

The purpose of this project is to implement higher-quality and higher-capacity transit service in the corridor in order to:

- Provide more capacity;
- Enhance access within the corridor and provide connections to the regional transit network; and
- Support economic development along the corridor.

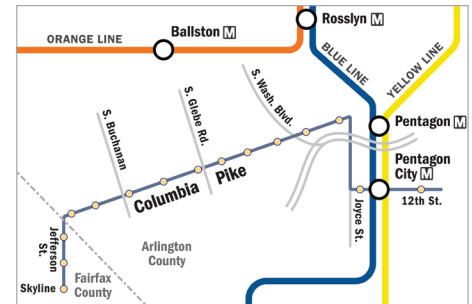
Columbia Pike Transit Initiative

Alternatives Analysis / Environmental Assessment: Executive Summary

Arlington County and Fairfax County, in cooperation with the Federal Transit Administration (FTA), have prepared an Alternatives Analysis/Environmental Assessment (AA/EA) for the Columbia Pike Transit Initiative and are seeking public comment on the document. The AA/EA compares the ability of four alternatives to satisfy the project purpose and need and analyzes the potential effects of the alternatives on the built and natural environment. The document is required in order for transit improvements along the corridor to be eligible for federal funding. This handout provides background information on the project and summarizes the highlights of the AA/EA.



Bailey's Crossroads Vision (Artist's Rendering)



Transit Corridor

What's the Vision for the Corridor?

(AA/EA Chapter 1, Sections 1 and 2)

Over the past decade, Arlington County and Fairfax County have been actively engaged in efforts to strengthen communities, increase the amount of housing and amenities, and encourage a mix of land uses at key locations along the corridor.

In 2002, the Arlington County Board approved the *Columbia Pike Initiative: A Revitalization Plan* for the corridor. Part visioning exercise and part implementation plan, the board developed a vision for transportation and community development along Columbia Pike and identified steps towards achievement. For its part, the Fairfax County Board of Supervisors has developed a vision for the greater Bailey's Crossroads area, reflected most recently in a 2010 Comprehensive Plan update that allows for greater land use densities and increased activity levels. Both boards' plans rely on implementation of a high-capacity, long-term transit system.

To meet their goals, the boards

initiated the Columbia Pike Transit Initiative project in coordination with FTA. The project proposes to implement high-quality, high-capacity transit service along a 5-mile corridor, running the majority along Columbia Pike, between the Pentagon/Pentagon City area in Arlington County and the Skyline area near Baileys Crossroads in Fairfax County. The proposed project fosters the counties' vision for a multimodal corridor, linking its walkable, mixed-use, mixed-income neighborhoods and connecting to the Washington, DC area transit network and thus, the region's major activity nodes.

Regionally, multiple transit corridors, including the project corridor, have been identified to provide increased mobility and accessibility, and potentially interface in the future. Implementing transit improvements along this corridor is part of achieving the regional transit vision for greater mobility and accessibility.

Land Use Planning Efforts

- 2001** Columbia Pike Initiative
- 2003** Columbia Pike Form Based Code
- 2005** Columbia Pike Initiative Plan Update
- 2006** Bailey's Crossroads Plan Amendment and ULI Panel
Bailey's Crossroads Planning Study
- 2010** Arlington County Transportation Master Plan Streetscape Element 2012
Bailey's Crossroads Plan Amendment Adoption
- 2012** Arlington County, Columbia Pike Neighborhoods Plan

What are the Transportation Challenges Along the Corridor?

Regional demographic projections and local land use plans anticipate that growth and development will continue along this already busy residential and commercial corridor. Residents and workers along the corridor face the following transportation challenges:

- Limited roadway capacity to handle an increase in automobile trips: Continued population and employment growth will increase transportation demand along the corridor. According to the MWCOG forecasts, population within a quarter-mile of the corridor is projected to increase by 21 percent from 2010 to 2030, while employment is projected to increase by 23 percent.¹ The population and employment growth (spurred by redevelopment) and operational improvements to existing transit service have generated a 45% increase in corridor weekday transit ridership since 2004. As land along the corridor continues to be redeveloped with medium- to large-scale mixed-use projects, and population and employment increases and development intensifies, the demand for transit will also increase.
- Existing transit capacity is insufficient to support future growth and development within the corridor: The Baileys Crossroads Revitalization Commer-

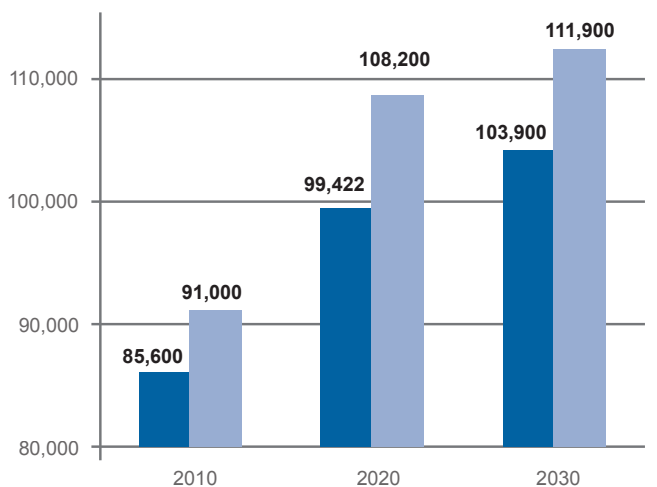
cial District in Fairfax County and Arlington County's Columbia Pike Initiative have provided the necessary land use plans and zoning codes to encourage development of additional housing amenities along Columbia Pike. These efforts have resulted in two major redevelopment projects in the Baileys Crossroads area of Fairfax County and six major residential redevelopment projects completed in the Arlington County portion of the corridor since 2002.² Additionally, ten projects, mostly mixed-use developments, are either under construction or approved along the overall corridor.

- The continued success of redevelopment efforts is dependent upon a robust transportation system to connect the new developments with existing population and employment centers. Most critically, improved transit service will demonstrate a permanent and on-going commitment to transportation by the public sector. Sustaining and improving the level of transit service investment will reassure people who continue to invest in the corridor that their efforts are worth the risk in the real estate market, and given this reassurance, jobs, housing, and services will continue to flow into the corridor.

The corridor carries more bus riders than any other corridor in Northern Virginia, with average weekday ridership of approximately **16,000 boardings per day**.

Since 2004, there's been a **45% increase in transit ridership** along the corridor.

- Skyline, a regional center of office, commercial and residential activity, is poorly connected to the regional transit network: Located at the western end of the corridor, the Skyline area of Fairfax County includes seven office buildings with approximately 10,000 employees and high density residential, mostly apartments, with about 4,000 residential units. The existing transit network provides relatively limited service to the Skyline area. Only one Metrobus line provides a direct connection from Skyline to the Pentagon Metrorail station and there is no direct connection to Pentagon City. Estimates of travel demand show that transit ridership could increase up to 4% with improved service to Skyline.



Projected Employment and Population for the study area
■ Employment ■ Population
Source: MWCOG Projections



Why won't adding more buses solve the problem?

During peak - periods, existing transit service frequency is very high— along the Pike, buses arrive every two to three minutes. Because of the already high service frequency, adding more buses to the corridor would decrease long-term operational efficiency, leading to more bus bunching and delays to passengers. Rather than adding more buses, increasing the capacity of the transit vehicle would contribute to increased service reliability and less bus bunching occurrences.

¹ Metropolitan Washington Council on Governments (MWCOG) Round 7.2a Land Use Projections.
² The six projects are the Halstead at Arlington, Siena Park, Gramercy at Metropolitan Park, Majestic Oak Townhouses, 55 Hundred, and Alcova Row.

How Can the Challenges be Addressed?

The transportation challenges of the corridor will be addressed by implementing a transit service that can increase transit capacity and reliability and support both the regional and local vision for the corridor. In order to address these challenges, three transit alternatives were developed, plus a No Build Alternative. These alternatives range in level of investment, in terms of planned improvements and capital costs. **Table 1** provides a brief summary of the alternatives. Below is a description of each alternative presented for evaluation:

- **No Build Alternative:** This alternative provides a way to evaluate and compare each of the proposed transit investment alternatives. Included in the No Build Alternative are all related transportation improvements planned for the corridor. This study assumes the implementation of Arlington County's Super Stop Program and Multimodal Street Improvement Project as part of the No Build, among other projects.
- **TSM 1 (Transportation Systems Management) Alternative – Enhanced Bus:** This alternative provides a modest level of investment and focuses on enhancing the current transit service along the corridor. Primary features of this alternative include increased service to underserved areas, slightly increased transit service, and consolidation of existing local bus stops. These improvements result in improved corridor travel time and slightly increased transit system capacity and reliability.
- **TSM 2 Alternative – Articulated Bus:** This alternative includes the same improvements provided under the TSM 1 Alternative but also deploys articulated buses on identified routes, introduces off board fare collection and multi-door boarding and alighting, and includes additional enhanced station stops beyond the Arlington County Super Stops program. The TSM 2 Alternative includes the addition of a new transit center along Jefferson Street. These service changes and improved rider amenities result in increased transit system capacity, improved corridor travel time, reliability, and passenger service and convenience.
- **Streetcar Build Alternative:** This alternative involves the highest capital investment and includes both a modern streetcar service and continued bus service between the Skyline area of Fairfax County and Pentagon City in Arlington County. The alternative includes off-board fare collection, multi-door boarding and

alighting, and enhanced station stops beyond the Arlington County Super Stops program. The alternative also includes the addition of the Jefferson Street Transit Center. These service changes and amenities result in improved corridor travel time and greater reliability. The investment in rail vehicles provides a high level of passenger convenience and allows for the greatest capacity to serve growing numbers of transit riders.

“Columbia Pike residents are slightly less satisfied than other Arlington County residents with the transportation system in the county.”

Source: 2009 Arlington County Resident Study Report

What is a streetcar?

A streetcar is an electric transit vehicle that runs along steel rails set flush into the surface of the street. Modern streetcar vehicles have low floors and multiple doors for convenient boarding. They are larger than typical transit buses and can carry more passengers. The Portland-style streetcar assumed in this study is 66 feet long and accommodates 115 passengers.



What is an articulated bus?

An articulated bus has two sections linked by a pivotal joint (like an accordion). The articulated bus in the TSM 2 Alternative (on Routes 16G and 16H) would be 60-foot long and hold a total of 94 passengers per vehicle – 60 seated passengers and 34 standees.



Table 1: Characteristics of the Alternatives

	No Build	TSM 1	TSM 2	Streetcar Build
Planned Service Enhancements	■	■	■	■
Consolidated Stop Locations along Columbia Pike		■	■	■
Improved span of service		■	■	■
Improved Service Coverage (Skyline)		■	■	■
Off-board Fare Collection and Multi-door Boarding			■	■
Increased Vehicle Passenger Capacity			■	■
Full Program of Stop Upgrades (Including transfer center and near-level boarding)			■	■
Smooth Ride and Ease of Passenger Access Associated with Rail Vehicles				■

How Will a Transit Investment Potentially Affect the Social, Built and Natural Environment Along the Corridor?

An evaluation of how each of the transit investments presented above would affect the social, built and natural environment was performed. In general, most impacts would result from construction-related activities and from the inclusion of new elements, such as enhanced station stops, traction power substations, and other facilities proposed along the corridor; other impacts would occur from operations of the transit alternatives. However, none of the transit alternatives were found to have adverse impacts that could not be addressed through mitigation or minimization. **Table 2** summarizes the potential effects of select key features.

Table 2: Summary of Potential Effects of Select Key Features (See AA/EA, Chapter 3 for further information)

FEATURE	ALTERNATIVE	EFFECT
Modified Transit Network	TSM 1 TSM 2 Streetcar Build	Environmental Justice: Increased mobility for minority & low-income communities as a result of increased bus service to and from Skyline (Sec. 3.5.2). Transportation: No level of service change at most intersections; LOS improvement and decrease at some intersections (Sec. 3.1.2). Economic Development: Travel time and travel cost savings identified (Sec. 3.6.2).
Jefferson Street Transit Center	TSM 2 Streetcar Build	Transportation: Minor parking displacements (Sec. 3.1.4). Land Use and Zoning: An allowable use requiring special exception (Sec. 3.2.2). Visual and Aesthetic Conditions: Minor changes in visual character (Sec. 3.7.2). Construction: Temporary construction impacts (Sec. 3.16.2).
Enhanced Station Stops beyond the Arlington County Super Stops program	TSM 2 Streetcar Build	Land Acquisition: Minor land acquisitions required (Sec. 3.3.2). Contaminated Materials: Potential impacts to contaminated materials (Sec. 3.13.2). Cultural Resources: Areas of archeological sensitivity identified (Sec 3.8.2). Water Quality: Minor increase in impervious surface (Sec. 3.12.2). Safety: Improved personal security, ADA accessibility, emergency communications, for travelers (Sec. 3.15.2). Construction: Temporary construction impacts (Sec. 3.16.2).
Track Work / Alignment	Streetcar Build	Transportation: Minor parking displacements (Sec. 3.1.4); changed conditions for cyclists (Sec. 3.1.5; Sec. 3.15.2). Contaminated Materials: Potential impacts to contaminated materials (Sec. 3.13.2). Parklands: Temporary effects for Four Mile Run Trail, Glencarlyn Park, and the W&OD Railroad Regional Park (Sec. 3.9.2). Visual and Aesthetic Conditions: Minor changes in visual character due to introduction of modern streetcar vehicles, and streetcar tracks and overhead wire (Sec. 3.7.2). Construction: Temporary construction impacts (Sec. 3.16.2).
Re-grading of Jefferson Street to accommodate the streetcar	Streetcar Build	Transportation: Service driveway access impacted (Sec. 3.1.4). Cultural Resources: Historic Boundary Marker SW6 adversely effected (Sec 3.8.2). Construction: Temporary construction impacts (Sec. 3.16.2).
Construction Staging & Equipment Storage Site	Streetcar Build	Land Use and Zoning: May require amendments to zoning and general land use plan. (Sec.3.2.2) Visual and Aesthetic Conditions: Minor changes in visual character. (Sec 3.7.2) Construction: Temporary construction impacts (Sec. 3.16.2).
Operation & Maintenance Facility	Streetcar Build	Land Use and Zoning: Allowable land use but would require re-zoning (Sec. 3.2.2). Noise & Vibration: Sensitive noise receptors identified (Sec. 3.12.2). Contaminated Materials: Potential direct impacts to contaminated materials (Sec. 3.13.2). Visual and Aesthetic Conditions: Minor changes in visual character (Sec. 3.7.2). Construction: Temporary construction impacts (Sec. 3.16.2).
Traction Power Substations (TPSS), Overhead Contact System (OCS)	Streetcar Build	Land Use and Zoning: Require access easements; allowable land uses requiring special exception (Sec. 3.2.2). Land Acquisition: Minor land acquisitions required (Sec. 3.3.2). Water Quality: Minor increase in impervious surface (Sec. 3.12.2). Visual and Aesthetic Conditions: Minor changes in visual character (Sec. 3.7.2). Construction: Temporary construction impacts (Sec. 3.16.2).
Streetcar Service	Streetcar Build	Economic Development: Potential for increase in property values along corridor (at least 4%). Potential beneficial effects on livability; potential for additional effects related to increased development/redevelopment along the corridor; Travel time and travel cost savings identified (Sec. 3.6.2).
Skyline Plaza Deck	Streetcar Build	Transportation: Minor parking displacements (Sec. 3.1.4). Construction: Temporary construction impacts (Sec. 3.16.2).

What are the Estimated Costs and Proposed Funding Sources?

The project alternatives represent varying degrees of capital investment and different levels of transit performance and potential to shape future activity along the corridor. **Table 3** presents the capital cost estimates. These cost estimates have been developed through an extensive peer review of similar projects throughout the United States and are based on 2011 dollars, escalated to 2015 dollars. **Table 4** presents the estimated operations and maintenance costs.

Arlington County and Fairfax County anticipate seeking federal funding to supplement local and state investments toward implementing the Columbia Pike Transit Initiative. The federal process requires completion of a federally approved AA/EA to consider the costs and benefits as well as the potential effects on the human and natural environment of each alternative. Approval of the AA/EA will allow the project to be eligible for all sources

of federal funding, including submission of an application to enter the FTA New Starts/Small Starts program.

These funding amounts are preliminary and approximate, and they are expected to change in the future as the project develops and as cost allocation agreements are negotiated between the various parties. The charts below show the breakdown of anticipated funding sources to cover the estimate capital and operations and maintenance costs.

Table 3: Estimated Capital Costs (2011, 2015)

	TSM 1	TSM 2	Streetcar
Capital Cost (2011)	\$4M	\$47M	\$214-231M
Capital Cost (2015)	\$5M	\$53M	\$242-261M

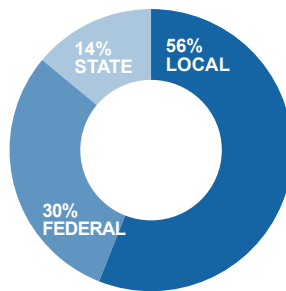
*Cost variation due to range of applicable peer capital costs

Table 4: Estimated Operations and Maintenance (O&M) Costs (2011, 2016)

	No Build	TSM 1	TSM 2	Streetcar Build*
O&M Costs (2011)	\$14.4M	\$20.1M	\$19.4M	\$19.4-\$25.5M
O&M Costs (2016)	\$16.7M	\$23.3M	\$22.5M	\$22.5-\$29.6M

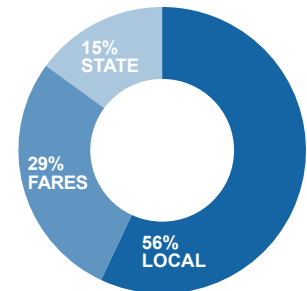
*Cost variation due to range of applicable peer O&M costs

Anticipated, Approximate Capital Funding Sources



56% Arlington County and Fairfax County
30% FTA Small Starts Funds
14% Commonwealth of Virginia

Anticipated, Approximate O&M Funding Sources



56% Arlington County and Fairfax County
29% Ridership and Fare Revenue
15% State Operating Support



Columbia Pike (Artist's Rendering), Columbia Pike Initiative Update, 2005

How will the Alternatives Support Land Use and Economic Development within the Corridor?

The counties need to invest in transit service along the corridor that supports future growth and development. Without the investment in a high-quality, high-capacity transit system within the corridor, adopted local land use goals and policies would not be supported.

Potential to Increase Transit System Capacity

Based on Metropolitan Washington Council of Governments (MWCOG) estimates, the total population within a quarter-mile of the corridor is expected to grow by approximately 10,000 people by 2030. Similarly, employment along the corridor is expected to grow by approximately 12,000 jobs. Therefore, the corridor needs a transit system that is able to expand and adapt to accommodate future growth by increasing system capacity and service frequency without compromising operational efficiency. As described in **Table 5**, the TSM 2 and Streetcar Build Alternative are able to expand transit capacity in the future.

Table 5: Potential to Increase Transit System Capacity

Measure	No Build	TSM 1	TSM 2	Streetcar Build
Ability to expand fleet in the future	Limited in its potential to add transit capacity in response to transit demand.	Limited in its potential to add transit capacity in response to transit demand.	Able to add transit capacity in the future with little increase in operating costs by replacing standard buses with articulated buses.	As a fixed guideway system, could add significant passenger capacity with little increase in operating costs by replacing buses with higher-capacity streetcar vehicles. In the future, capacity could be increased further—again with little increase in operating costs—through the use of multiple-car consists.

Economic Effects for Travelers

A review of housing and transportation affordability along the project corridor found that the majority of U.S. Census Block Groups along the corridor are currently within the affordable range, as defined by the Center for Neighborhood Technology (CNT); based on average household income, residents are paying less than 45 percent of their income on housing and transportation costs. As the region continues to grow, congestion levels increase, and housing and transportation expenditures rise, it is likely that the 45 percent threshold would be exceeded in areas along the corridor. This risk highlights the need for continued access to inexpensive public transportation for corridor residents, and the need for Arlington County and Fairfax County to provide adequate affordable housing. As summarized in **Table 6**, the TSM Alternatives, and to a greater degree, the Streetcar Build Alternative, provide annual travel time savings and travel cost savings.

Table 6: Economic Effects for Travelers

Measure	No Build	TSM 1	TSM 2	Streetcar Build
Value of Annual Travel Time Savings	No travel time savings.	\$2.2M	\$4.5M	\$5.1M
Value of Annual Travel Cost Savings	No travel cost savings.	Annual travel cost savings for 2030 identified (\$0.3M).	Annual travel cost savings for 2030 identified (\$0.7M).	Annual travel cost savings identified for 2030 (\$0.9M).
Location Efficiency	Housing and transportation costs likely to increase without travel time or travel cost savings.	Housing costs likely to increase for reasons independent of transportation investment; travel cost savings for 2030 (\$0.3M) identified to offset housing cost.	Housing costs likely to increase for reasons independent of transportation investment; annual travel cost savings for 2030 (\$0.7M) identified to offset housing cost.	Housing costs likely to increase with overall increase in property values due to alternative, but impact mitigated by housing policies; travel cost savings for 2030 (\$0.9M) identified to offset housing cost.

Potential Economic Development Effect

Unless some investment in higher-quality, higher-capacity transit is made, the projected population and employment growth would not be addressed and would result in increased congestion, which could discourage future development along the corridor. As shown in **Table 7**, the TSM Alternatives and Streetcar Build Alternative provide increased transit capacity, which would help alleviate potential congestion and encourage development along the corridor. The Streetcar Build Alternative has the greatest potential to have a positive economic development effect. The permanent nature of streetcar guideway leads to the increased potential to shape long-term corridor growth and development.

Table 7: Potential Economic Development Effect

Measure:	No Build	TSM 1	TSM 2	Streetcar Build
Land Value	Negligible impacts on property values.	Negligible impacts on property values.	Slight impacts on property values.	4% increase in property values.
Pace of Development	No Effect.	No Effect.	Some potential to increase pace of development.	More potential to increase pace of development.

How do the Alternatives Compare in Meeting the Transportation Challenges of the Corridor?

Table 8, below, summarizes how well the alternatives address the transportation challenges, including increasing transit mode share and ridership, and reducing regional vehicle miles traveled in the corridor.

Table 8: Transit Capacity and Mode Share, and Vehicle Miles Traveled (VMT) Savings

Measure	No Build	TSM 1	TSM 2	Streetcar Build
2016 person throughput (at peak-load point) (automobile and transit)	3,101 (37% transit)	3,229 (40% transit)	3,489 (44% transit)	3,524 (45% transit)
2030 person throughput (at peak-load point) (automobile and transit)	3,349 (39% transit)	3,745 (41% transit)	3,795 (46% transit)	3,916 (48% transit)
Transit capacity (peak hour, peak direction)	1,974	2,073	2,654	2,802
2016 transit ridership (total average weekday for Metrobus/ streetcar and ART)	17,800	21,700	25,100	26,200
2030 transit ridership (total average weekday for Metrobus/ streetcar and ART)	20,700	25,000	28,900	30,500
2016 transit mode share (daily total)	11.70%	11.82%	12.01%	12.07%
2030 transit mode share (daily total)	12.91%	13.04%	13.23%	13.31%
2016 Regional Vehicle Miles Traveled (VMT) and savings compared to the No Build Alternative	130M	-5,652	-13,699	-16,323
2030 Regional Vehicle Miles Traveled (VMT) and savings compared to the No Build Alternative	160M	-6,341	-15,208	-18,740
2016 Travel time, Jefferson Street to Pentagon City (am peak hour, peak direction)	29 min.	26 min.	23 min.	22 min.
2030 Travel time, Jefferson Street to Pentagon City (am peak-period, peak direction)	30 min.	28 min.	25 min.	23 min.



Proposed Station Stop at Walter Reed Drive (Artist's Rendering)

How do the Alternatives Compare in Meeting the Project Purpose and Need and Goals and Objectives?

The goal of the evaluation is to assess how well each alternative addresses the Columbia Pike Transit Initiative's purpose and needs and goals and objectives. The first assessment evaluates the ability of each alternative to meet the project purpose and need, as described in Chapter 1. This is performed using identified evaluation measures that provide either quantitative or qualitative data on how well each alternative meets the stated need. The second evaluation is a qualitative assessment of how well an alternative supports the project goals and objectives defined in Chapter 1, relative to the other alternatives. **Tables 9 and 10** provide a synthesis of how well the alternatives address the project goals and objectives, and problems and needs.

Table 9: Ability to Meet Project Needs

Project Needs	No Build	TSM 1	TSM 2	Streetcar Build
Increase transit capacity and improve transit mode share				
Invest in transit service that supports growth and economic development				
Improve connectivity and transit service to and from Skyline				

Table 10: Ability to Meet Project Goals and Objectives

Project Needs	No Build	TSM 1	TSM 2	Streetcar Build
Improve mobility for corridor residents, employees, customers and visitors.				
Contribute to and serve as a catalyst for economic development.				
Enhance livability and long-term economic and environmental sustainability of the corridor.				
Support development of an integrated regional multimodal transportation system.				
Provide a safe environment for all modes of travel.				

No improvement over existing conditions Greatest improvement over existing conditions

What are the Next Steps?

After the public meetings are held, Arlington County Board and the Fairfax County Board of Supervisors will each select a Locally Preferred Alternative (LPA). After the selection of the LPA, the Federal Transit Administration (FTA) will review the findings of the AA/EA and responses to comments. FTA will make its formal NEPA determination and the comments will be formally addressed in the NEPA finding. If the Streetcar Build Alternative is selected as the LPA, Arlington County and Fairfax County would apply to enter the next phase, preliminary engineering or project development of FTA's New Starts/Small Starts program.

Subject to the availability of funding, the current project timeline calls for:

- Arlington County Board and Fairfax County Board of Supervisors adopt a Locally Preferred Alternative in 2012.
- Preliminary engineering and project development from 2012 to 2014.
- Design and construction to begin in 2015.
- System testing and service to begin in 2017.

