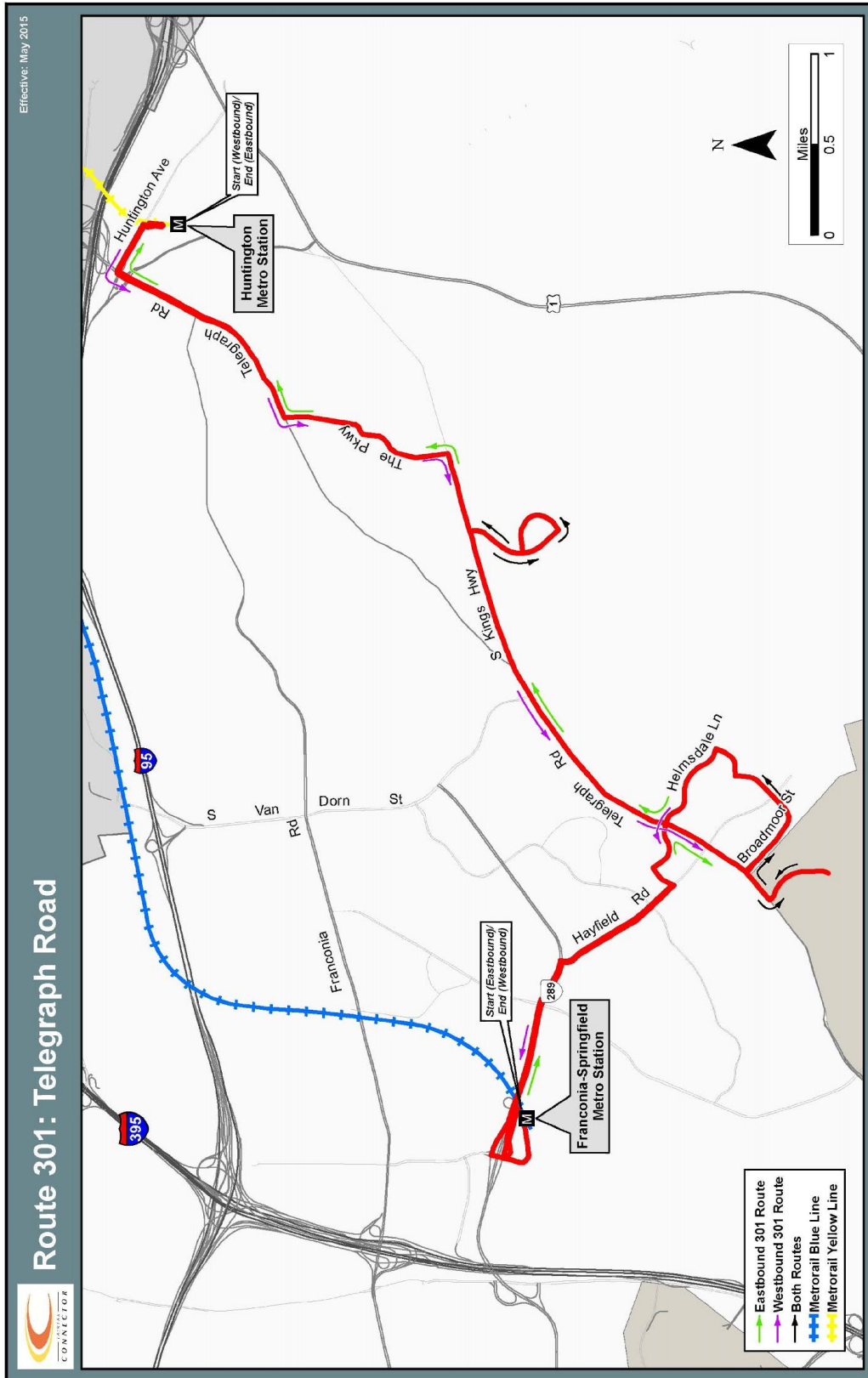
Route 161/162: Hybla Valley

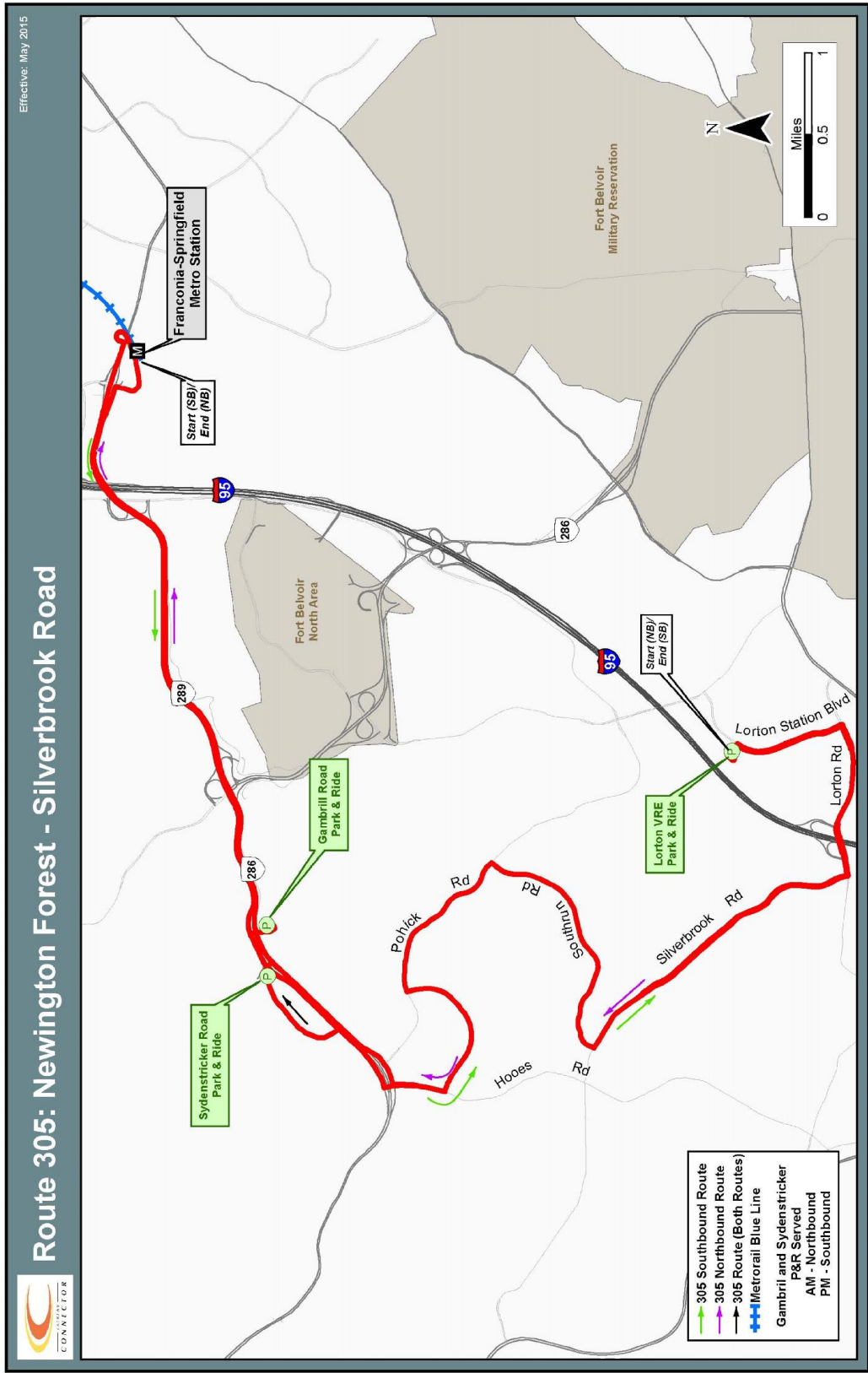
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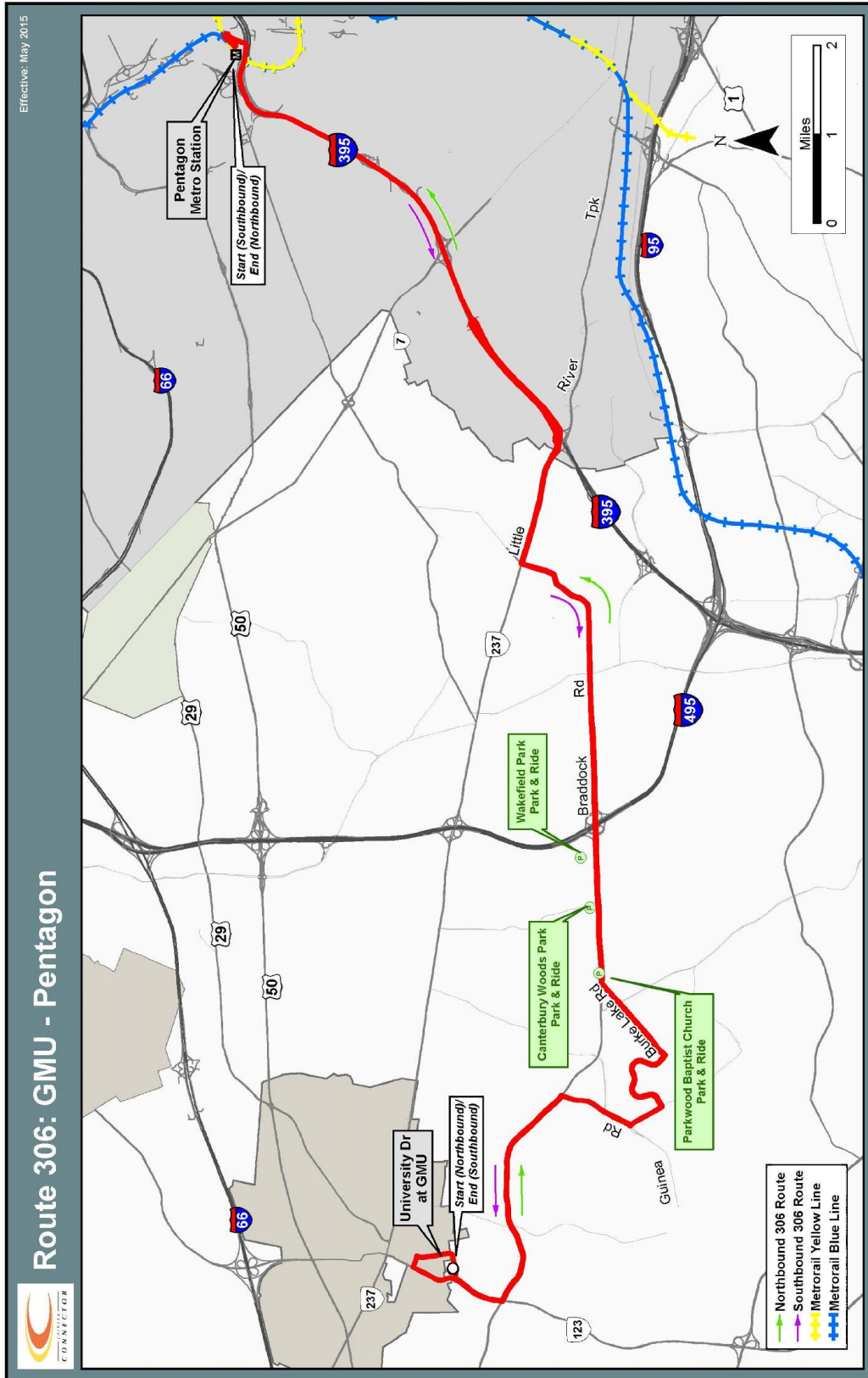


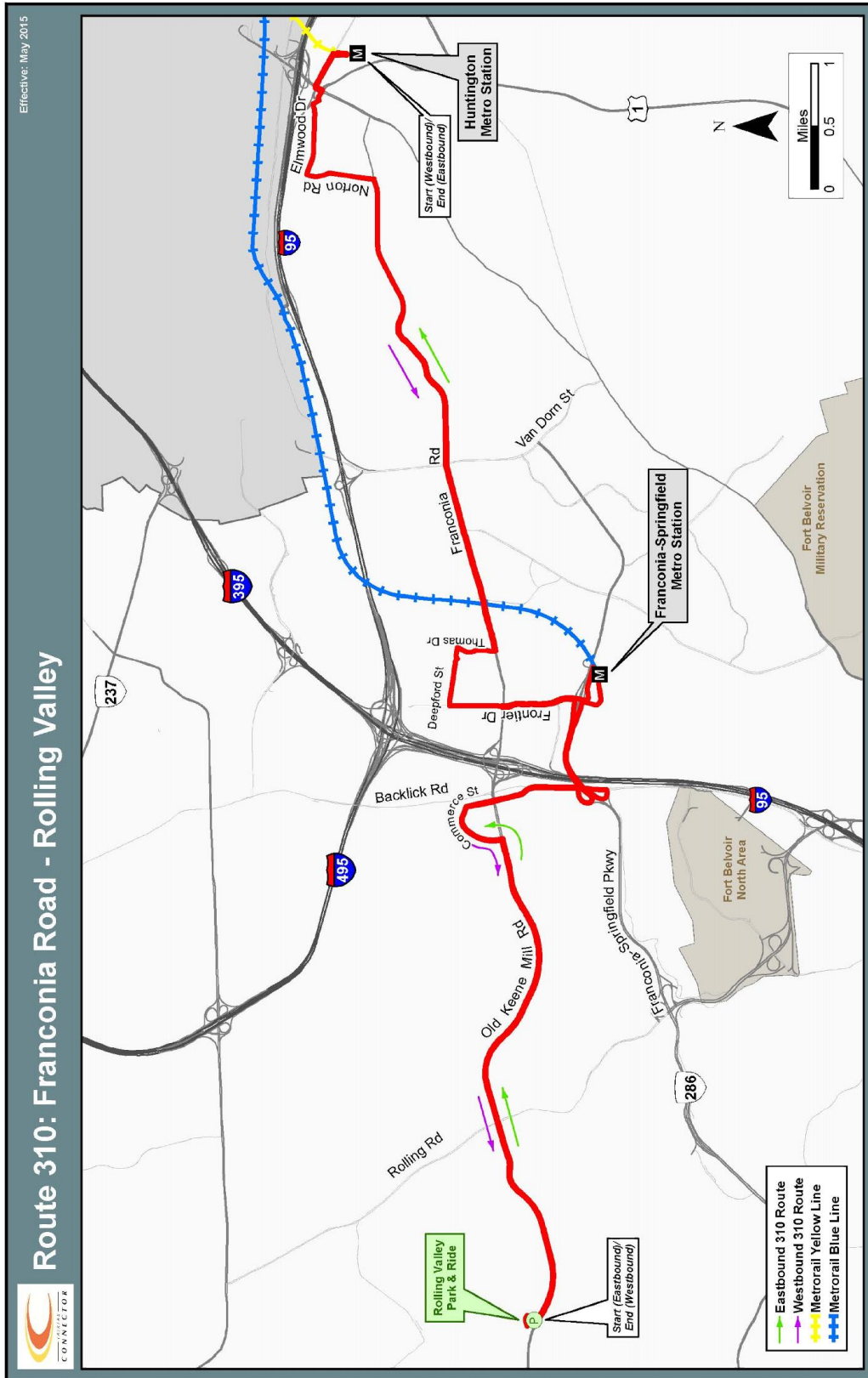




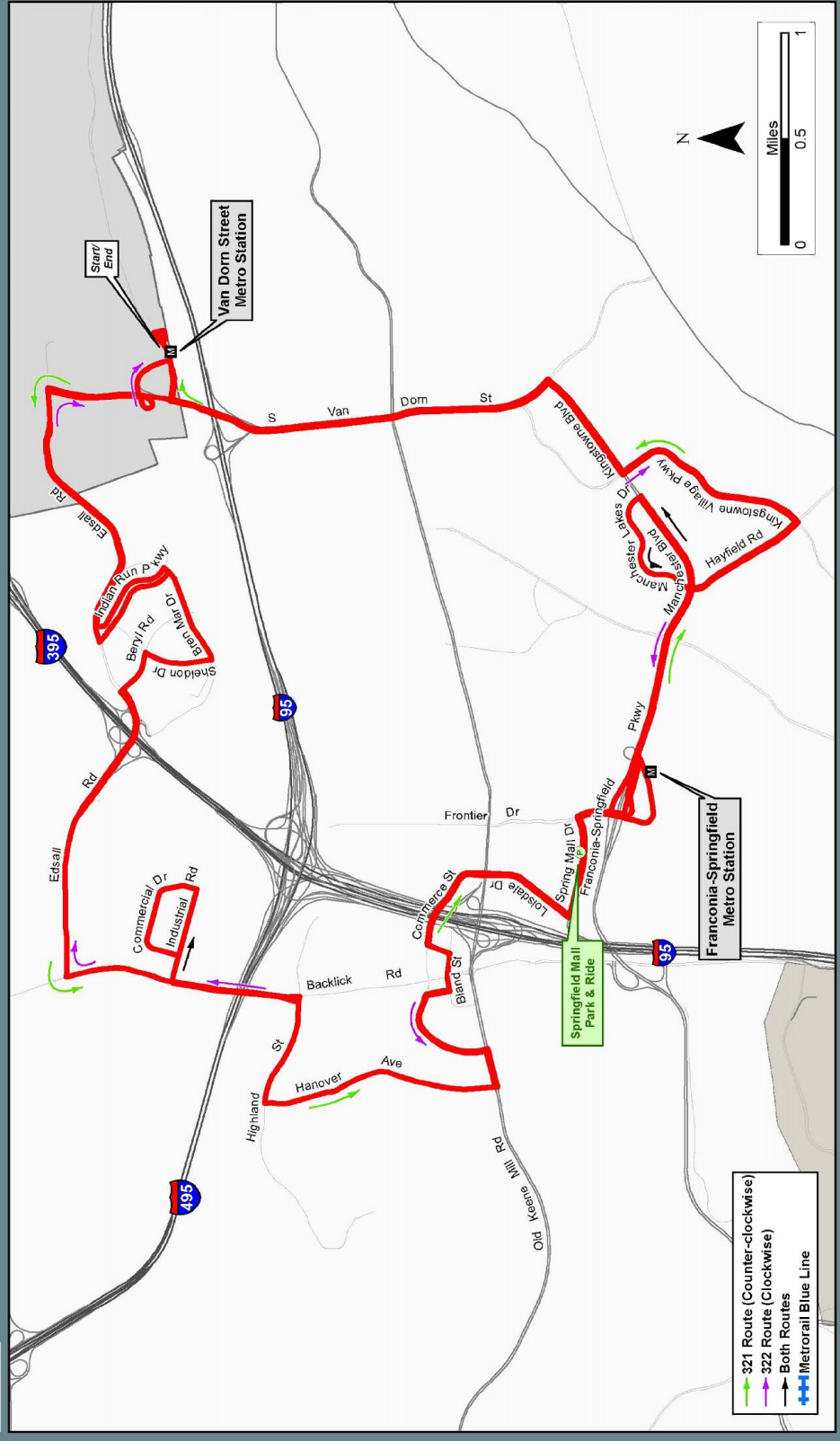




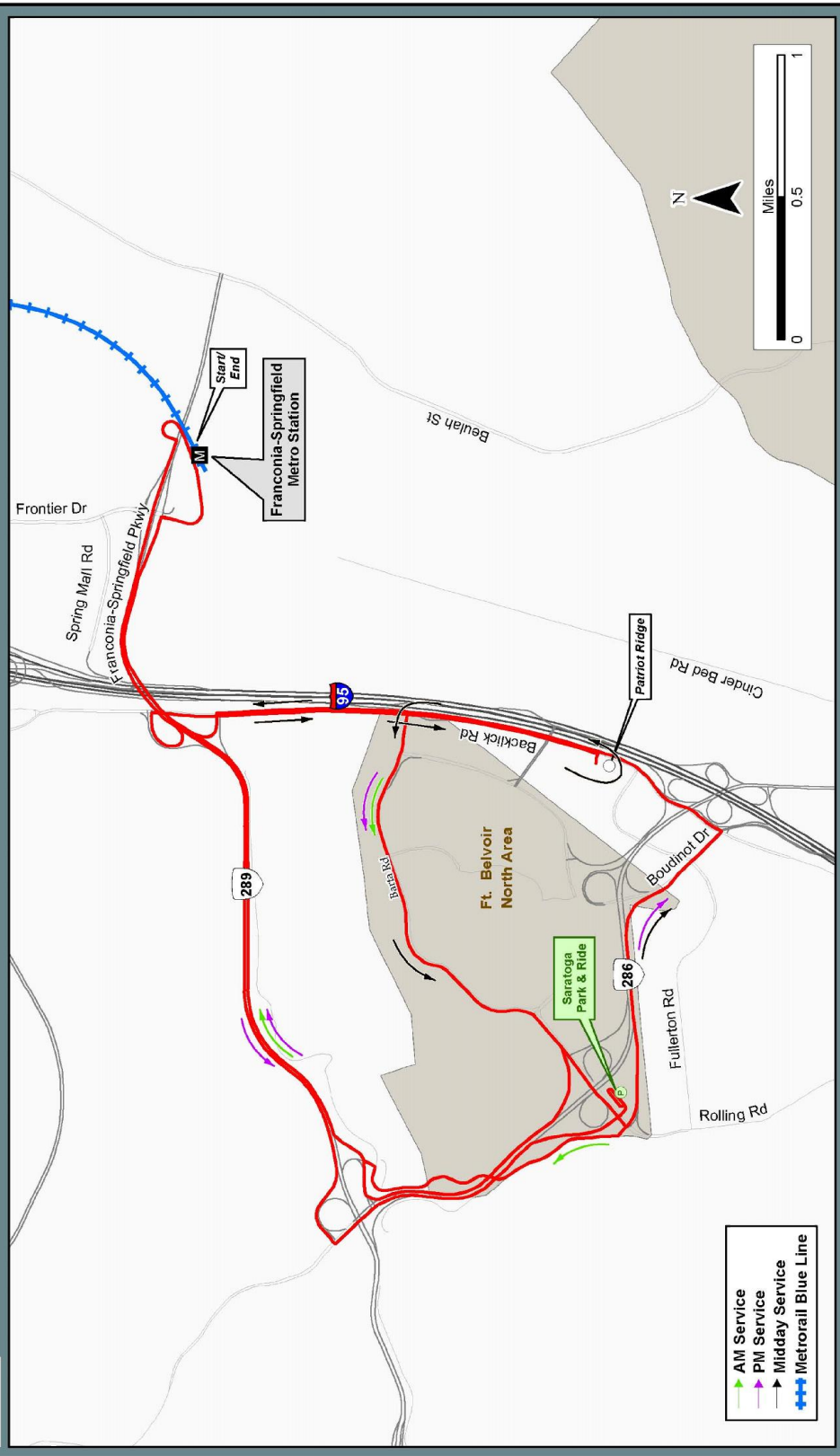




Route 321/322: Greater Springfield Circulator



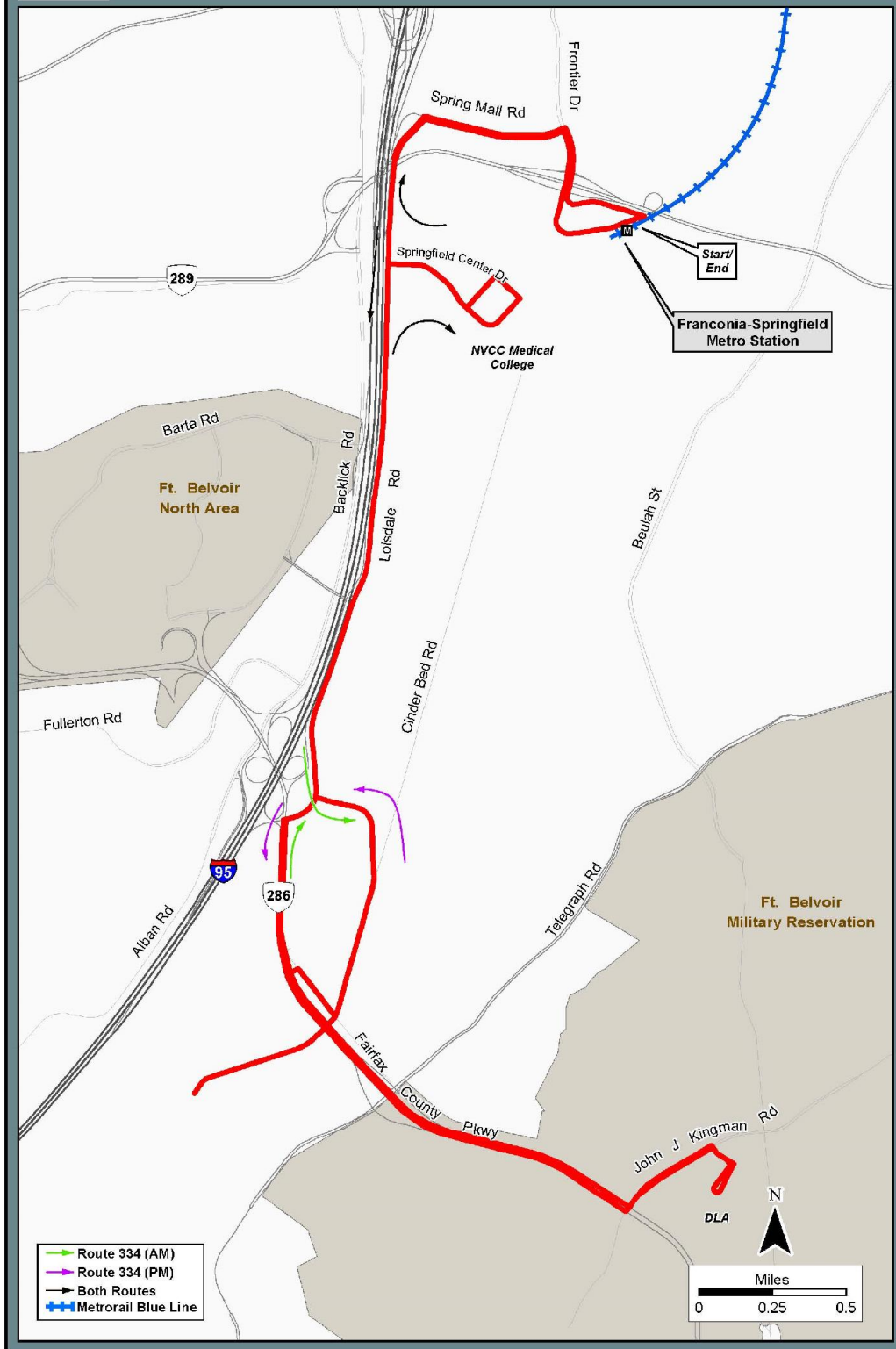
Route 333: Patriot Ridge - Saratoga

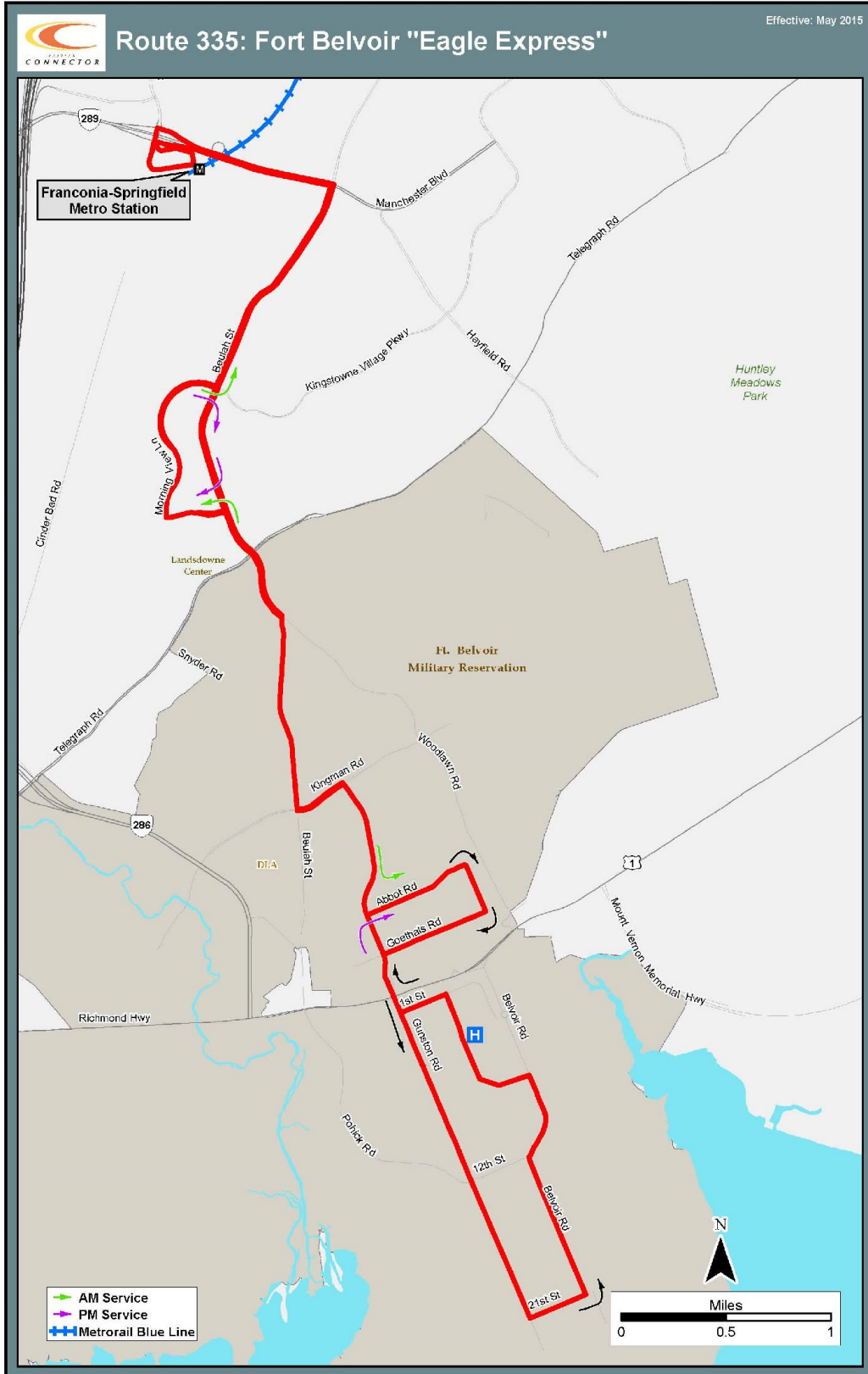


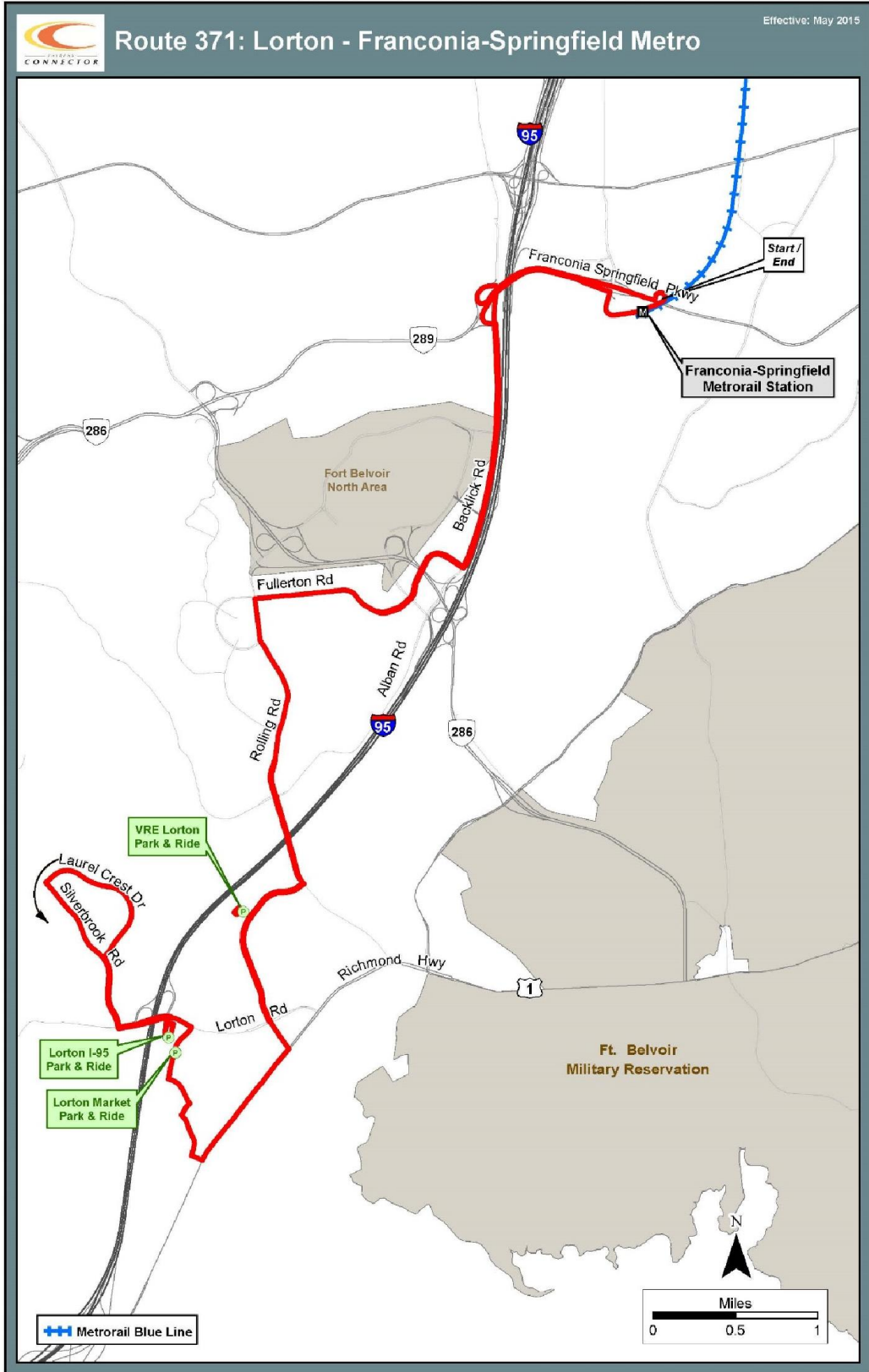


Route 334: DLA Circulator

Effective: May 2015



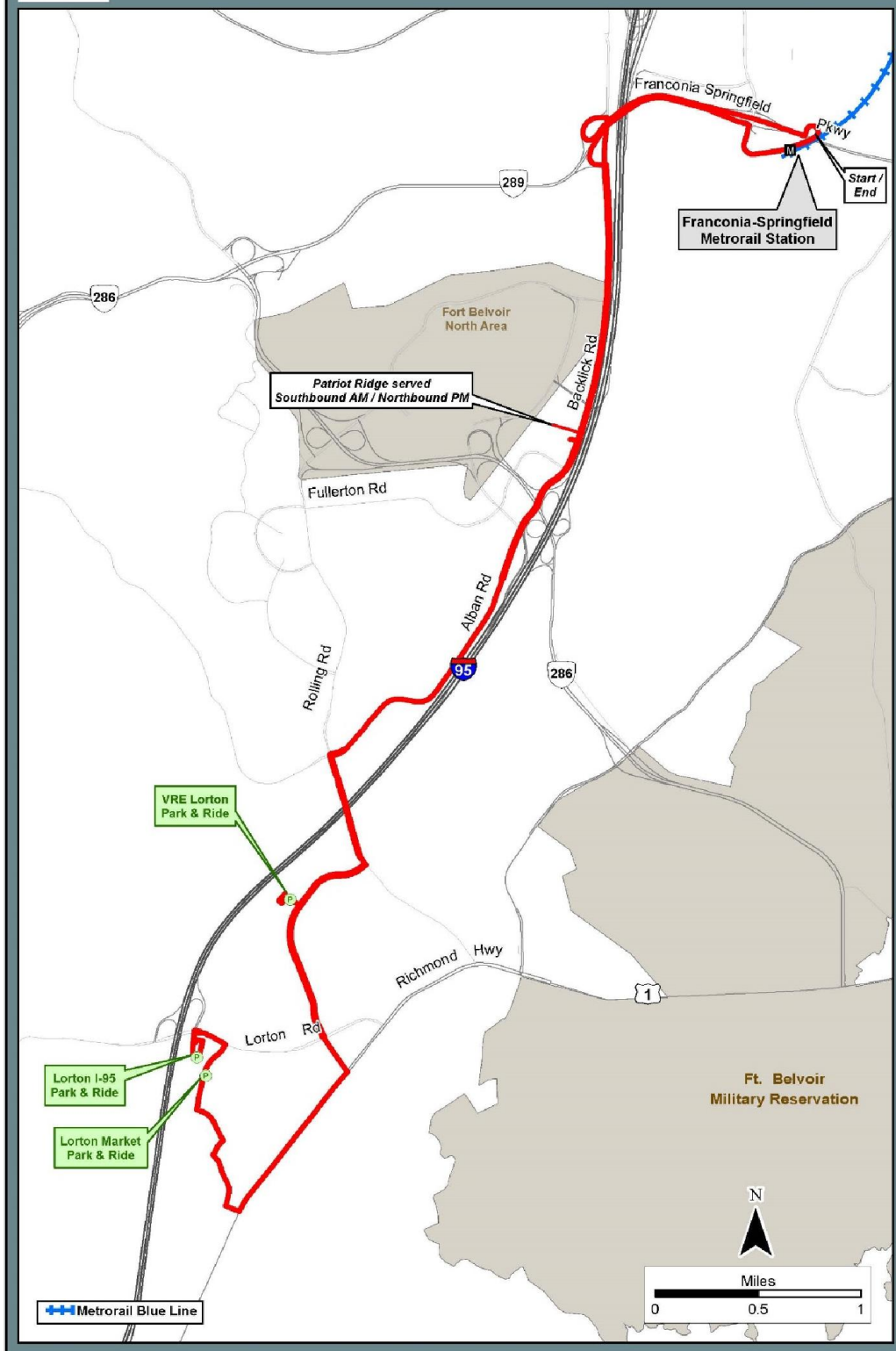






Route 372: Lorton - Alban Road

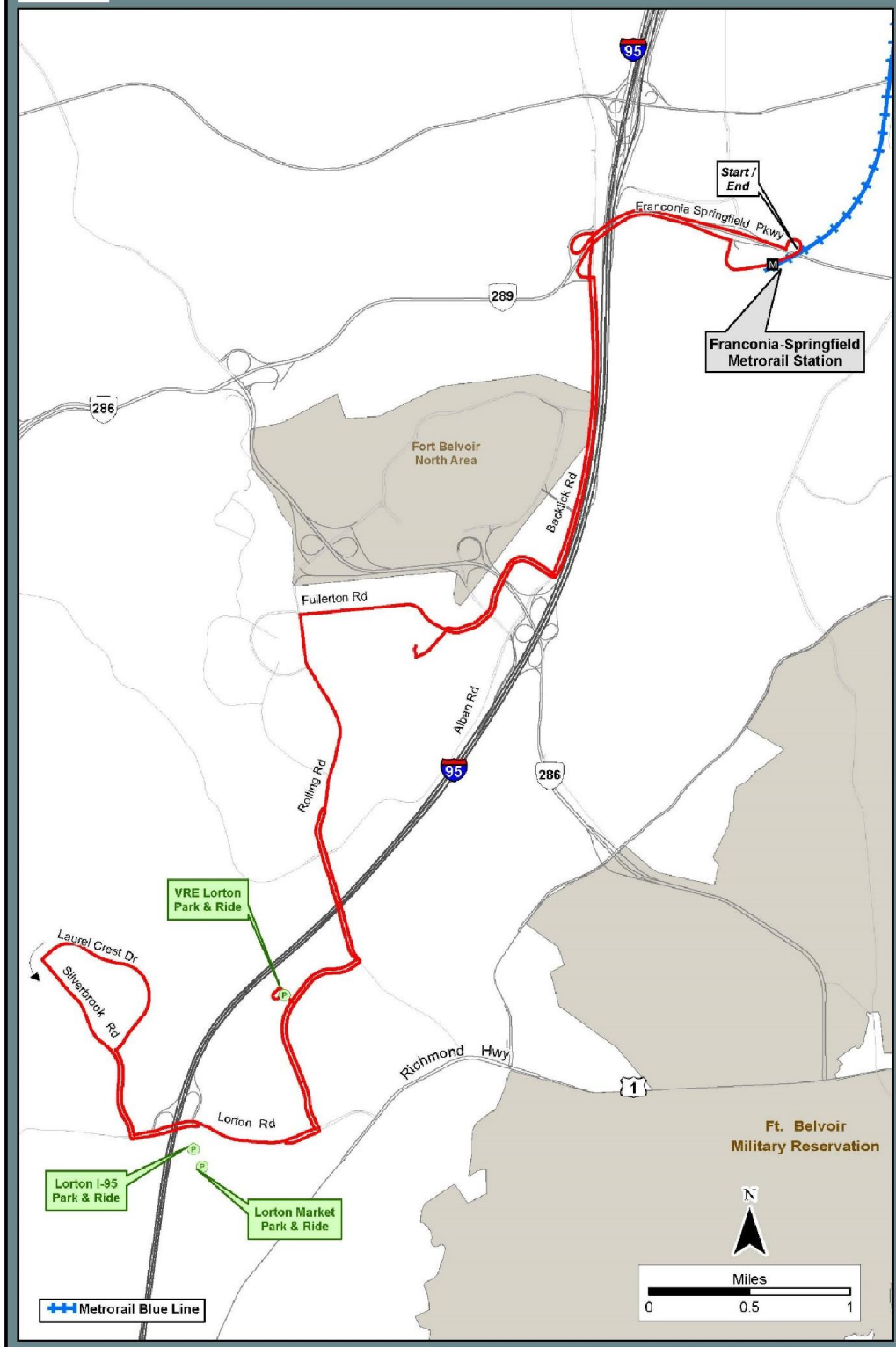
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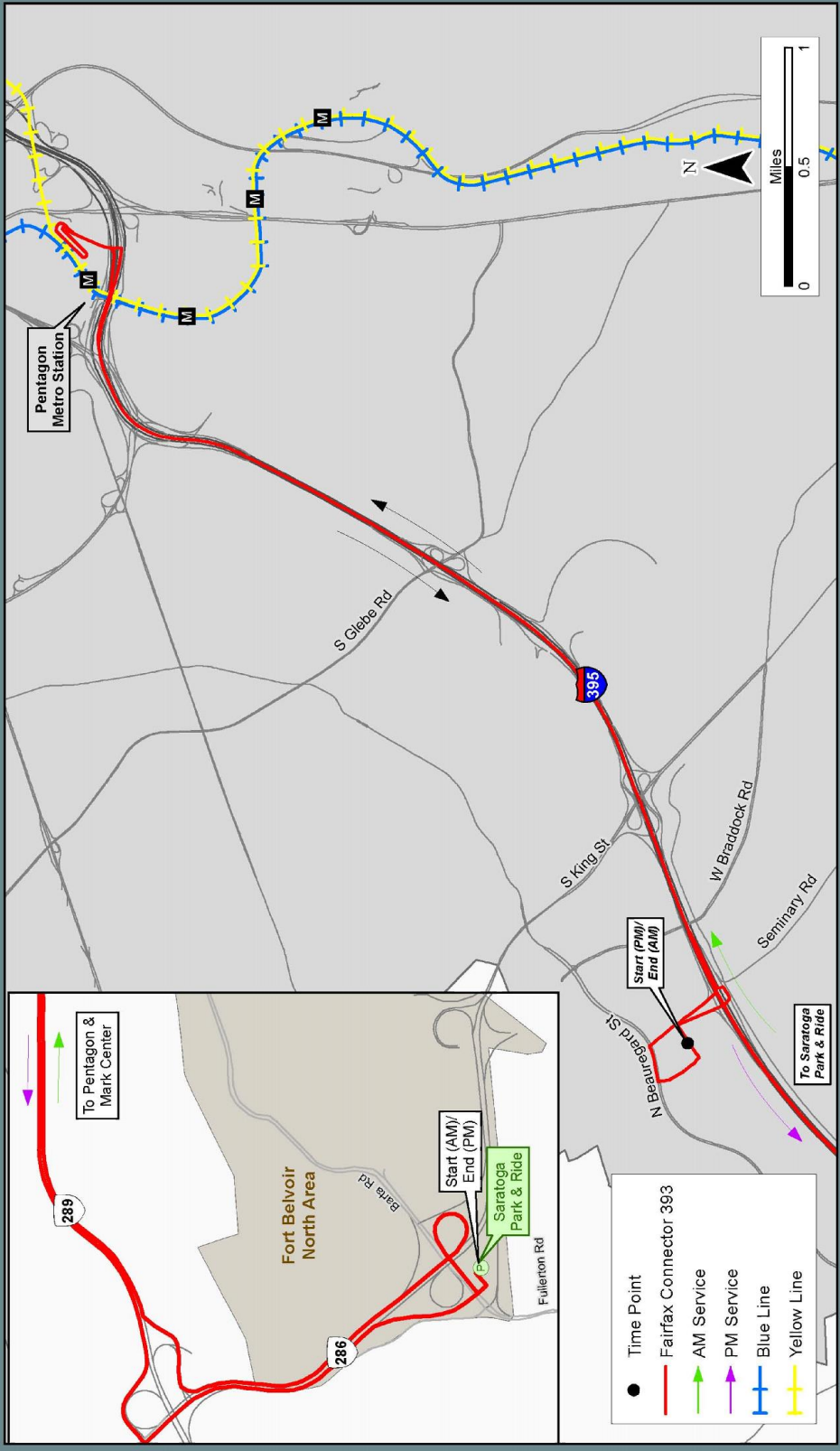


Route 373: Lorton - Fullerton Road

Effective: May 2015



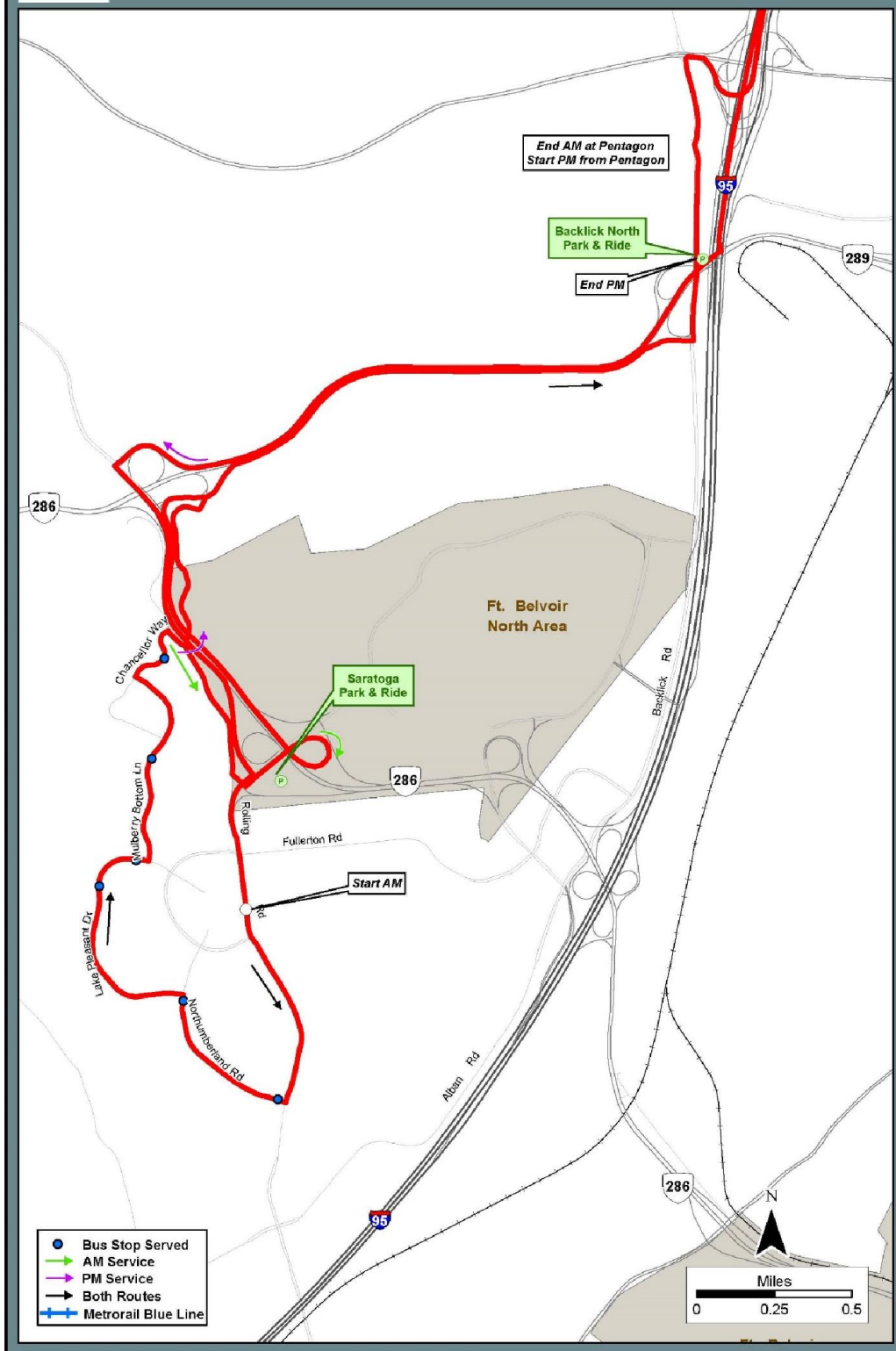
Fairfax Connector 393: Saratoga - Pentagon - Mark Center

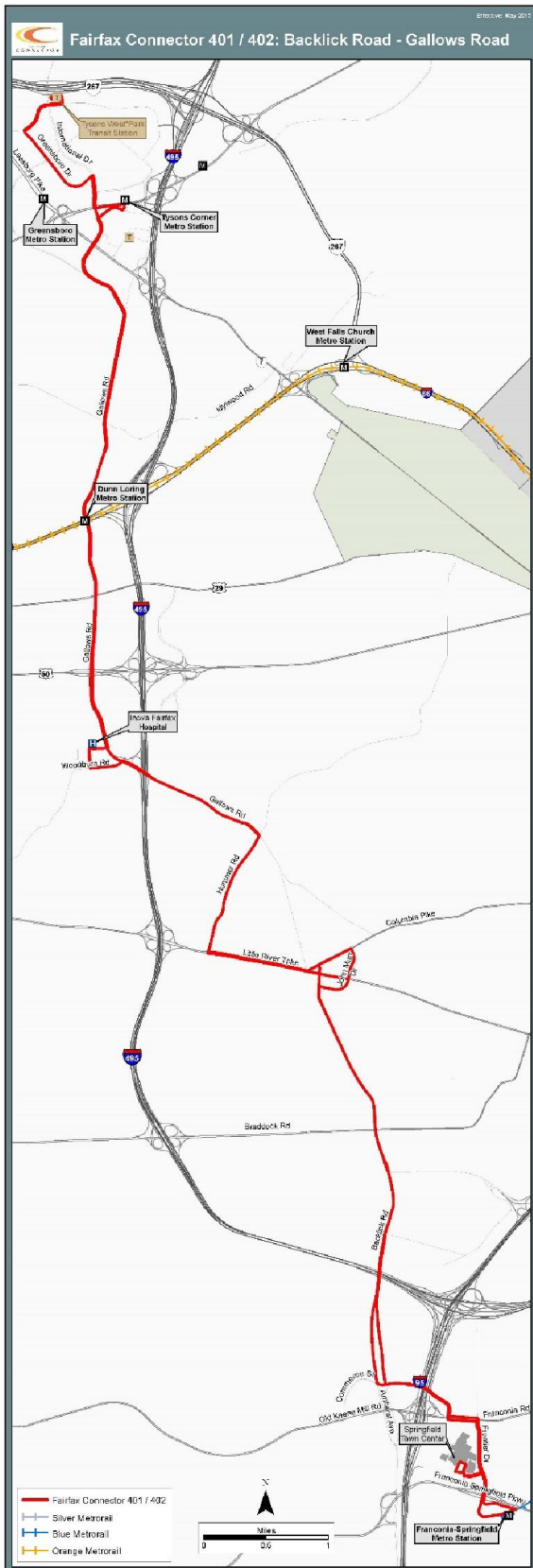


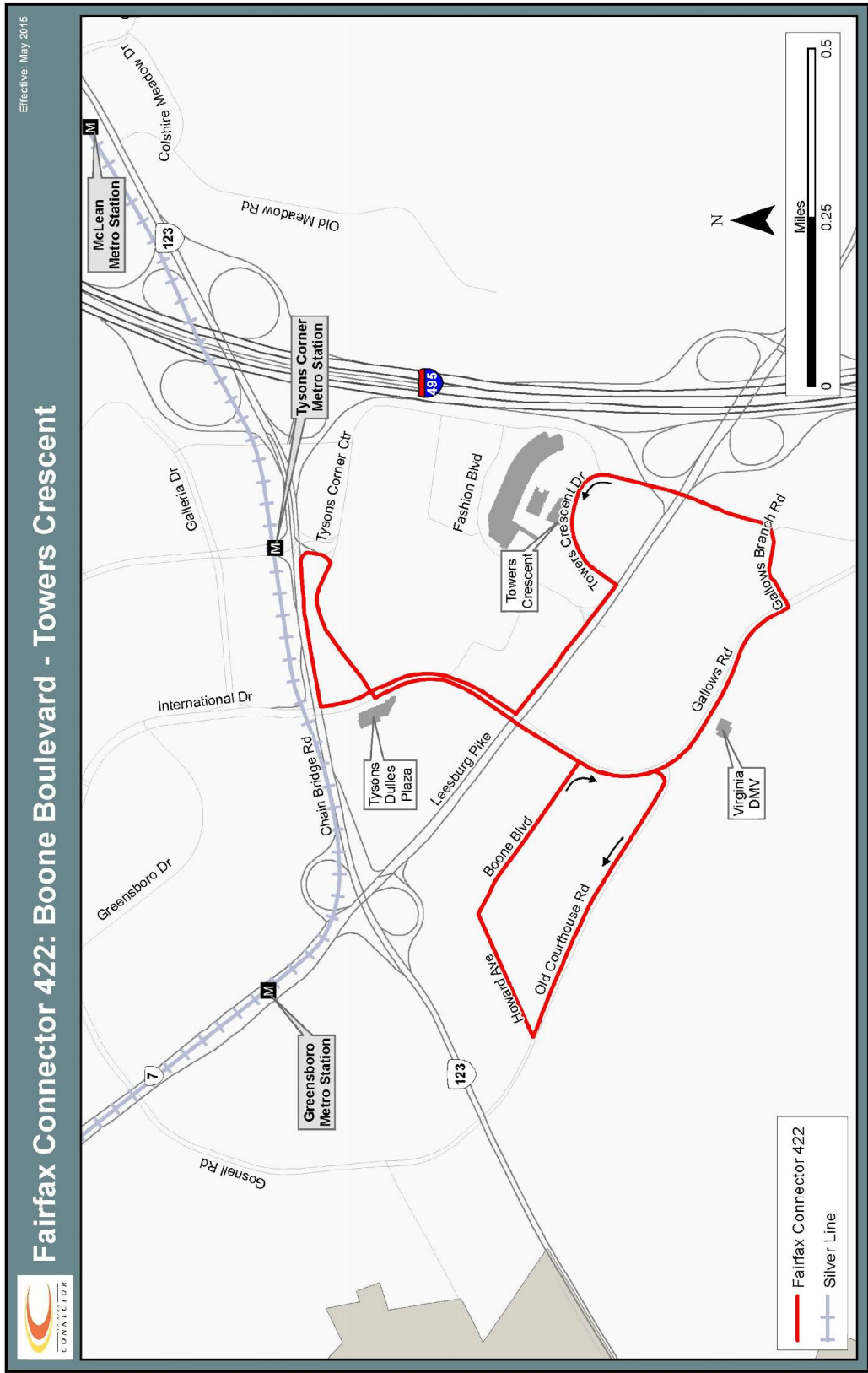


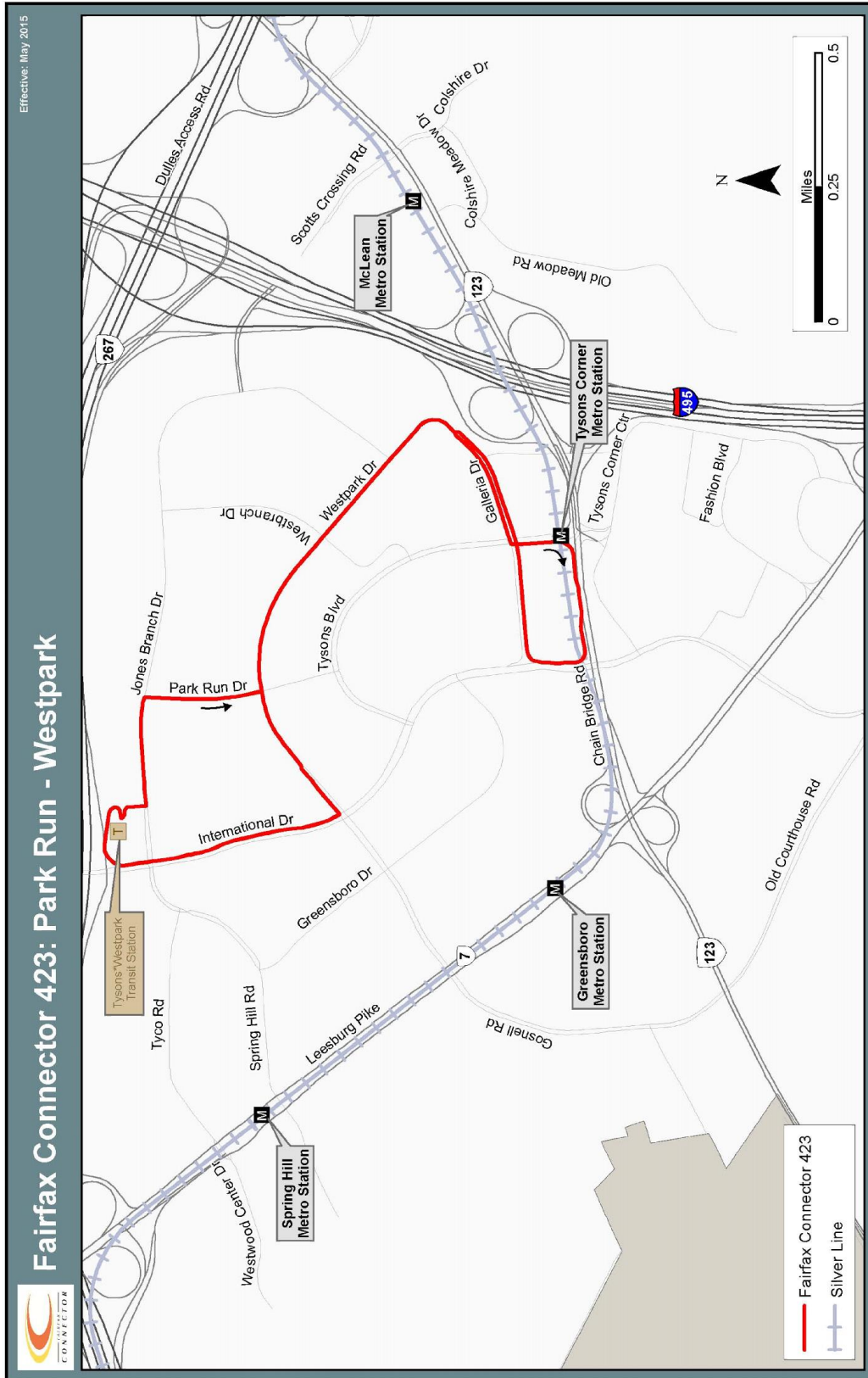
Route 394: Saratoga - Pentagon Express

Effective: May 2015

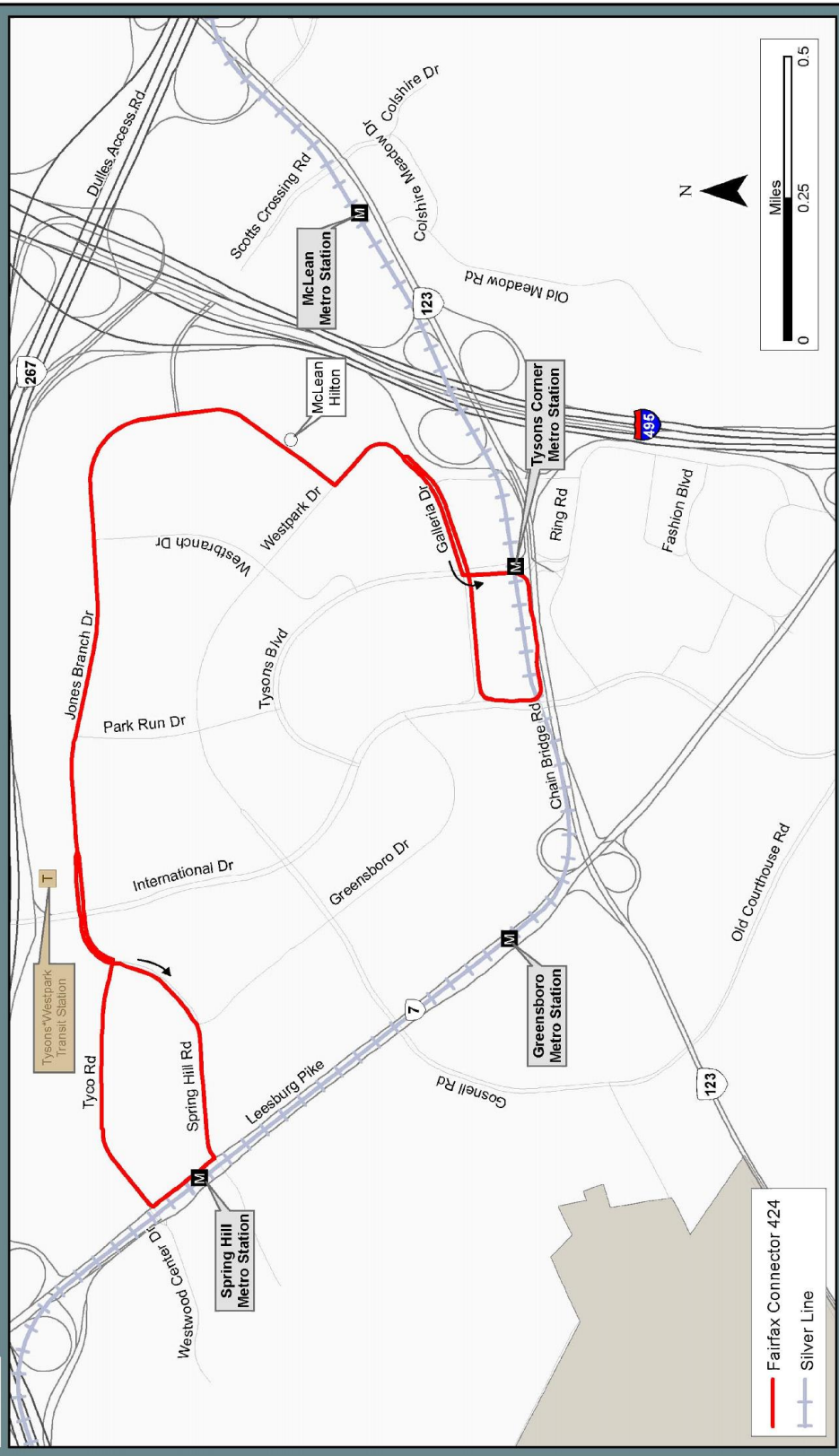


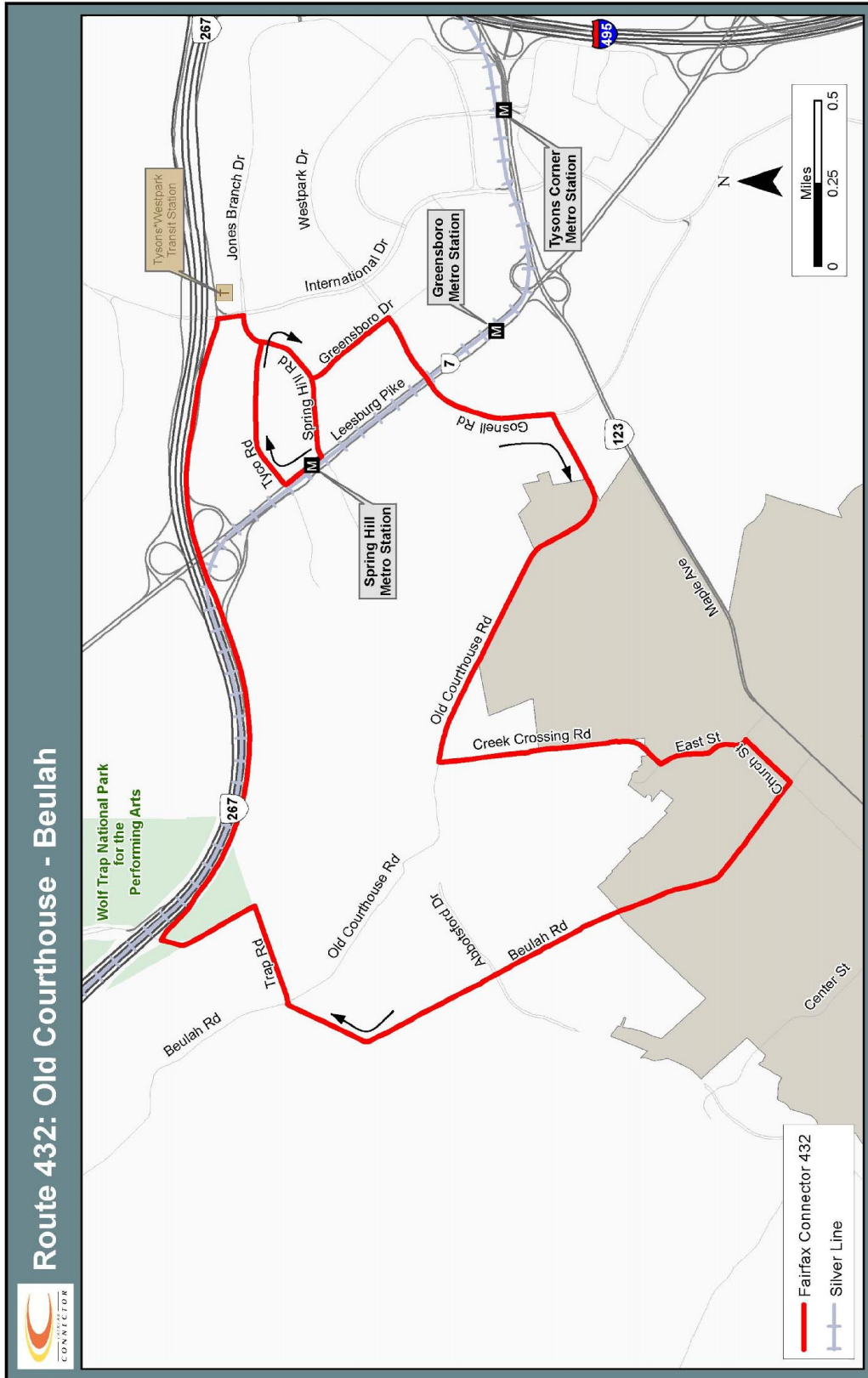


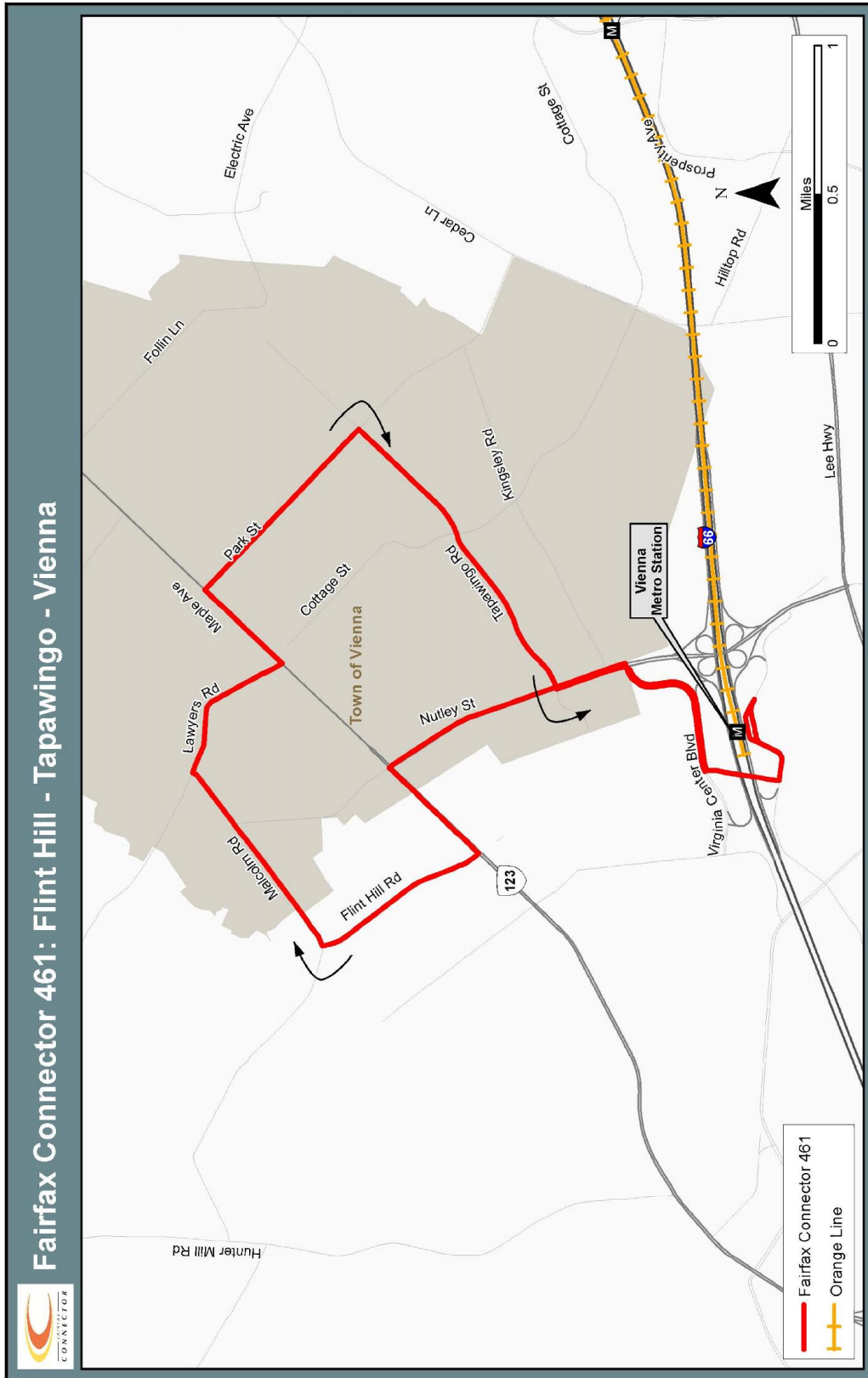


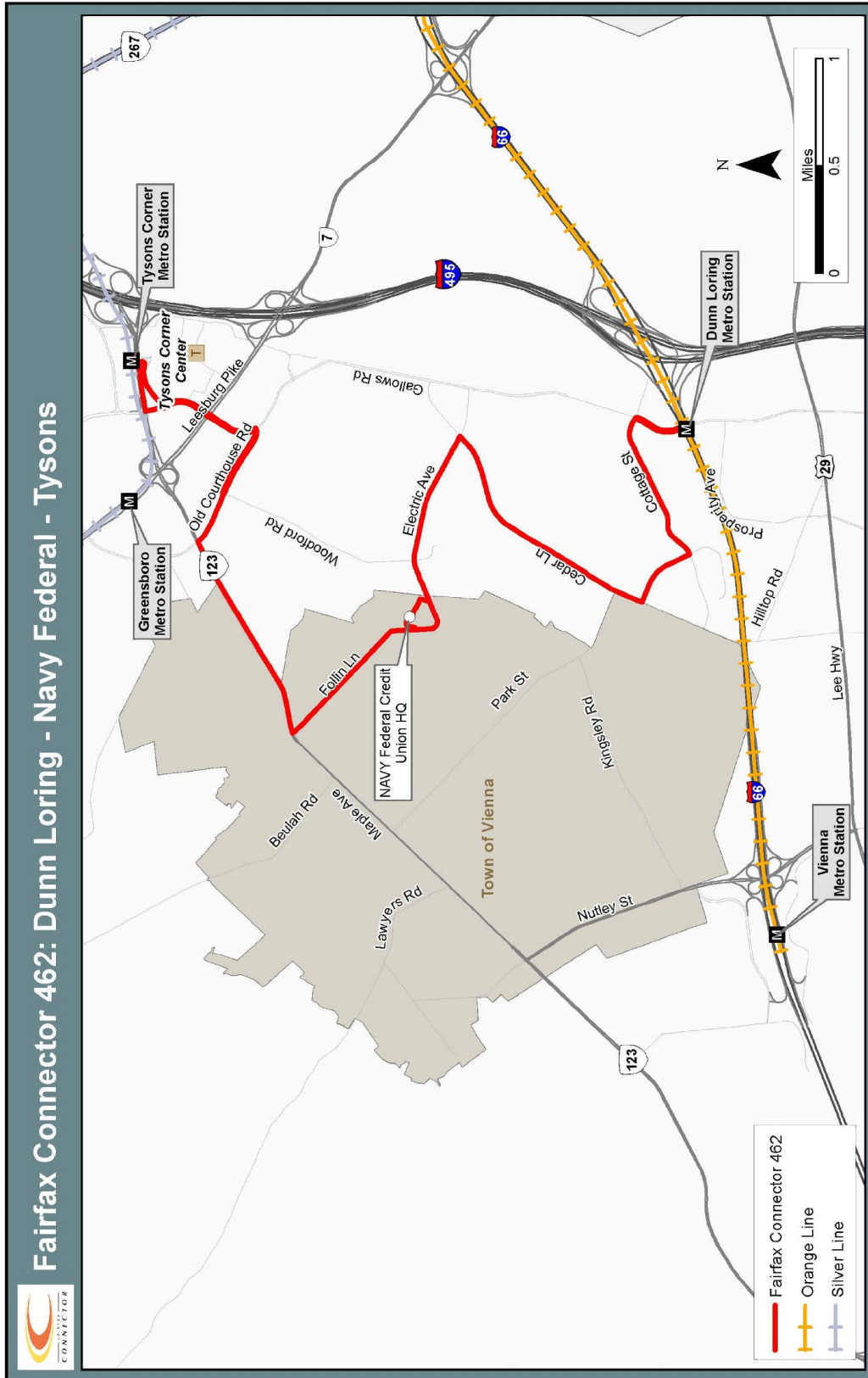


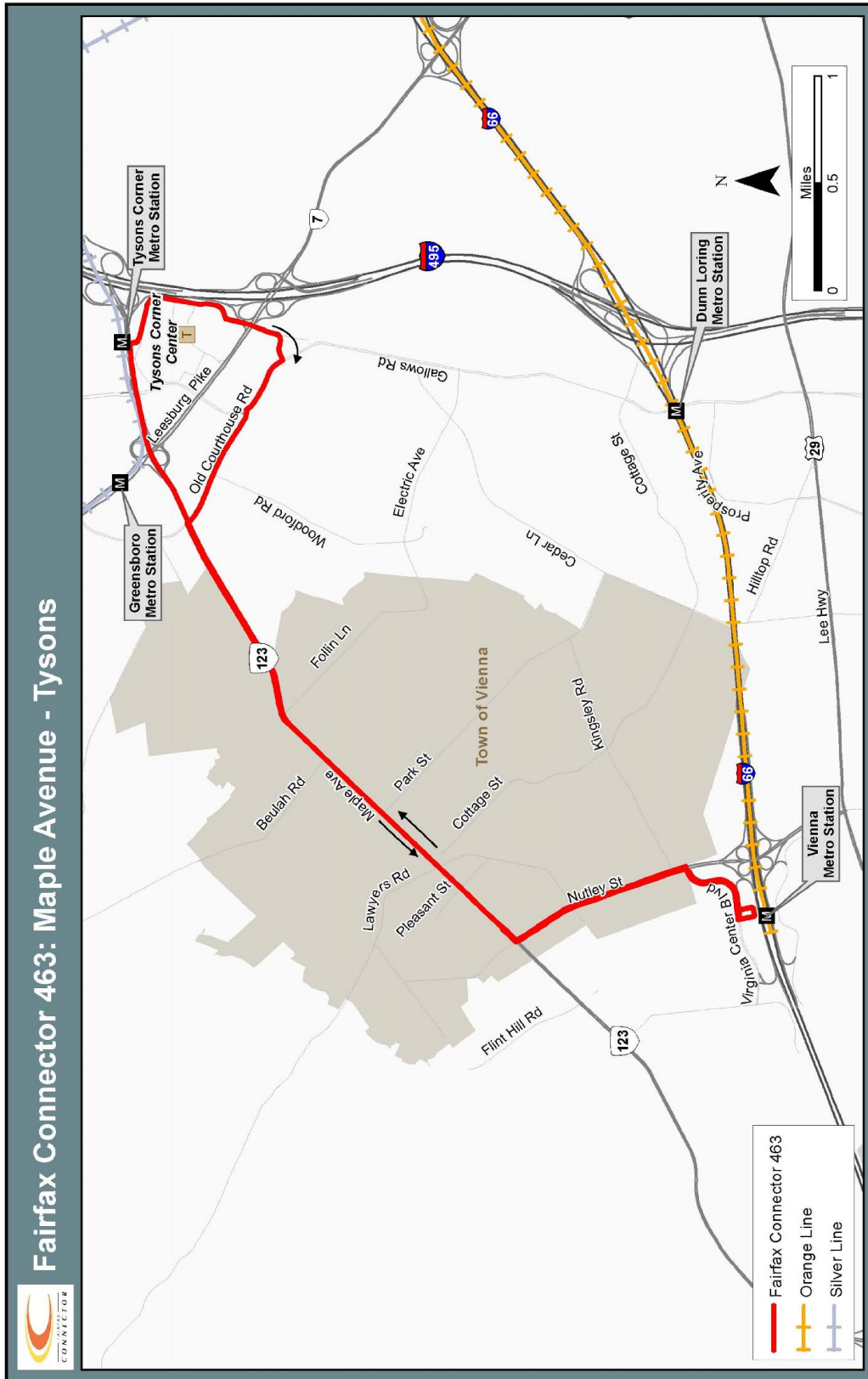
Fairfax Connector 424: Jones Branch Drive

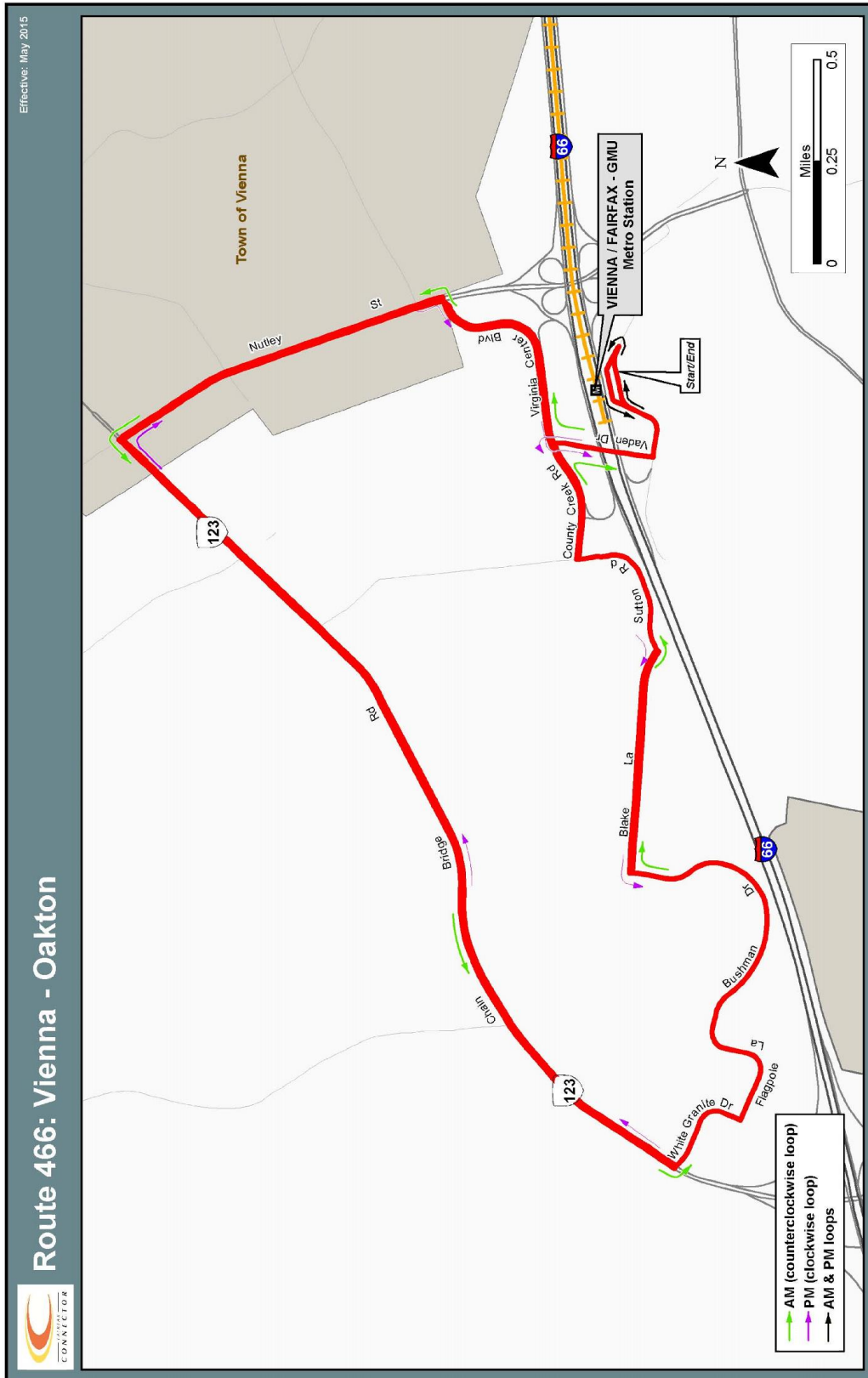


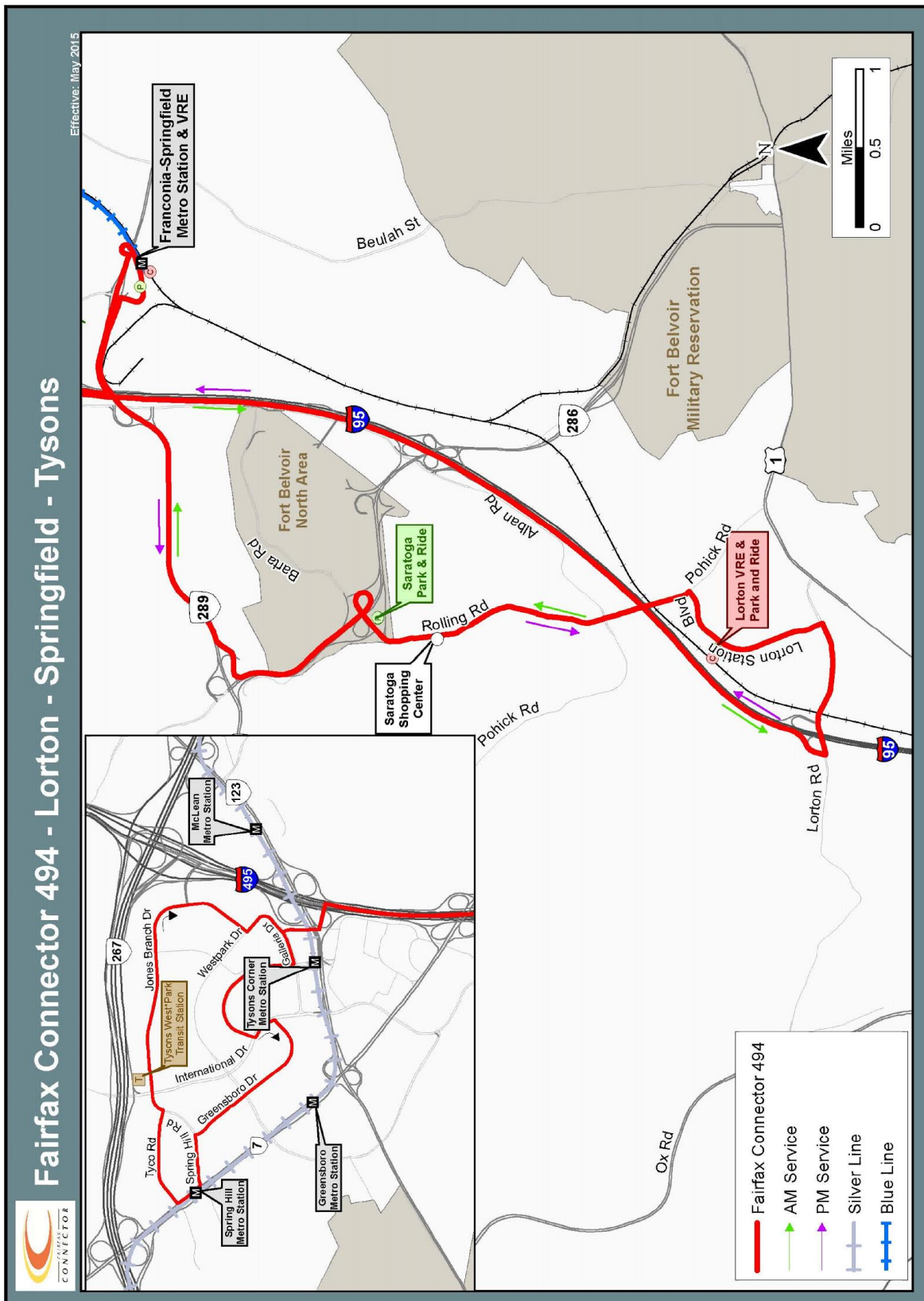


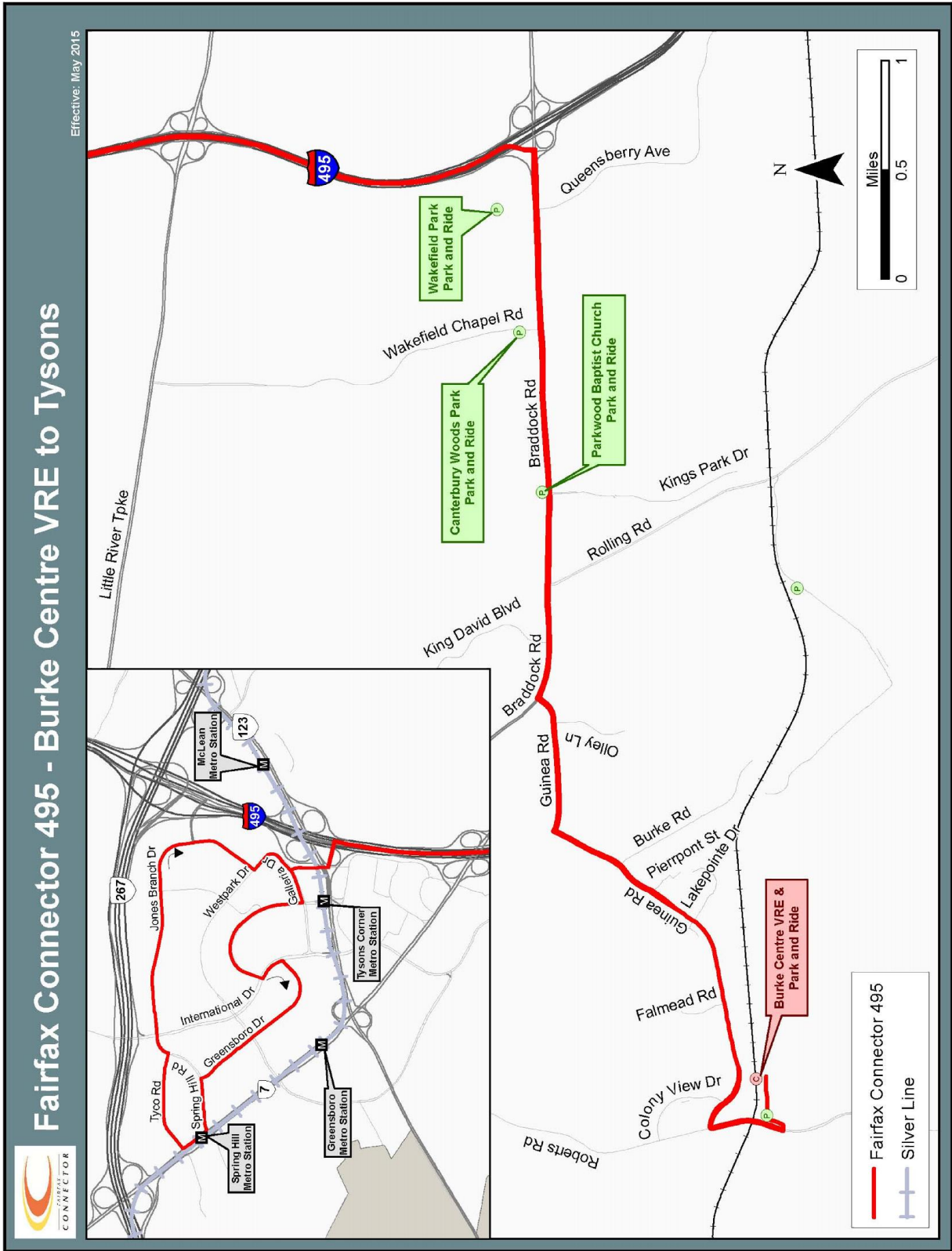


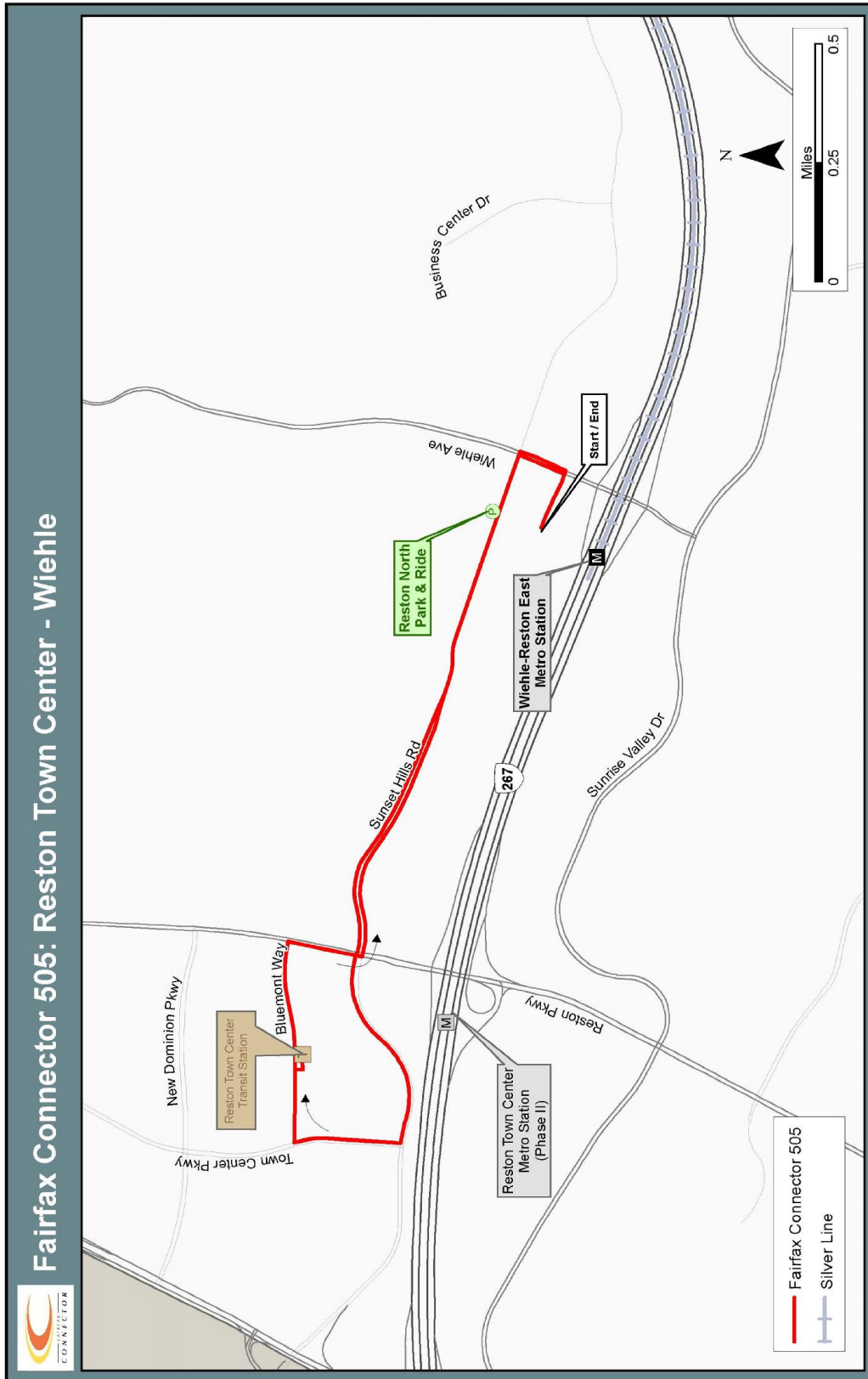


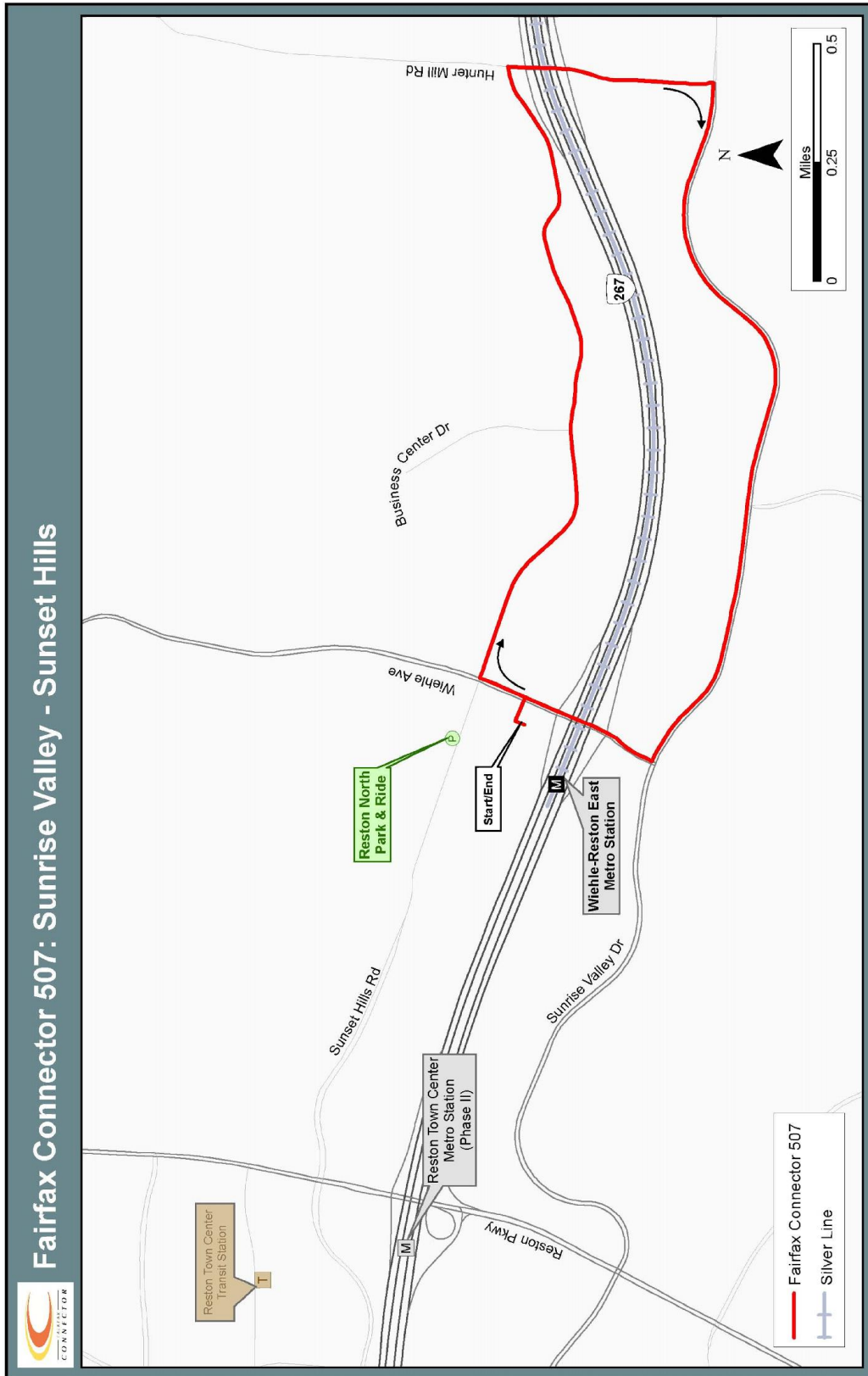




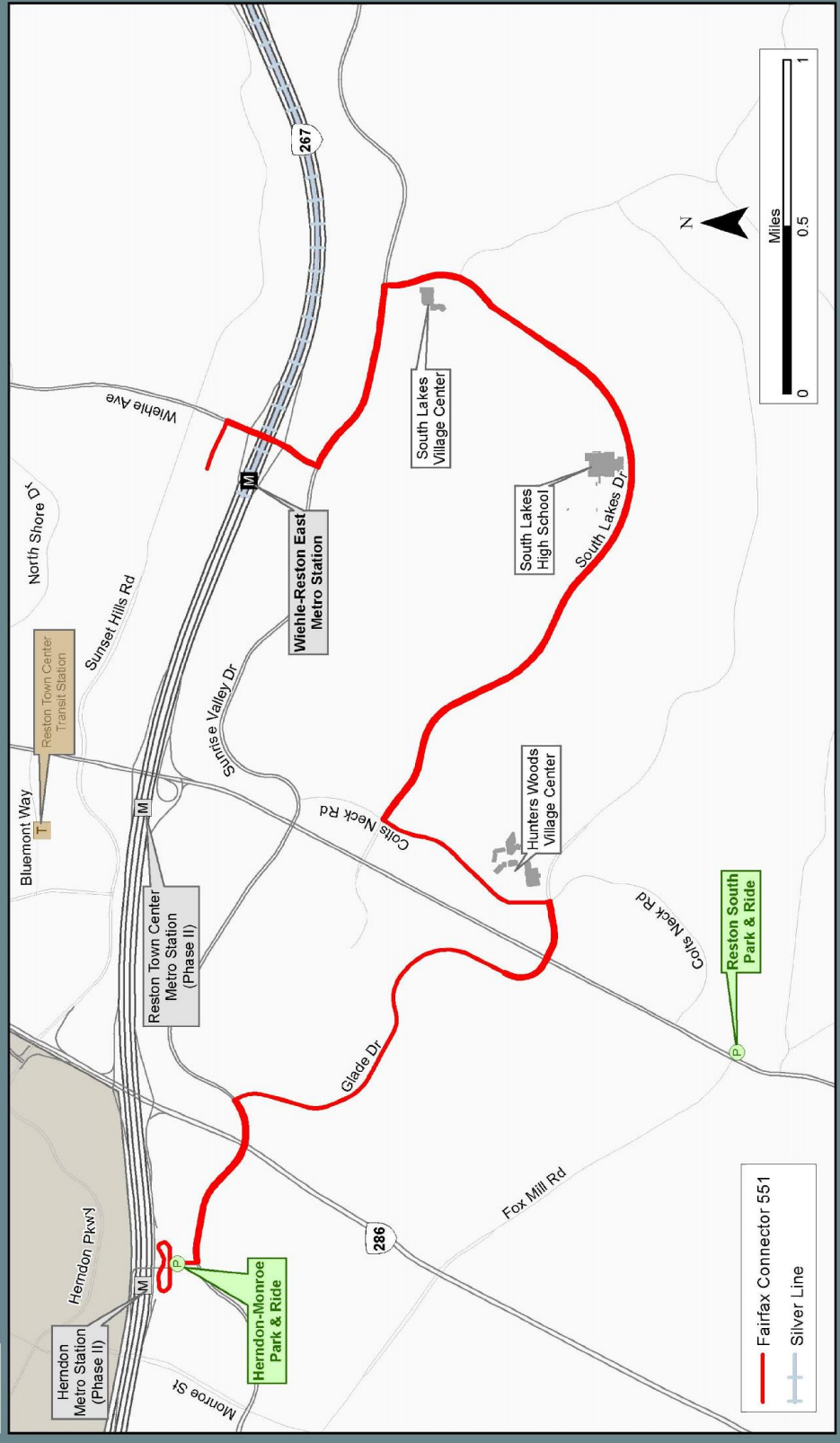


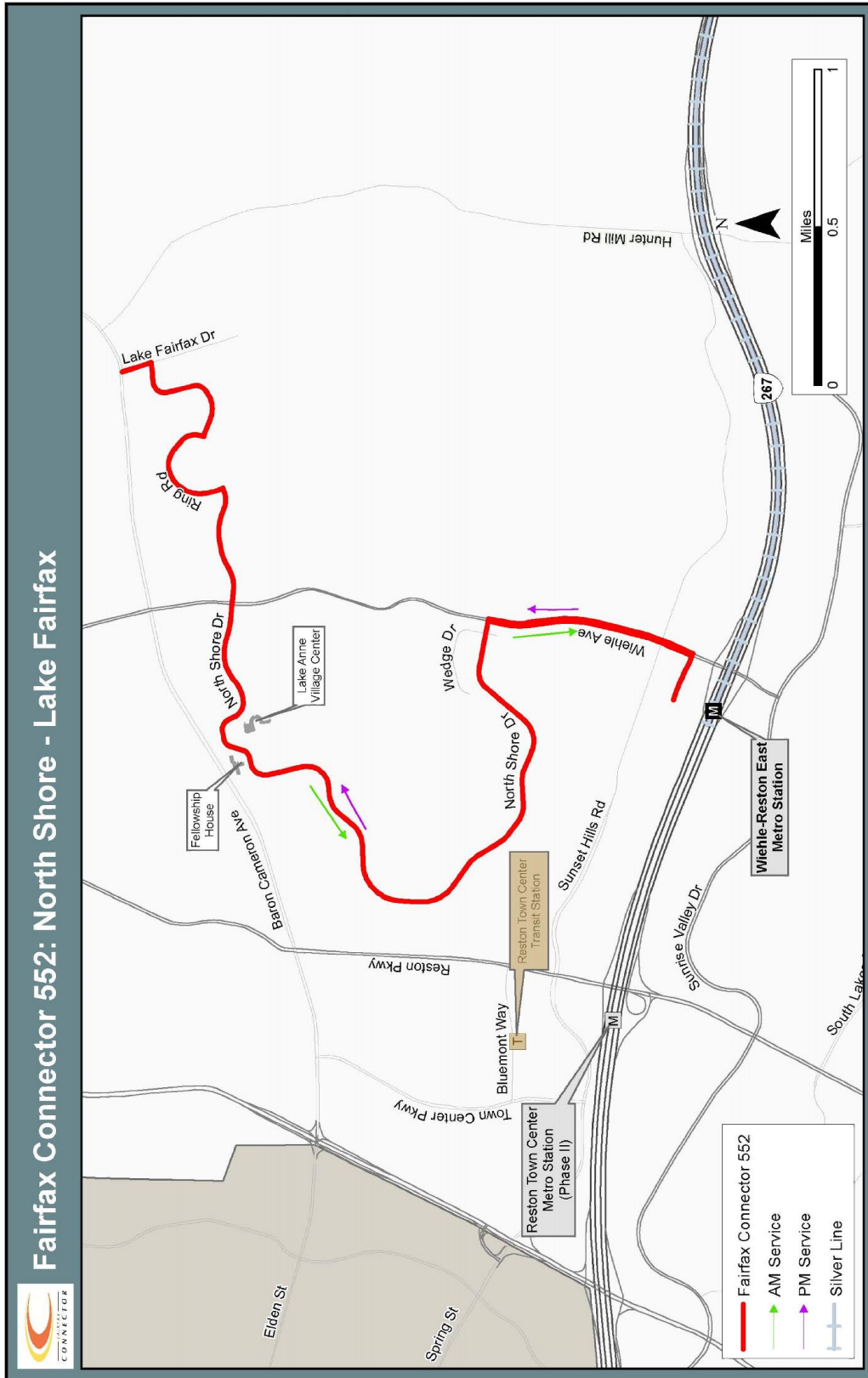


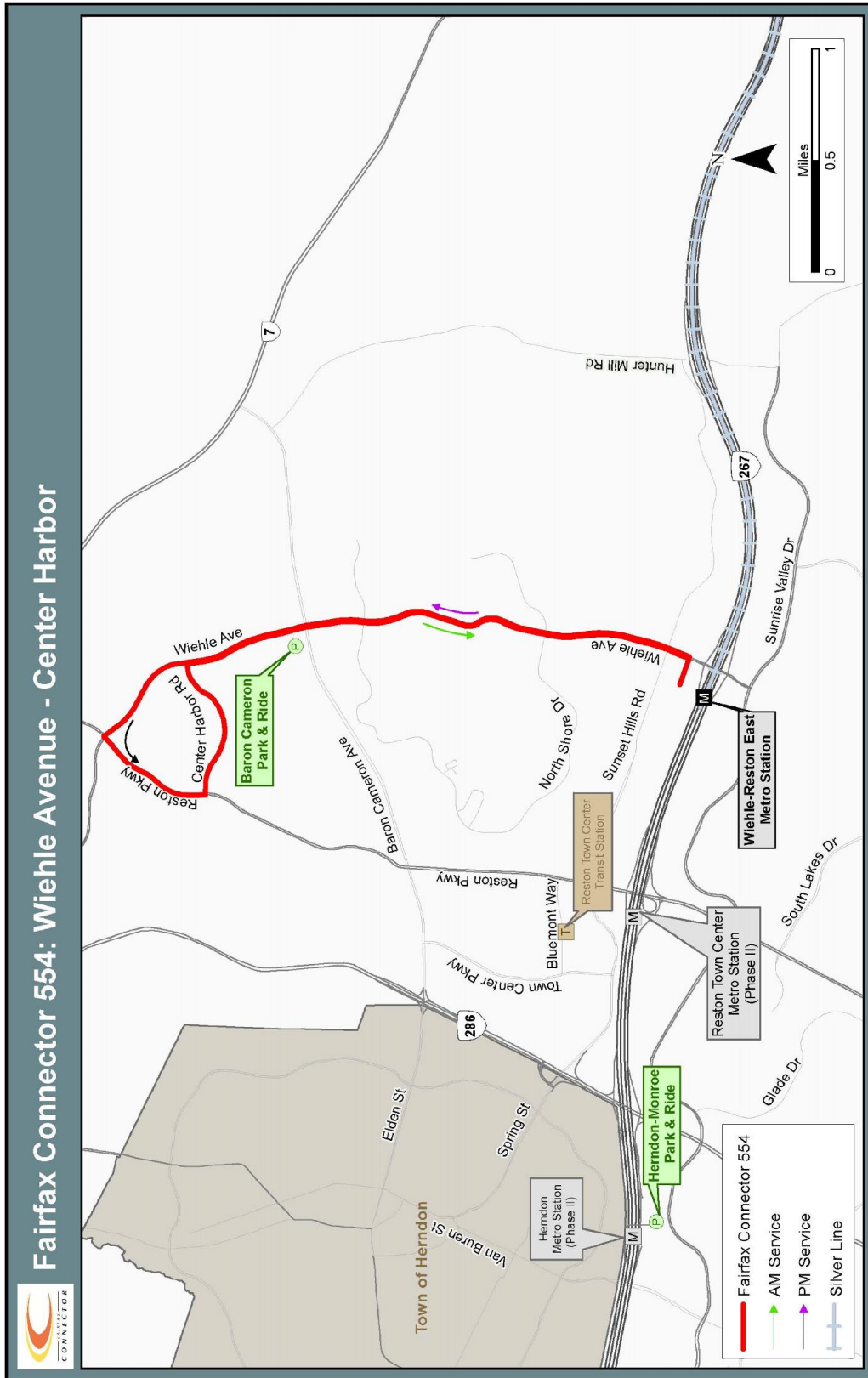




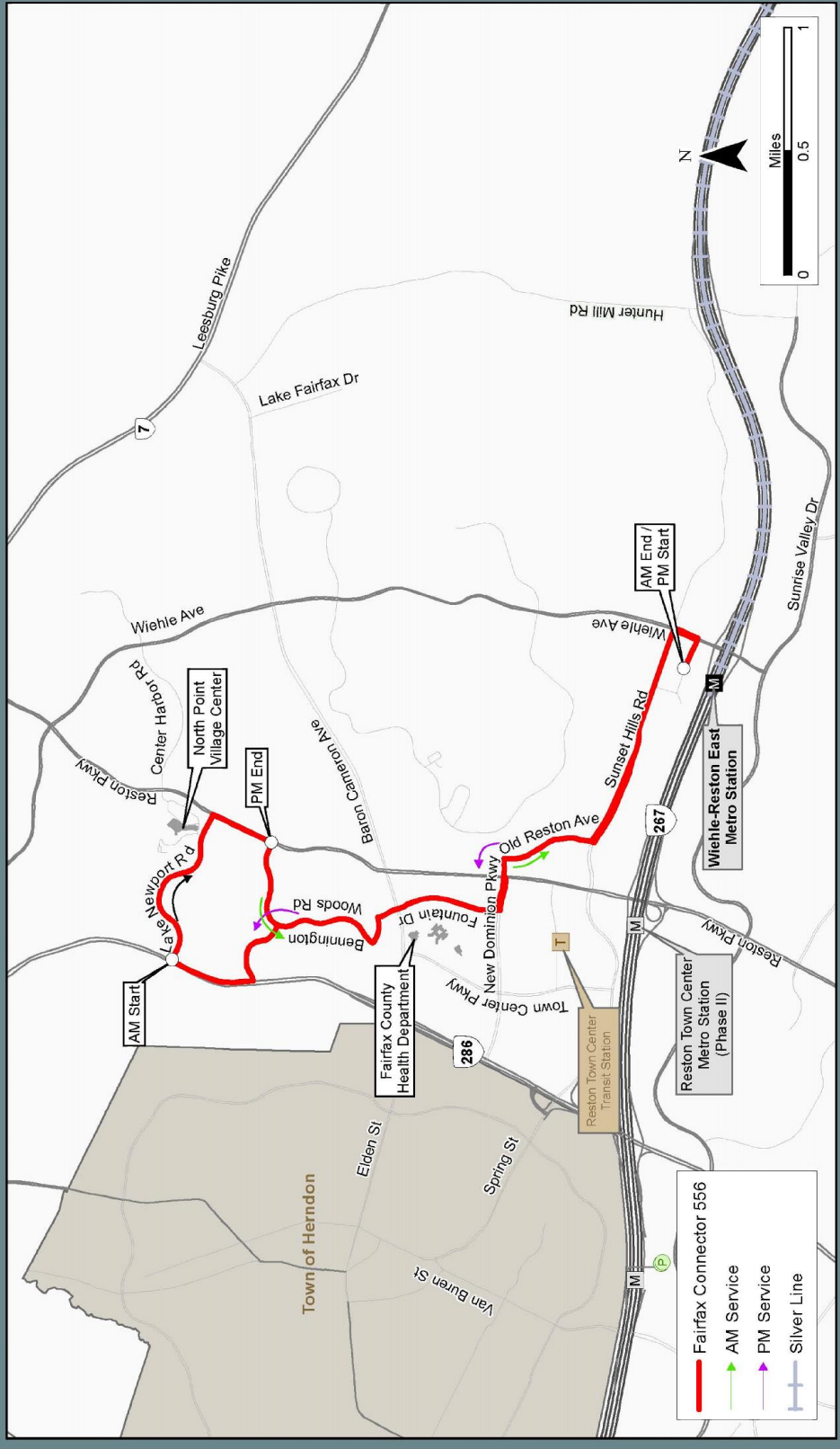
Fairfax Connector 551: South Lakes Drive

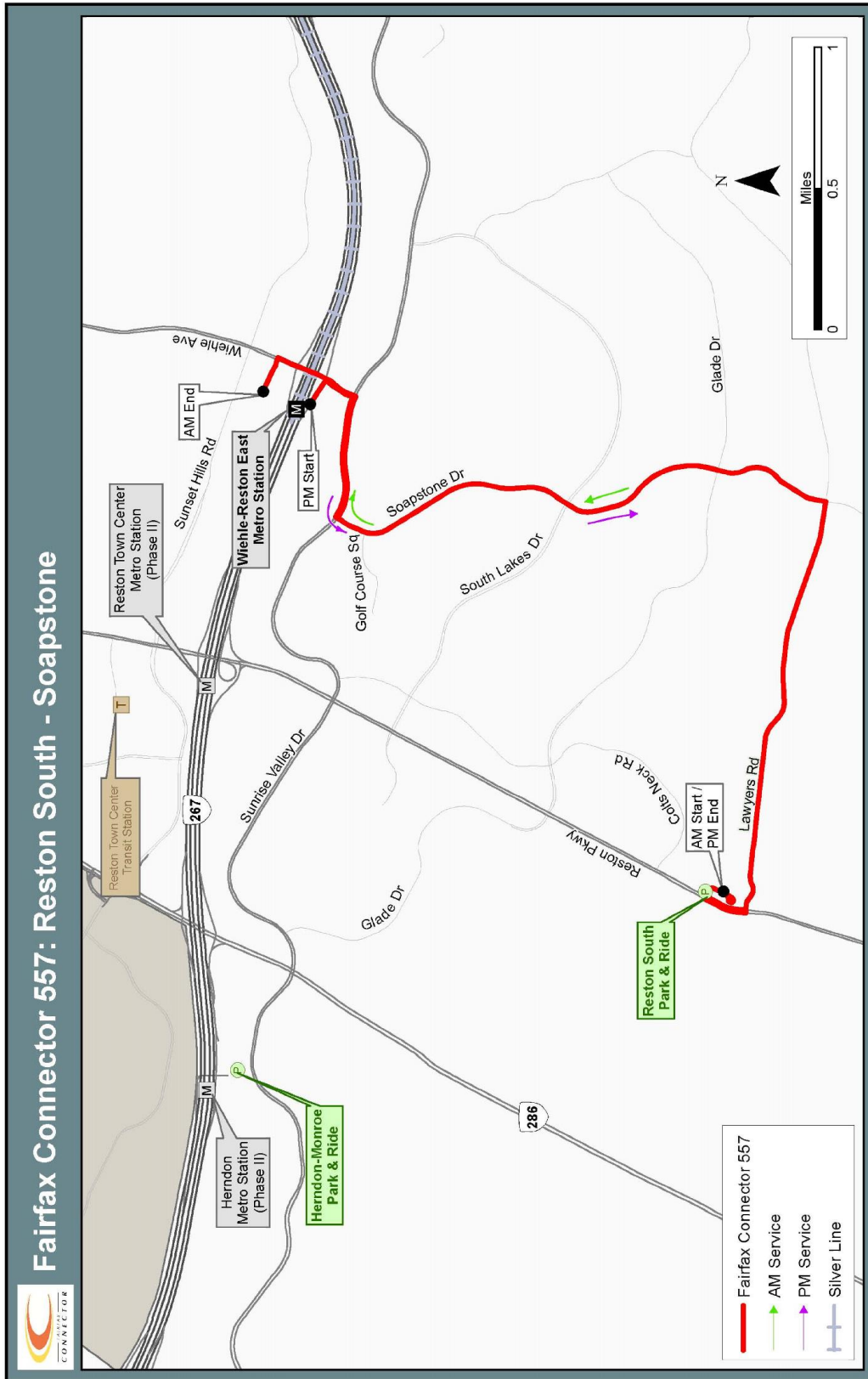


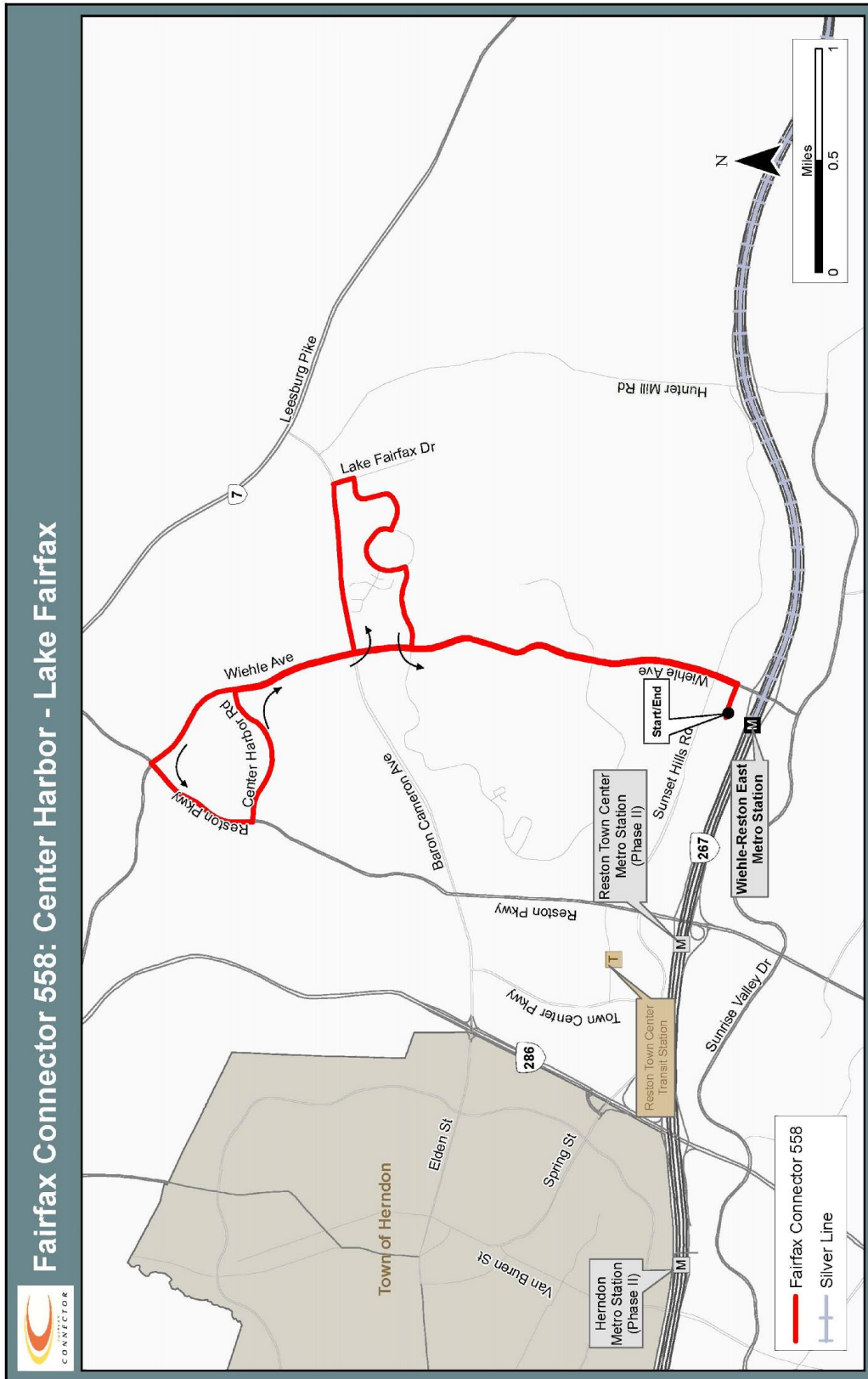


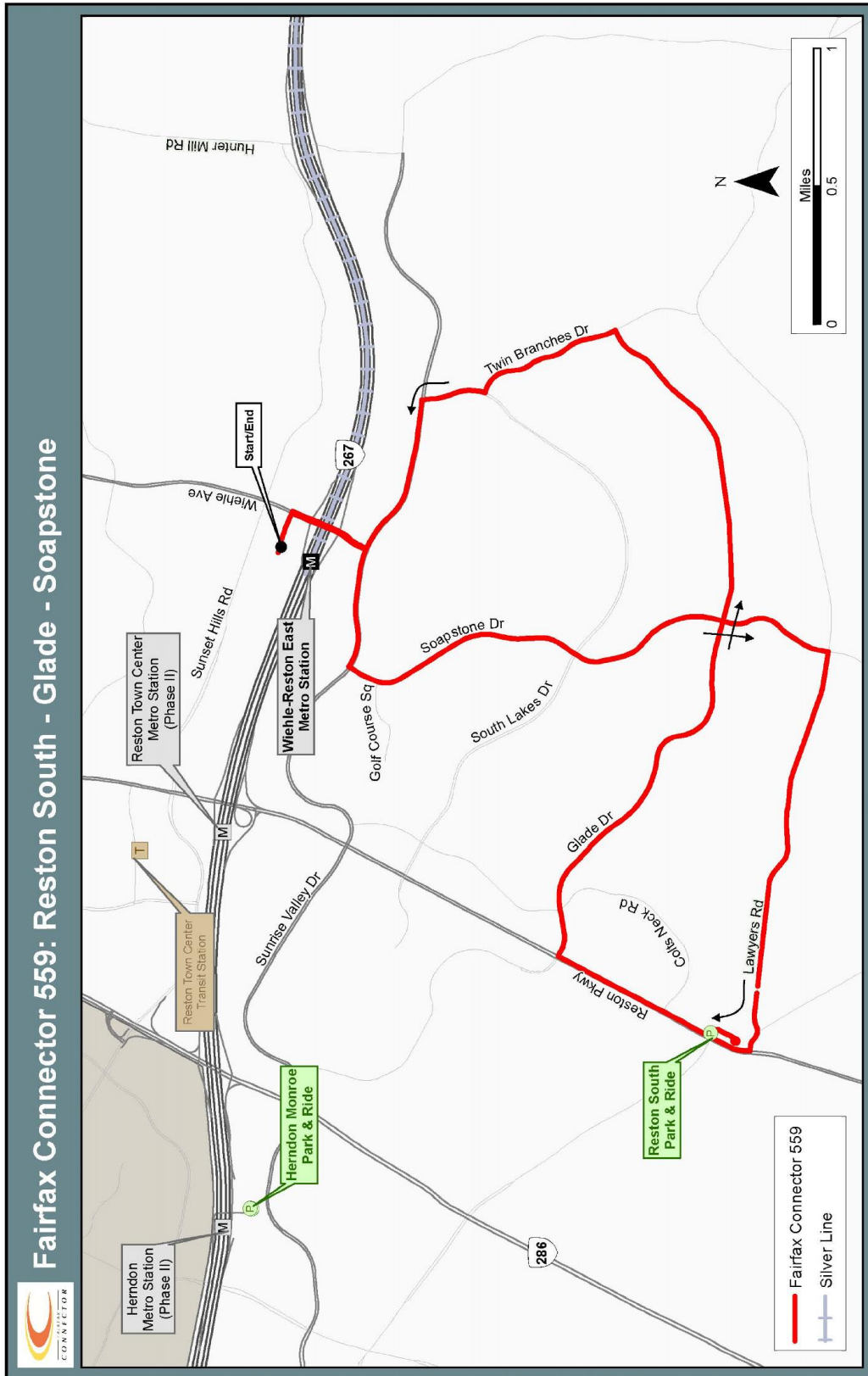


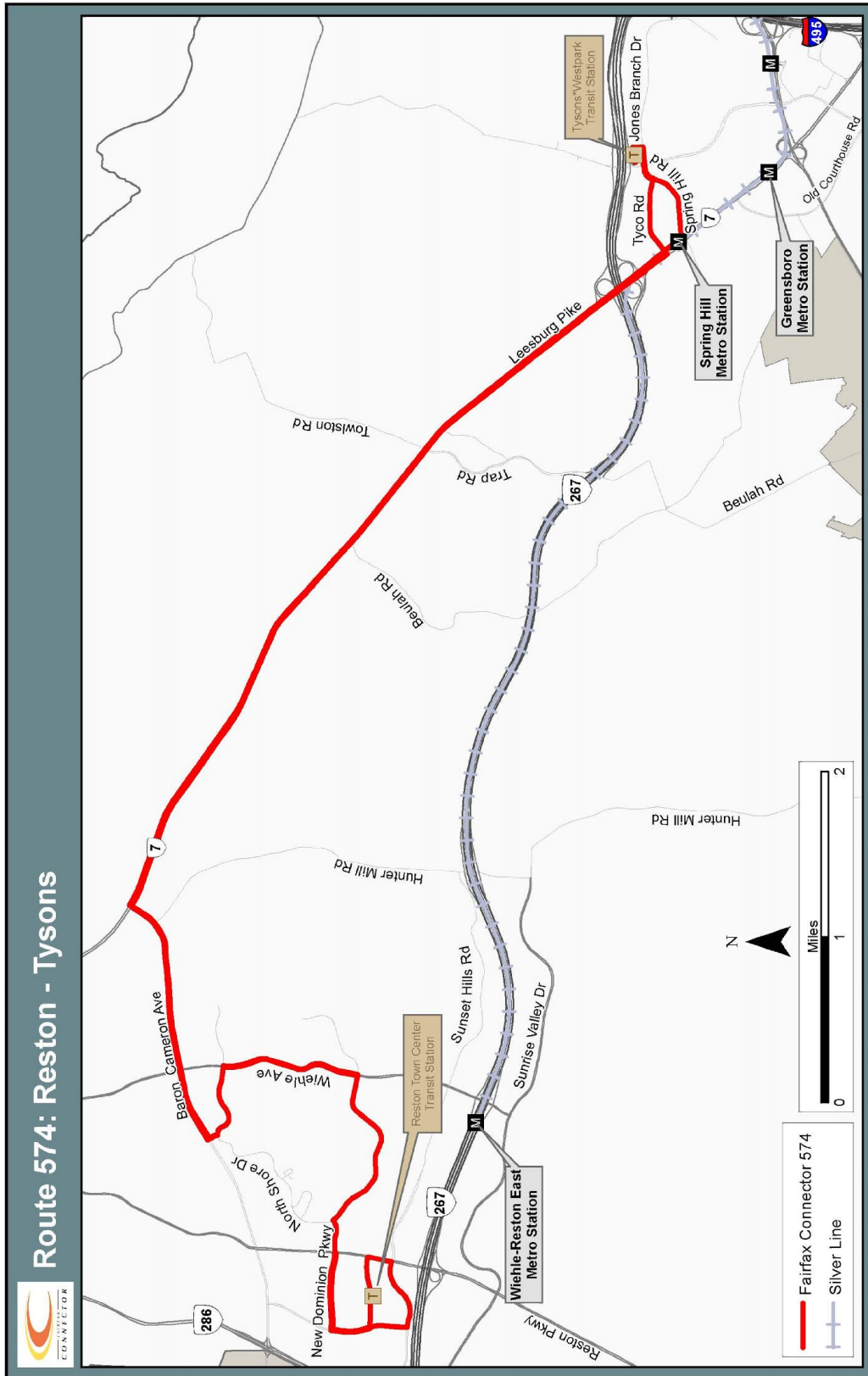
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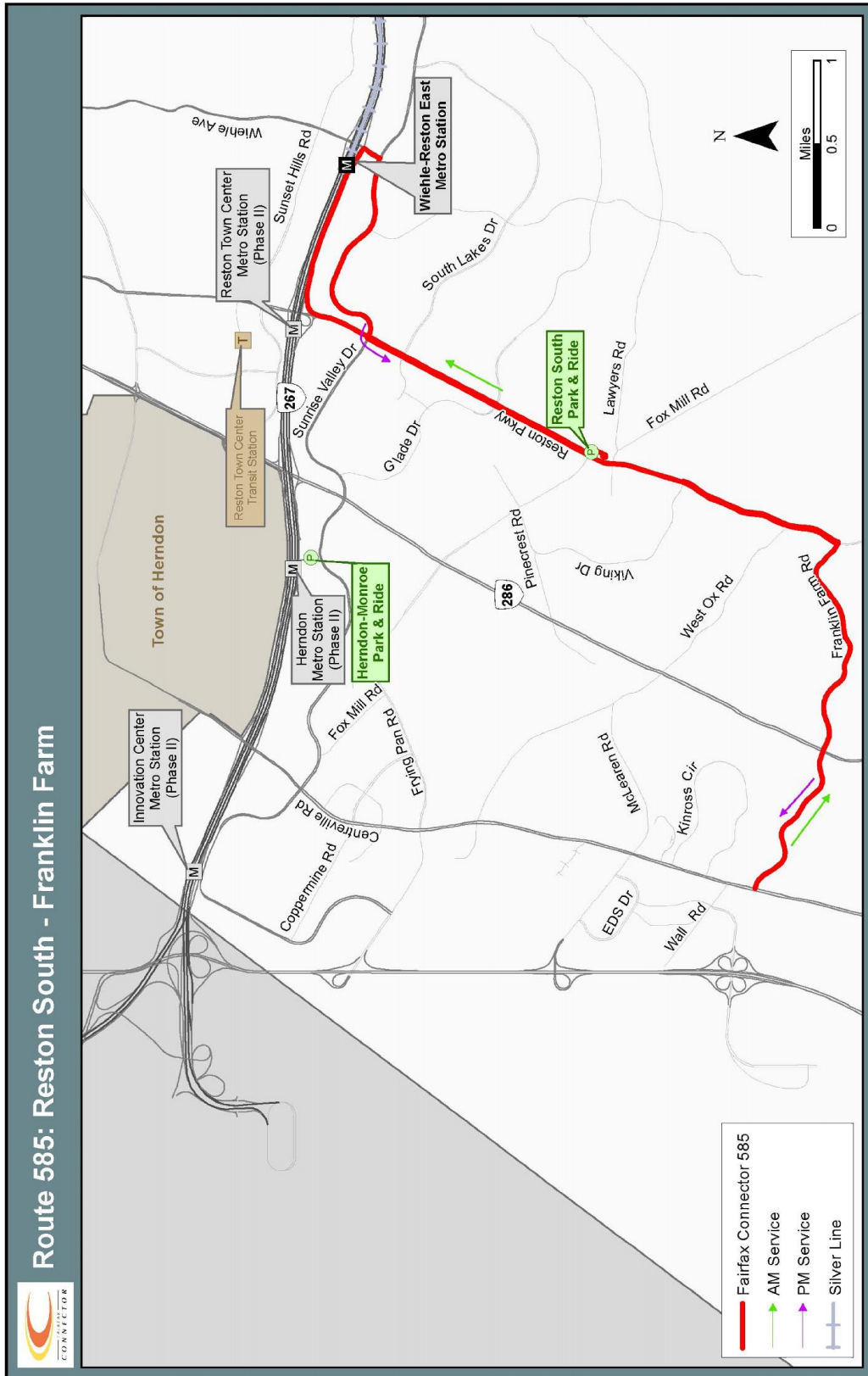




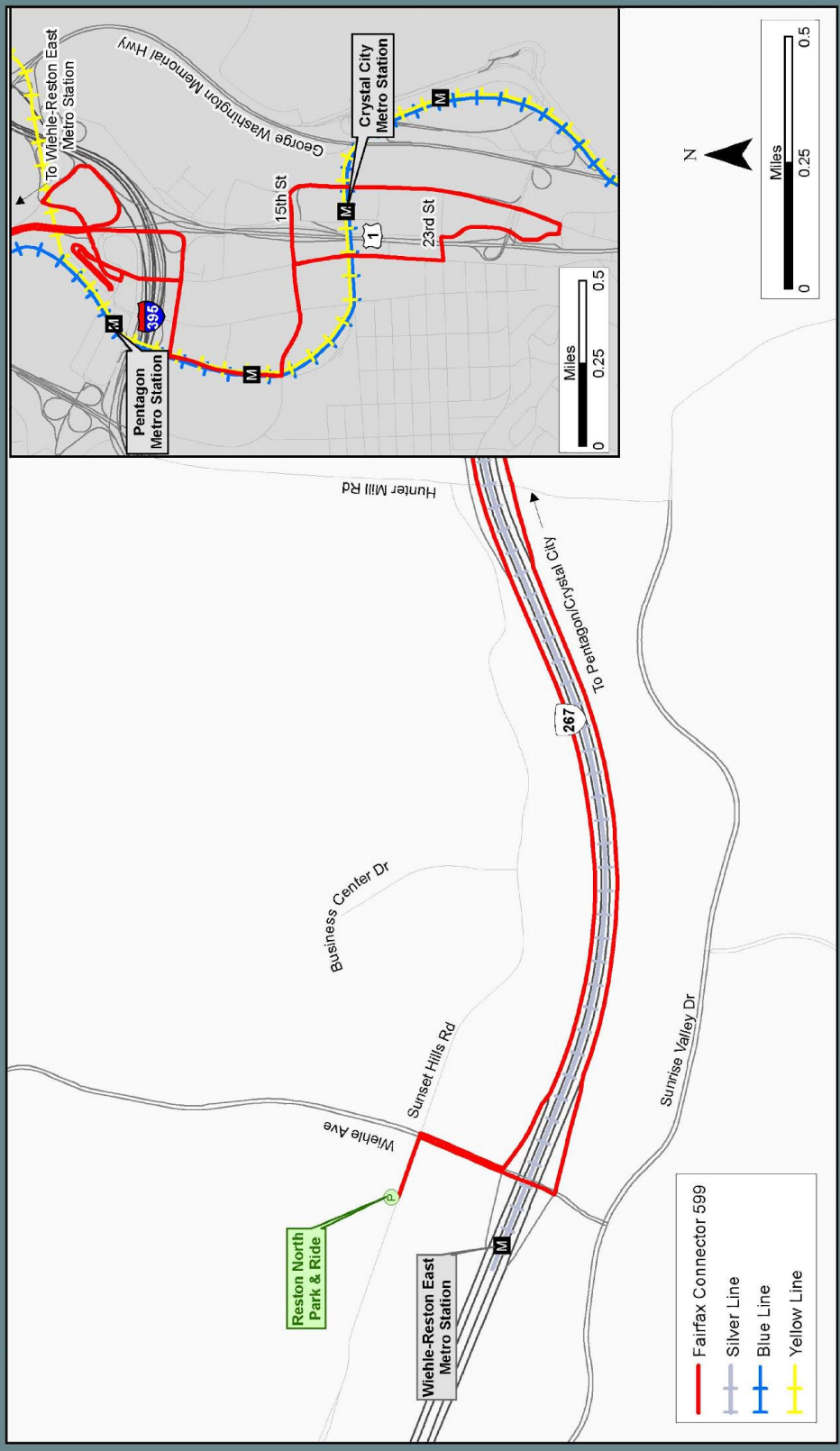


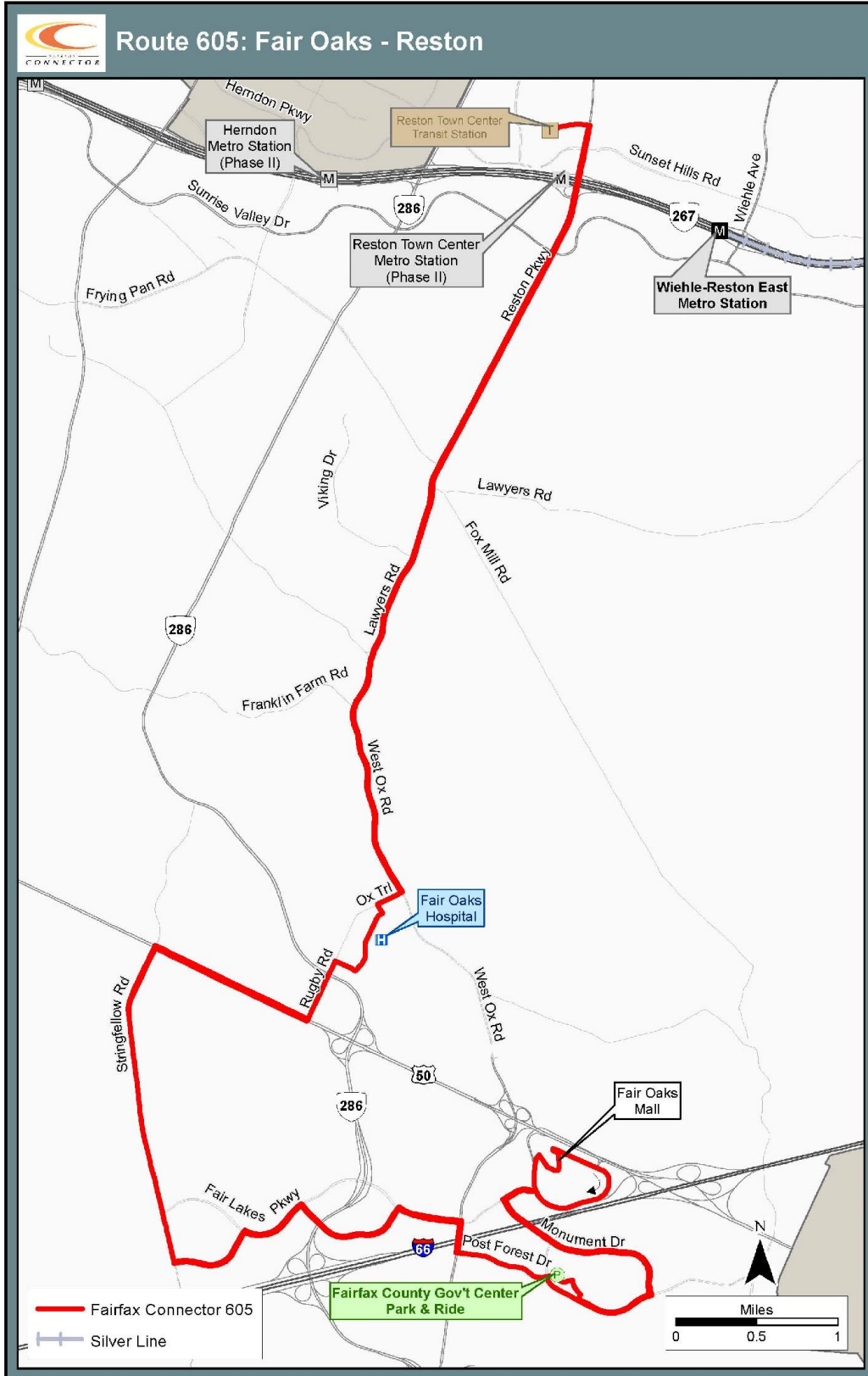




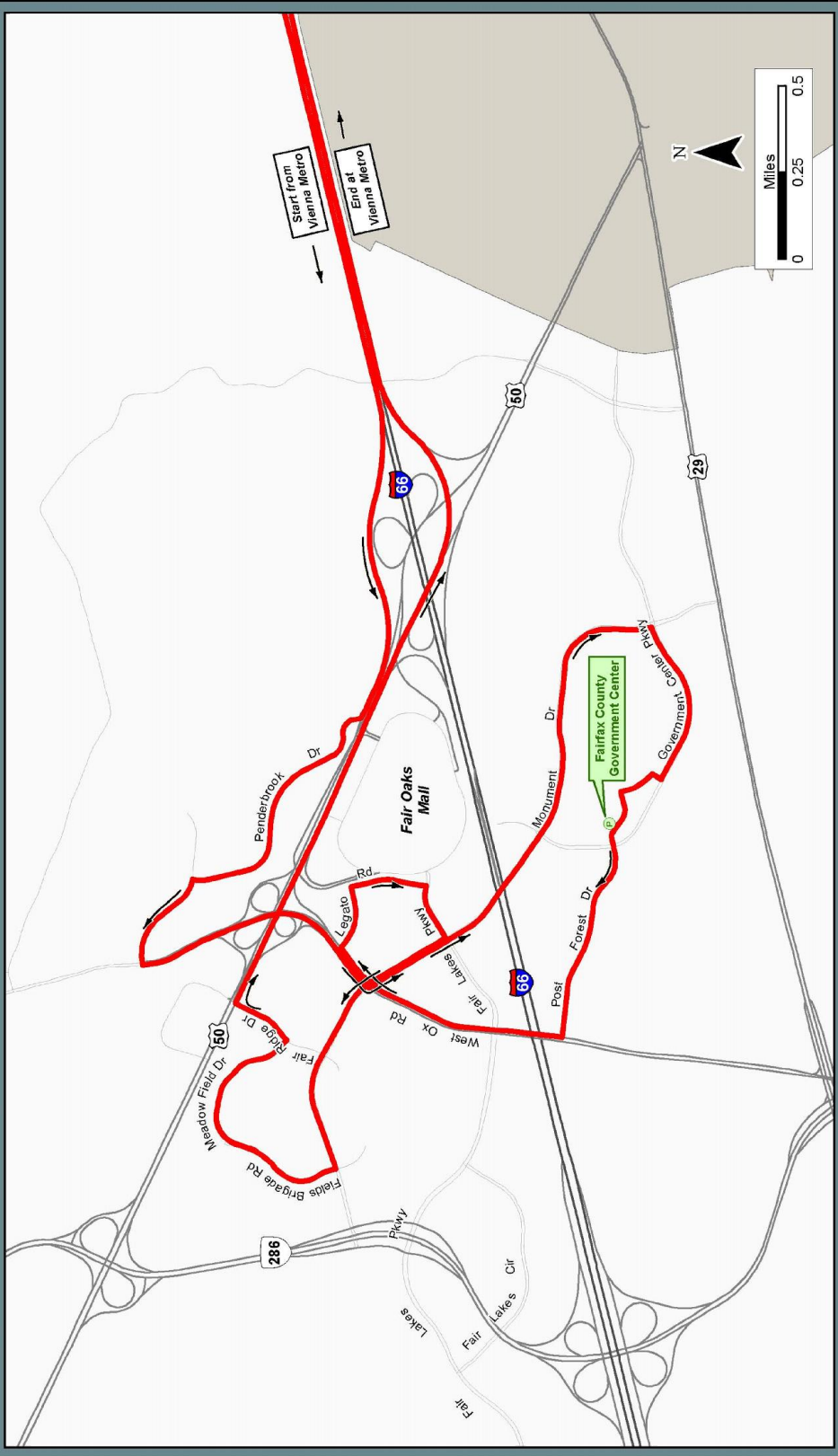


Route 599: Pentagon - Crystal City Express

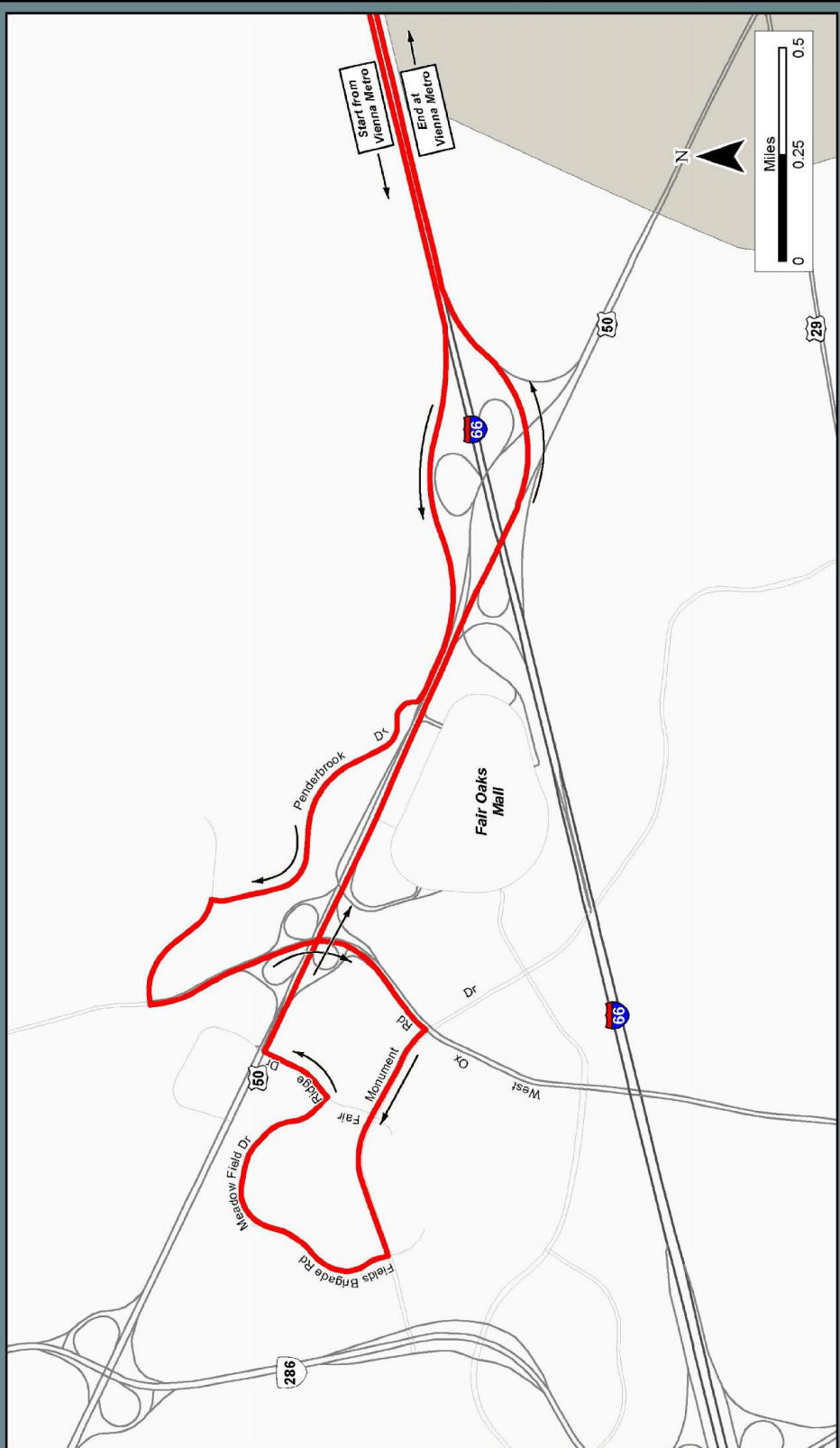


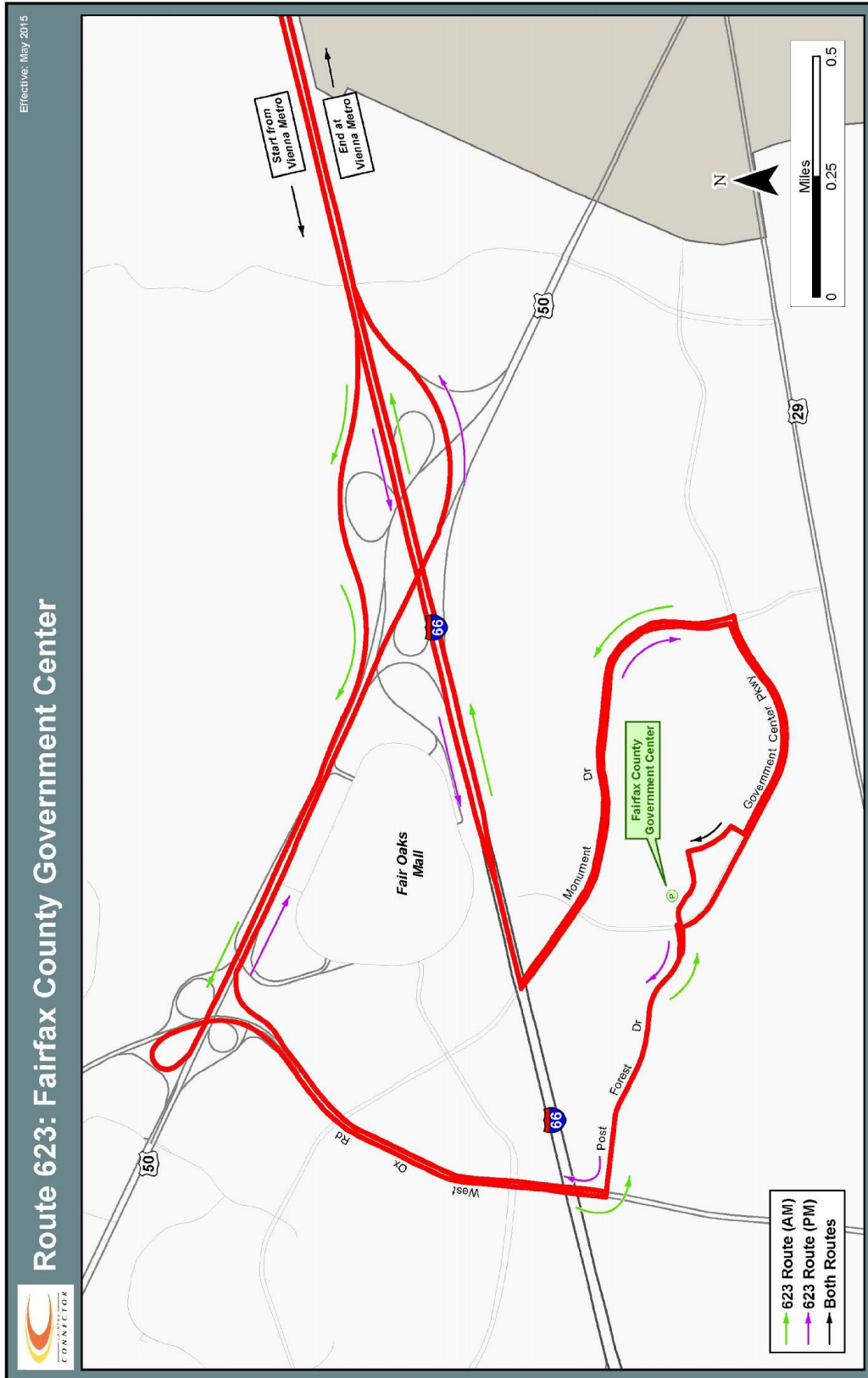


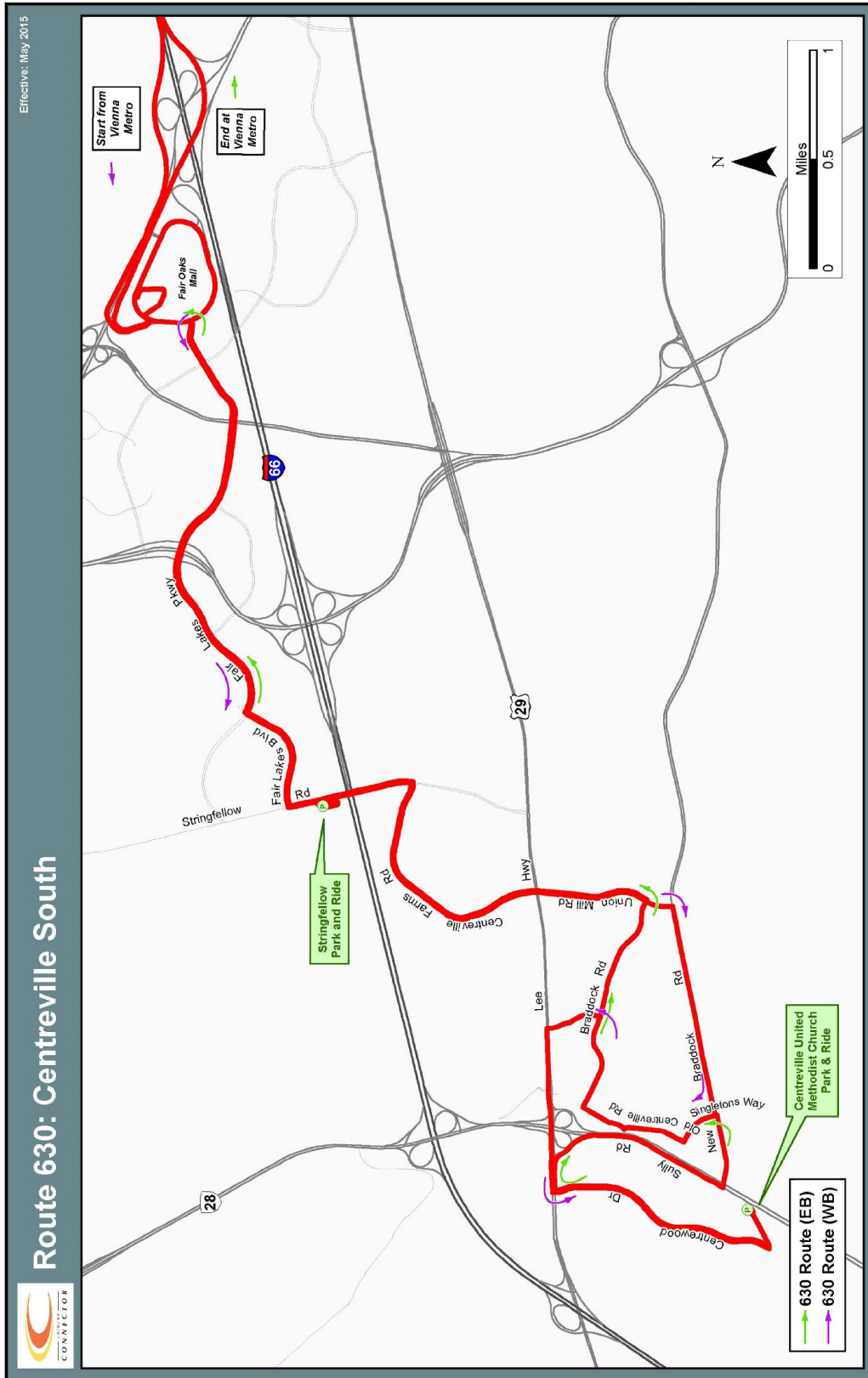
Route 621: Penderbrook - Fairfax County Government Center

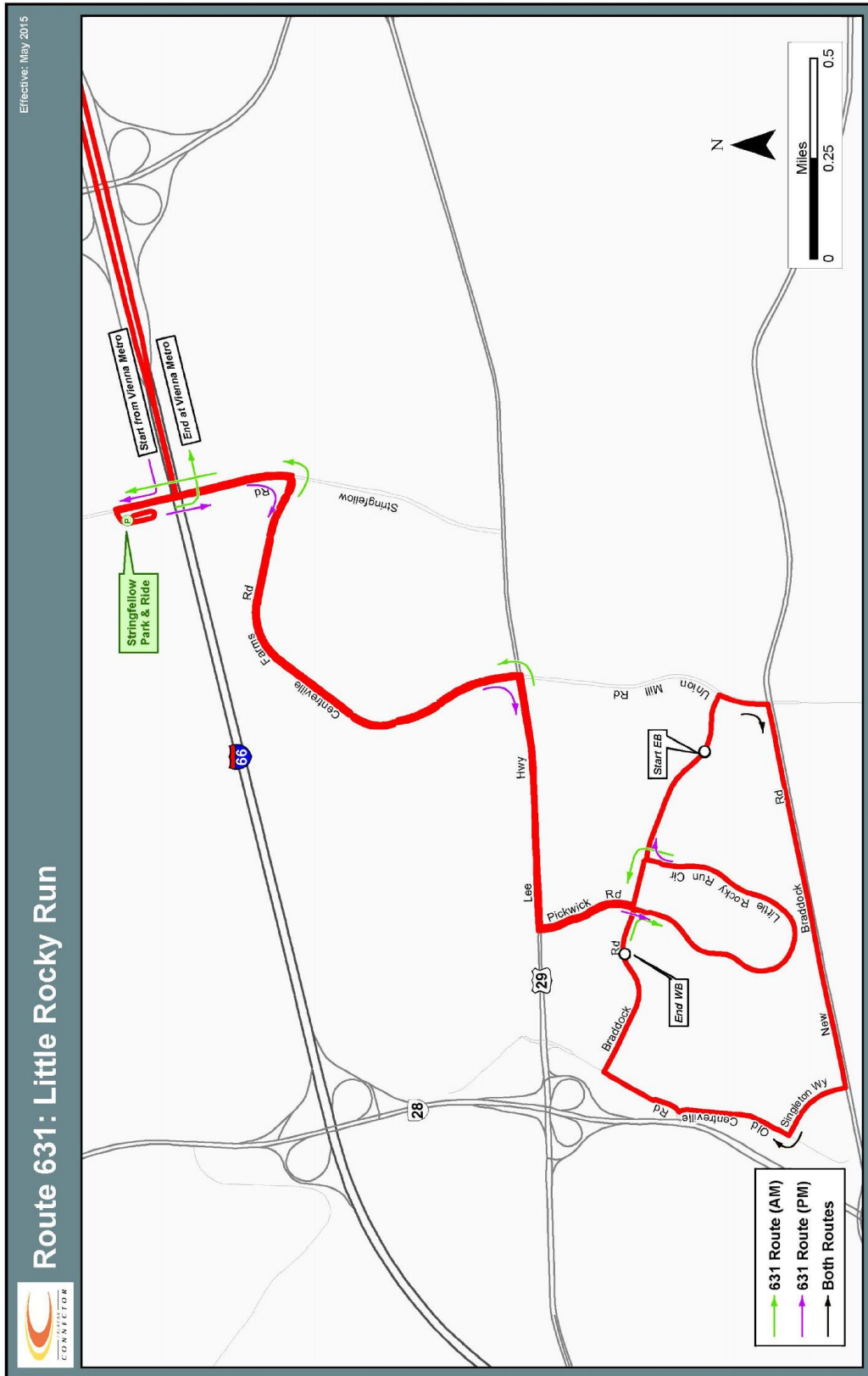


Route 622: Penderbrook - Fair Ridge

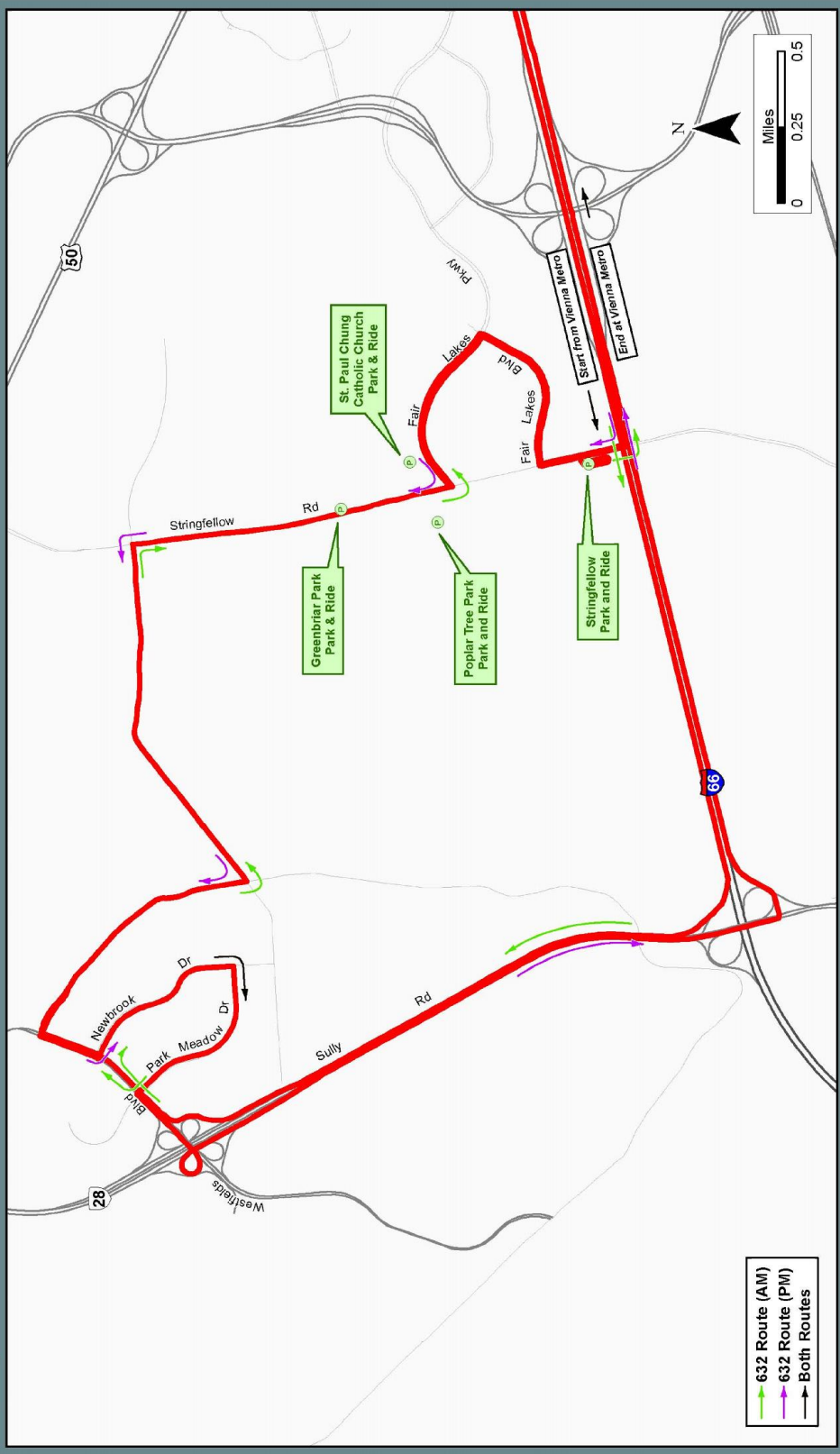




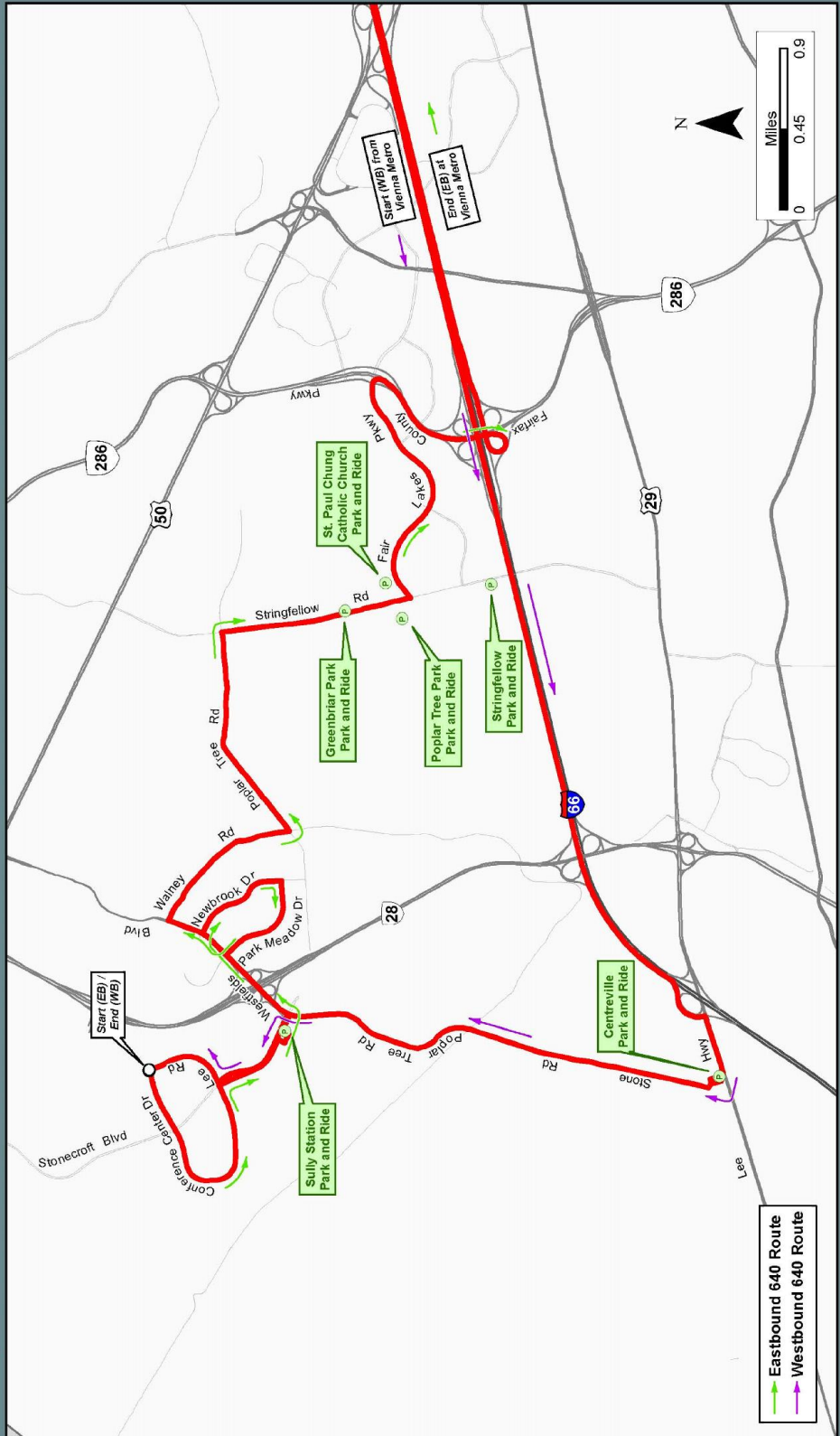


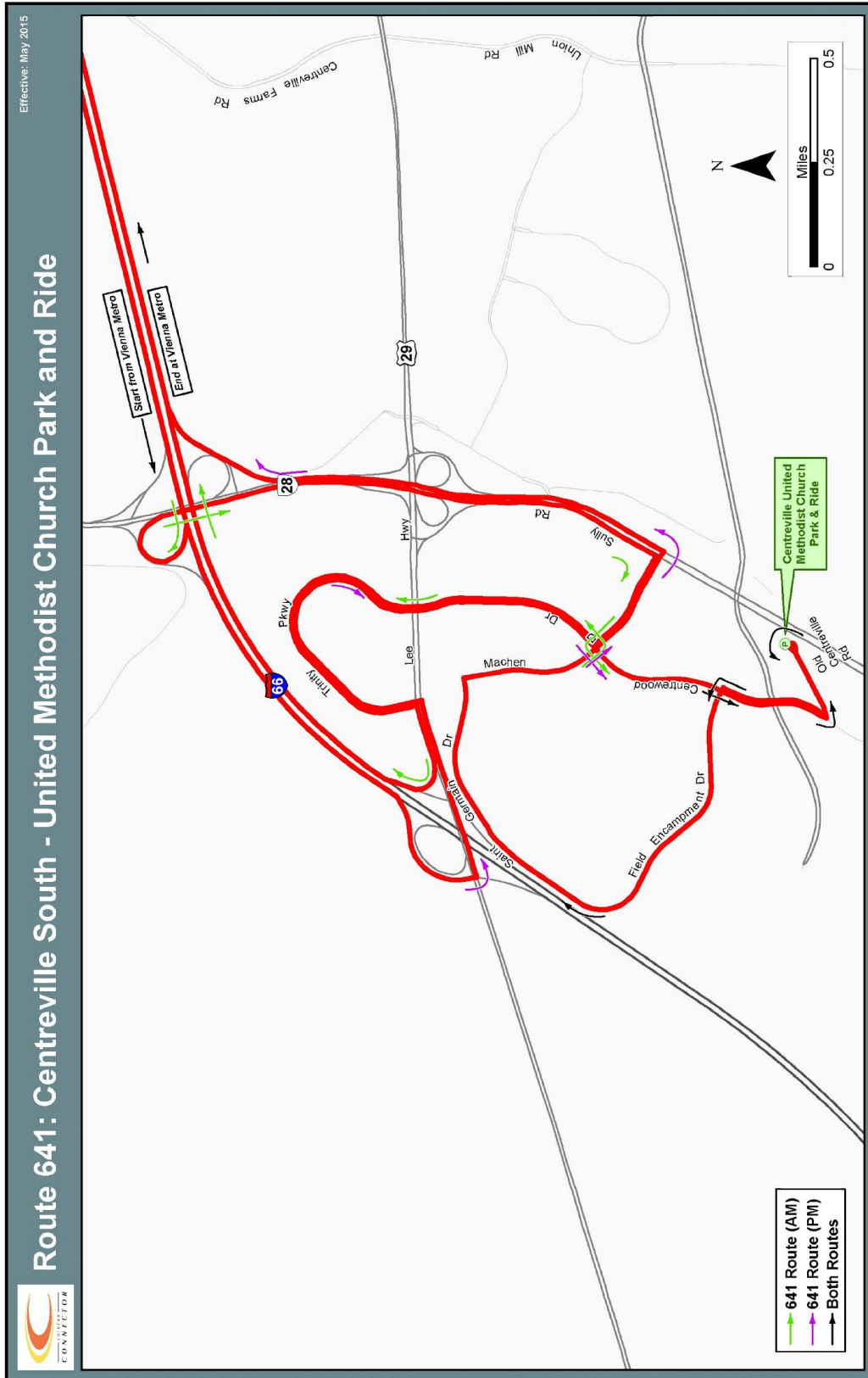


Route 632: Westfields Boulevard - Walney Road

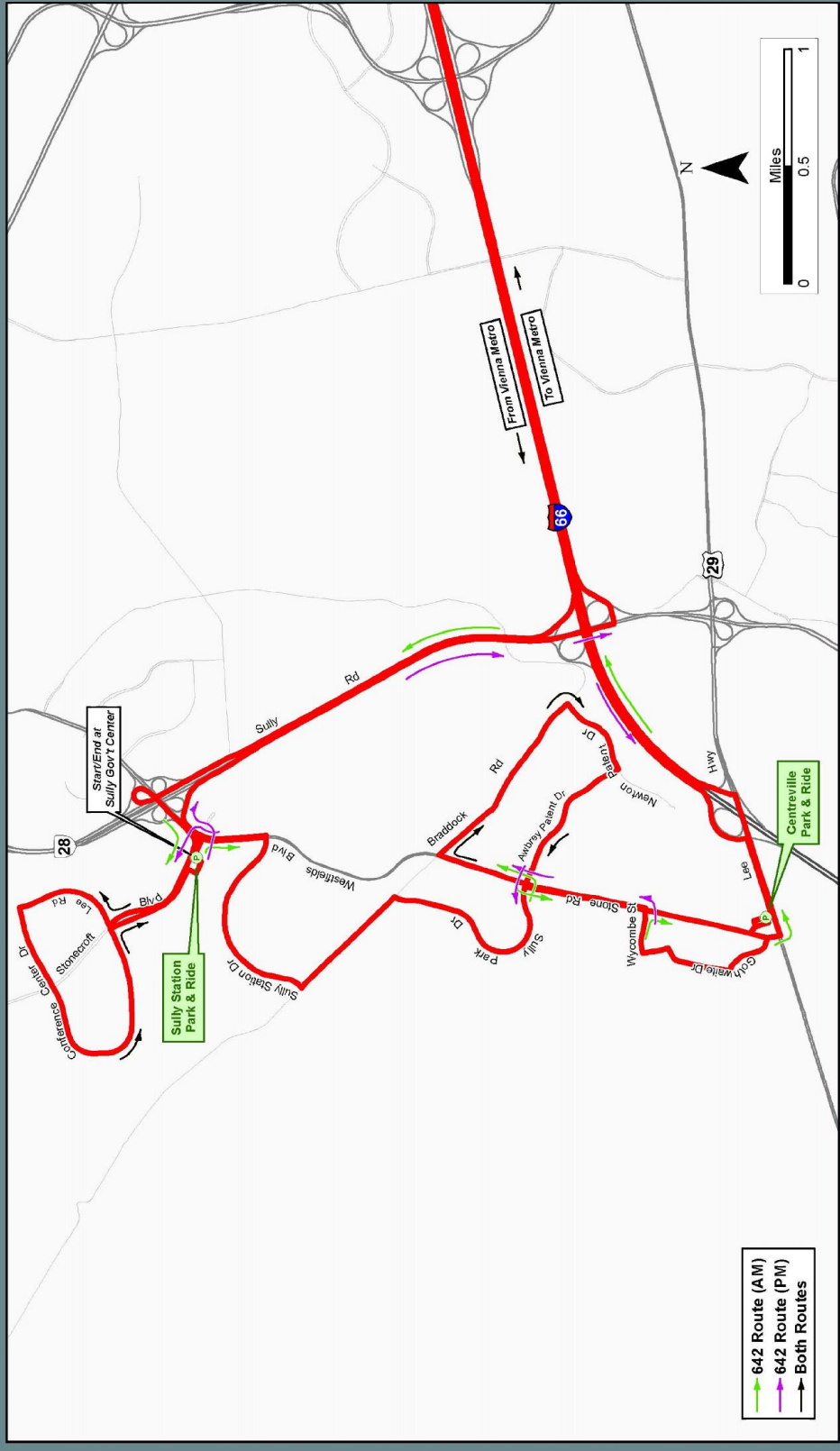


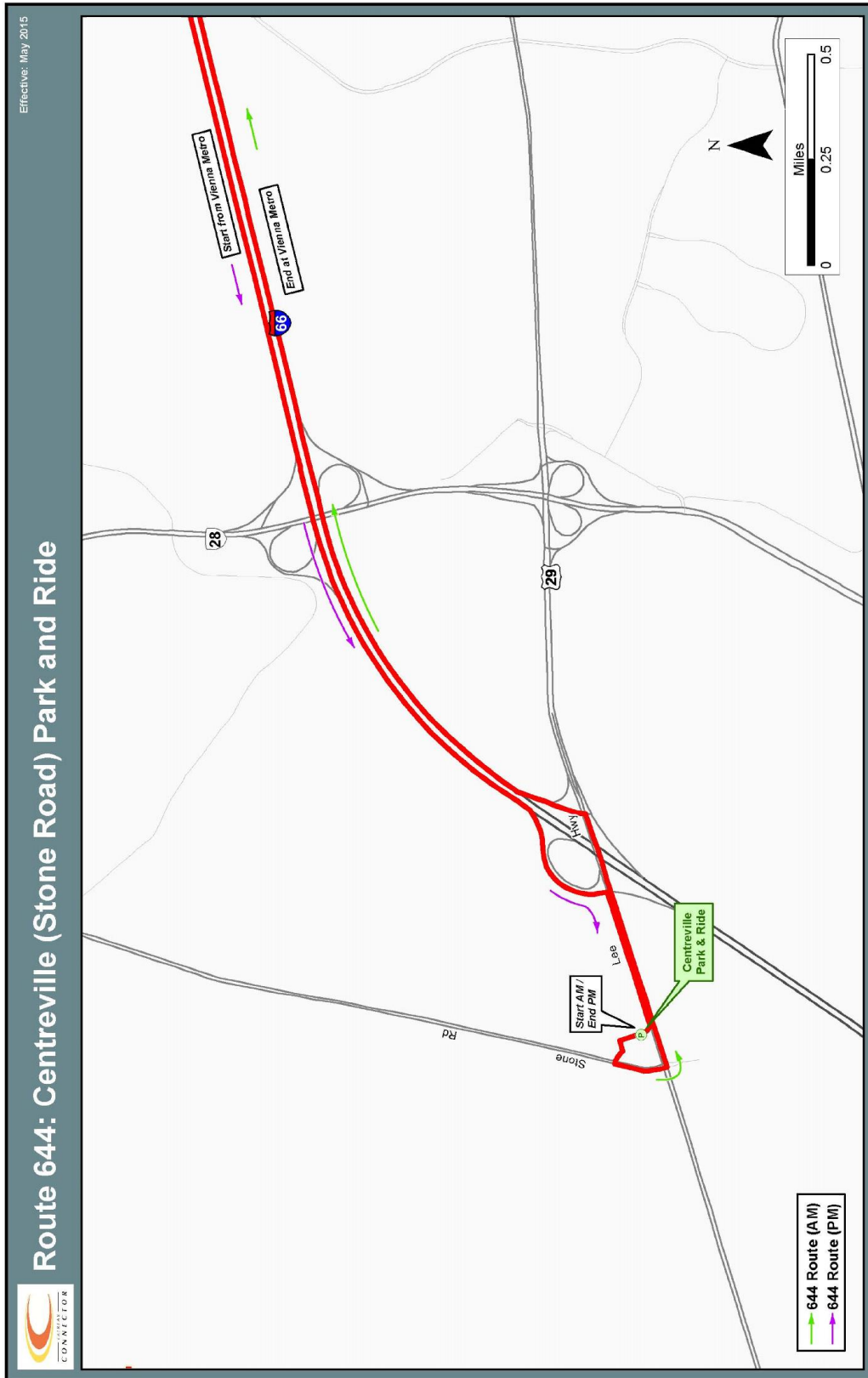
Route 640: Stone Road - Westfields Boulevard



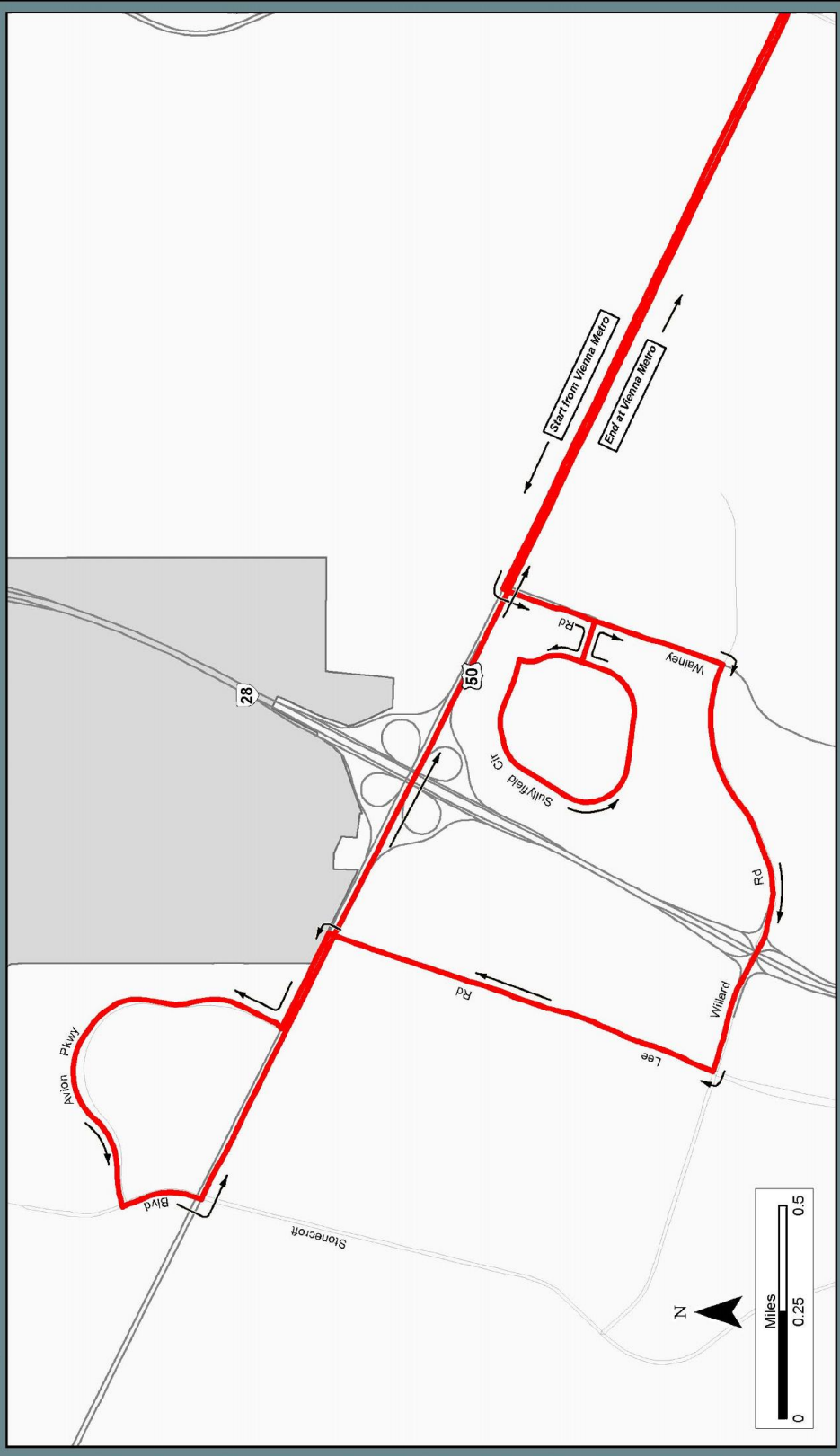


Route 642: Sully Station

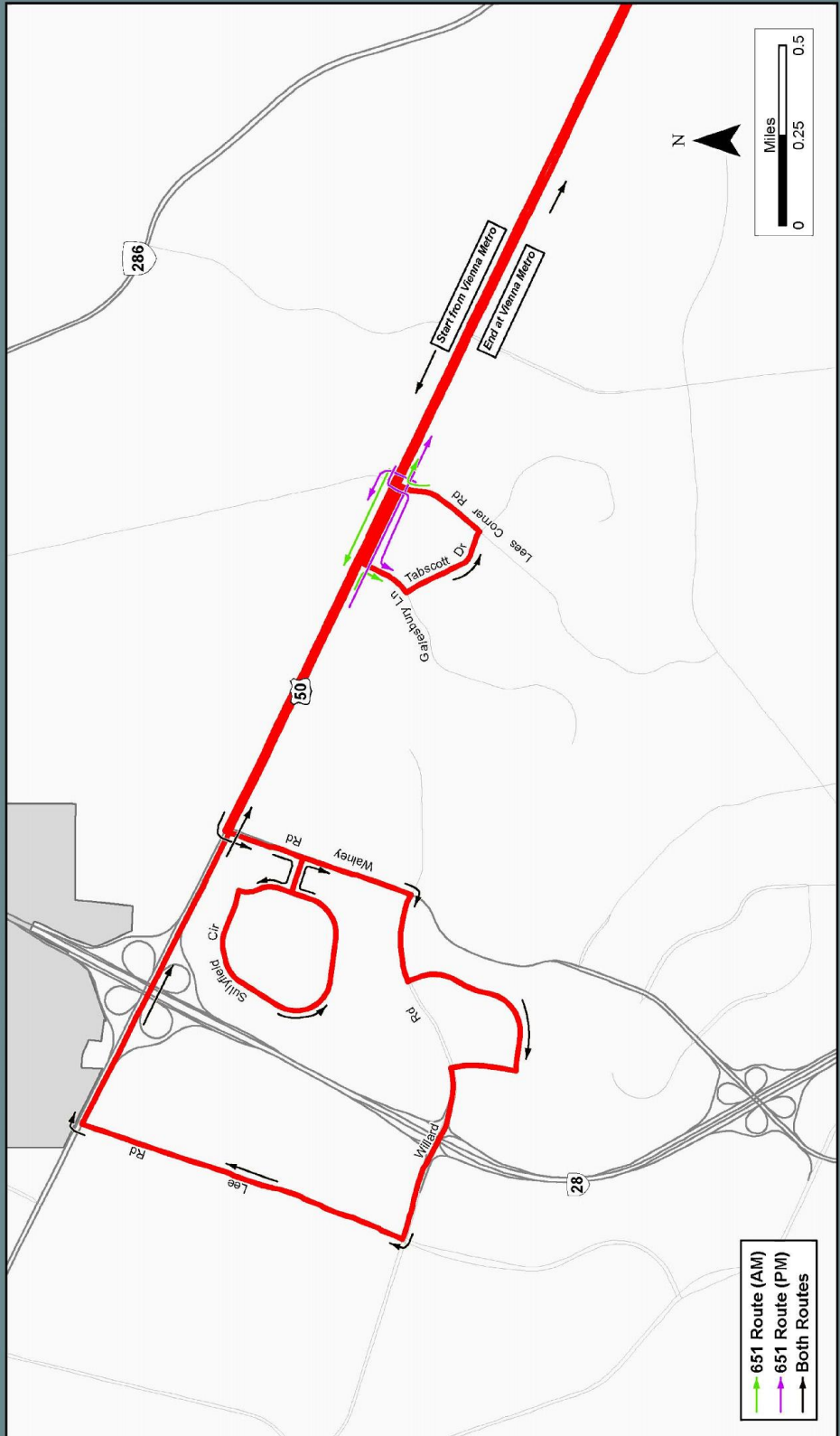




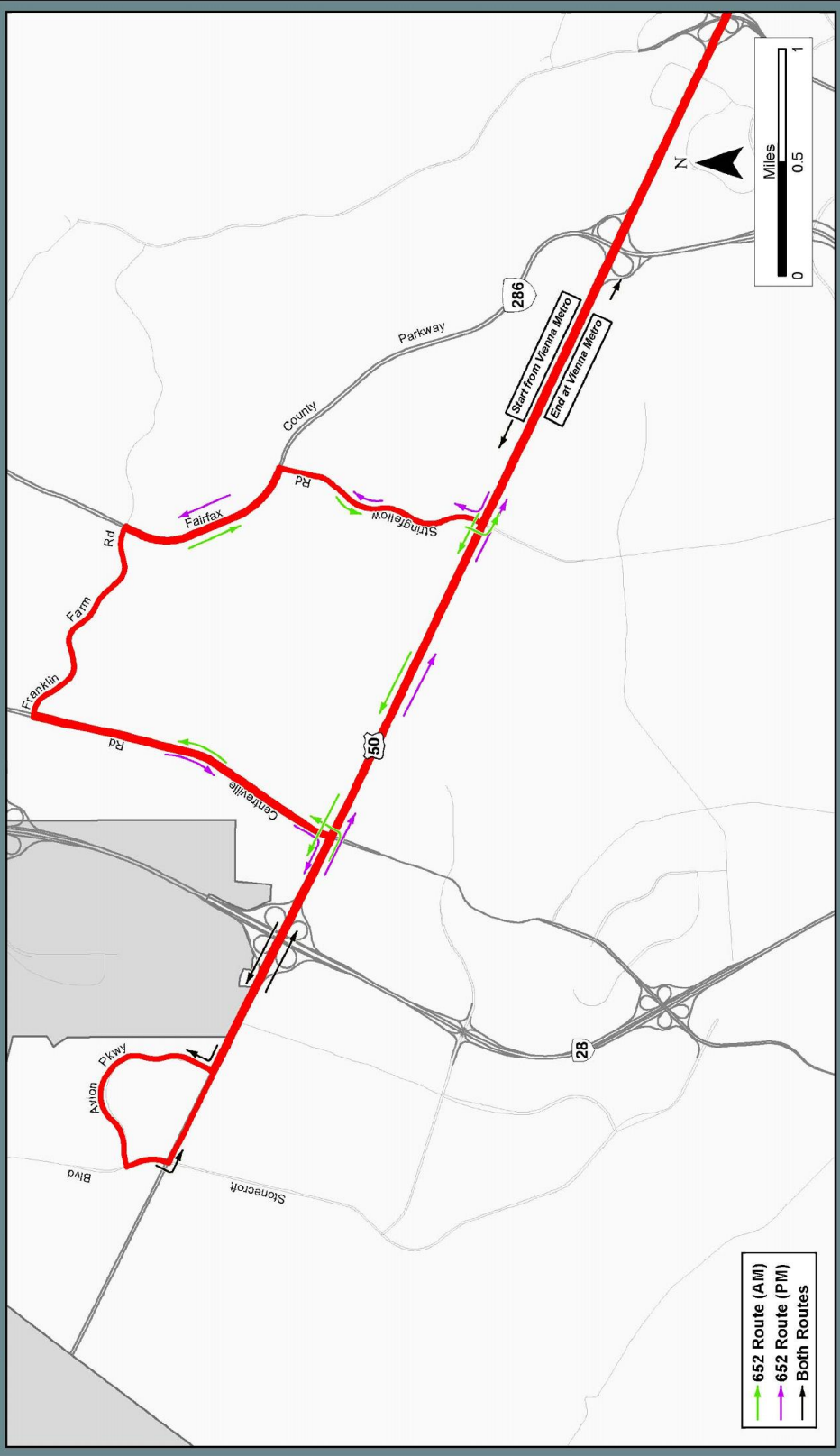
Route 650: Chantilly



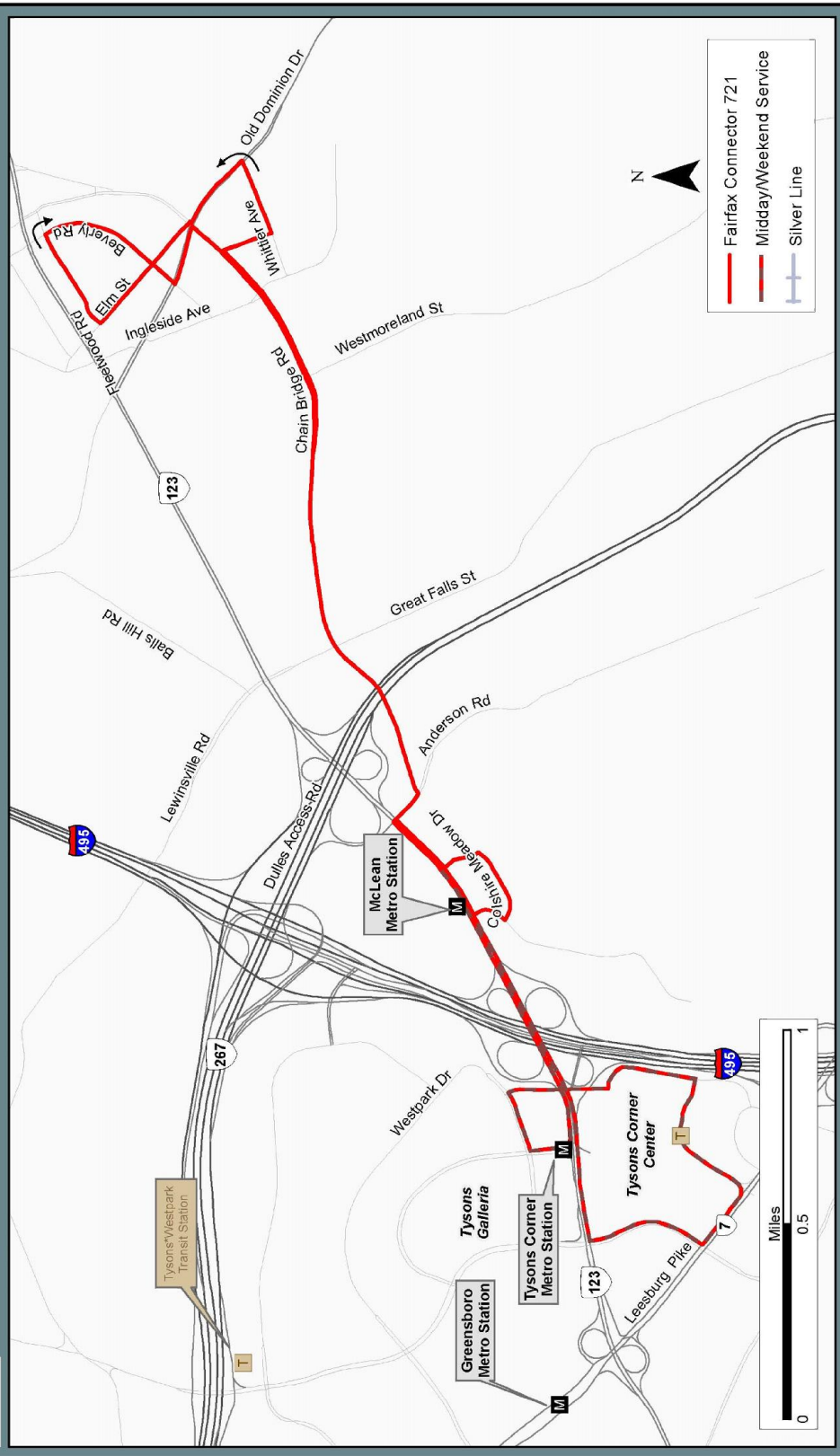
Route 651: Chantilly - Brookfield



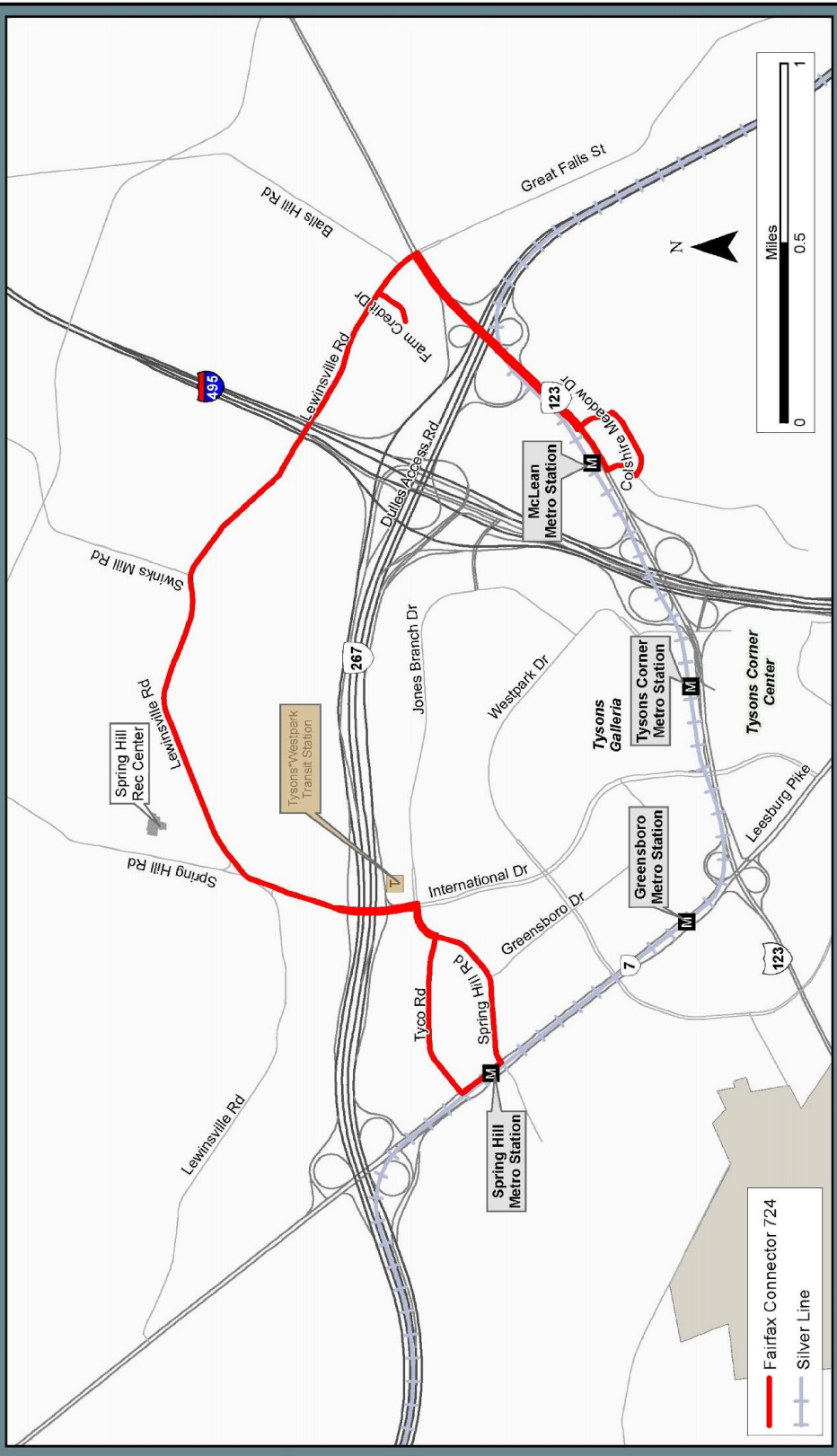
Route 652: Chantilly - Franklin Farm

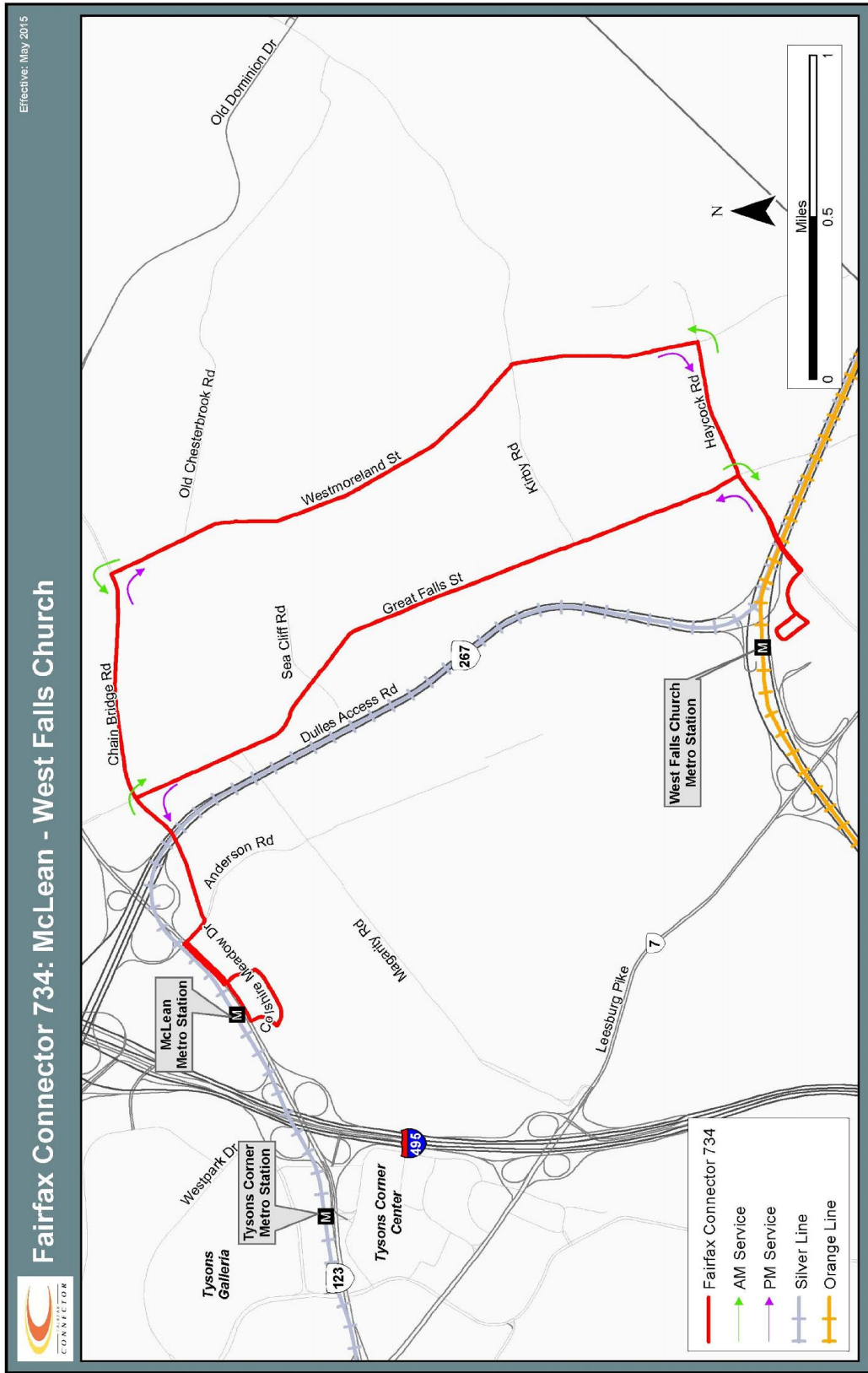


Fairfax Connector 721: Chain Bridge Road - McLean



Fairfax Connector 724: Lewinsville Road

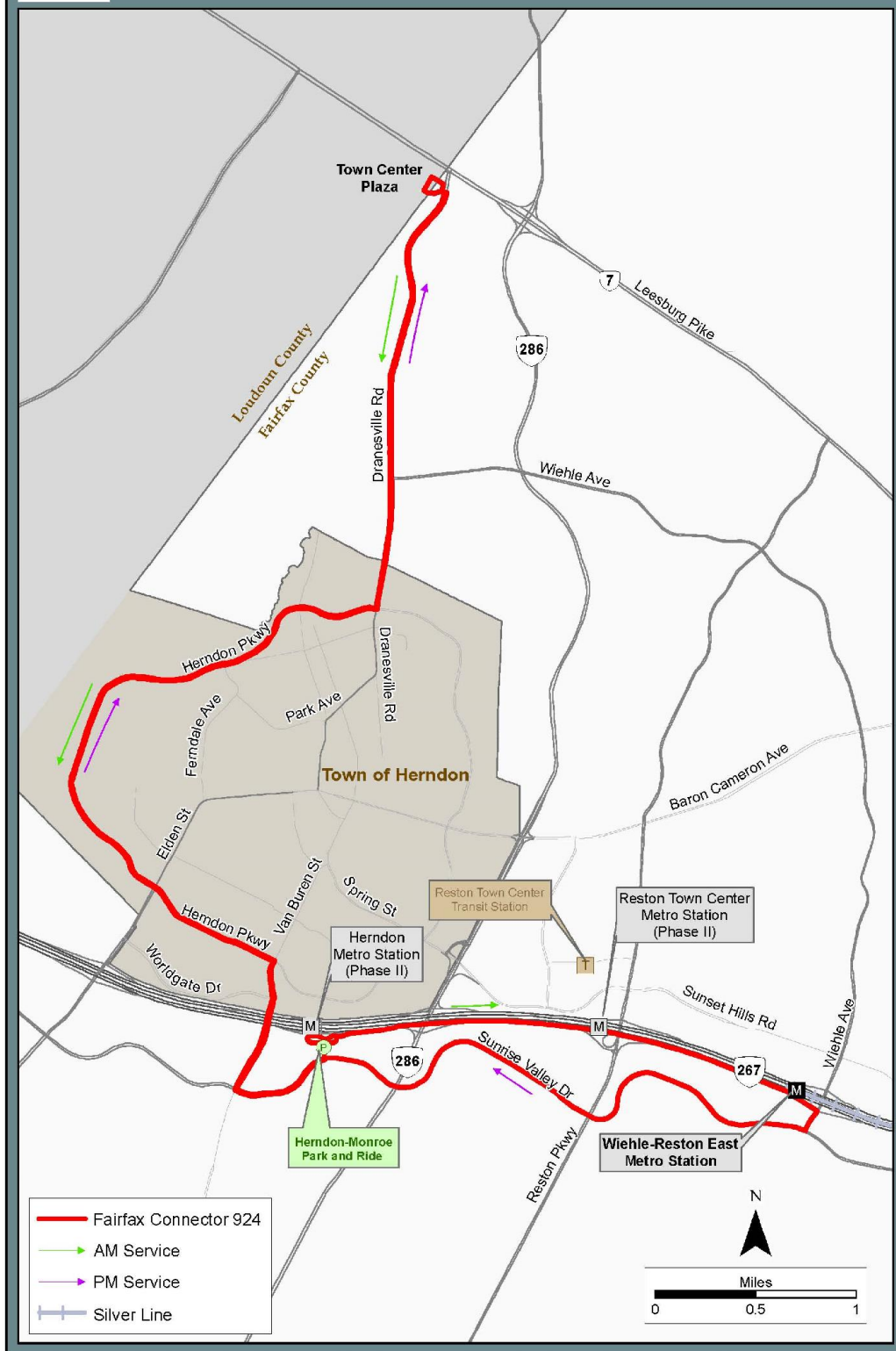






Route 924: Herndon Parkway - Dranesville Road

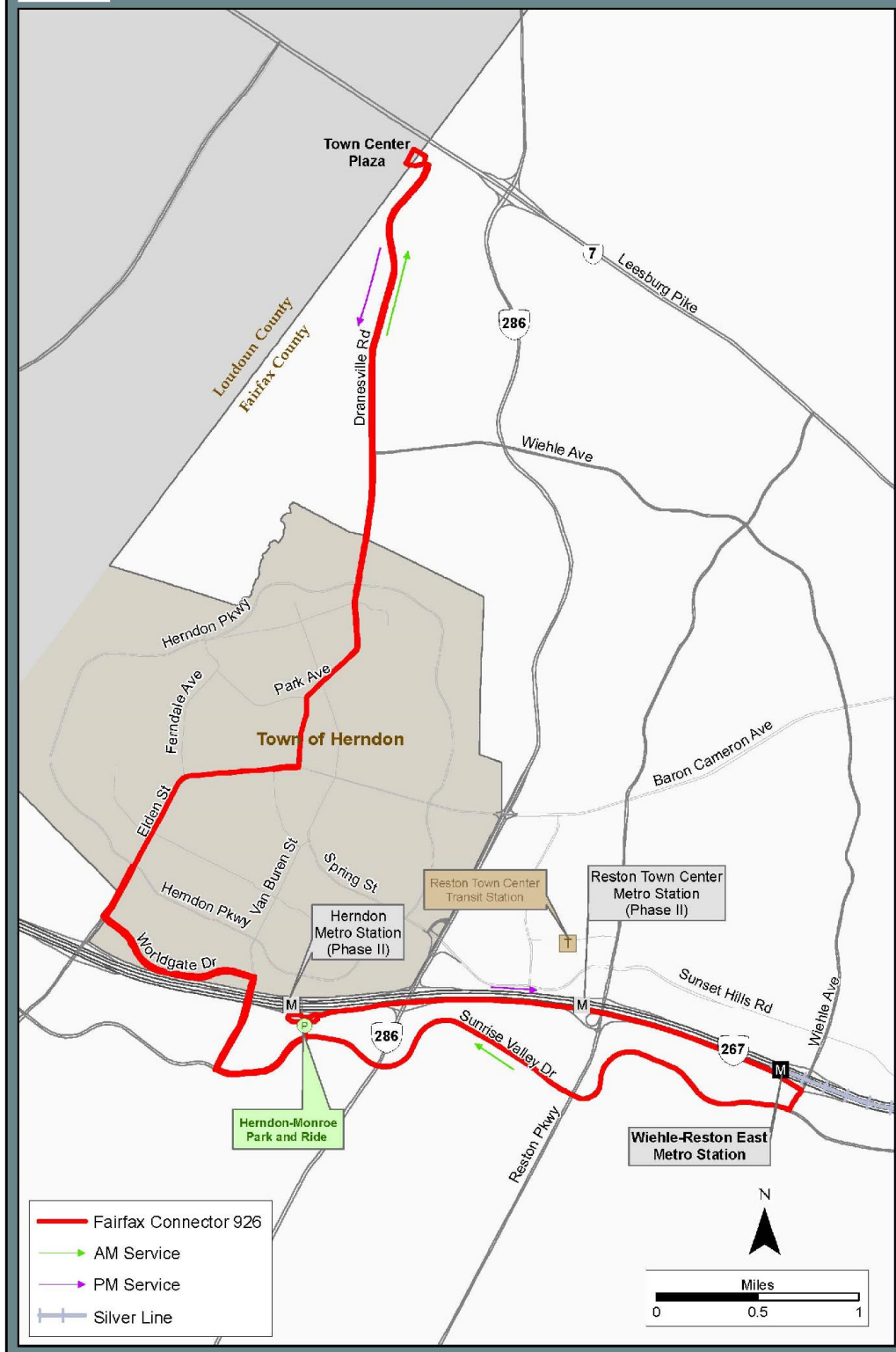
Effective: May 2016

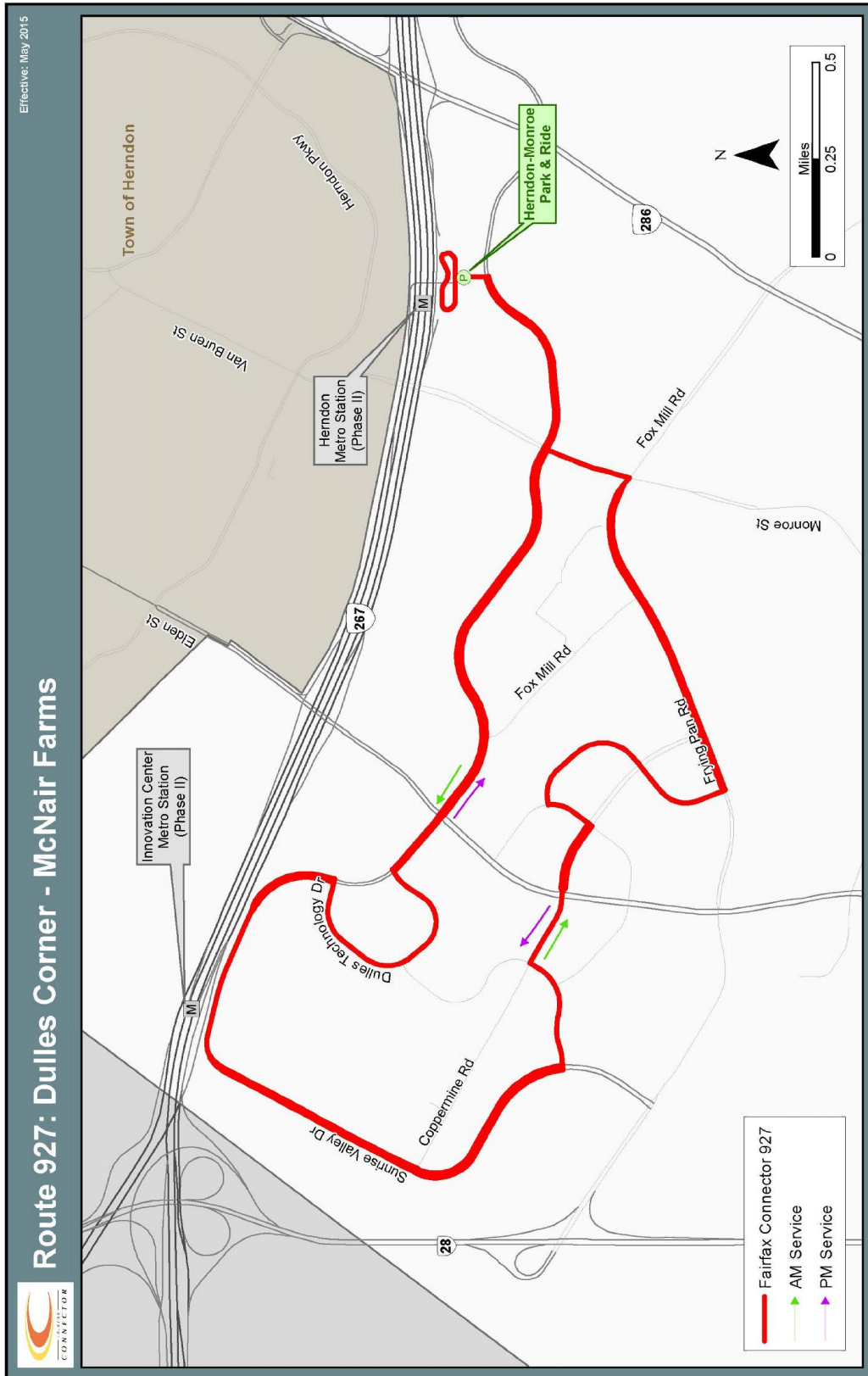




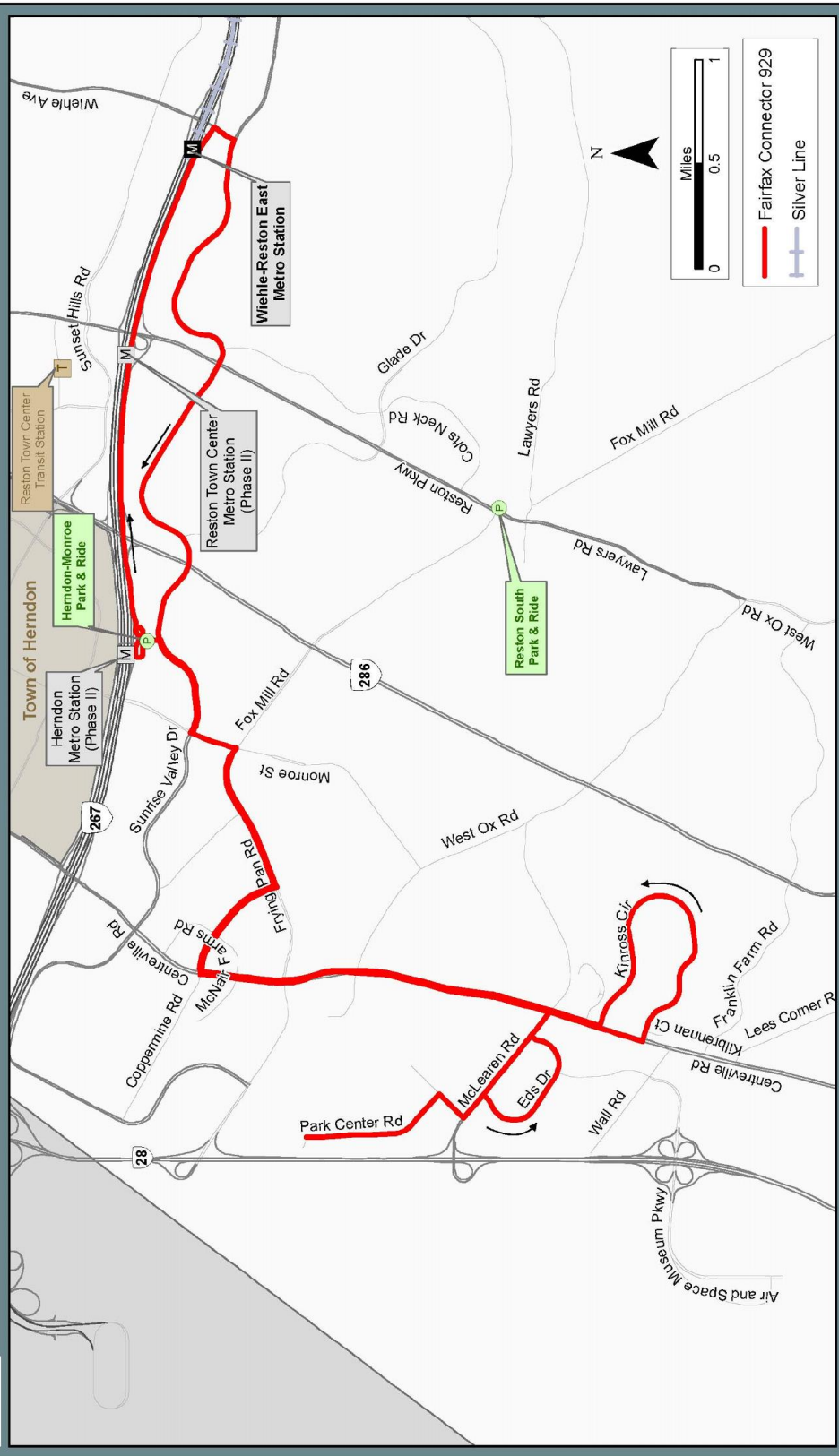
Route 926: Worldgate - Dranesville Road

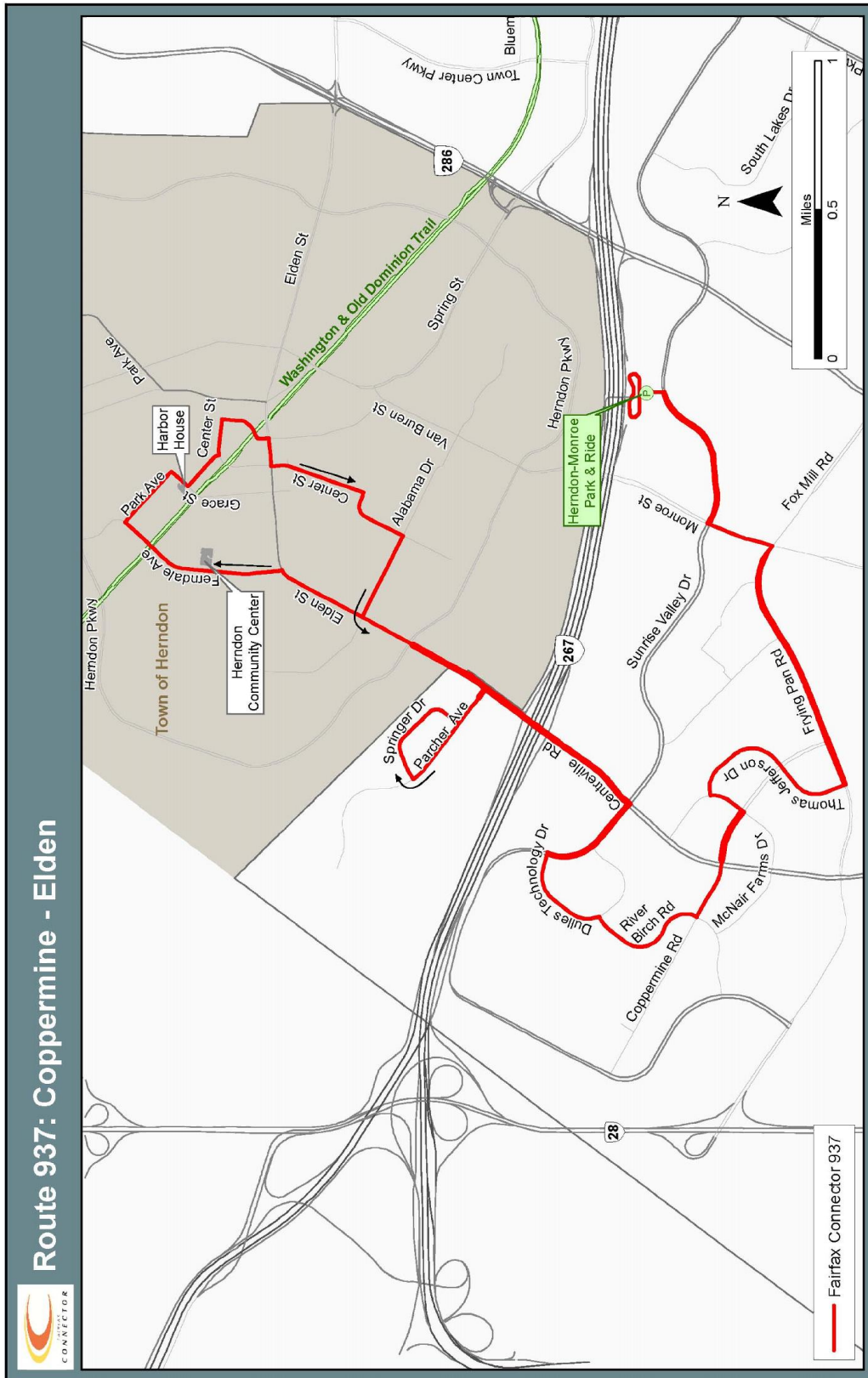
Effective: May 2015



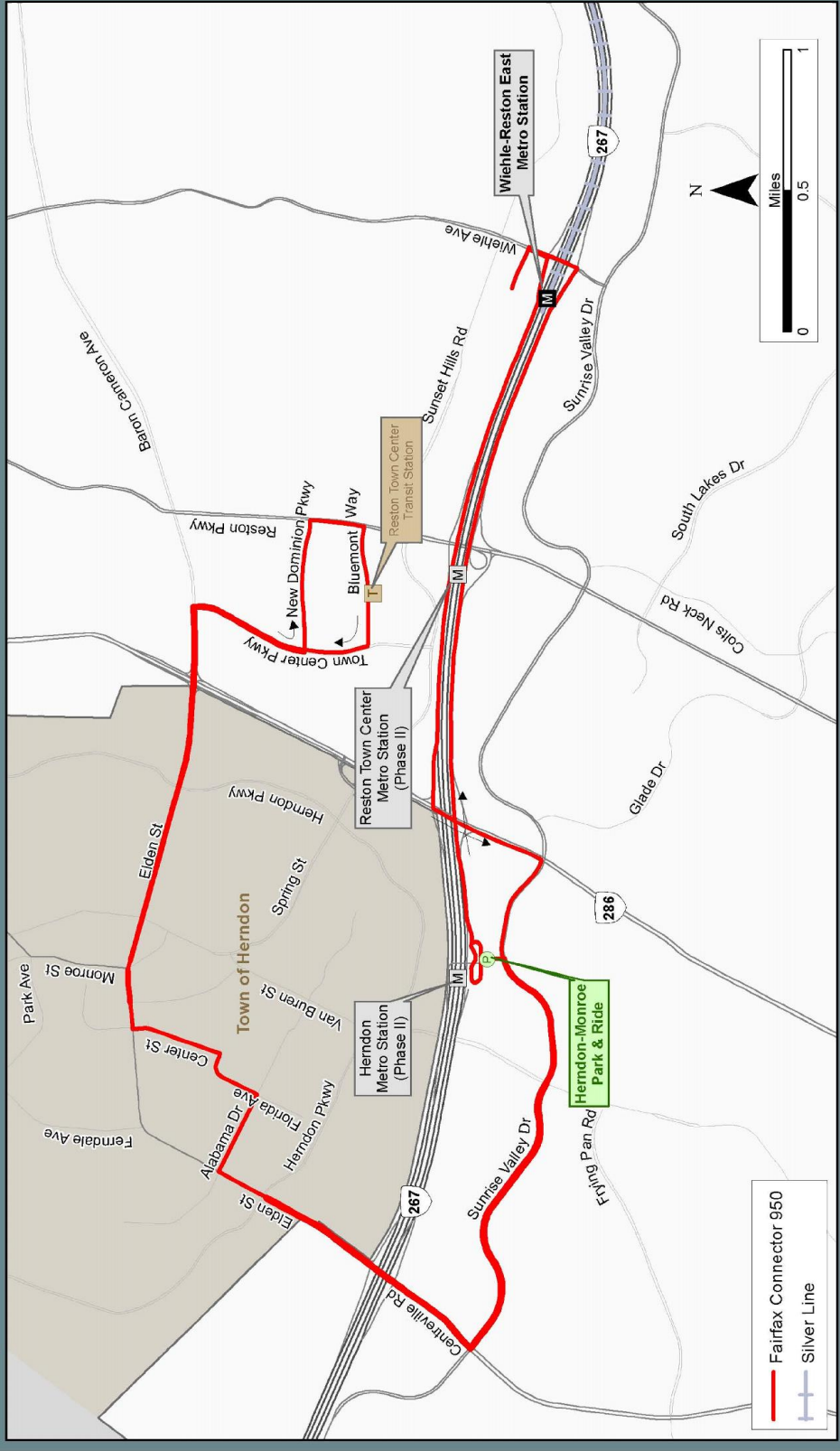


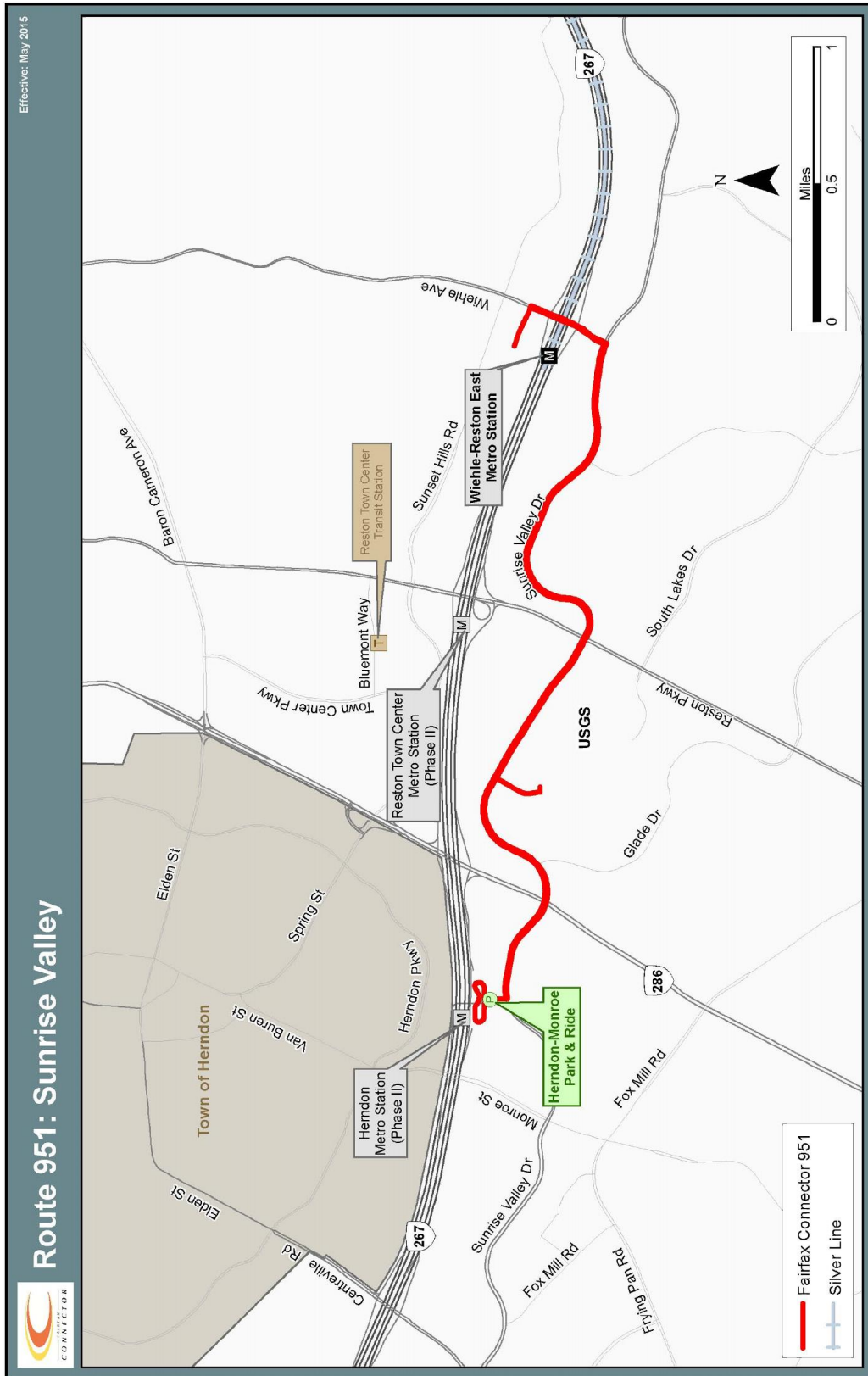
Route 929: Centreville Road



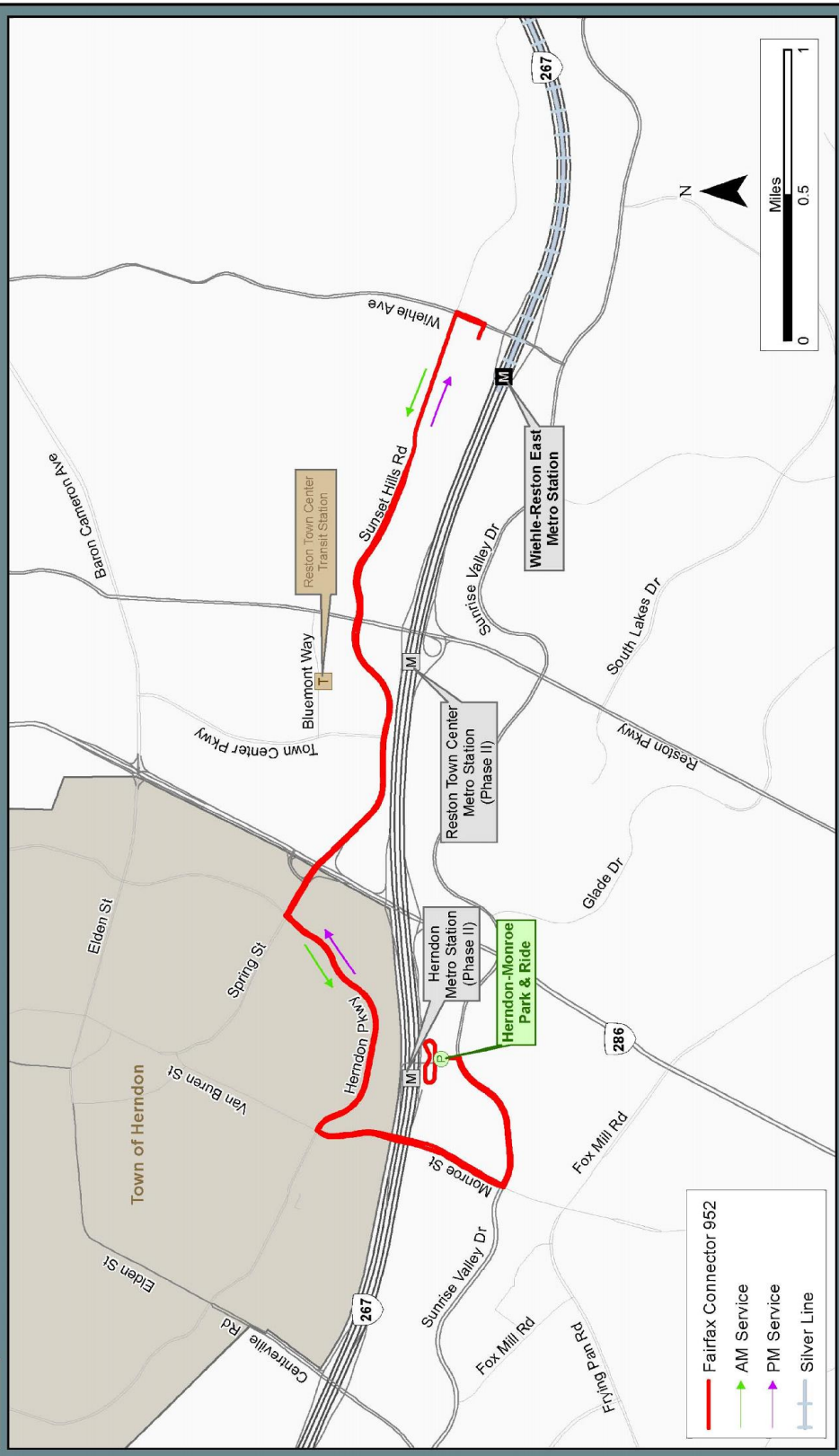


Route 950: Herndon - Reston Town Center - Wiehle

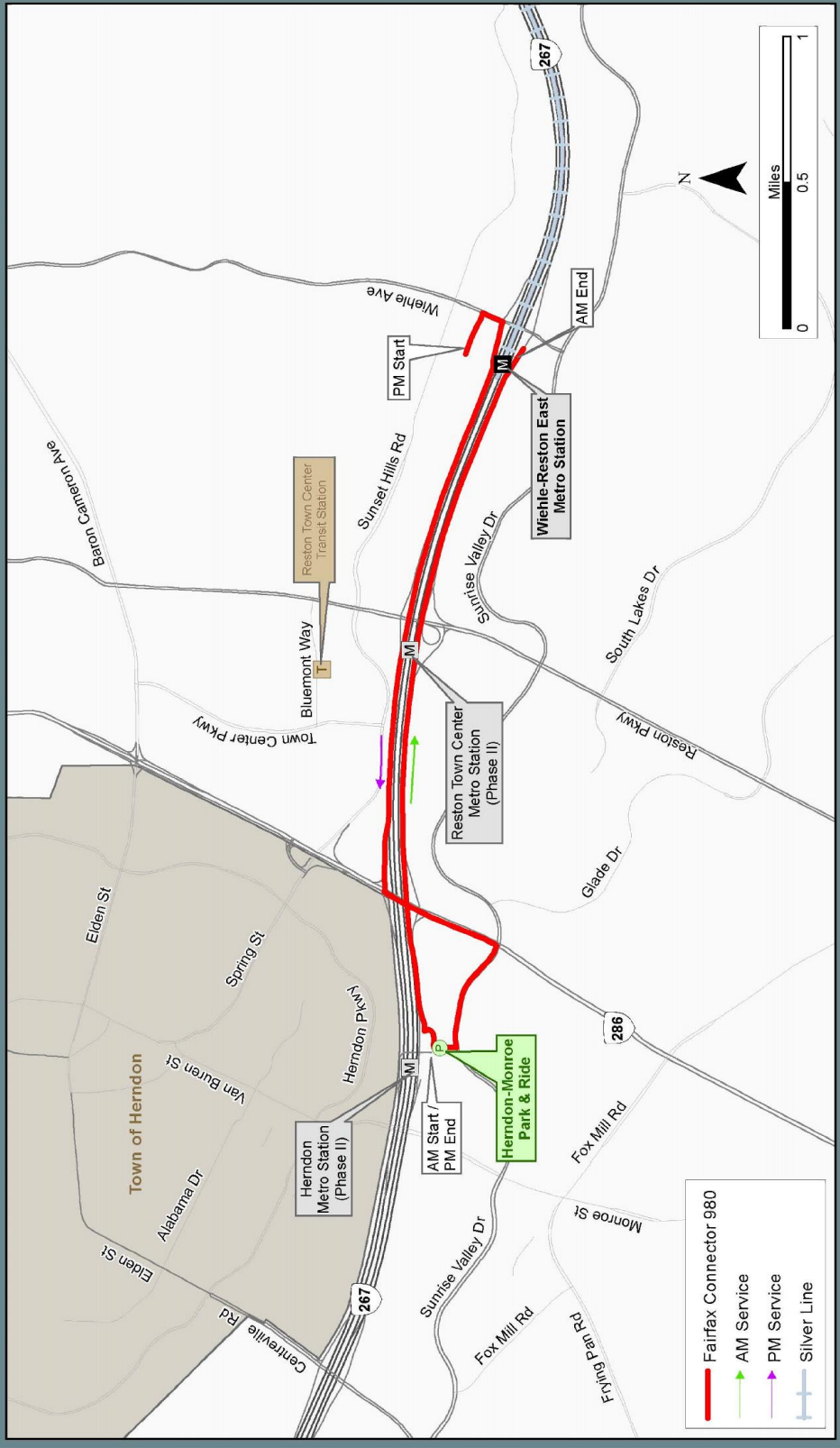




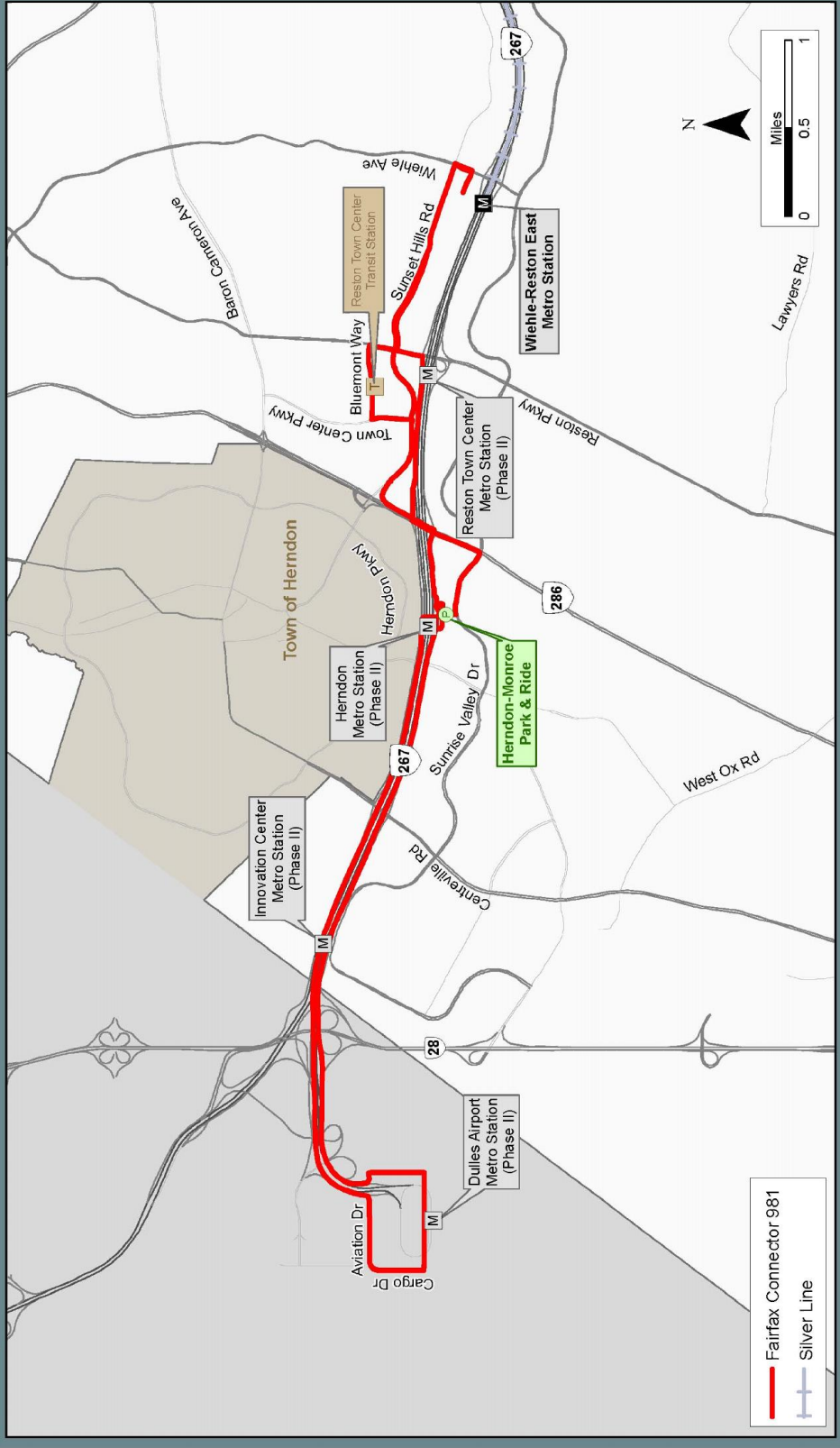
Route 952: Sunset Hills



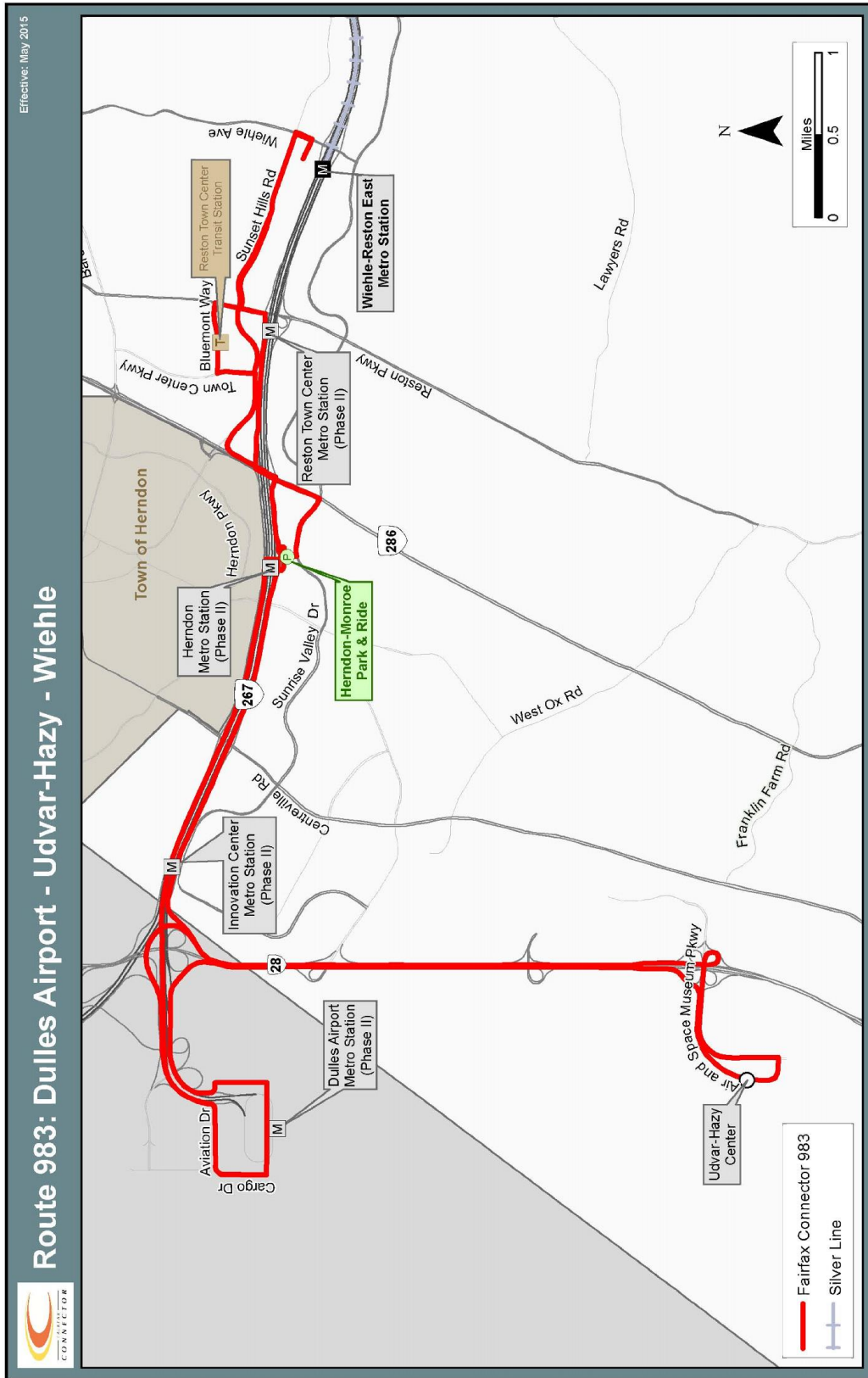
Route 980: Herndon-Monroe - Wiehle

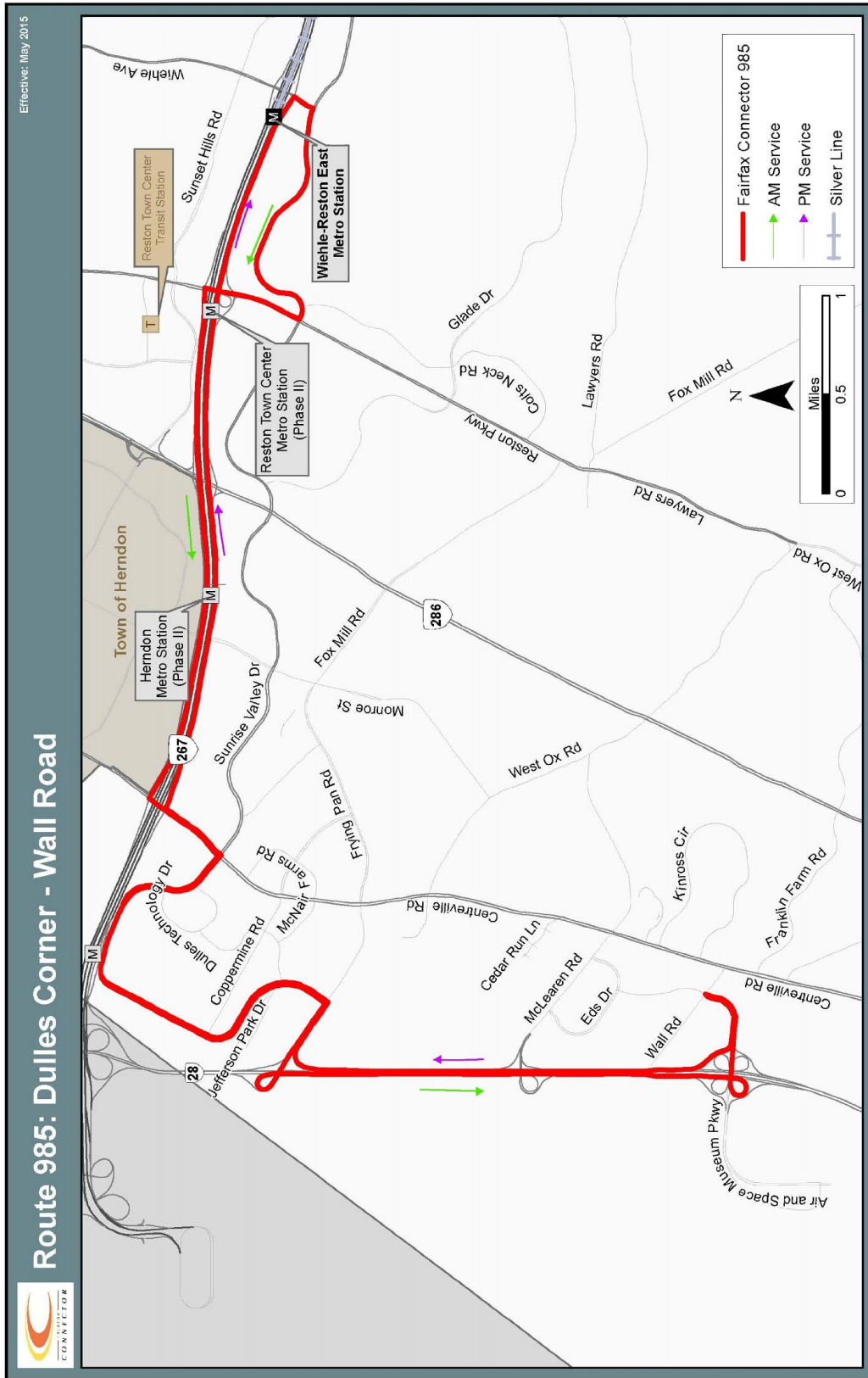


Route 981: Dulles Airport - Wiehle

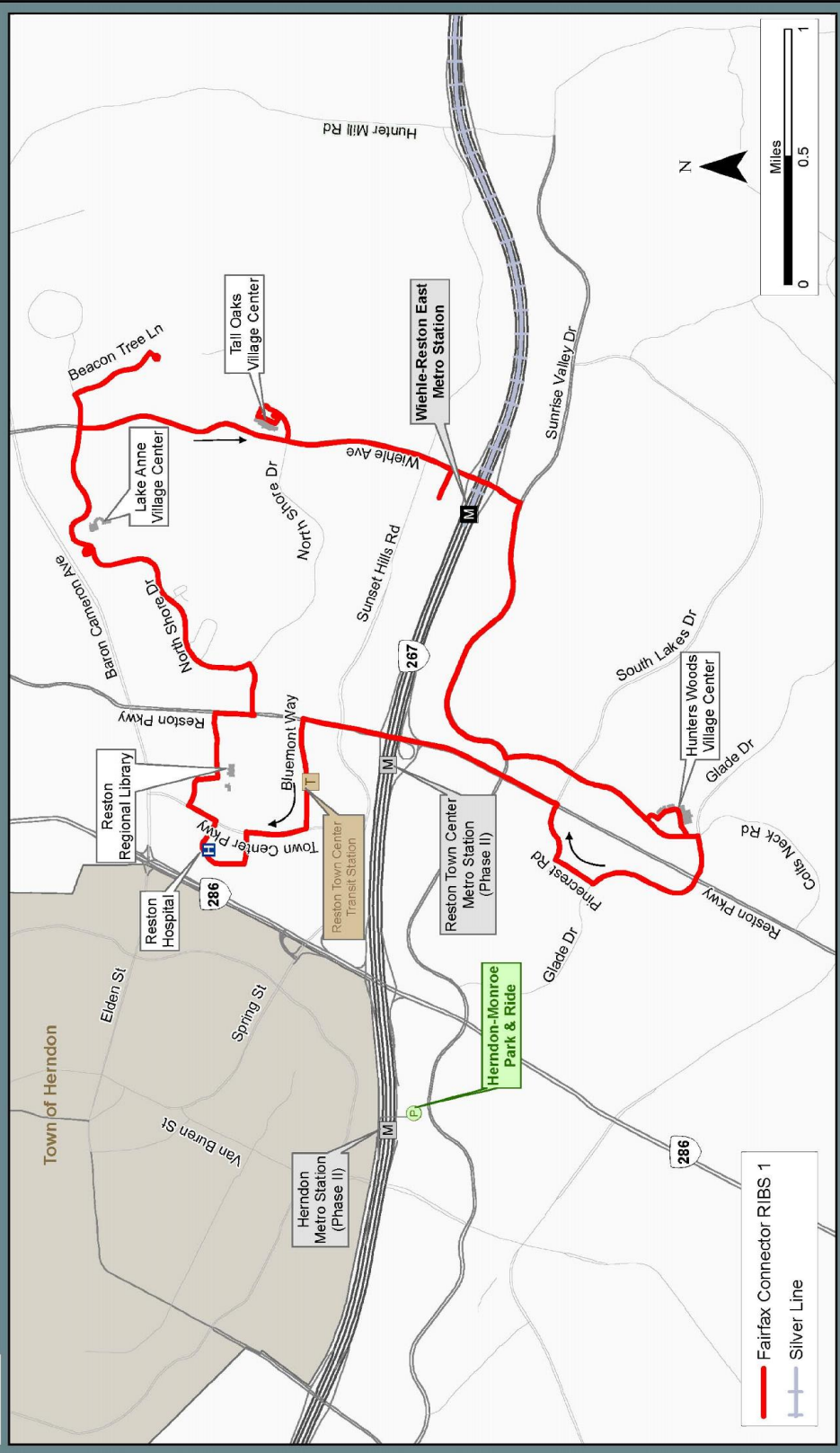


— Fairfax Connector 981
— Silver Line

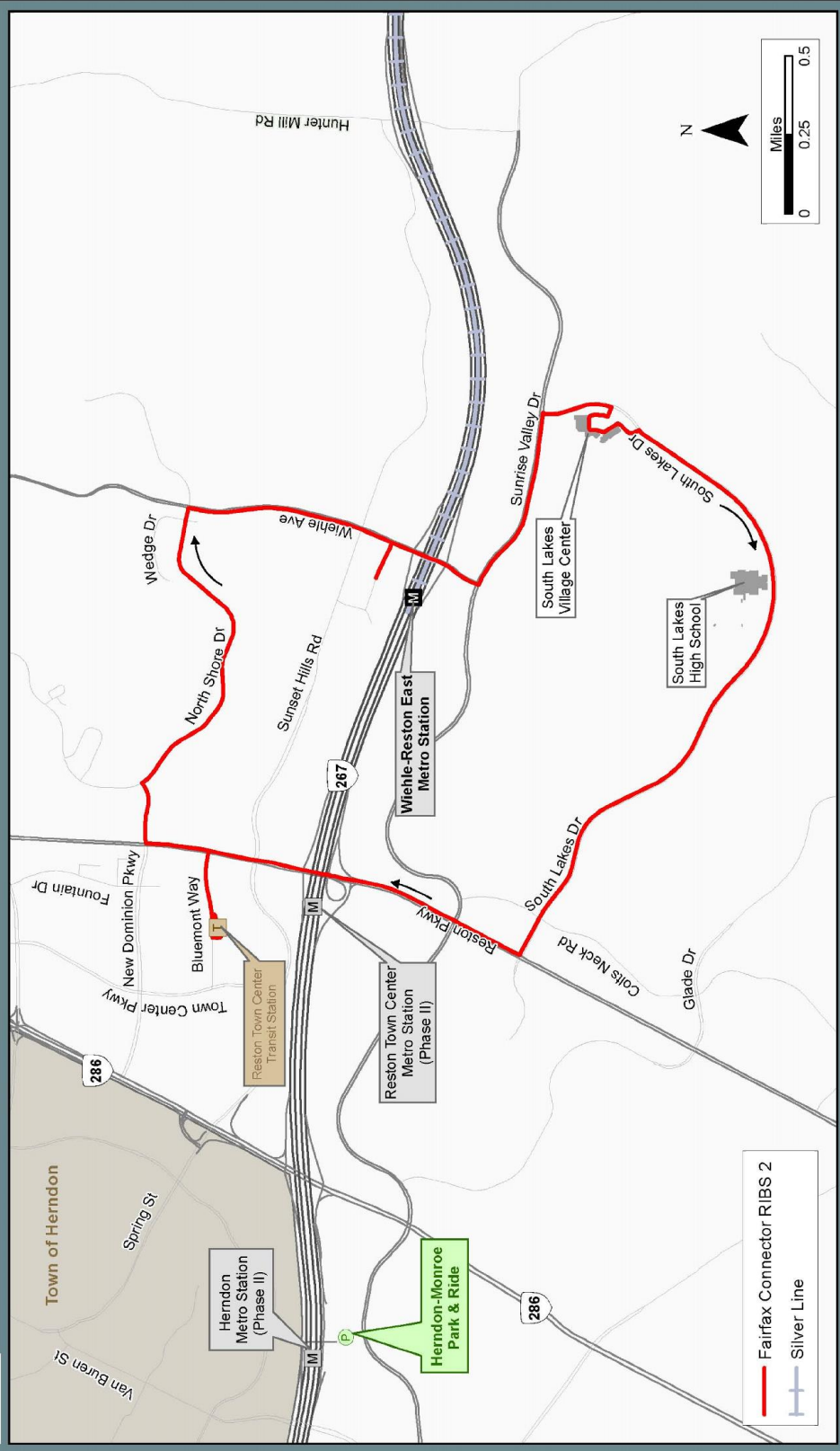




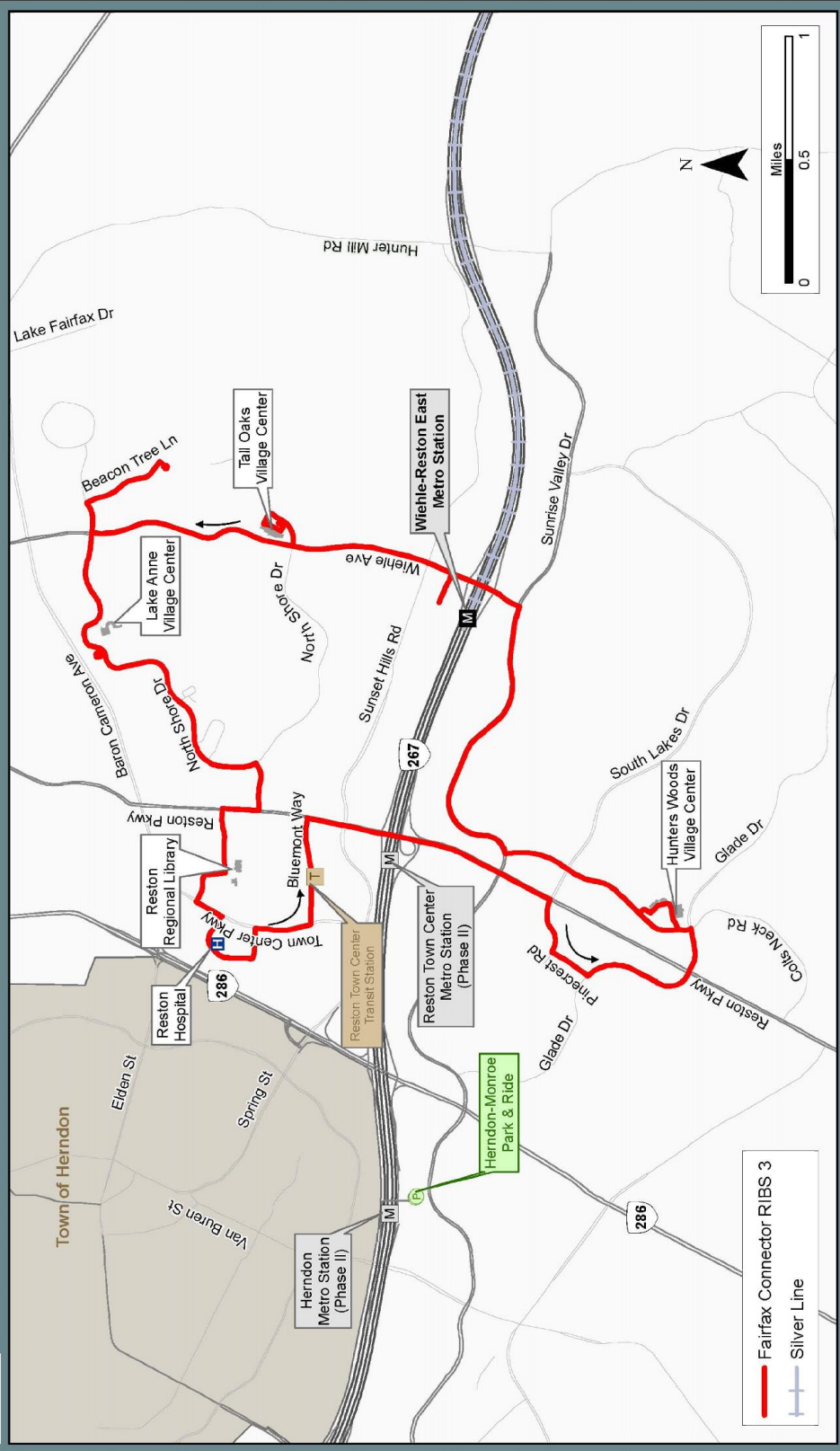
Fairfax Connector RIBS 1: Lake Anne - Hunters Woods



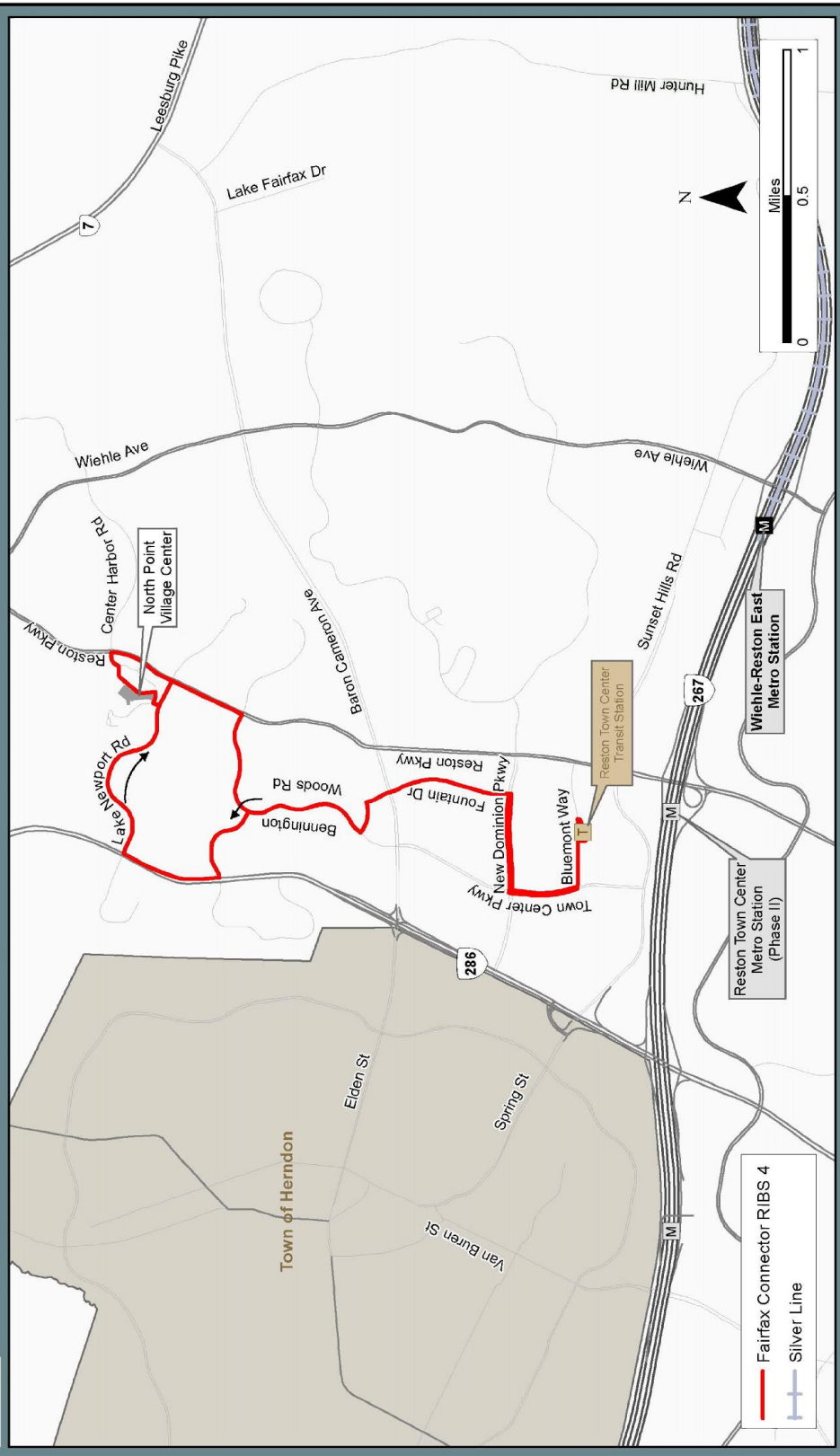
Fairfax Connector RIBS 2: South Lakes



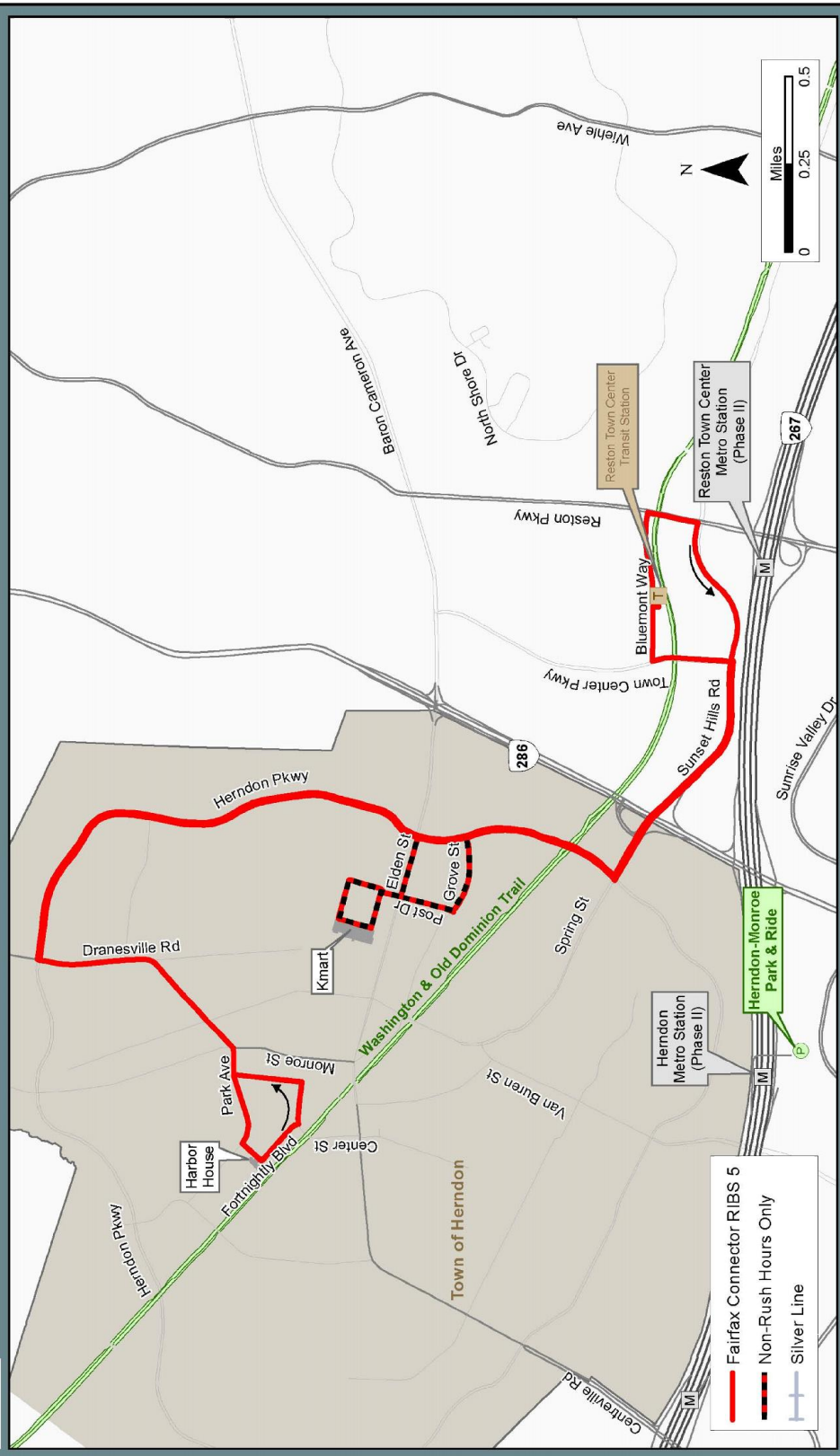
Fairfax Connector RIBS 3: Hunters Woods - Lake Anne



Fairfax Connector RIBS 4: North Point



Fairfax Connector RIBS 5: Herndon



9.2. FTA Triennial Review

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FTA Triennial Review

Fairfax Connector has not been subjected to an FTA Triennial Review within the last three years.

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9.3. Fleet Inventory from OLGA

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Vehicle Inventory Data for NVTC - Fairfax County

Descriptions	Mfg Date	FTA code	Purchased
4521-Ford Escape, 1FMCU59H88KE43287	01/01/2008	11.12.16 - Sedan / Station Wagon	05/20/2008
4533-Ford Escape, FMCU59HX8KE432888	01/01/2008	11.12.16 - Sedan / Station Wagon	05/20/2008
4550-Ford Escape, 1FMCU59H68KE43286	01/01/2008	11.12.16 - Sedan / Station Wagon	05/20/2008
4577-Ford Escape, 1FMCU59H18KE43289	01/01/2008	11.12.16 - Sedan / Station Wagon	05/20/2008
7701-New Flyer XD40, 5FYD8FV11BC039339	01/01/2011	11.12.01 - Bus STD 40 FT	09/26/2011
7702-New Flyer XD40, 5FYD8FV18BC039340	01/01/2011	11.12.01 - Bus STD 40 FT	09/23/2011
7703-New Flyer XD40, 5FYD8FV1XBC039341	01/01/2011	11.12.01 - Bus STD 40 FT	09/26/2011
7704-New Flyer XD40, 5FYD8FV11BC039342	01/01/2011	11.12.01 - Bus STD 40 FT	09/26/2011
7705-New Flyer XD40, 5FYD8FV13BC039343	01/01/2011	11.12.01 - Bus STD 40 FT	09/26/2011
7706-New Flyer XD40, 5FYD8FV15BC039344	01/01/2011	11.12.01 - Bus STD 40 FT	09/26/2011
7707-New Flyer XD40, 5FYD8FV17BC039345	01/01/2011	11.12.01 - Bus STD 40 FT	09/26/2011
7708-New Flyer XD40, 5FYD8FV19BC039346	01/01/2011	11.12.01 - Bus STD 40 FT	09/26/2011
7709-New Flyer XD40, 5FYD8FV10BC039347	01/01/2011	11.12.01 - Bus STD 40 FT	09/26/2011
7710-New Flyer XD40, 5FYD8FV12BC039348	01/01/2011	11.12.01 - Bus STD 40 FT	09/26/2011
7711-New Flyer XD40, 5FYD8FV14BC039349	01/01/2011	11.12.01 - Bus STD 40 FT	09/26/2011
7712-New Flyer XD40, 5FYD8FV10BC039350	01/01/2011	11.12.01 - Bus STD 40 FT	09/26/2011
7713-New Flyer XD40, 5FYD8FV12BC039351	01/01/2011	11.12.01 - Bus STD 40 FT	09/26/2011
7714-New Flyer XD40, 5FYD8FV14BC039352	01/01/2011	11.12.01 - Bus STD 40 FT	09/26/2011
7715-New Flyer XD40, 5FYD8FV16BC039353	01/01/2011	11.12.01 - Bus STD 40 FT	09/26/2011
7716-New Flyer XD40, 5FYD8FV18BC039354	01/01/2011	11.12.01 - Bus STD 40 FT	09/26/2011
7717-New Flyer XD40, 5FYD8FV1XBC039355	01/01/2011	11.12.01 - Bus STD 40 FT	09/26/2011

Vehicle Inventory Data for NVT - Fairfax County

7718-New Flyer XD40, 5FYD8FV11BC039356	01/01/2011	11.12.01 - Bus STD 40 FT	09/26/2011
7719-New Flyer XD40, 5FYD8FV13BC039357	01/01/2011	11.12.01 - Bus STD 40 FT	09/26/2011
7720-New Flyer XD40, 5FYD8FV15BC039358	01/01/2011	11.12.01 - Bus STD 40 FT	09/26/2011
7721-New Flyer XD40, 5FYD8FV17BC039359	01/01/2011	11.12.01 - Bus STD 40 FT	09/26/2011
7722-New Flyer XD40, 5FYD8FV13BC039360	01/01/2011	11.12.01 - Bus STD 40 FT	09/26/2011
7723-New Flyer XD40, 5FYD8FV15BC039361	01/01/2011	11.12.01 - Bus STD 40 FT	09/26/2011
7724-New Flyer XD40, 5FYD8FV17BC039362	01/01/2011	11.12.01 - Bus STD 40 FT	09/26/2011
7725-New Flyer XD40, 5FYD8FV19BC039363	01/01/2011	11.12.01 - Bus STD 40 FT	09/26/2011
7726-New Flyer XD40, 5FYD8FV10BC039364	01/01/2011	11.12.01 - Bus STD 40 FT	09/26/2011
7727-New Flyer XD40, 5FYD8FV12BC039365	01/01/2011	11.12.01 - Bus STD 40 FT	09/26/2011
7728-New Flyer XD40, 5FYD8FV14BC039366	01/01/2011	11.12.01 - Bus STD 40 FT	09/26/2011
7729-New Flyer XD40, 5FYD8FV16BC039367	01/01/2011	11.12.01 - Bus STD 40 FT	09/26/2011
7730-New Flyer XD40, 5FYD8FV18BC039368	01/01/2011	11.12.01 - Bus STD 40 FT	09/26/2011
7731-New Flyer XD40, 5FYD8FV1XBC039369	01/01/2011	11.12.01 - Bus STD 40 FT	09/26/2011
7732-New Flyer XD40, 5FYD8FV16BC039370	01/01/2011	11.12.01 - Bus STD 40 FT	09/26/2011
7733-New Flyer XD40, 5FYD8FV18BC039371	01/01/2011	11.12.01 - Bus STD 40 FT	09/26/2011
7734-New Flyer XD40, 5FYD8FV1XBC039372	01/01/2011	11.12.01 - Bus STD 40 FT	09/26/2011
7735-New Flyer XD40, 5FYD8FV11BC039373	01/01/2011	11.12.01 - Bus STD 40 FT	09/26/2011
7736-New Flyer XD40, 5FYD8FV13BC039374	01/01/2011	11.12.01 - Bus STD 40 FT	09/26/2011
7737-New Flyer XD40, 5FYD8FV15BC039375	01/01/2011	11.12.01 - Bus STD 40 FT	09/26/2011
7738-New Flyer XD40, 5FYD8FV16CC041332	01/01/2012	11.12.01 - Bus STD 40 FT	12/21/2012
7739-New Flyer XD40, 5FYD8FV18CC041333	01/01/2012	11.12.01 - Bus STD 40 FT	12/21/2012
7740-New Flyer XD40, 5FYD8FV1XCC041334	01/01/2012	11.12.01 - Bus STD 40 FT	12/21/2012
7741-New Flyer XD40, 5FYD8FV11CC041335	01/01/2012	11.12.01 - Bus STD 40 FT	12/21/2012
7742-New Flyer XD40, 5FYD8FV13CC041336	01/01/2012	11.12.01 - Bus STD 40 FT	12/21/2012
7743-New Flyer XD40, 5FYD8FV15CC041337	01/01/2012	11.12.01 - Bus STD 40 FT	12/21/2012
7744-New Flyer XD40, 5FYD8FV17CC041338	01/01/2012	11.12.01 - Bus STD 40 FT	12/21/2012
7745-New Flyer XD40, 5FYD8FV19CC041339	01/01/2012	11.12.01 - Bus STD 40 FT	12/21/2012
7746-New Flyer XD40, 5FYD8FV15CC041340	01/01/2012	11.12.01 - Bus STD 40 FT	12/21/2012

Vehicle Inventory Data for NVTC - Fairfax County

7747-New Flyer XD40, 5FYD8FV17CC041341	01/01/2012	11.12.01 - Bus STD 40 FT	12/21/2012
7748-New Flyer XD40, 5FYD8FV19CC041342	01/01/2012	11.12.01 - Bus STD 40 FT	12/21/2012
7749-New Flyer XD40, 5FYD8FV10CC041343	01/01/2012	11.12.01 - Bus STD 40 FT	12/21/2012
7750-New Flyer XD40, 5FYD8FV12CC041344	01/01/2012	11.12.01 - Bus STD 40 FT	12/21/2012
7751-New Flyer XD40, 5FYD8FV14CC041345	01/01/2012	11.12.01 - Bus STD 40 FT	12/21/2012
7752-New Flyer XD40, 5FYD8FV16CC041346	01/01/2012	11.12.01 - Bus STD 40 FT	12/21/2012
7753-New Flyer XD40, 5FYD8FV18CC041347	01/01/2012	11.12.01 - Bus STD 40 FT	12/21/2012
7754-Orion I-MATT, 2B1139772L6002695	01/01/1990	11.12.02 - Bus STD 35 FT	01/01/1990
7755-New Flyer XD40, 5FYD8FV11CC041349	01/01/2012	11.12.01 - Bus STD 40 FT	12/21/2012
7756-New Flyer XD40, 5FYD8FV18CC041350	01/01/2012	11.12.01 - Bus STD 40 FT	12/21/2012
7757-New Flyer XD40, 5FYD8FV1XCC041351	01/01/2012	11.12.01 - Bus STD 40 FT	12/21/2012
7758-New Flyer XD40, 5FYD8FV1XCC041348	01/01/2012	11.12.01 - Bus STD 40 FT	12/21/2012
7759-New Flyer XD40, 5FYD8FV1XDB042216	01/01/2013	11.12.01 - Bus STD 40 FT	08/01/2013
7760-New Flyer XD40, 5FYD8FV11DB042217	01/01/2013	11.12.01 - Bus STD 40 FT	08/01/2013
7761-New Flyer XD40, 5FYD8FV13DB042218	01/01/2013	11.12.01 - Bus STD 40 FT	08/01/2013
7762-New Flyer XD40, 5FYD8FV15DB042219	01/01/2013	11.12.01 - Bus STD 40 FT	08/01/2013
7763-New Flyer XD40, 5FYD8FV11DB042220	01/01/2013	11.12.01 - Bus STD 40 FT	08/01/2013
7764-New Flyer XD40, 5FYD8FV13DB042221	01/01/2013	11.12.01 - Bus STD 40 FT	08/01/2013
7765-New Flyer XD40, 5FYD8FV15DB042222	01/01/2013	11.12.01 - Bus STD 40 FT	08/01/2013
7766-New Flyer XD40, 5FYD8FV17DB042223	01/01/2013	11.12.01 - Bus STD 40 FT	08/01/2013
7767-New Flyer XD40, 5FYD8FV19DB042224	01/01/2013	11.12.01 - Bus STD 40 FT	08/01/2013
7768-New Flyer XD40, 5FYD8FV10DB042225	01/01/2013	11.12.01 - Bus STD 40 FT	08/01/2013
7769-New Flyer XD40, 5FYD8FV12DB042226	01/01/2013	11.12.01 - Bus STD 40 FT	08/01/2013
7770-New Flyer XD40, 5FYD8FV14DB042227	01/01/2013	11.12.01 - Bus STD 40 FT	08/01/2013
7771-New Flyer XD40, 5FYD8FV16DB042228	01/01/2013	11.12.01 - Bus STD 40 FT	08/01/2013
7772-New Flyer XD40, 5FYD8FV18DB042229	01/01/2013	11.12.01 - Bus STD 40 FT	08/01/2013
7773-New Flyer XD40, 5FYD8FV14DB042230	01/01/2013	11.12.01 - Bus STD 40 FT	08/13/2013
7774-New Flyer XD40, 5FYD8FV16DB042231	01/01/2013	11.12.01 - Bus STD 40 FT	08/01/2013
7775-New Flyer XD40, 5FYD8FV18DB042232	01/01/2013	11.12.01 - Bus STD 40 FT	08/01/2013

Vehicle Inventory Data for NVTC - Fairfax County

7776-New Flyer XD40, 5FYD8FV1XDB042233	01/01/2013	11.12.01 - Bus STD 40 FT	08/01/2013
7777-New Flyer XD40, 5FYD8FV16DB042875	01/01/2013	11.12.01 - Bus STD 40 FT	08/01/2013
7778-New Flyer XD35, 5FYD8KV13EC046029	01/01/2014	11.12.02 - Bus STD 35 FT	12/30/2014
7779-New Flyer XD35, 5FYD8KV1XEC046030	01/01/2014	11.12.02 - Bus STD 35 FT	12/30/2014
7780-New Flyer XD35, 5FYD8KV11EC046031	01/01/2014	11.12.02 - Bus STD 35 FT	12/30/2014
7781-New Flyer XD35, 5FYD8KV13EC046032	01/01/2014	11.12.02 - Bus STD 35 FT	12/30/2014
7782-New Flyer XD35, 5FYD8KV15EC046033	01/01/2014	11.12.02 - Bus STD 35 FT	12/30/2014
7783-New Flyer XD35, 5FYD8KV17EC046034	01/01/2014	11.12.02 - Bus STD 35 FT	12/30/2014
7784-New Flyer XD35, 5FYD8KV19EC046035	01/01/2014	11.12.02 - Bus STD 35 FT	12/30/2014
7785-New Flyer XD35, 5FYD8KV10EC046036	01/01/2014	11.12.02 - Bus STD 35 FT	12/30/2014
7786-New Flyer XD35, 5FYD8KV12EC046037	01/01/2014	11.12.02 - Bus STD 35 FT	12/30/2014
7787-New Flyer XD35, 5FYD8KV14EC046038	01/01/2014	11.12.02 - Bus STD 35 FT	12/30/2014
7788-New Flyer XD35, 5FYD8KV16EC046039	01/01/2014	11.12.02 - Bus STD 35 FT	12/30/2014
7789-New Flyer XD35, 5FYD8KV12EC046040	01/01/2014	11.12.02 - Bus STD 35 FT	12/30/2014
7790-New Flyer XD35, 5FYD8KV14EC046041	01/01/2014	11.12.02 - Bus STD 35 FT	12/30/2014
7791-New Flyer XD35, 5FYD8KV16EC046042	01/01/2014	11.12.02 - Bus STD 35 FT	12/30/2014
7792-New Flyer XD35, 5FYD8KV18EC046043	01/01/2014	11.12.02 - Bus STD 35 FT	12/30/2014
7793-New Flyer XD35, 5FYD8KV1XEC046044	01/01/2014	11.12.02 - Bus STD 35 FT	12/30/2014
7794-New Flyer XD35, 5FYD8KV11EC046045	01/01/2002	11.12.02 - Bus STD 35 FT	01/01/2002
7891-Orion V, 1VHAF3N2226501801	01/01/2002	11.12.02 - Bus STD 35 FT	01/01/2002
7893-Orion V, 1VHAF3N2826501804	01/01/2002	11.12.02 - Bus STD 35 FT	01/01/2002
7894-Orion V, 1VHAF3N2X26501805	01/01/2002	11.12.02 - Bus STD 35 FT	01/01/2002
7895-Orion V, 1VHAF3N2126501806	01/01/2002	11.12.02 - Bus STD 35 FT	01/01/2002
7896-Orion V, 1VHAF3N2326501807	01/01/2002	11.12.02 - Bus STD 35 FT	01/01/2002
7897-Orion V, 1VHAF3N2526501808	01/01/2002	11.12.02 - Bus STD 35 FT	01/01/2002
7898-Orion V, 1VHAF3N2726501809	01/01/2002	11.12.02 - Bus STD 35 FT	01/01/2002
7918-Orion V, 1VHAC3N2226501791	01/01/2002	11.12.03 - Bus 30 FT	01/01/2002
7919-Orion V, 1VHAC3N2426501792	01/01/2002	11.12.03 - Bus 30 FT	01/01/2002
7921-Orion V, 1VHAC3N2826501794	01/01/2002	11.12.03 - Bus 30 FT	01/01/2002

Vehicle Inventory Data for NVTC - Fairfax County

7922-Orion V, 1VHAC3N2X26501795	01/01/2002	11.12.03 - Bus 30 FT	01/01/2002
7923-Orion V, 1VHAC3N2126501796	01/01/2002	11.12.03 - Bus 30 FT	01/01/2002
7924-Orion V, 1VHAC3N2326501797	01/01/2002	11.12.03 - Bus 30 FT	01/01/2002
7925-Orion V, 1VHAC3N2526501798	01/01/2002	11.12.03 - Bus 30 FT	01/01/2002
7926-Orion V, 1VHAC3N2726501799	01/01/2002	11.12.03 - Bus 30 FT	01/01/2002
7927-Orion V, 1VHAC3N2X26501800	01/01/2002	11.12.03 - Bus 30 FT	01/01/2002
9600-New Flyer D40LFR, 5FYD5FV1X9B035153	01/01/2009	11.12.01 - Bus STD 40 FT	01/01/2009
9601-New Flyer D40LFR, 5FYD5FV119B035154	01/01/2009	11.12.00 - Bus STD 40 FT	01/01/2009
9602-New Flyer D40LFR, 5FYD5FV139B035155	01/01/2009	11.12.01 - Bus STD 40 FT	01/01/2009
9603-New Flyer D40LFR, 5FYD5FV159B035156	01/01/2009	11.12.00 - Bus STD 40 FT	01/01/2009
9604-New Flyer D40LFR, 5FYD5FV179B035157	01/01/2009	11.12.01 - Bus STD 40 FT	01/01/2009
9605-New Flyer D40LFR, 5FYD5FV199B035158	01/01/2009	11.12.01 - Bus STD 40 FT	01/01/2009
9606-New Flyer D40LFR, 5FYD5FV109B035159	01/01/2009	11.12.01 - Bus STD 40 FT	01/01/2009
9607-New Flyer D40LFR, 5FYD5FV179B035160	01/01/2009	11.12.01 - Bus STD 40 FT	01/01/2009
9608-New Flyer D40LFR, 5FYD5FV199B035161	01/01/2009	11.12.01 - Bus STD 40 FT	01/01/2009
9609-New Flyer D40LFR, 5FYD5FV109B035162	01/01/2009	11.12.01 - Bus STD 40 FT	01/01/2009
9610-New Flyer D40LFR, 5FYD5FV129B035163	01/01/2009	11.12.01 - Bus STD 40 FT	01/01/2009
9611-New Flyer D40LFR, 5FYD5FV149B035164	01/01/2009	11.12.01 - Bus STD 40 FT	01/01/2009
9612-New Flyer D40LFR, 5FYD5FV169B035165	01/01/2009	11.12.01 - Bus STD 40 FT	01/01/2009
9613-New Flyer D40LFR, 5FYD5FV189B035166	01/01/2009	11.12.01 - Bus STD 40 FT	01/01/2009
9614-New Flyer D40LFR, 5FYD5FV149B036735	01/01/2009	11.12.01 - Bus STD 40 FT	01/01/2009
9615-New Flyer D40LFR, 5FYD5FV169B036736	01/01/2009	11.12.01 - Bus STD 40 FT	01/01/2009
9616-New Flyer D40LFR, 5FYD5FV189B036737	01/01/2009	11.12.01 - Bus STD 40 FT	01/01/2009
9617-New Flyer D40LFR, 5FYD5FV1X9B036738	01/01/2009	11.12.01 - Bus STD 40 FT	01/01/2009
9618-New Flyer D40LFR, 5FYD5FV119B036739	01/01/2009	11.12.01 - Bus STD 40 FT	01/01/2009
9619-New Flyer D40LFR, 5FYD5FV189B036740	01/01/2009	11.12.01 - Bus STD 40 FT	01/01/2009
9620-New Flyer D40LFR, 5FYD5FV1X9B036741	01/01/2009	11.12.01 - Bus STD 40 FT	01/01/2009
9621-New Flyer D40LFR, 5FYD5FV119B036742	01/01/2009	11.12.01 - Bus STD 40 FT	01/01/2009
9622-New Flyer D40LFR, 5FYD5FV139B036743	01/01/2009	11.12.01 - Bus STD 40 FT	01/01/2009

Vehicle Inventory Data for NRTC - Fairfax County

9623-New Flyer D40LFR, 5FYD5FV159B036744	01/01/2009	11.12.01 - Bus STD 40 FT	01/01/2009
9624-New Flyer D40LFR, 5FYD5FV179B036745	01/01/2009	11.12.01 - Bus STD 40 FT	01/01/2009
9625-New Flyer D40LFR, 5FYD5FV199B036746	01/01/2009	11.12.01 - Bus STD 40 FT	01/01/2009
9626-New Flyer D40LFR, 5FYD5FV109B036747	01/01/2009	11.12.01 - Bus STD 40 FT	01/01/2009
9627-New Flyer D40LFR, 5FYD5FV129B036748	01/01/2009	11.12.01 - Bus STD 40 FT	01/01/2009
9628-New Flyer D40LFR, 5FYD5FV149B036749	01/01/2009	11.12.01 - Bus STD 40 FT	01/01/2009
9629-New Flyer D40LFR, 5FYD5FV109B036750	01/01/2009	11.12.01 - Bus STD 40 FT	01/01/2009
9630-New Flyer D40LFR, 5FYD5FV129B036751	01/01/2009	11.12.01 - Bus STD 40 FT	01/01/2009
9631-New Flyer D40LFR, 5FYD5FV149B036752	01/01/2009	11.12.01 - Bus STD 40 FT	01/01/2009
9632-New Flyer D40LFR, 5FYD5FV169B036753	01/01/2009	11.12.01 - Bus STD 40 FT	01/01/2009
9633-New Flyer D40LFR, 5FYD5FV189B036754	01/01/2009	11.12.01 - Bus STD 40 FT	01/01/2009
9634-New Flyer D40LFR, 5FYD5FV1X9B036755	01/01/2009	11.12.01 - Bus STD 40 FT	01/01/2009
9635-New Flyer D40LFR, 5FYD5FV119B036756	01/01/2009	11.12.01 - Bus STD 40 FT	01/01/2009
9636-New Flyer D40LFR, 5FYD5FV139B036757	01/01/2009	11.12.01 - Bus STD 40 FT	01/01/2009
9637-New Flyer D40LFR, 5FYD5FV159B036758	01/01/2009	11.12.01 - Bus STD 40 FT	01/01/2009
9638-New Flyer D40LFR, 5FYD5FV179B036759	01/01/2009	11.12.01 - Bus STD 40 FT	01/01/2009
9639-New Flyer D40LFR, 5FYD5FV139B036760	01/01/2009	11.12.01 - Bus STD 40 FT	01/01/2009
9640-New Flyer D40LFR, 5FYD5FV159B036761	01/01/2009	11.12.01 - Bus STD 40 FT	01/01/2009
9641-New Flyer D40LFR, 5FYD5FV179B036762	01/01/2009	11.12.01 - Bus STD 40 FT	01/01/2009
9642-New Flyer D40LFR, 5FYD5FV199B036763	01/01/2009	11.12.01 - Bus STD 40 FT	01/01/2009
9643-New Flyer D40LFR, 5FYD5FV109B036764	01/01/2009	11.12.01 - Bus STD 40 FT	01/01/2009
9644-New Flyer D40LFR, 5FYD5FV129B036765	01/01/2011	11.12.01 - Bus STD 40 FT	09/01/2011
9645-New Flyer XD40, 5FYD8FV17BC038759	01/01/2011	11.12.01 - Bus STD 40 FT	09/01/2011
9646-New Flyer XD40, 5FYD8FV13BC038760	01/01/2011	11.12.01 - Bus STD 40 FT	09/01/2011
9647-New Flyer XD40, 5FYD8FV15BC038761	01/01/2011	11.12.01 - Bus STD 40 FT	09/01/2011
9648-New Flyer XD40, 5FYD8FV17BC038762	01/01/2011	11.12.01 - Bus STD 40 FT	09/01/2011
9649-New Flyer XD40, 5FYD8FV19BC038763	01/01/2011	11.12.01 - Bus STD 40 FT	09/01/2011
9650-New Flyer XD40, 5FYD8FV10BC038764	01/01/2011	11.12.01 - Bus STD 40 FT	09/01/2011
9651-New Flyer XD40, 5FYD8FV12BC038765	01/01/2011	11.12.01 - Bus STD 40 FT	09/01/2011

Vehicle Inventory Data for NVT - Fairfax County

9652-New Flyer XD40, 5FYD8FV14BC038766	01/01/2011	11.12.01 - Bus STD 40 FT	09/01/2011
9653-New Flyer XD40, 5FYD8FV16BC038767	01/01/2011	11.12.01 - Bus STD 40 FT	09/01/2011
9654-New Flyer XD40, 5FYD8FV18BC038768	01/01/2011	11.12.01 - Bus STD 40 FT	09/01/2011
9655-New Flyer XD40, 5FYD8FV1XBC038769	01/01/2011	11.12.01 - Bus STD 40 FT	09/01/2011
9656-New Flyer XD40, 5FYD8FV16BC038770	01/01/2011	11.12.01 - Bus STD 40 FT	09/01/2011
9657-New Flyer XD40, 5FYD8FV18BC038771	01/01/2011	11.12.01 - Bus STD 40 FT	09/01/2011
9658-New Flyer XD40, 5FYD8FV1XBC038772	01/01/2011	11.12.01 - Bus STD 40 FT	09/01/2011
9659-New Flyer XD40, 5FYD8FV11BC038773	01/01/2011	11.12.01 - Bus STD 40 FT	09/01/2011
9660-New Flyer XD40, 5FYD8FV13BC038774	01/01/2011	11.12.01 - Bus STD 40 FT	09/01/2011
9661-New Flyer XD40, 5FYD8FV15BC038775	01/01/2011	11.12.01 - Bus STD 40 FT	09/01/2011
9662-New Flyer XD40, 5FYD8FV17BC038776	01/01/2011	11.12.01 - Bus STD 40 FT	09/01/2011
9663-New Flyer XD40, 5FYD8FV19BC038777	01/01/2011	11.12.01 - Bus STD 40 FT	09/01/2011
9664-New Flyer XD40, 5FYD8FV10BC038778	01/01/2011	11.12.01 - Bus STD 40 FT	09/01/2011
9665-New Flyer XD40, 5FYD8FV12BC038779	01/01/2011	11.12.01 - Bus STD 40 FT	09/01/2011
9666-New Flyer XD40, 5FYD8FV19BC038780	01/01/2011	11.12.01 - Bus STD 40 FT	09/01/2011
9667-New Flyer XD40, 5FYD8FV10BC038781	01/01/2011	11.12.01 - Bus STD 40 FT	09/01/2011
9668-New Flyer XD40, 5FYD8FV12BC038782	01/01/2011	11.12.01 - Bus STD 40 FT	09/01/2011
9669-New Flyer XD40, 5FYD8FV14BC038783	01/01/2011	11.12.01 - Bus STD 40 FT	09/01/2011
9670-New Flyer XD40, 5FYD8FV16BC038784	01/01/2011	11.12.01 - Bus STD 40 FT	09/01/2011
9671-New Flyer XD40, 5FYD8FV18BC038785	01/01/2011	11.12.01 - Bus STD 40 FT	09/01/2011
9672-New Flyer XD40, 5FYD8FV1XBC038786	01/01/2011	11.12.01 - Bus STD 40 FT	09/01/2011
9673-New Flyer XD40, 5FYD8FV11BC038787	01/01/2011	11.12.01 - Bus STD 40 FT	09/01/2011
9674-New Flyer XD40, 5FYD8FV13BC038788	01/01/2011	11.12.01 - Bus STD 40 FT	09/01/2011
9675-New Flyer XD40, 5FYD8FV15BC038789	01/01/2011	11.12.01 - Bus STD 40 FT	09/01/2011
9676-New Flyer XD35, 5FYD8KV13CC041393	01/01/2012	11.12.02 - Bus STD 35 FT	02/25/2013
9677-New Flyer XD35, 5FYD8KV15CC041394	01/01/2012	11.12.02 - Bus STD 35 FT	02/25/2013
9678-New Flyer XD35, 5FYD8KV17CC041395	01/01/2012	11.12.02 - Bus STD 35 FT	02/25/2013
9679-New Flyer XD35, 5FYD8KV19CC041396	01/01/2012	11.12.02 - Bus STD 35 FT	02/25/2013
9680-New Flyer XD35, 5FYD8KV10CC041397	01/01/2012	11.12.02 - Bus STD 35 FT	02/25/2013

Vehicle Inventory Data for NVTC - Fairfax County

9681-New Flyer XD35, 5FYD8KV12CC041398	01/01/2012	11.12.02 - Bus STD 35 FT	02/25/2013
9682-New Flyer XD35, 5FYD8KV14CC041399	01/01/2012	11.12.02 - Bus STD 35 FT	02/25/2013
9683-New Flyer XD35, 5FYD8KV17CC041400	01/01/2012	11.12.02 - Bus STD 35 FT	02/25/2013
9684-New Flyer XD35, 5FYD8KV19CC041401	01/01/2012	11.12.02 - Bus STD 35 FT	02/25/2013
9685-New Flyer XD35, 5FYD8KV10CC041402	01/01/2012	11.12.02 - Bus STD 35 FT	02/25/2013
9686-New Flyer XD35, 5FYD8KV12CC041403	01/01/2012	11.12.02 - Bus STD 35 FT	02/25/2013
9687-New Flyer XD35, 5FYD8KV14CC041404	01/01/2012	11.12.02 - Bus STD 35 FT	02/25/2013
9688-New Flyer XD35, 5FYD8KV16CC041405	01/01/2012	11.12.02 - Bus STD 35 FT	02/25/2013
9689-New Flyer XD35, 5FYD8KV18CC041406	01/01/2012	11.12.02 - Bus STD 35 FT	02/25/2013
9690-New Flyer XD35, 5FYD8KV1XCC041407	01/01/2007	11.12.01 - Bus STD 40 FT	01/01/2007
9700-New Flyer D40LFR, 5FYD5FV157C031549	01/01/2007	11.12.01 - Bus STD 40 FT	01/01/2007
9701-New Flyer D40LFR, 5FYD5FV117C031550	01/01/2007	11.12.01 - Bus STD 40 FT	01/01/2007
9702-New Flyer D40LFR, 5FYD5FV137C031551	01/01/2007	11.12.01 - Bus STD 40 FT	01/01/2007
9703-New Flyer D40LFR, 5FYD5FV157C031552	01/01/2007	11.12.01 - Bus STD 40 FT	01/01/2007
9704-New Flyer D40LFR, 5FYD5FV177C031553	01/01/2007	11.12.01 - Bus STD 40 FT	01/01/2007
9705-New Flyer D40LFR, 5FYD5FV197C031554	01/01/2007	11.12.01 - Bus STD 40 FT	01/01/2007
9706-New Flyer D40LFR, 5FYD5FV107C031555	01/01/2007	11.12.01 - Bus STD 40 FT	01/01/2007
9707-New Flyer D40LFR, 5FYD5FV127C031556	01/01/2007	11.12.01 - Bus STD 40 FT	01/01/2007
9708-New Flyer D40LFR, 5FYD5FV147C031557	01/01/2007	11.12.01 - Bus STD 40 FT	01/01/2007
9709-New Flyer D40LFR, 5FYD5FV167C031558	01/01/2007	11.12.01 - Bus STD 40 FT	01/01/2007
9710-New Flyer D40LFR, 5FYD5FV187C031559	01/01/2007	11.12.01 - Bus STD 40 FT	01/01/2007
9711-New Flyer D40LFR, 5FYD5FV147C031560	01/01/2007	11.12.01 - Bus STD 40 FT	01/01/2007
9712-New Flyer D40LFR, 5FYD5FV167C031561	01/01/2007	11.12.01 - Bus STD 40 FT	01/01/2007
9713-New Flyer D40LFR, 5FYD5FV187C031562	01/01/2007	11.12.01 - Bus STD 40 FT	01/01/2007
9714-New Flyer D40LFR, 5FYD5FV1X7C031563	01/01/2007	11.12.01 - Bus STD 40 FT	01/01/2007
9715-New Flyer D40LFR, 5FYD5FV117C031564	01/01/2007	11.12.01 - Bus STD 40 FT	01/01/2007
9716-New Flyer D40LFR, 5FYD5FV137C031565	01/01/2007	11.12.01 - Bus STD 40 FT	01/01/2007
9717-New Flyer D40LFR, 5FYD5FV157C031566	01/01/2007	11.12.01 - Bus STD 40 FT	01/01/2007
9718-New Flyer D40LFR, 5FYD5FV177C031567	01/01/2007	11.12.01 - Bus STD 40 FT	01/01/2007

Vehicle Inventory Data for NVTC - Fairfax County

9719-New Flyer D40LFR, 5FYD5FV197C031568	01/01/2007	11.12.01 - Bus STD 40 FT	01/01/2007
9720-New Flyer D40LFR, 5FYD5FV107C031569	01/01/2007	11.12.01 - Bus STD 40 FT	01/01/2007
9721-New Flyer D40LFR, 5FYD5FV177C031570	01/01/2007	11.12.01 - Bus STD 40 FT	01/01/2007
9722-New Flyer D40LFR, 5FYD5FV197C031571	01/01/2007	11.12.01 - Bus STD 40 FT	01/01/2007
9723-New Flyer D40LFR, 5FYD5FV107C031572	01/01/2007	11.12.01 - Bus STD 40 FT	01/01/2007
9724-New Flyer D40LFR, 5FYD5FV127C031573	01/01/2007	11.12.01 - Bus STD 40 FT	01/01/2007
9725-New Flyer D40LFR, 5FYD5FV147C031574	01/01/2007	11.12.01 - Bus STD 40 FT	01/01/2007
9726-New Flyer D40LFR, 5FYD5FV167C031575	01/01/2007	11.12.01 - Bus STD 40 FT	01/01/2007
9727-New Flyer D40LFR, 5FYD5FV187C031576	01/01/2007	11.12.01 - Bus STD 40 FT	01/01/2007
9728-New Flyer D40LFR, 5FYD5FV1X7C031577	01/01/2007	11.12.01 - Bus STD 40 FT	01/01/2007
9729-New Flyer D40LFR, 5FYD5FV117C031578	01/01/2007	11.12.01 - Bus STD 40 FT	01/01/2007
9730-New Flyer D40LFR, 5FYD5FV137C031579	01/01/2007	11.12.01 - Bus STD 40 FT	01/01/2007
9731-New Flyer D40LFR, 5FYD5FV1X7C031580	01/01/2007	11.12.01 - Bus STD 40 FT	01/01/2007
9732-New Flyer D40LFR, 5FYD5FV117C031581	01/01/2007	11.12.01 - Bus STD 40 FT	01/01/2007
9733-New Flyer D40LFR, 5FYD5FV137C031582	01/01/2007	11.12.01 - Bus STD 40 FT	01/01/2007
9734-New Flyer D40LFR, 5FYD5FV157C031583	01/01/2007	11.12.01 - Bus STD 40 FT	01/01/2007
9735-New Flyer D40LFR, 5FYD5FV177C031584	01/01/2007	11.12.01 - Bus STD 40 FT	01/01/2007
9736-New Flyer D40LFR, 5FYD5FV197C031585	01/01/2007	11.12.01 - Bus STD 40 FT	01/01/2007
9737-New Flyer D40LFR, 5FYD5FV107C031586	01/01/2007	11.12.01 - Bus STD 40 FT	01/01/2007
9738-New Flyer D40LFR, 5FYD5FV127C031587	01/01/2007	11.12.01 - Bus STD 40 FT	01/01/2007
9739-New Flyer D40LFR, 5FYD5FV147C031588	01/01/2007	11.12.01 - Bus STD 40 FT	01/01/2007
9740-New Flyer D40LFR, 5FYD5FV167C031589	01/01/2007	11.12.01 - Bus STD 40 FT	01/01/2007
9741-New Flyer D40LFR, 5FYD5FV127C031590	01/01/2007	11.12.01 - Bus STD 40 FT	01/01/2007
9742-New Flyer D40LFR, 5FYD5FV147C031591	01/01/2007	11.12.01 - Bus STD 40 FT	01/01/2007
9743-New Flyer D40LFR, 5FYD5FV167C031592	01/01/2007	11.12.01 - Bus STD 40 FT	01/01/2007
9744-New Flyer D40LFR, 5FYD5FV187C031593	01/01/2007	11.12.01 - Bus STD 40 FT	01/01/2007
9745-New Flyer D40LFR, 5FYD5FV1X7C031594	01/01/2007	11.12.01 - Bus STD 40 FT	01/01/2007
9746-New Flyer D40LFR, 5FYD5FV117C031595	01/01/2007	11.12.01 - Bus STD 40 FT	01/01/2007
9747-New Flyer D40LFR, 5FYD5FV137C031596	01/01/2007	11.12.01 - Bus STD 40 FT	01/01/2007

Vehicle Inventory Data for NVTC - Fairfax County

9748-New Flyer D40LFR, 5FYD5FV157C031597	01/01/2007	11.12.01 - Bus STD 40 FT	01/01/2007
9749-New Flyer D40LFR, 5FYD5FV117C031598	01/01/2007	11.12.01 - Bus STD 40 FT	01/01/2007
9750-New Flyer D40LFR, 5FYD5FV197C031599	01/01/2007	11.12.01 - Bus STD 40 FT	01/01/2007
9751-New Flyer D40LFR, 5FYD5FV117C031600	01/01/2007	11.12.01 - Bus STD 40 FT	01/01/2007
9754-New Flyer D35LFR, 5FYD5KV157C032340	01/01/2007	11.12.02 - Bus STD 35 FT	01/01/2007
9755-New Flyer D35LFR, 5FYD5KV177C032341	01/01/2007	11.12.02 - Bus STD 35 FT	01/01/2007
9756-New Flyer D35LFR, 5FYD5KV197C032342	01/01/2007	11.12.02 - Bus STD 35 FT	01/01/2007
9757-New Flyer D35LFR, 5FYD5KV107C032343	01/01/2007	11.12.02 - Bus STD 35 FT	01/01/2007
9758-New Flyer D35LFR, 5FYD5KV127C032344	01/01/2007	11.12.02 - Bus STD 35 FT	01/01/2007
9759-New Flyer D35LFR, 5FYD5KV147C032345	01/01/2007	11.12.02 - Bus STD 35 FT	01/01/2007
9760-New Flyer D35LFR, 5FYD5KV167C032346	01/01/2007	11.12.02 - Bus STD 35 FT	01/01/2007
9761-New Flyer D35LFR, 5FYD5KV187C032347	01/01/2007	11.12.02 - Bus STD 35 FT	01/01/2007
9762-New Flyer D35LFR, 5FYD5KV1X7C032348	01/01/2007	11.12.02 - Bus STD 35 FT	01/01/2007
9763-New Flyer D35LFR, 5FYD5KV117C032349	01/01/2007	11.12.02 - Bus STD 35 FT	01/01/2007
9764-New Flyer D35LFR, 5FYD5KV187C032350	01/01/2007	11.12.02 - Bus STD 35 FT	01/01/2007
9765-New Flyer D35LFR, 5FYD5KV1X7C032351	01/01/2007	11.12.02 - Bus STD 35 FT	01/01/2007
9766-New Flyer D35LFR, 5FYD5KV117C032352	01/01/2007	11.12.02 - Bus STD 35 FT	01/01/2007
9767-New Flyer D35LFR, 5FYD5KV137C032353	01/01/2007	11.12.02 - Bus STD 35 FT	01/01/2007
9768-New Flyer D35LFR, 5FYD5KV157C032354	01/01/2007	11.12.02 - Bus STD 35 FT	01/01/2007
9769-New Flyer D35LFR, 5FYD5KV177C032355	01/01/2007	11.12.02 - Bus STD 35 FT	01/01/2007
9770-Orion VII, 1VHFD3G2186703739	01/01/2008	11.12.03 - Bus 30 FT	01/01/2008
9771-Orion VII, 1VHFD3G2686704286	01/01/2008	11.12.03 - Bus 30 FT	01/01/2008
9772-Orion VII, 1VHFD3G2886704287	01/01/2008	11.12.03 - Bus 30 FT	01/01/2008
9773-Orion VII, 1VHFD3G2238670429	01/01/2008	11.12.03 - Bus 30 FT	01/01/2008
9774-Orion VII, 1VHFD3G2586704294	01/01/2008	11.12.03 - Bus 30 FT	01/01/2008
9775-Orion VII, 1VHFD3G2586704313	01/01/2008	11.12.03 - Bus 30 FT	01/01/2008
9776-Orion VII, 1VHFD3G2786704314	01/01/2008	11.12.03 - Bus 30 FT	01/01/2008
9777-Orion VII, 1VHFD3G2686704322	01/01/2008	11.12.03 - Bus 30 FT	01/01/2008
9778-Orion VII, 1VHFD3G2886704323	01/01/2008	11.12.03 - Bus 30 FT	01/01/2008

Vehicle Inventory Data for NRTC - Fairfax County

9779-Orion VII, 1VHFD3G2386704326	01/01/2008	11.12.03 - Bus 30 FT	01/01/2008
9780-Orion VII, 1VHFD3G2986704329	01/01/2008	11.12.03 - Bus 30 FT	01/01/2008
9781-Orion VII, 1VHFD3G2486704335	01/01/2008	11.12.03 - Bus 30 FT	01/01/2008
9782-Orion VII, 1VHFD3G2X86704338	01/01/2008	11.12.03 - Bus 30 FT	01/01/2008
9783-Orion VII, 1VHFD3G2X86704341	01/01/2008	11.12.03 - Bus 30 FT	01/01/2008
9784-Orion VII, 1VHFD3G2186704342	01/01/2008	11.12.03 - Bus 30 FT	01/01/2008
9785-Orion VII, 1VHFD3G2238670434	01/01/2008	11.12.03 - Bus 30 FT	01/01/2008
9786-Orion VII, 1VHFD3G2586704375	01/01/2008	11.12.03 - Bus 30 FT	01/01/2008
9787-Orion VII, 1VHFD3G2586704389	01/01/2008	11.12.03 - Bus 30 FT	01/01/2008
9788-Orion VII, 1VHFD3G2186704390	01/01/2008	11.12.03 - Bus 30 FT	01/01/2008
9789-Orion VII, 1VHFD3G2586704392	01/01/2008	11.12.03 - Bus 30 FT	01/01/2008
9790-Orion VII, 1VHFD3G2886704399	01/01/2008	11.12.03 - Bus 30 FT	01/01/2008
9791-Orion VII, 1VHFD3G2086704400	01/01/2008	11.12.03 - Bus 30 FT	01/01/2008
9792-Orion VII, 1VHFD3G2286704401	01/01/2008	11.12.03 - Bus 30 FT	01/01/2008
9793-Orion VII, 1VHFD3G2486704402	01/01/2008	11.12.03 - Bus 30 FT	01/01/2008
9794-Orion VII, 1VHFD3G2886704418	01/01/2008	11.12.03 - Bus 30 FT	01/01/2008
9795-Orion VII, 1VHFD3G2X86704419	01/01/2008	11.12.03 - Bus 30 FT	01/01/2008

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9.4. Three Year Operating and Capital Expenses and Revenue (audited)

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Three Year Operating and Capital Expenses and Revenue (audited)

As a division of Fairfax County government, Fairfax Connector undergoes the same auditing process as all other County departments. The system's operating expenditures are incorporated into the County's Audited Financial Reports along with other County transportation expenses. The audited report consists of one line item representing Fairfax Connector Operating expenses, special studies, and includes the cash fares netted out of the contract vendor's invoices. There is no separate audited report of Fairfax Connector operating and capital expenses and revenues.

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9.5. Fairfax County Title VI Program

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Fairfax County Title VI Program

The current Fairfax County Title VI Program was approved by the Board of Supervisors on July 1, 2014. The Federal Transit Administration (FTA) notified the County on November 26, 2014 that its Title VI Program met the FTA's requirements.

The Fairfax County Title VI Program is hereby incorporated into the TDP by reference.

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