



FAIRFAX COUNTY HIGH QUALITY
TRANSIT NETWORK STUDY
EXECUTIVE SUMMARY



JUNE 2016



What Is A *High Quality Transit Network*?

A High Quality Transit Network provides high travel speeds and reliable travel times for both rail and bus transit vehicles on exclusive or managed rights-of-way that allow transit vehicles to avoid traffic congestion. The 2015 Fairfax County Transportation Plan, shown in Exhibit 1, includes a concept for a High Quality Transit Network to connect places both within and beyond the County's borders. The green lines in Exhibit 1 show the Enhanced Public Transportation Corridors as currently included in the Transportation Plan Map.

Two corridors in the adopted Transportation Plan Map are identified as Metrorail corridors: the Silver Line Extension, which is underway; and an Orange Line Extension to Centreville. The remaining Enhanced Public Transportation Corridors are currently mode-neutral.

The *Countywide Transit Network Study* was initiated to analyze the Comprehensive Plan's Enhanced Public Transportation Corridors, evaluate if changes to those corridors are needed, and provide more specific planning guidance including:

- How the planned corridors can best serve as an interconnected network,
- What transit functions, technologies, and station locations will be most effective to help serve the objectives of the County's Comprehensive Plan.

The proposed High Quality Transit Network combines Metrorail, commuter rail, light rail transit (LRT), bus rapid transit (BRT), and express bus services into an integrated transit system connecting the County's activity centers with each other and to the rest of the region, providing a sound platform for the County's economic and quality of life objectives.

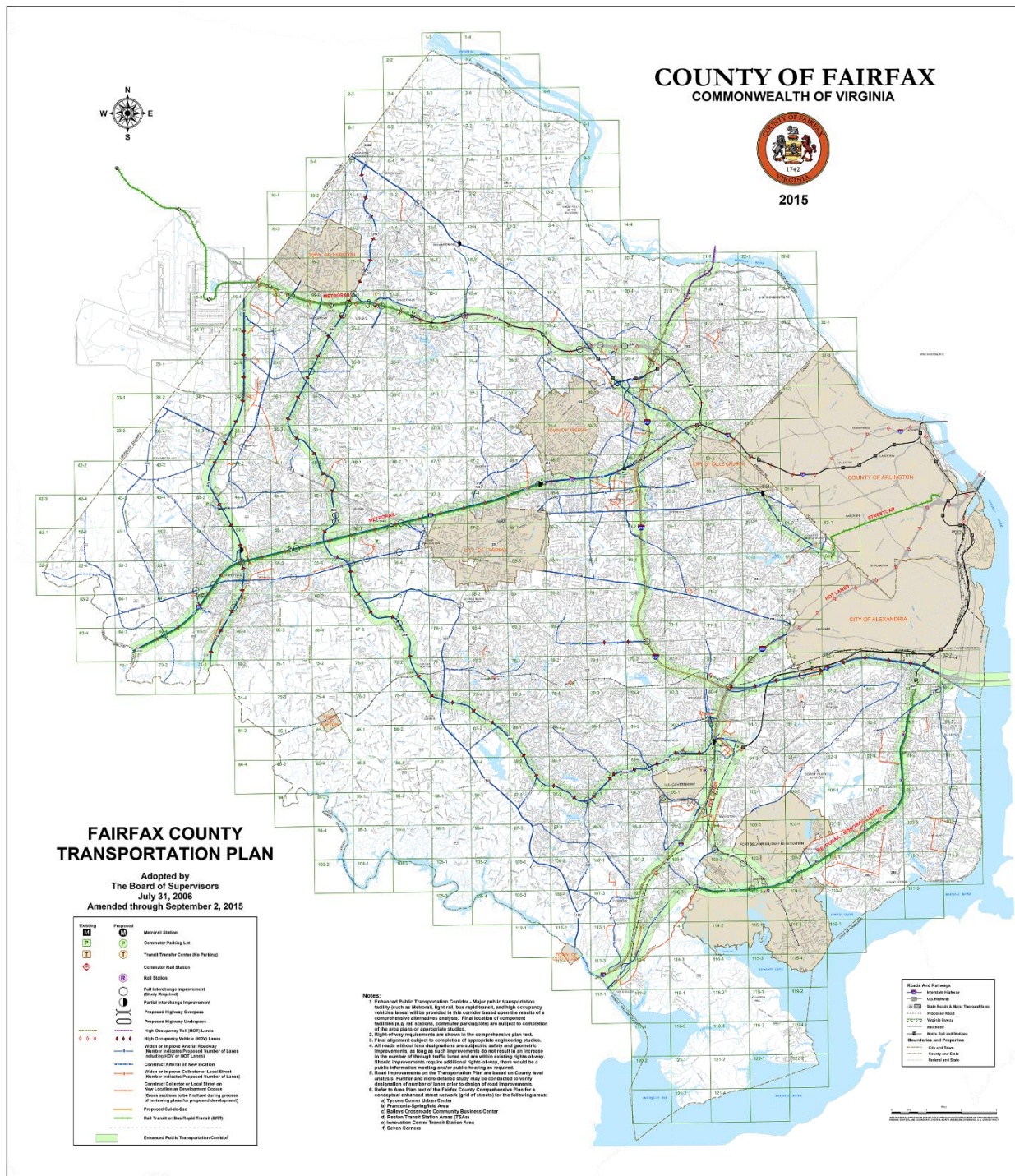


Exhibit 1 - 2015 Fairfax County Transportation Plan



Why Develop A High Quality Transit Network?

Fairfax County has been successful in attracting high-quality commercial and residential growth by integrating both economic development and quality of life objectives and policies. As the County approaches buildout of its developable land, growth is being directed towards higher density development in the County's designated activity centers. Several factors create the need to invest in an interconnected High Quality Transit Network:

- Fixed-guideway transit systems have higher person-throughput than auto travel lanes, improving efficiency in high demand corridors with constrained rights-of-way.
- High quality transit services are needed to help provide traveler choices and achieve desired mode share goals in urban centers like Tysons, where both real estate values and good public policy will increase parking costs.
- Investment in high quality transit can be an economic development driver. Improved transit accessibility increases land values which helps incent private sector investment that expands the County's tax base.

Accommodating Planned Growth

The study examines the types of transit improvements needed over the long term to accommodate planned development in the County's activity centers, which comprise about 10 percent of the County's land. Today the County has approximately:

- 680,000 jobs, with 82 percent in activity centers
- 1,090,000 residents, with 18 percent in activity centers.

The study plans for a future, nominally assumed to be 2050, in which the County has approximately:

- 1,170,000 jobs (an increase of 72 percent), with 89 percent in activity centers
- 1,550,000 residents (an increase of 42 percent), with 36 percent in activity centers.

Planned growth is concentrated in activity centers based on the Comprehensive Plan's future development concept shown in Exhibit 2. This pattern increases the need for transit capacity to connect Fairfax County's activity centers to each other as well as to continue to connect all of Fairfax County to the regional core.

The location and intensity of land use activity, both within Fairfax County and throughout the region, is one of the leading indicators of the orientation of travel demand that may best be served by high quality transit as well as of the types of transit investments that may be practical. Exhibit 3 shows the forecast 2050 "activity unit density" indicated by the current Comprehensive Plan. An "activity unit", or AU, consists of either one person or one job. The total number of activity units in a given area is therefore the sum of that area's population plus jobs. Transit-oriented development density can be measured in terms of activity units per acre (AU/acre).

An activity unit density of at least 4 AU/acre (shown in blue tones in Exhibit 3) is generally indicative of the minimum density at which fixed route bus service becomes effective. Most of the County's established residential neighborhoods have at least 4 AU/acre, however the low density rural areas do not.

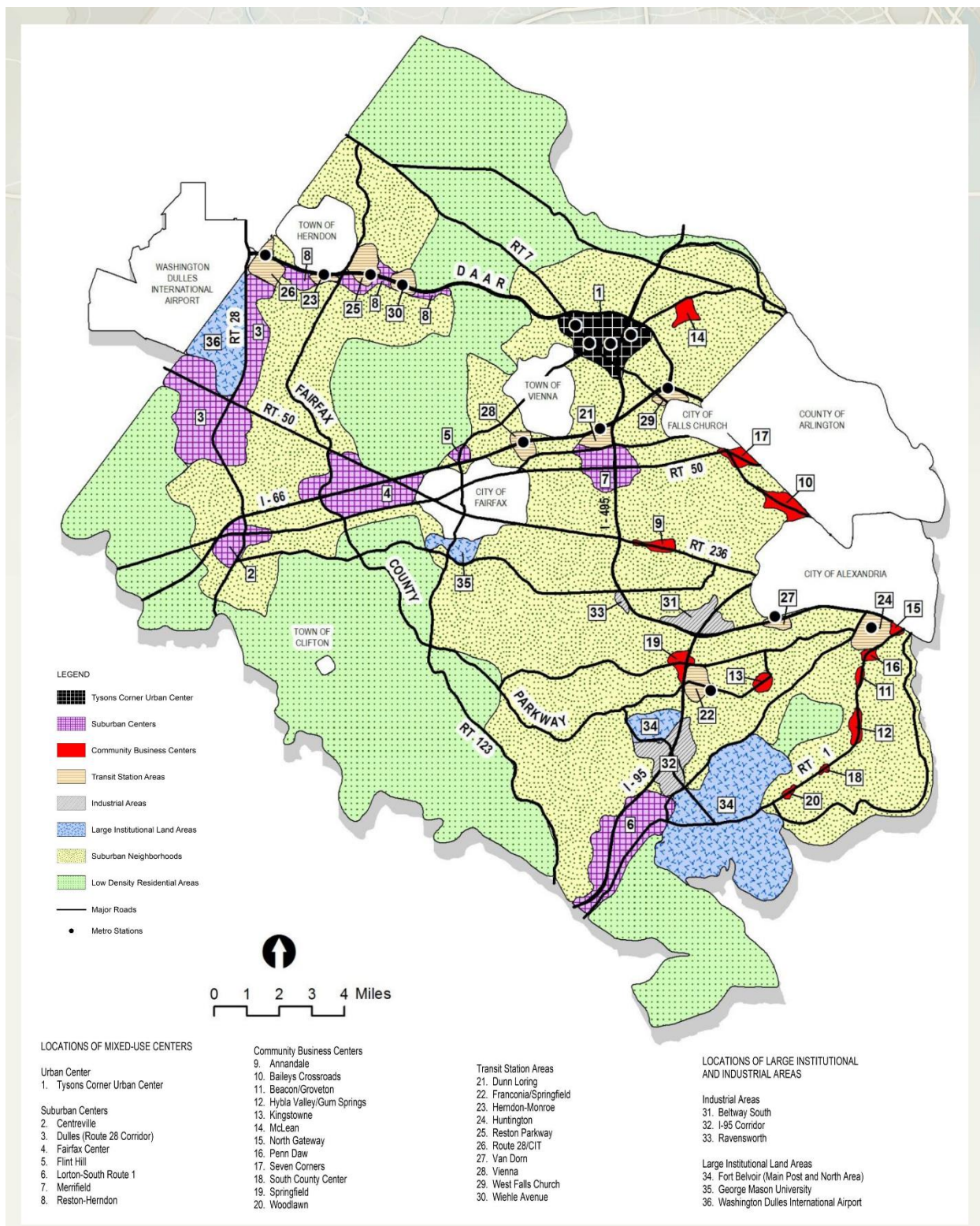


Exhibit 2 - Fairfax County Comprehensive Plan Concept for Future Development

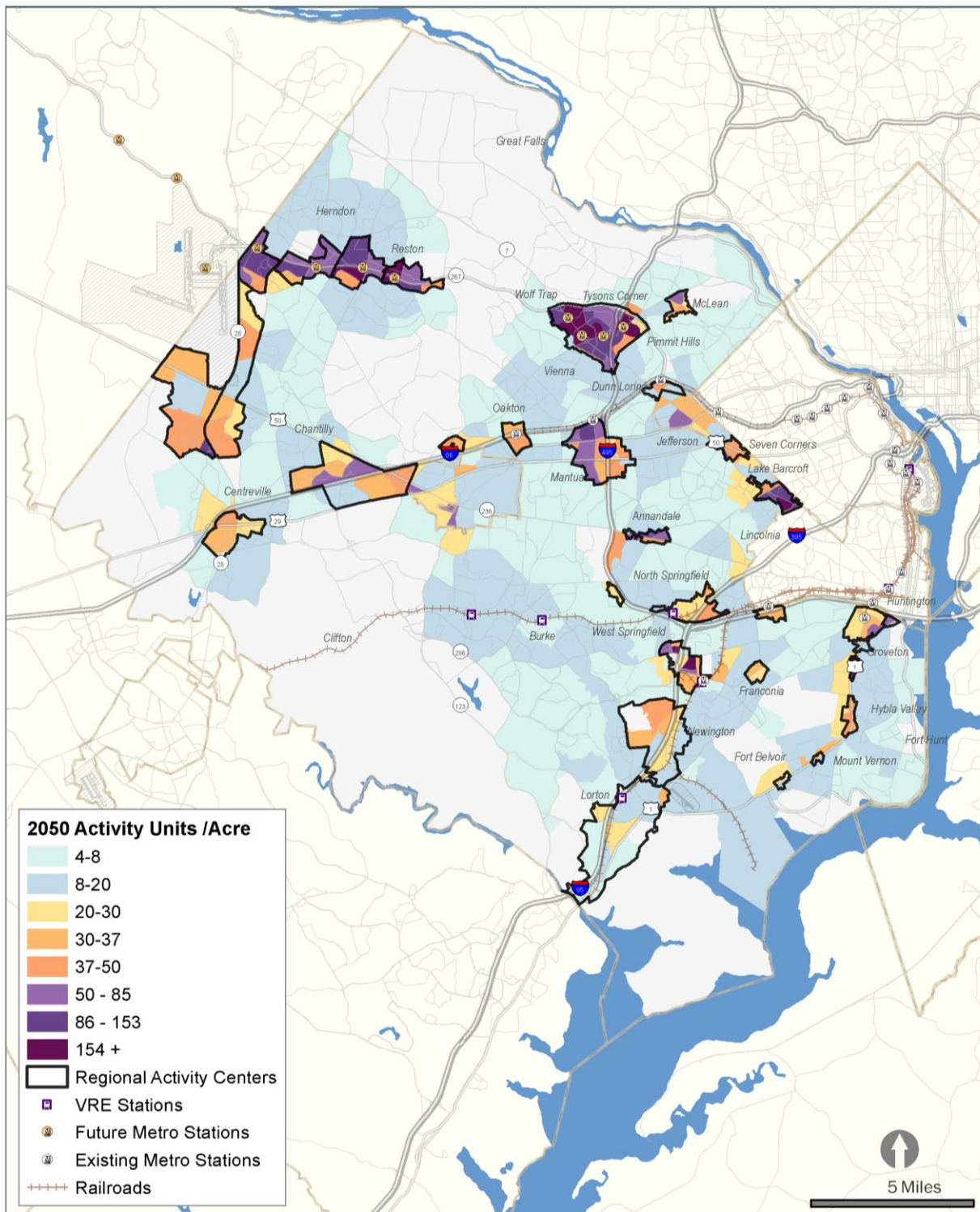


Exhibit 3 - Year 2050 Transit Supportive Development Densities



An activity density of 20 AU/acre and above (shown in orange tones on Exhibit 3) is generally indicative of the minimum density at which dedicated right-of-way for transit becomes effective, most likely as a bus-rapid transit (BRT) line.

An activity density of 50 AU/acre and above (shown in purple tones on Exhibits 9 and 10) is generally indicative of densities associated with potential rail transit service (LRT for densities around 50 AU/acre and heavy rail for higher densities)

While some level of activity density is necessary to support an effective investment in high quality transit services on dedicated rights-of-way, density is only one of several indicators considered in the study. Park and ride facilities are an effective way to connect residents Countywide – even those in low density neighborhoods – to the transit network.

Realizing Benefits

The Proposed High Quality Transit Network proposes an effective way to accommodate the County’s desired economic growth objectives over the long term. The proposed network was developed reflecting a combination of quantitative travel demand analysis and public outreach and consensus building. The study started with the County’s Comprehensive Plan goals and objectives, with specific measures of effectiveness informed by public outreach and tailored to reflect achievements of the High Quality Transit Network. This process identified that the primary goals of the High Quality Transit Network are to help the County *connect, grow, and thrive*. The proposed High Quality Transit Network achieves these goals as demonstrated in Exhibit 4.

Goal	Achievement (compared to 2050 CLRP conditions)
CONNECT <i>Provide more transportation choices for Fairfax County and regional connectivity</i>	Allows average County resident to reach 90,000 more jobs within a 45 minute transit commute
	Increases Fairfax County transit trips by 65,000 per day, a 16% increase over base conditions.
	Introduces rail service to 7 previously unserved activity centers
	Cost per passenger consistent with recent New Starts approvals
GROW <i>Support local and regional economic development goals</i>	Serves 27 new station areas within designated activity centers.
	Brings 103,000 additional County households and 270,000 County jobs within ½ mile of high quality transit station
THRIVE <i>Strengthen quality of life by making transit-friendly, sustainable investments</i>	Serves 33 new station areas with higher than average transit dependency.
	Reduces weekday peak period Vehicle Hours of Travel by 40,000
	Furthers Comprehensive Plan concepts for Enhanced Public Transportation Corridors

Exhibit 4 - The Proposed High Quality Transit Network Will Help Fairfax County Connect, Grow, and Thrive.



Being Affordable

The Proposed High Quality Transit Network promotes a cost-effective approach to connecting people and places. Implementation does require maintaining commitments from federal, state, local, and private constituents to keep Fairfax County moving. The total estimated capital cost for alignment, stations, rolling stock, and yard and shop for the Proposed High Quality Transit Network Concept elements (beyond those included in the CLRP) is approximately \$8.1B.

Cost effectiveness (which considers capital cost, operating costs, and forecast transit ridership) can be gauged by comparing the range of the Capital Cost Per Weekday Passenger (CCPWP) values against those calculated for transit project investments currently being implemented across the country. This CCPWP process incorporates a recognition of both one-time capital costs and continuing operating costs. Higher capacity transit systems like Metrorail are routinely considered by both federal and local funding partners as worthy investments when properly located to serve transit-oriented development, even though the CCPWP may be significantly higher than lower capital-cost investments like express bus lanes. The forecast transit services in the proposed HQTN concept are comparable to the level of cost-effectiveness that local jurisdictions nationwide are currently supporting in Federal Transit Administration New Starts applications.

The network will be implemented over a period of several decades using both conventional revenue streams such as the Federal New Starts process and potential innovative funding mechanisms such as value capture techniques that recognize the increased property value and development potential that results from improved accessibility.



Elements of the *High Quality Transit Network*

The Proposed High Quality Transit Network Concept builds upon the existing and Constrained Long Range Plan (CLRP) transit investments to create an interconnected network of commuter corridors and destination corridors, supported by a system of express bus routes.

Existing Elements

Existing High Quality Transit Network elements serving Fairfax County are shown conceptually in Exhibit 5 and include Metrorail, VRE, and express bus services on HOV/HOT lanes. Starting with the Shirley Highway Busway (planned in 1964 and opened in 1969), these services have been developed over five decades and were primarily commuter-oriented, helping Fairfax County residents reach jobs in the Washington DC core and inner ring suburbs of Arlington and Alexandria. The I-495 Express Lane project connecting Springfield to Tysons, which opened in 2012, represents the first element of the High Quality Transit Network oriented to jobs located in Fairfax County rather than the core and inner ring suburbs. The following are existing High Quality Transit Services in Fairfax County:

- Metrorail Silver Line (Wiehle Avenue – Arlington/DC)
- Metrorail Orange Line (Vienna – Arlington/DC)
- Metrorail Blue Line (Franconia/Springfield – Alexandria/DC)
- Metrorail Yellow Line (Huntington – Alexandria/DC)
- VRE Manassas Line (Manassas – Alexandria/DC)
- VRE Fredericksburg Line (Fredericksburg – Alexandria/DC)
- I-66 HOV Lanes
- I-95/I-395 HOT/Express Lanes (Stafford – Arlington/DC)
- I-495 Express Lanes (Springfield – Tysons)

Current Constrained Long Range Plan (CLRP) Elements

The Metropolitan Washington Council of Governments (MWCOG) maintains a fiscally Constrained Long Range Plan (CLRP), developed in conjunction with Fairfax County and other MWCOG member jurisdictions. The CLRP contains transit projects that have proceeded through the planning process to a point where they are found to be feasible and affordable for some future implementation date. The 2015 Constrained Long Range Plan transit connections, shown conceptually in Exhibit 6, provide a starting point for the Proposed HQTN Concept and includes the following projects:

- Silver Line Phase 2 (Wiehle Avenue – Ashburn)
- Alexandria West End Transitway (Van Dorn – Pentagon)
- I-66 Express Lanes (Gainesville – Arlington/DC)

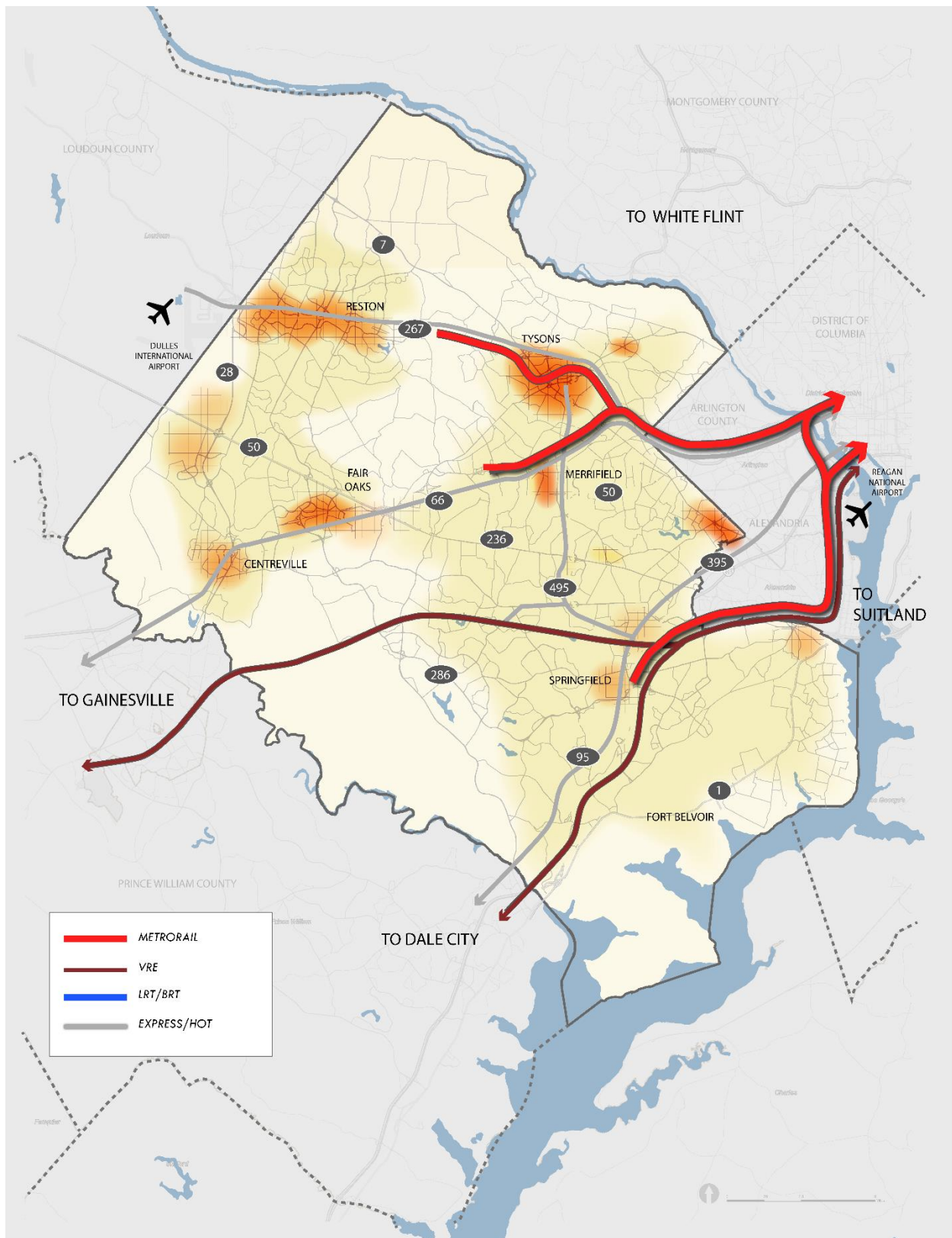


Exhibit 5 - Existing High Quality Transit Network Elements

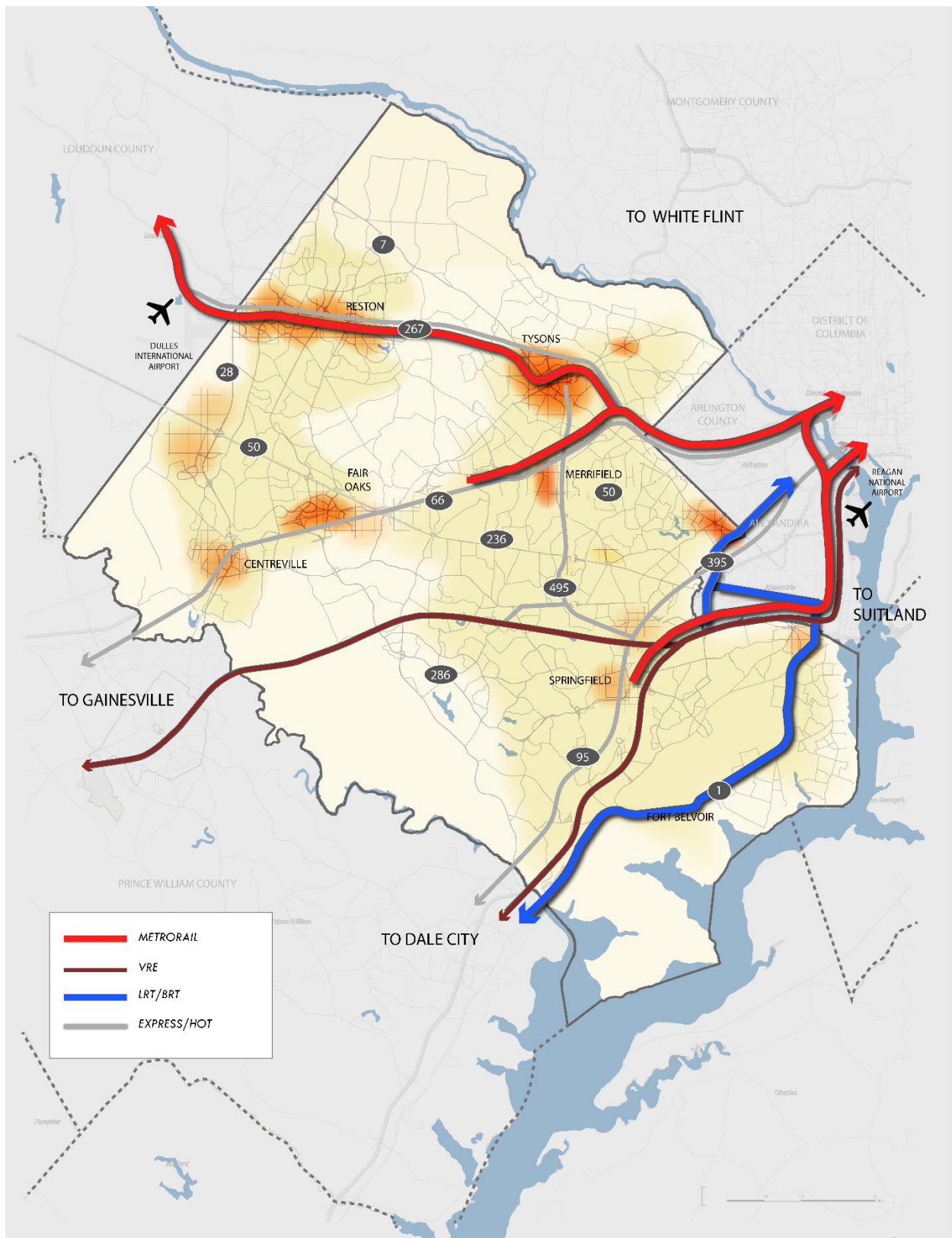


Exhibit 6 - High Quality Transit Network Elements Including the Regional Constrained Long Range Plan (CLRP)

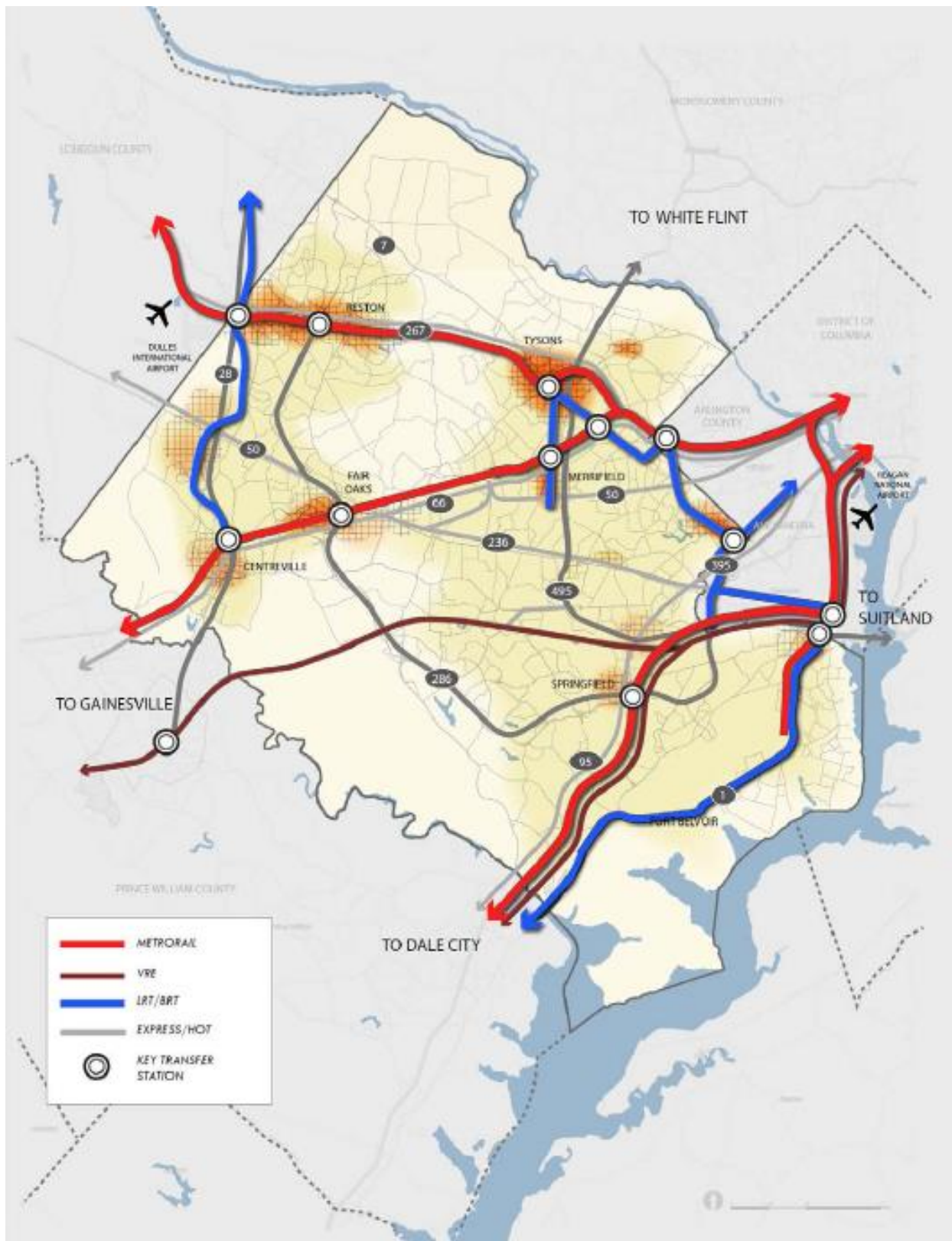


Exhibit 7 - Proposed High Quality Transit Network



Elements to be Added to the Regional CLRP

The High Quality Transit Network includes additional Metrorail extensions, LRT/BRT routes, and express bus services beyond those included in the regional Constrained Long Range Plan. Exhibit 7 shows the conceptual layout of the proposed High Quality Transit Network.

Metrorail Extensions

The High Quality Transit Network includes three Metrorail extensions beyond those services included in the CLRP:

- Orange Line Extension (Vienna – Gainesville)
- Blue Line Extension (Franconia/Springfield – Potomac Mills)
- Yellow Line Extension (Huntington – Hybla Valley)

These commuter corridors are expected to provide transit system capacity and support economic growth in the very long range future, perhaps beyond the 2050 timeframe in the study. Both the Orange Line and Blue Line corridors have extensive potential for increased high quality transit capacity via expanded commuter rail and commuter bus services that will provide greater cost-effectiveness in the foreseeable future for the purposes of improving mobility. Both Metrorail extensions should be included in the County's long-range plans, but implementation should only be pursued in conjunction with an examination of land use plans in both Fairfax and Prince William Counties. As both Fairfax and Prince William County consider continuing growth management opportunities and increased development intensity along the Orange Line and Blue Line corridors, the feasibility of these Metrorail extensions will emerge.

LRT/BRT Routes

The High Quality Transit Network includes three LRT or BRT routes beyond those services included in the CLRP:

- Route 28 LRT/BRT (Herndon – Centreville)
- Gallows Road LRT/BRT (Tysons – Merrifield)
- Route 7 BRT (Tysons – Mark Center)

Express Bus Services

These High Quality Transit Network systems are supported by express bus services. North-South Express Bus Services connect activity centers and High Quality Transit Network services in radial corridors and provide flexibility for through-routing, sometimes sharing their lanes with HOV. Express Bus Services proposed in Fairfax County include:

- Beltway Express (Tysons to Montgomery County, Tysons to Burke Centre VRE, Tysons to Franconia/Springfield Metro, Tysons to Huntington Metro, Huntington Metro to Prince George's County)
- Fairfax County Parkway (Reston Metro to Franconia/Springfield Metro) and Van Dorn Street Extended (Van Dorn Metro to Franconia/Springfield Metro)
- Route 28 (Loudoun County to Prince William County)

East-West Express Bus Services augment the grid of direct and flexible transit connections:

- Route 50 – serves activity centers and provides Orange Line “bus bridge” function
- Route 236 – continues Alexandria's planned Duke Street Transitway



The Express Bus Services can be implemented in a flexible manner, with a combination of exclusive right-of-way and operation in managed lanes (such as shared with HOV) or general purpose lanes. Express Bus Services are expected to include at least 50 percent of their mileage in exclusive right-of-way.

Exhibits 8 and 9 provide a more detailed examination of the proposed High Quality Transit Network elements beyond the CLRP, identifying specific alignments and the general locations of individual stations. The map includes proposed routes and stations outside Fairfax County for context.

CORRIDOR	TRANSIT MODE	CORRIDOR DESCRIPTION AND TERMINI
M1	Metrorail	Orange Line: Vienna to Prince William County
M2	Metrorail	Blue Line: Franconia-Springfield to Prince William County
M3	Metrorail	Yellow Line: Huntington to Hybla Valley
L1	LRT/BRT	Route 28: Route 28/CIT to Centreville
L2	LRT/BRT	Gallows Road: Tysons to Merrifield
L3	LRT/BRT	Route 7: Tysons to Mark Center
E1	Express Bus	Capital Beltway: Tysons to Montgomery County
E2 (a – c)	Express Bus	Route 50/236: Loudoun County to Landmark
E3	Express Bus	Route 28: Loudoun County to Prince William County
E4	Express Bus	Fairfax County Parkway: Reston to Franconia-Springfield
E5 (a – b)	Express Bus	Route 50: Fairfax City to Arlington County
E6 (a – c)	Express Bus	Capital Beltway: Tysons to Burke Centre VRE, Franconia-Springfield, and Huntington
E7	Express Bus	Capital Beltway: Huntington to Prince George’s County
E8	Express Bus	Van Dorn Street: Van Dorn to Franconia-Springfield

Exhibit 8 - Corridor Segments to be Added to the Regional Constrained Long Range Plan.

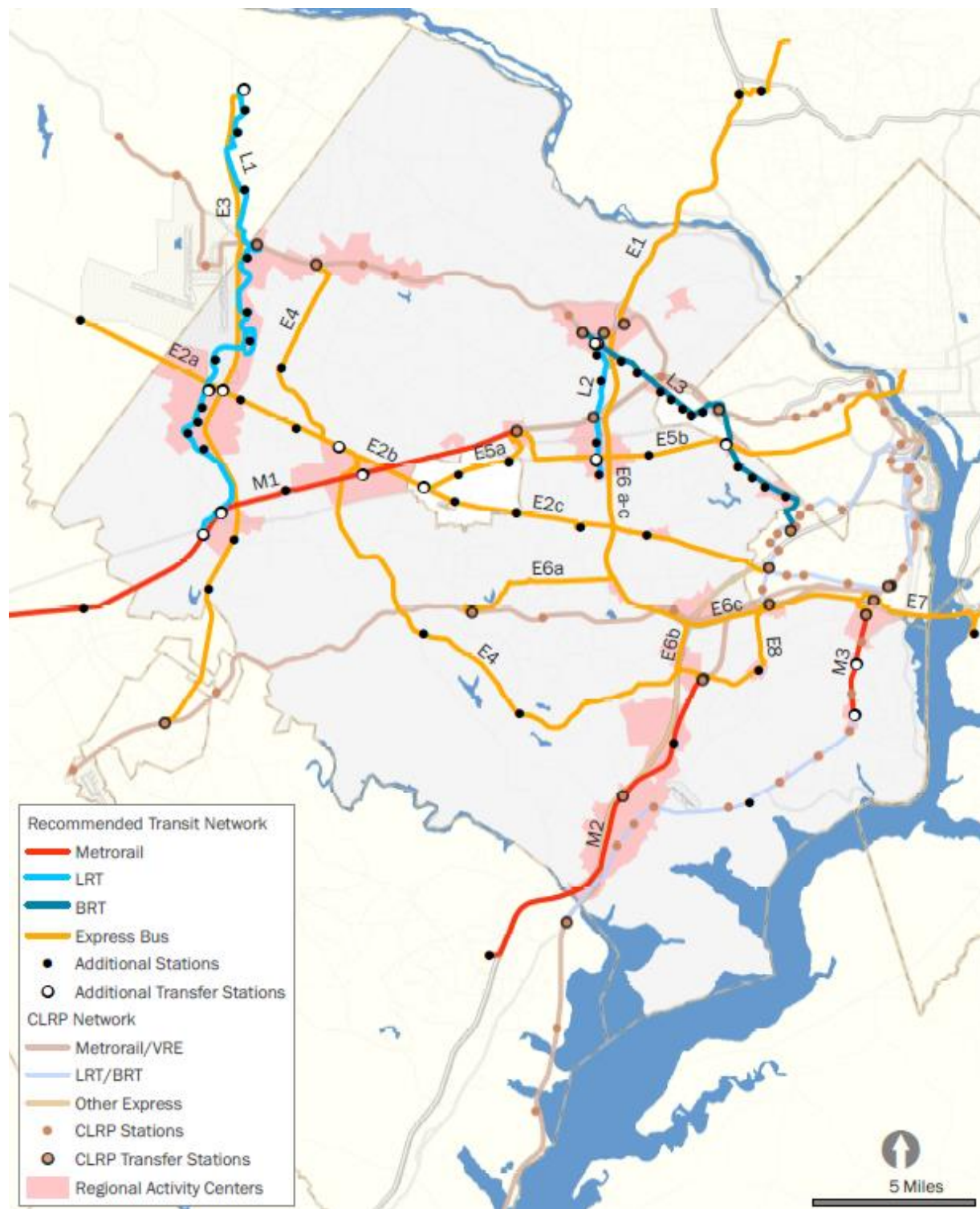


Exhibit 9 - High Quality Transit Network Routes and Station Locations



Supporting Policies

Supporting feeder bus service, park and ride lots, and circulator systems will provide broader access to commuter services and increased coverage within larger activity centers. Park and ride lots are most valuable in locations that can connect lower density residential communities with feeder or express bus services to activity centers. Circulator systems are most valuable where activity centers have significant development potential not directly served by a High Quality Transit Network station, such as Reston Town Center as well as expansion of existing services in activity centers with High Quality Transit Network stations such as Springfield and Tysons.

Land use plans and policies can help encourage the density, diversity, and design of Transit Oriented Development, particularly in destination corridors where LRT will connect multiple activity centers in a single corridor. In the Route 28 corridor and the Richmond Highway corridor, additional development density and diversity is needed to support the proposed transit system. Such changes will maximize efficient use of developable properties, increase total transit ridership, and reduce vehicle miles of travel.

Next Steps

The High Quality Transit Network described in the *Countywide Transit Network Study* proposes several changes to the Enhanced Public Transportation Corridors in the Transportation Plan Map, as well as changes to land use in the Richmond Highway and Dulles Suburban Center corridors. These changes will require amendments to the Fairfax County Comprehensive Plan as part of the Fairfax Forward work program or separate plan amendments.