Route 1

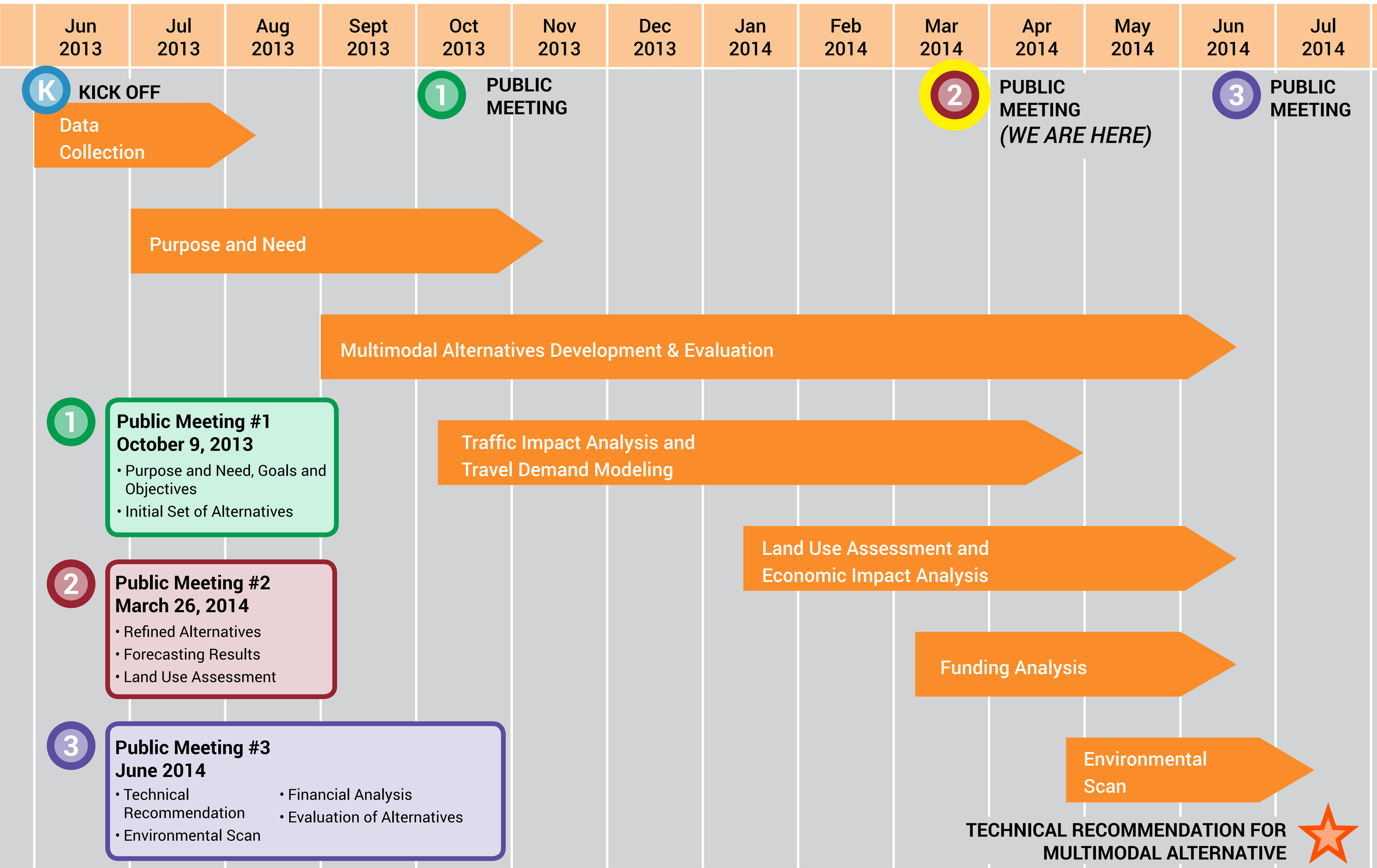
Multimodal Alternatives Analysis

Public Meeting

March 26, 2014

South County Government Center
Fairfax County, VA

Project Schedule



1 Public Meeting #1
October 9, 2013

- Purpose and Need, Goals and Objectives
- Initial Set of Alternatives

2 Public Meeting #2
March 26, 2014

- Refined Alternatives
- Forecasting Results
- Land Use Assessment

3 Public Meeting #3
June 2014

- Technical Recommendation
- Environmental Scan
- Financial Analysis
- Evaluation of Alternatives

Study Purpose

WHAT IS AN ALTERNATIVES ANALYSIS?

An **Alternatives Analysis** is a study that examines different options to address a transportation problem

Multimodal means that a range of different transportation types will be evaluated

FALL 2013	WINTER - SPRING 2013 - 2014	SUMMER 2014
PURPOSE & NEED	**ALTERNATIVES DEVELOPMENT**	**EVALUATION OF ALTERNATIVES & IMPLEMENTATION PLAN**
Public Meeting	**Public Meeting**	**Public Meeting**
• Data Collection • Purpose and Need • Goals and Objectives	• Transportation Modes • Land Use Potentials	• Transportation and Land Use Analysis • Economic Impacts • Funding Strategy • Agreed-upon Transportation Alternative • Recommendations for Land Use

Public involvement is critical to the success of a major transportation project, so public meetings and other citizen outreach efforts are integrated throughout the study process. The goal is to ensure that all parties are informed, understood and able to participate fully in the process

STAKEHOLDER INVOLVEMENT

The Virginia Department of Rail and Public Transportation (DRPT) is facilitating the Route 1 Multimodal Alternatives Analysis. Key partner agencies include Fairfax County, Prince William County, the Virginia Department of Transportation (VDOT), and the Virginia Office of Intermodal Planning and Investment (OIPI).

Additional project input and guidance is being provided by:

- A **Community Involvement Committee** composed of business and residential leaders and interested organizations.
- An **Executive Steering Committee**, consisting of elected officials, to assist with policy-related decision making and funding strategies.
- A **Technical Advisory Committee** consisting of state and local agency staff with expertise in a range of relevant topic areas.

Route 1 Multimodal Alternatives Analysis

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Purpose & Need, Goals and Objectives

Purpose

The purpose of the project is to provide improved performance for transit, bicycle and pedestrian, and vehicular conditions and facilities along the Route 1 corridor that support long-term growth and economic development.

Needs

	Needs	
Transit	• Peak and off-peak transit service is infrequent • High transit dependent population • Traffic delays reduce transit reliability • High ridership potential for quality transit	*Attractive and competitive transit service*
Pedestrian/Bicycle	• Pedestrian networks along and surrounding the corridor are disjointed, limiting pedestrian travel and reducing access to transit • Bicycle access is difficult with few alternative paths	*Safe and accessible pedestrian and bicycle access*
Vehicular	• Users experience significant congestion along Route 1 during peak periods • Travel times are highly variable and unpredictable	*Appropriate level of vehicle accommodation*
Land Use/Economic Development	• Significant population and employment growth is anticipated regionally and along Route 1 corridor • Current development patterns fail to optimize development potential	*Support and accommodate more robust land development*

Goals and Objectives

Expand attractive multimodal travel options to improve local and regional mobility

- Increase transit ridership
- Improve transit to reduce travel times and increase frequency, reliability, and attractiveness
- Increase transportation system productivity (passengers per hour) within the corridor
- Increase comfort, connectivity, and attractiveness of bicycle and pedestrian networks to and along the corridor
- Integrate with existing and planned transit systems and services

Improve safety; increase accessibility

- Provide accessible pathways to and from transit service and local destinations
- Reduce modal conflicts
- Improve pedestrian crossings
- Minimize negative impact on transit and auto operations in the corridor
- Maintain traffic delays at acceptable levels

Increase economic viability and vitality of the corridor

- Improve connectivity to local and regional activity centers
- Encourage and support compact, higher density, mixed use development consistent with local plans, policies, and economic objectives
- Secure public and investor confidence in delivery and sustainability of new transit investments
- Provide high-capacity transit facilities at locations where existing and future land uses make them mutually supportive

Support community health and minimize impacts on community resources

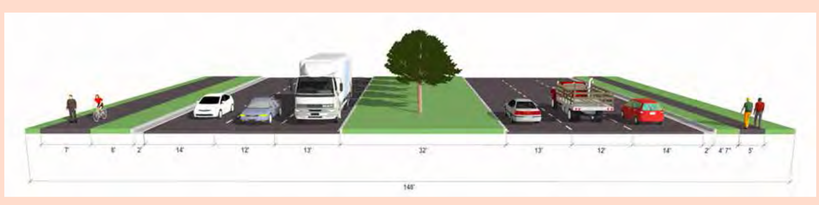
- Minimize negative impacts to the natural environment
- Contribute to improvements in regional air quality
- Increase opportunities for bicycling and walking to improve health and the environment

Coordination with Relevant Studies and Plans

HIGH CAPACITY TRANSIT PROPOSED

- DRPT Study SJ292 (2010)
- Fairfax County Comprehensive Plan (2011)
- Fairfax County Transit Network Study (ongoing)

VDOT ENVIRONMENTAL ASSESSMENT SET PROPOSED TYPICAL CROSS SECTION WITH BICYCLE AND PEDESTRIAN PATHS



INTERCHANGE IMPROVEMENTS CURRENTLY IN DESIGN (CONSTRUCTION TO BEGIN IN 2015)

Route 1/ Route 123 Interchange

LOCATIONS UNDER CONSIDERATION FOR ROUTE 1 TRANSIT CENTER

COUNTY PLANS

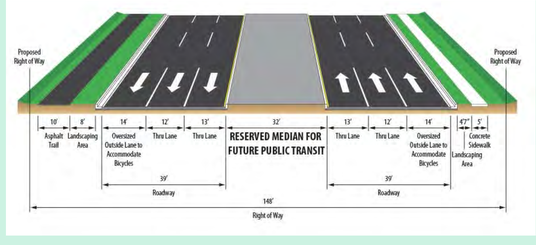
- Fairfax County Comprehensive Plan
- Prince William County Comprehensive Plan

REGIONAL STUDIES AND PLANS

- MWCOG Constrained Long Range Plan
- NVTA TransAction 2040
- WMATA Regional Transit System Plan
- WMATA Momentum 2025

WIDEN ROUTE 1 TO ACHIEVE CONSISTENT 6-LANE CROSS SECTION AND EXPAND MEDIAN

- Route 1 - Telegraph Road to Mount Vernon Memorial Highway FHWA Design Build Project (ongoing)



FORT BELVOIR MASTER PLAN

CITY OF ALEXANDRIA
Braddock Rd
King St - Old Town
Eisenhower Ave
I-495/I-95 CAPITAL BELTWAY
495 95
HUNTINGTON
VIRGINIA
495
95
FAIRFAX COUNTY
Telegraph Road
FORT BELVOIR
Mount Vernon Memorial Highway
POTOMAC RIVER
Gordon Boulevard (Route 123)
WOODBRIDGE
PRINCE WILLIAM COUNTY

Key Past and Current Studies

Route 1 Centerline Study (1998)

The 1998 study was in response to concerns about increased travel demand in the corridor and a need to ensure coordinated revitalization efforts in Prince William and Fairfax Counties.

Route 1 Location Study (2004)

Determined the right-of-way requirements for widening Route 1 from the existing 4-lane divided highway to a 6-lane divided highway with a multi-purpose trail, sidewalk, wide curb lane for bicycle use and landscaping. The goals of the proposed transportation improvements were to reduce traffic congestion, improve safety, facilitate economic development, and enhance pedestrian access and safety.

Route 1Transit Improvement Study (2003)

Examined the Route 1 corridor between Fort Belvoir to the Huntington Metrorail Station. Recommended a three-phase implementation plan to first improve local bus service, and then introduce bus rapid transit and eventually light rail. The study also included recommendations to add facilities to support transit access.

Fairfax County Transit Development Plan (2009)

Guided the expansion and enhancement of Fairfax Connector and Metrobus service operated in and paid for by Fairfax County.

Super NoVa Transit & Transportation Demand Management Vision Plan Study (2010)

Envisioned safe, strategic, and seamless mobility for all options rail, transit, and TDM in the greater NoVa region. Goals included increasing mobility and transportation choice, efficiently using transportation infrastructure to meet current and future needs, integrate transportation and land use planning policy, and support sustained economic growth and prosperity.

Fairfax Countywide Transit Study (ongoing)

Determines transit system types needed to accommodate desired economic growth throughout the county over next several decades. This study develops recommendations for Metrorail extensions, appropriate streetcar and light rail placement, and dedicated lanes that allow for faster bus travel.

Route 1 Multimodal Alternatives Analysis

Richmond Highway Public Transportation Initiative (2004)

This study looked at 7 miles of the Route 1 corridor between the Capital Beltway and Mount Vernon Memorial Highway, with the intent to upgrade transit service and improve access. As a result, the plan included provisions to upgrade pedestrian facilities along the corridor, including new sidewalks, enhanced crosswalks, median refuges, pedestrian signals, lighting, curb ramps, and bus stop amenities.

Sustainability of Mixed-Use Development around Woodbridge Station (2009)

Explored transit-oriented development opportunities in the area surrounding Woodbridge's Virginia Railway Express station while testing the impact of various land use and transportation scenarios. The intention was to understand the implications of creating a vibrant, walkable, mixed-use development north of Route 1 and a mass transit node near the existing station.

Route 1 Transit Study SJ292 (2010)

Evaluated the level of study necessary to identify and advance potential public transportation services to Fort Belvoir in Fairfax County and Quantico in Prince William and Stafford Counties.

Route 1/Route 123 Interchange (ongoing)

Will improve the current Route 1/ Route 123 interchange in Woodbridge to better accommodate future traffic growth. Route 1 will become wider, and the current at-grade interchange will become grade separated to improve traffic flow and better connect communities.

Route 1 Improvements at Fort Belvoir (ongoing)

Evaluated alternatives for addressing transportation in the section of Route 1 between Telegraph Road (Route 611) and Mount Vernon Memorial Highway (Route 235).

1998 2000 2002 2004 2006 2008 2010 2012 2014

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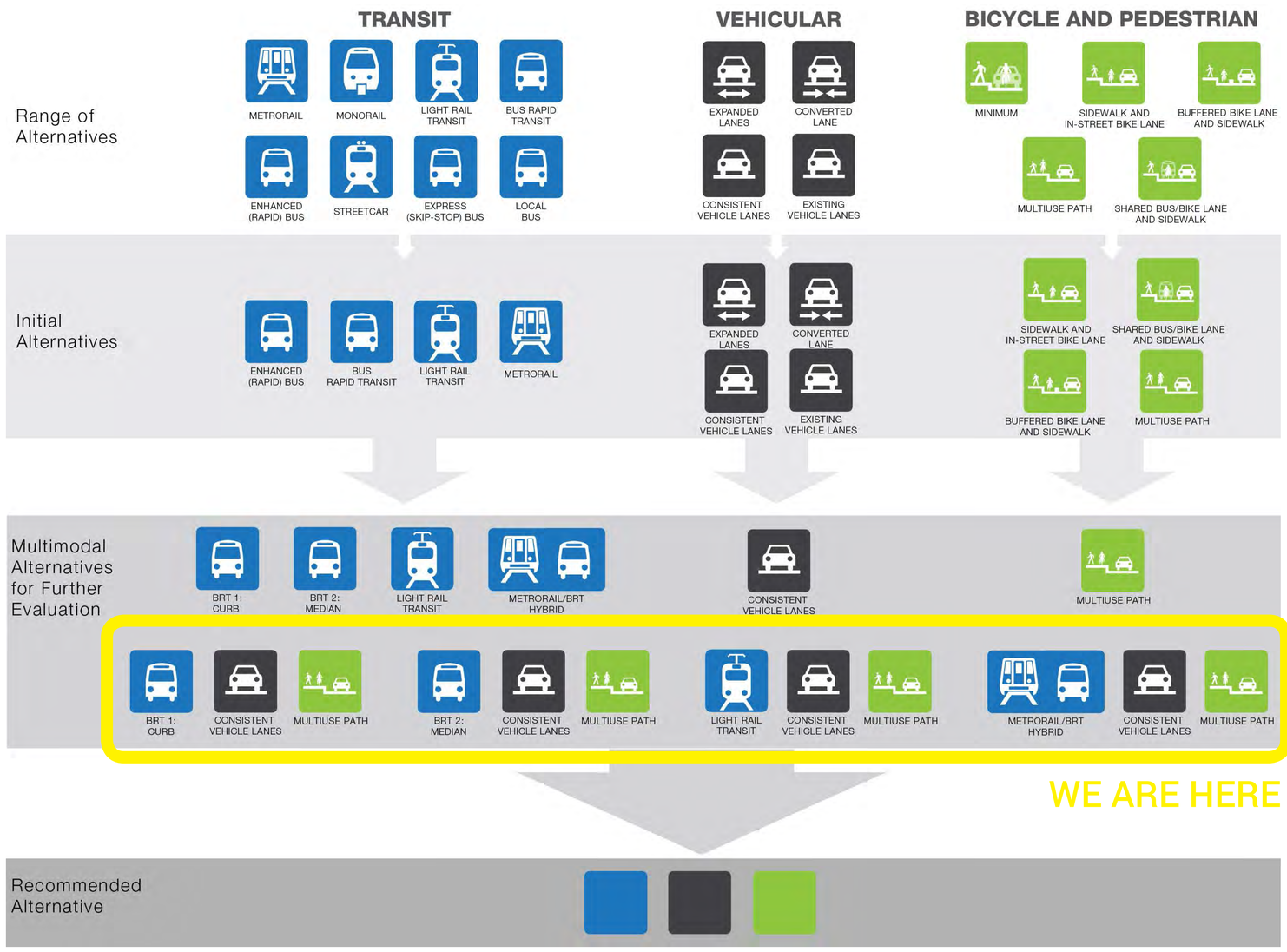
Evaluation Process

- **Identify initial transit, vehicular, and bicycle and pedestrian alternatives**
- **Evaluate alternatives based on key evaluation factors and project goals and objectives**
- **Recommend a multimodal transportation alternative to advance for further study**



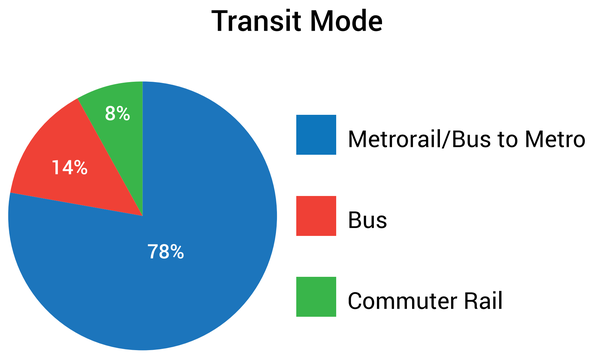
Key Evaluation Factors:

- Transit System Performance
- Bicycle and Pedestrian Network Improvement
- Traffic Operations
- Implementation/ability to phase project
- Financial Feasibility
- Capacity to Meet Current and Future Needs
- ROW and Impacts on Community Resources

Existing Transit Travel Markets

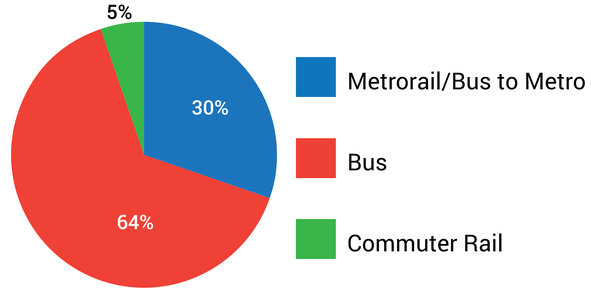
On an average weekday, where do people who live in the corridor travel via transit?

- 78% of corridor transit users take Metrorail to work
- The majority of corridor transit users (52%) are commuting to downtown, using Metrorail
- 86% of corridor transit users are traveling to Arlington or Downtown

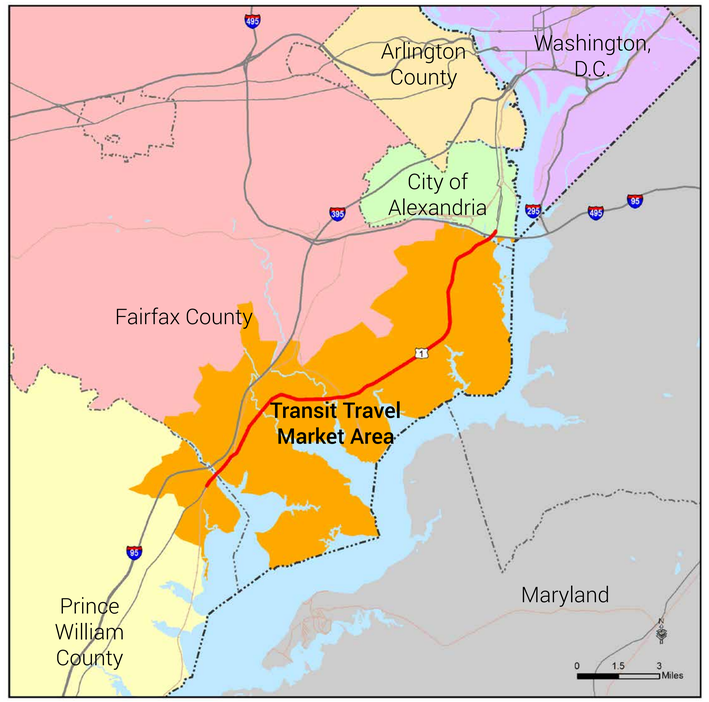


On an average weekday, where do people who travel to the corridor via transit come from?

- 64% of transit commuters to the corridor use the bus
- 57% of transit trips begin and end in the corridor

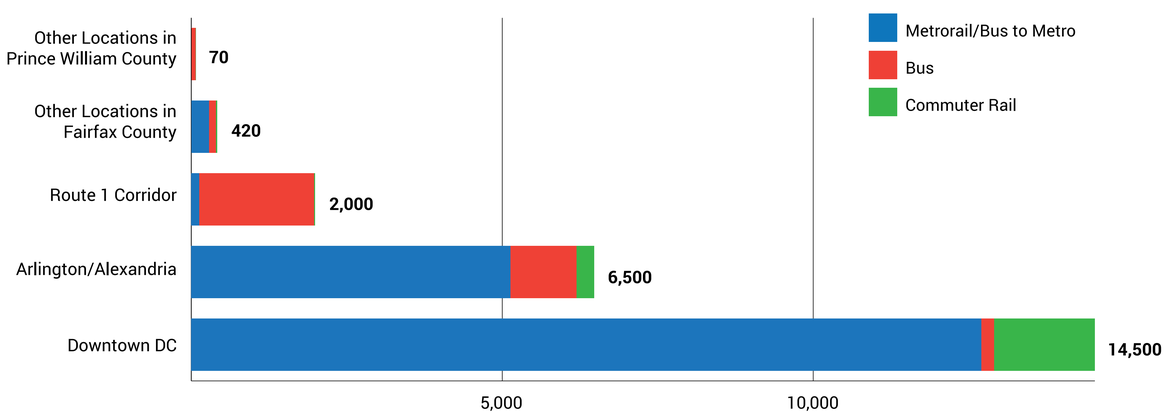


- **Most transit users use Metrorail to travel outside the corridor and bus to travel within the corridor**
- **Most trips outside the corridor go to DC and Arlington/Alexandria**

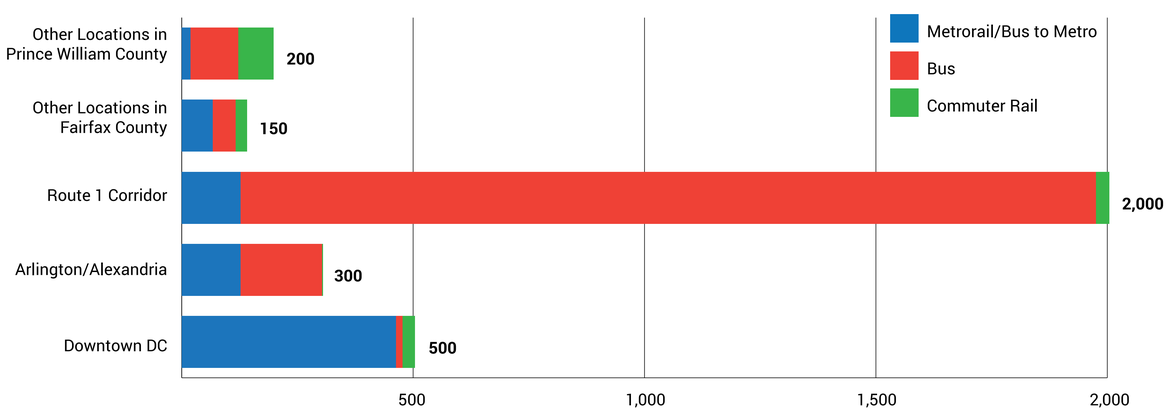


Route 1 From/To	Total Daily Trips		
	Total	% of Total	Transit Share
DC	52,000	6%	29%
Arlington/ Alexandria	116,000	13%	6%
Route 1 Corridor	310,000	34%	1%
Fairfax Other	216,000	24%	0.3%
Prince William Other	124,000	14%	0.2%
Other Areas	95,000	10%	2%
Total	**913,000**	**100%**	**3%**

Traveling To:



Traveling from:



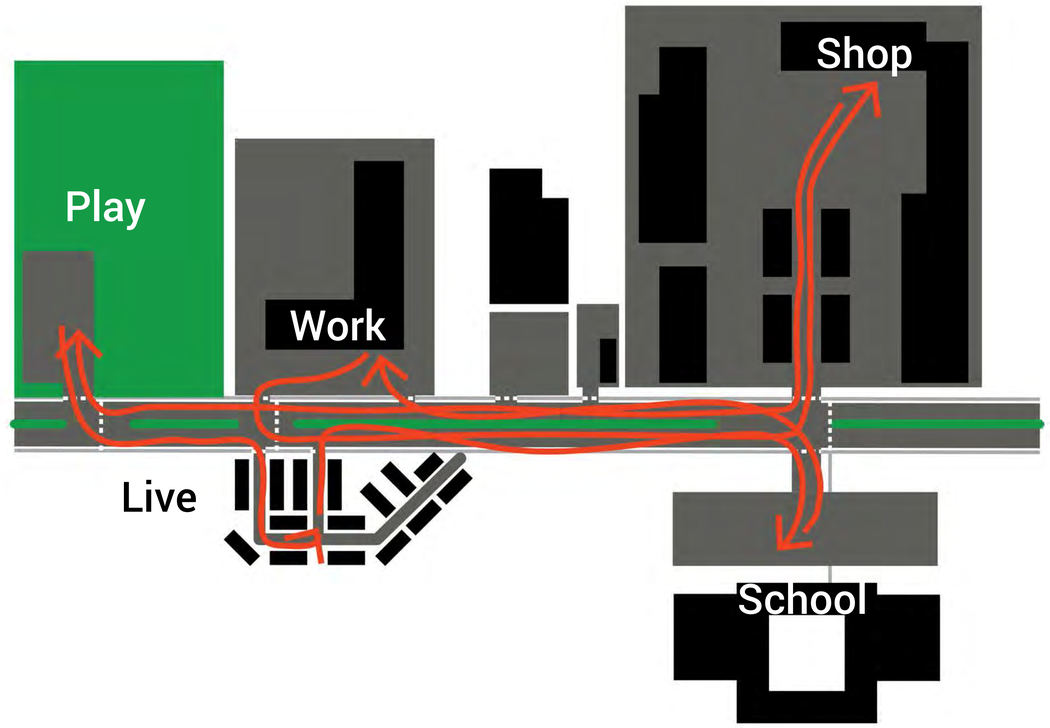
Changing the way we get around

Most traffic comes from short car trips

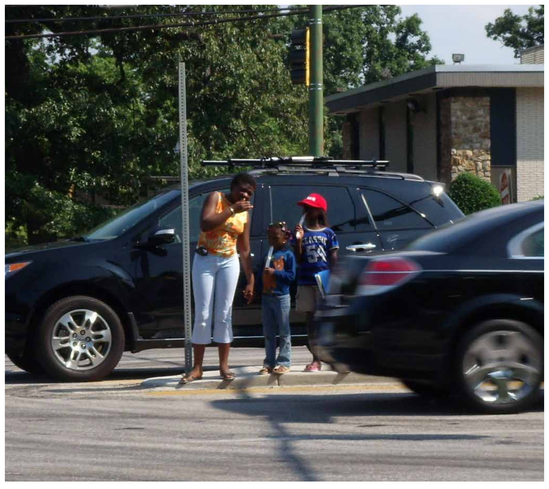
70% of all household trips are less than 5 miles long

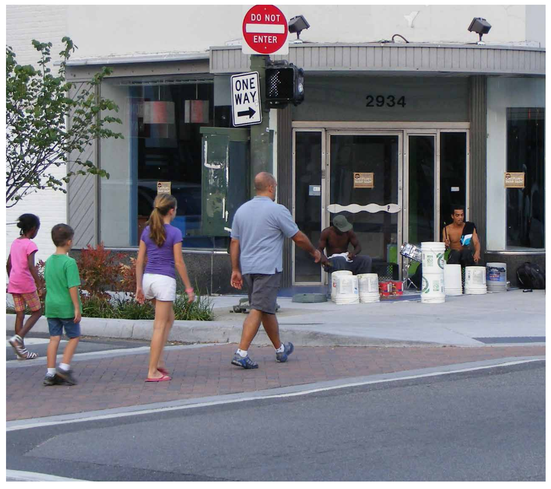
83% are taken by car

Conventional development



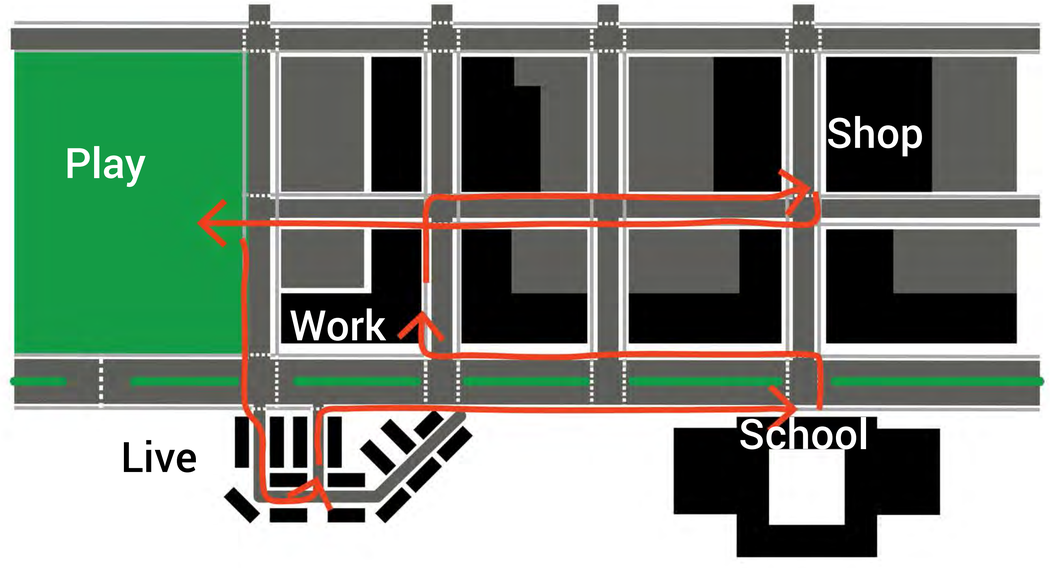
Travel alternatives can reduce congestion





Making it safe and pleasant for people to make short, local trips without a car can have a big impact on traffic.

Grid pattern, mixed-use development



- Requires less parking
- Uses less land
- Produces fewer automobile trips
- Reduces vehicle turning movements
- Reduces vehicle miles traveled

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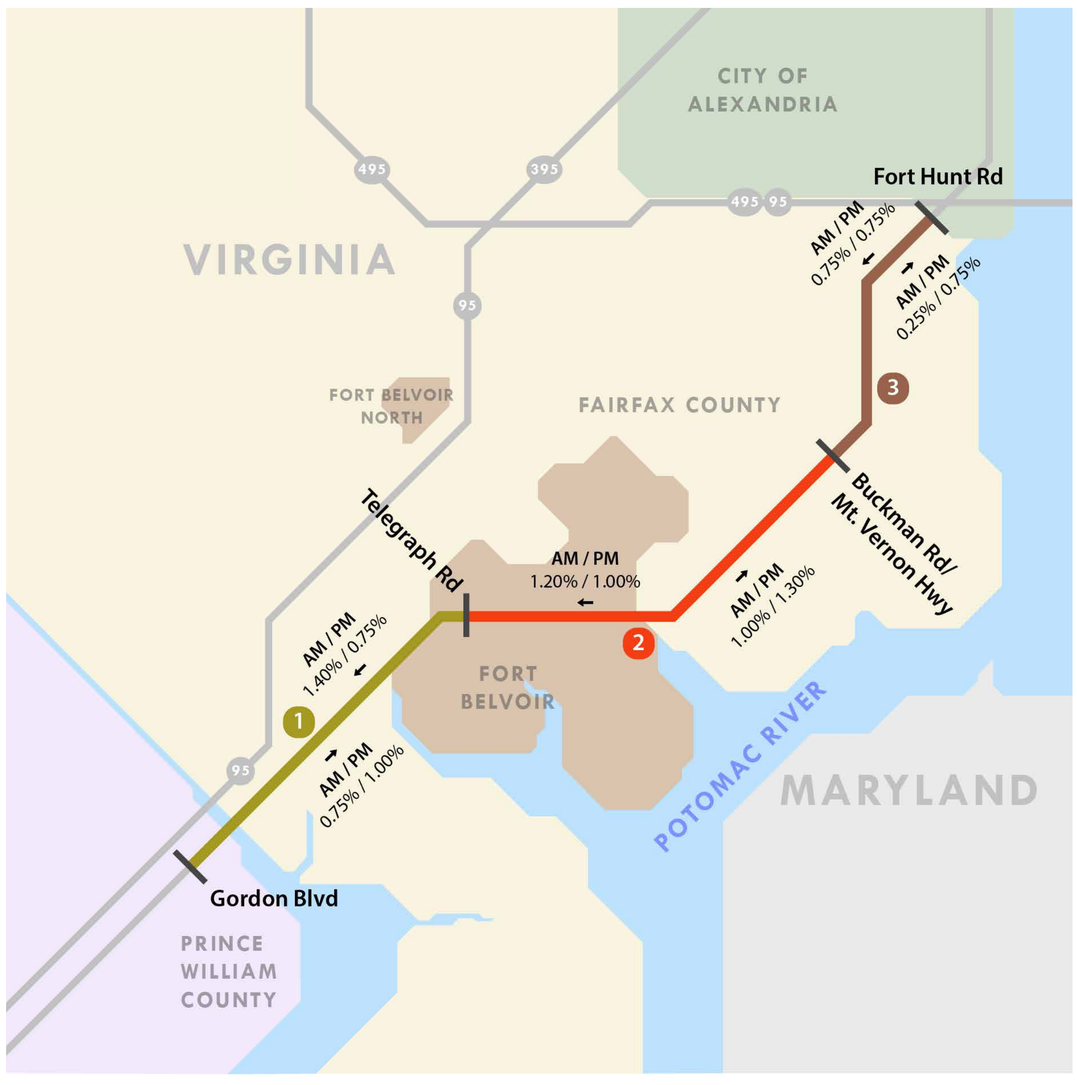
Traffic

Average Annual Daily Traffic (2014)

Projected Growth in Annual Daily Traffic (to 2035)



Intersection Level of Service (2014)

Level of Service

Fair | Poor | Unacceptable

Intersection	Existing Level of Service		2035 Level of Service	
	AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour
Fort Hunt Rd	F	D	F	D
Huntington Ave	C	D	C	D
Holiday Inn Ent.	B	B	B	B
Quander Rd	B	B	B	B
N. Kings Hwy	B	C	B	D
S. Kings Hwy	D	D	D	E
Southgate Dr	A	B	B	B
Beacon Hill Rd	C	D	C	D
Memorial St	B	C	B	C
Collard St	A	A	A	A
Popkins Ln	B	B	B	B
Lockheed Blvd/ Dart Dr	C	D	D	D
Arlington Dr*	B	C	B	C
Boswell Ave*	C	D	C	D
Fordson Rd/ Shopping Center*	B	C	B	D
Haft Dr*	A	B	A	B
Sherwood Hall Ln*	C	D	C	E
Ladson Ln*	A	B	A	C
Buckman Rd/Mt. Vernon*	F	D	E	E
Janna Lee Ave	A	B	A	B
Russell Rd	C	B	C	B
Mohawk Ln	A	B	A	B
Buckman Rd/ Radford Ave	B	B	B	B
Frye Rd	B	B	B	B
Lukens Ln	B	B	B	B
Cooper Rd	B	B	C	B
Mt. Vernon Memorial Hwy	E	E	D	D
Woodlawn Rd	A	A	A	A
Belvoir Rd*	B	C	B	C
Backlick Rd*	D	E	D	E
Fairfax County Pkwy*	D	E	C	D
Cook Intel Dr*	B	A	A	A
Telegraph Rd*	D	D	D	D
Pohick Rd	C	B	C	C
Lorton Rd	C	B	D	C
Armistead Rd	B	C	C	C
Dutchman Dr	A	B	A	A
Gunston Rd	D	C	D	C
Furnace Rd	C	D	C	D
Gordon Blvd	E	B	E	C

*Intersections for detailed study

Vehicular Travel Lane Evaluation

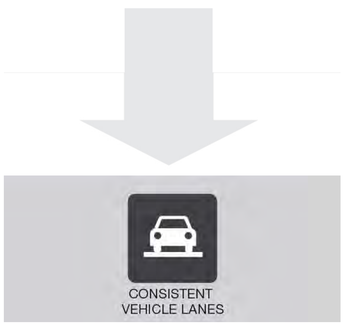
Alternatives

Key Evaluation Factors:

- Level of Service
- Volume-to-Capacity (V/C)
- Right of Way (ROW) impacts

Other, qualitative factors:

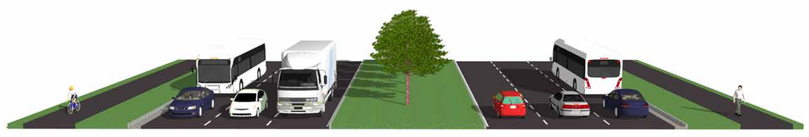
- Maintaining existing speeds
- Minimizing lane transitions
- Reducing pedestrian crossing distance/time



Existing Lanes

Expanded Lanes
Three or four lanes, depending on location along the corridor

Converted Lanes



Consistent Lanes

Evaluation

Alternative		Intersection Performance	Right of Way Impacts
Expanded Lanes		No intersections with LOS E or worse ↑	Significant ROW impacts ↓
Consistent Lanes		3 intersections with LOS E or worse ↑	Moderate ROW impacts ↓
Converted Lanes		10 intersections with LOS E or worse ↓	Few ROW impacts ↑

↑ Compares more favorably ↓ Compares less favorably

Recommendation

3 general purpose travel lanes in each direction along the entire corridor

Consistent Lanes

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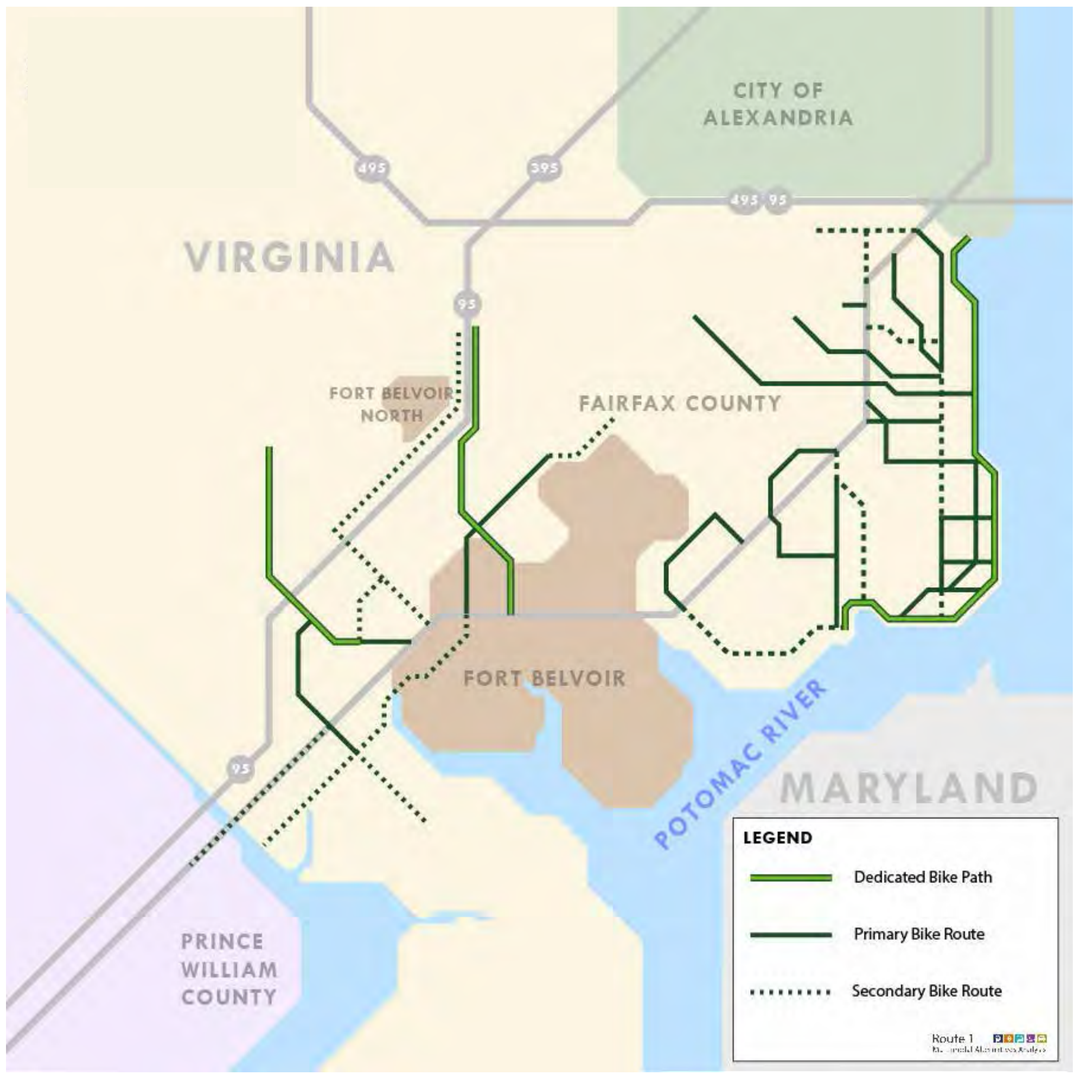
Bicycle and Pedestrian Facilities

Intersections and Crosswalks

Existing Bicycle Network



Examples of Existing Conditions

Lack of Sidewalks

Jaywalking

Lack of Sidewalks

Unbuffered Sidewalk

Route 1 Multimodal Alternatives Analysis

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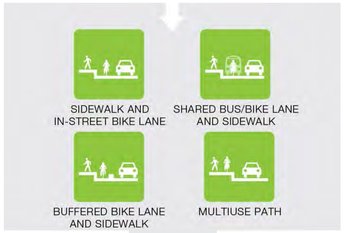
Bicycle and Pedestrian Alternative Evaluation

Alternatives

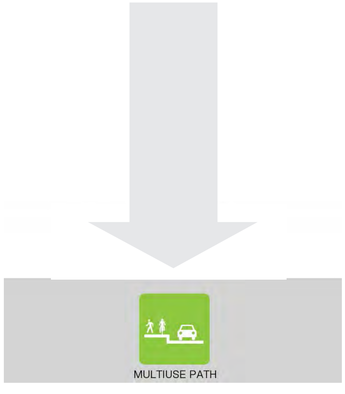


Key Evaluation Factors:

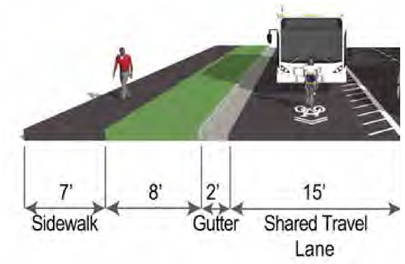
- Safety and comfort for cyclists of all abilities
- Right of Way (ROW) impacts

Measures and factors:

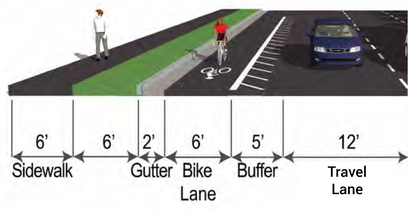
- Bicycle compatibility index and Bicycle Level of Service
- Possible to implement incrementally/flexible over time



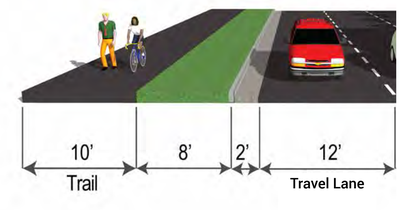
Sidewalk and in-street bike lane



Shared bus/bike lane and sidewalk



Buffered bike lane and sidewalk



Multiuse Path (bike and ped)

Note: These alternatives may vary along the 15 mile extent of the corridor appropriate to local land use context, constraints, and preferred transit alignment

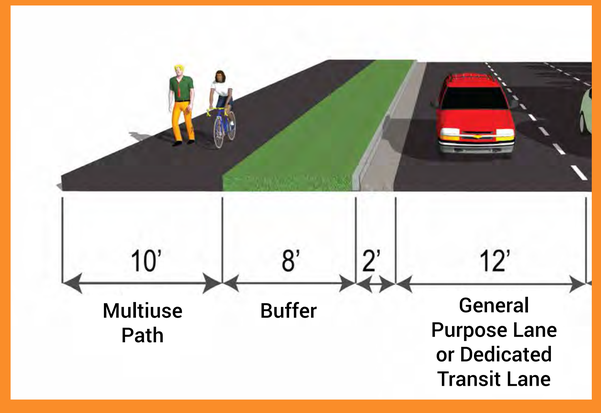
Evaluation

Alternative	In-street bike lane and sidewalk	Shared bus/ bike lane and sidewalk	Buffered bike lane and sidewalk	Multiuse Path
				
Provides access along full corridor	Improves walk & bike access to all destinations ↑	Improves walk & bike access to all destinations ↑	Improves walk & bike access to all destinations ↑	Improves walk & bike access to all destinations ↑
Provides safety and comfort given high auto speeds and volumes	In-street bike lane not recommended for 45 mph+ ↓	Shared bike/ travel lane not recommended for 45 mph+ ↓	Bike lane buffered from 45 mph traffic ↑	Bike lane buffered from 45 mph traffic with curb and landscape strip ↑
Requires additional right-of-way	Requires some new ROW ↓	Requires little new ROW ↑	Requires significant new ROW ↓	Requires some new ROW ↓

↑ Compares more favorably ↓ Compares less favorably

Recommendation

10 foot Multiuse Path on both sides of the street

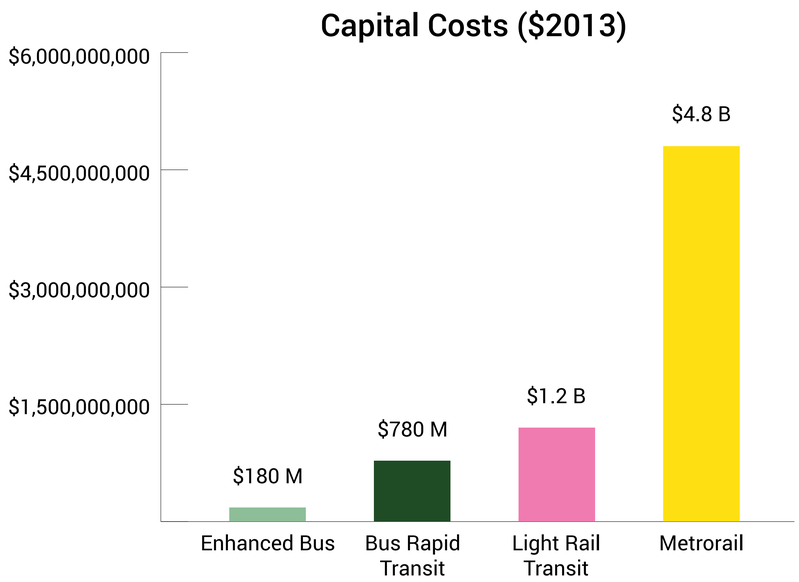


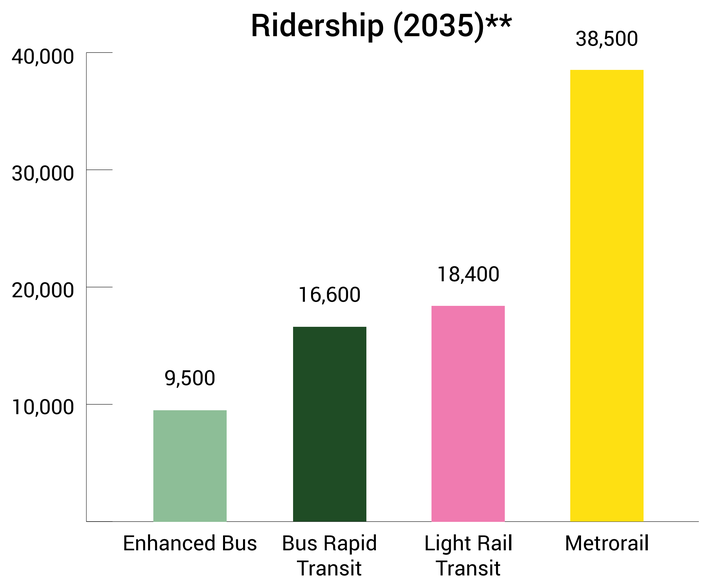
Key Indicators: Initial Transit Alternatives

	Enhanced Bus	Bus Rapid Transit	Light Rail Transit	Metrorail
Example				
Average Weekday Ridership (2035)	9,500	16,600	18,400	38,500
Conceptual Capital Cost	$180 M	$780 M	$1.20 B	$4.80 B
Annual O&M Cost	$14 M	$17 M	$24 M	$84 M
Cost Per Rider*	$10	$15	$21	$37

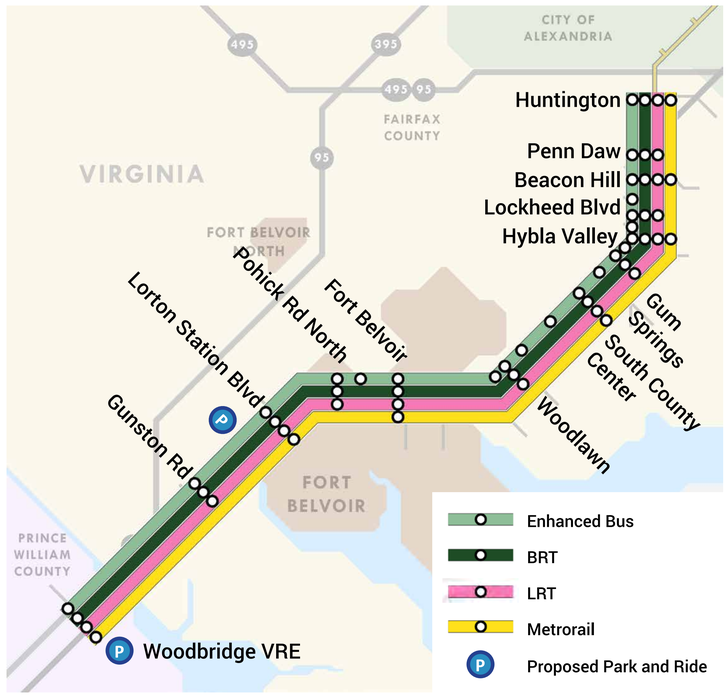
*Assumes Annualized Capital Cost + Operating Costs divided by total boardings (2035)
Note: FTA Cost Effectiveness measure averages current (2015) and horizon year (2035) costs and boardings

- Evaluated four initial transit alternatives
- Assumed all initial alternatives operated along the entire 15-mile corridor
- Developed high-level capital and operating costs and preliminary ridership forecasts





**Forecasts did not constrain parking at existing Park & Rides



Route 1 Multimodal Alternatives Analysis

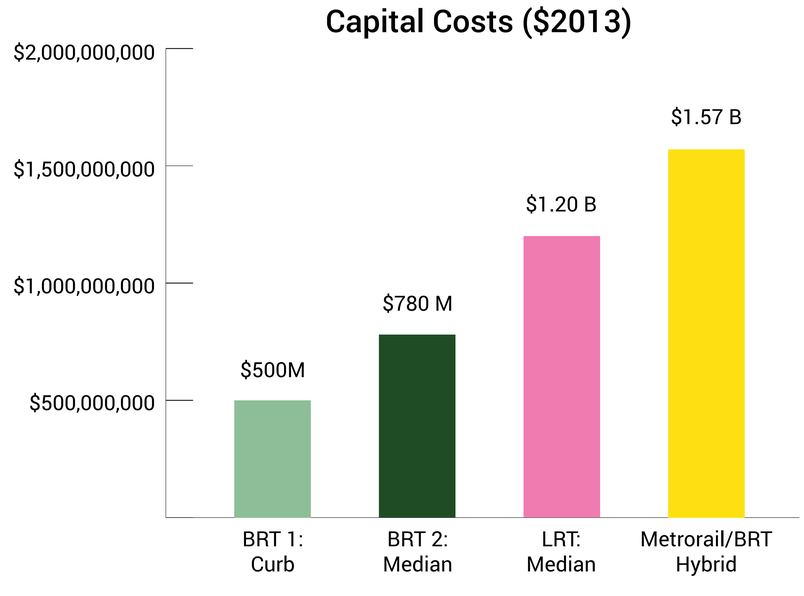
Key Indicators: Refined Transit Alternatives

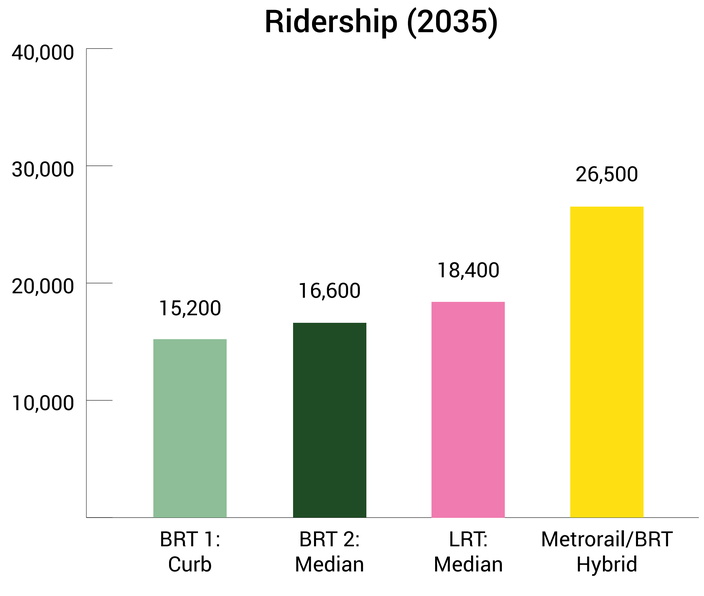
	Bus Rapid Transit - Curb	Bus Rapid Transit - Median	Light Rail Transit	Metrorail/BRT Hybrid
Average Weekday Ridership (2035)	15,200	16,600	18,400	26,500* (BRT: 10,600 Metrorail: 22,900)
Conceptual Capital Cost	$500 M	$780 M	$1.20 B	$1.57 B
Annual O&M Cost	$18 M	$17 M	$24 M	$31 M
Cost Per Rider**	$12	$15	$21	$18

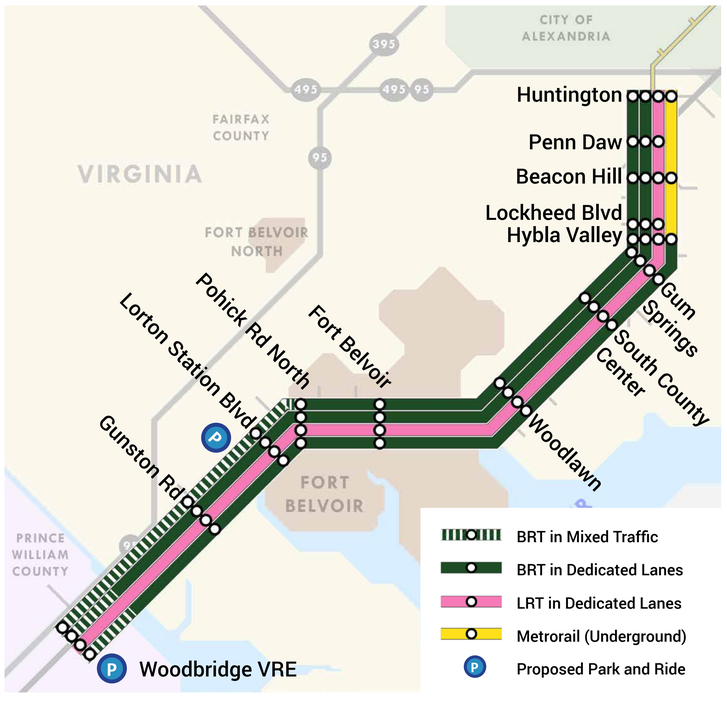
- Evaluated four refined transit alternatives based on findings of initial alternatives
- Refined alternatives include two Bus Rapid Transit options, Light Rail, and a Metrorail/BRT hybrid option
- Defined alignments and operating environments for each refined alternative
- Refined alternatives will be further evaluated

*Corridor ridership, excluding transfers between Metrorail and BRT portions

**Assumes Annualized Capital Cost + Operating Cost divided by total boardings (2035)
Note: FTA Cost Effectiveness measure averages current (2015) and horizon year (2035) costs and boardings







Route 1 Multimodal Alternatives Analysis

DRPT Virginia Department of Rail and Public Transportation

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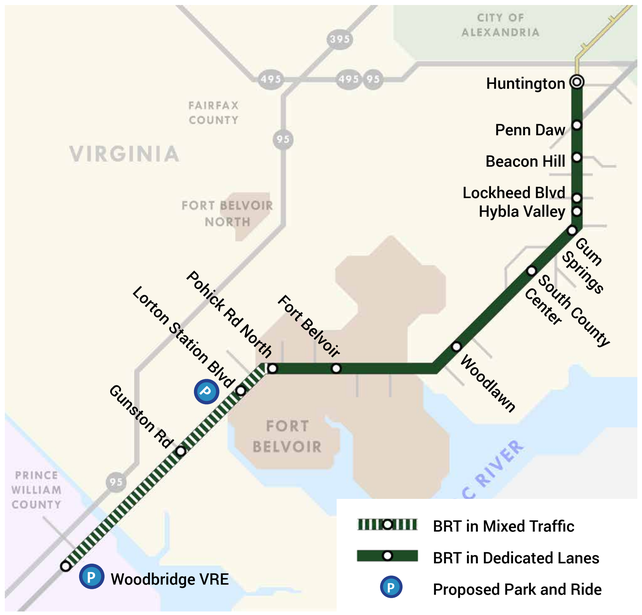
Refined Transit Alternatives

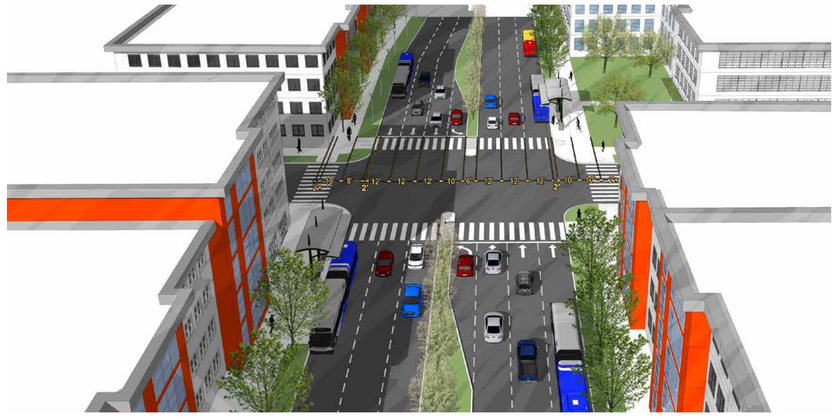
Alternative 1: Bus Rapid Transit - Curb



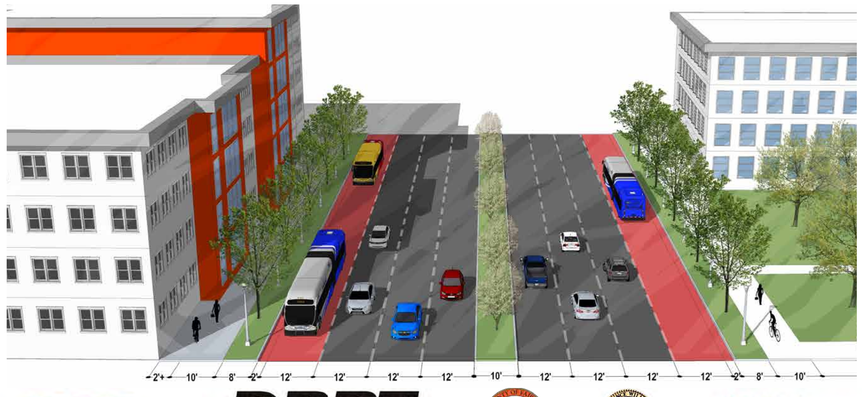
- Bus operates in curb, dedicated transit lanes from Huntington to Pohick Road North
- Bus operates in mixed traffic south of Pohick Road North to Woodbridge

Average Weekday Ridership (2035)	15,200
Conceptual Capital Cost	$500 M
Annual O&M Cost	$18 M
Cost Per Rider	$12

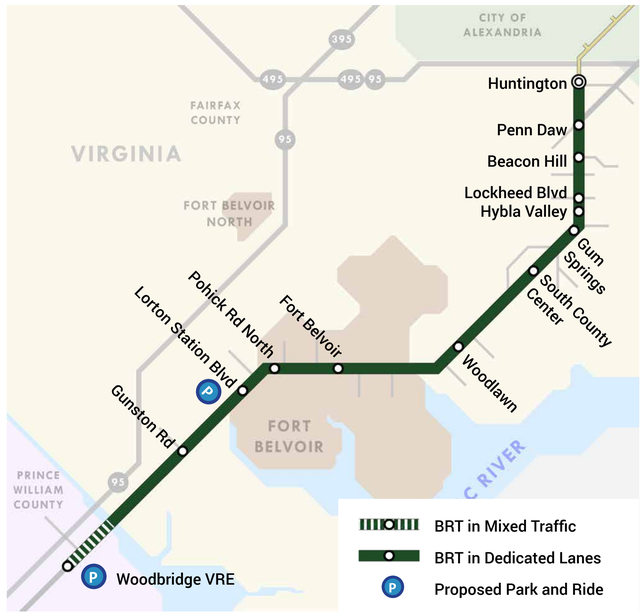
Typical Intersection



Typical Mid-block



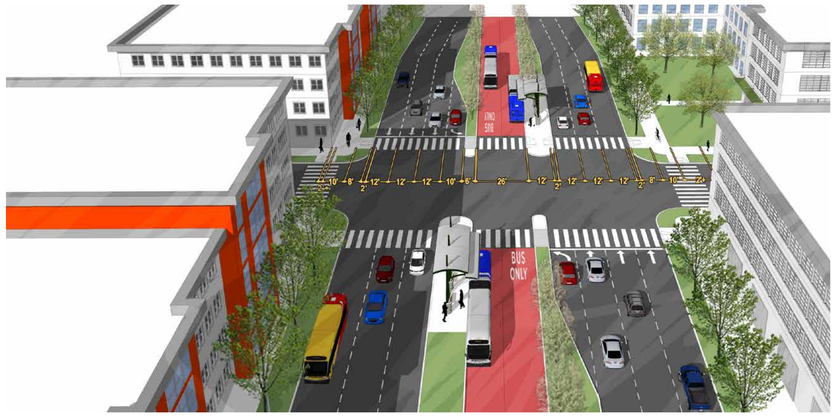
Alternative 2: Bus Rapid Transit - Median



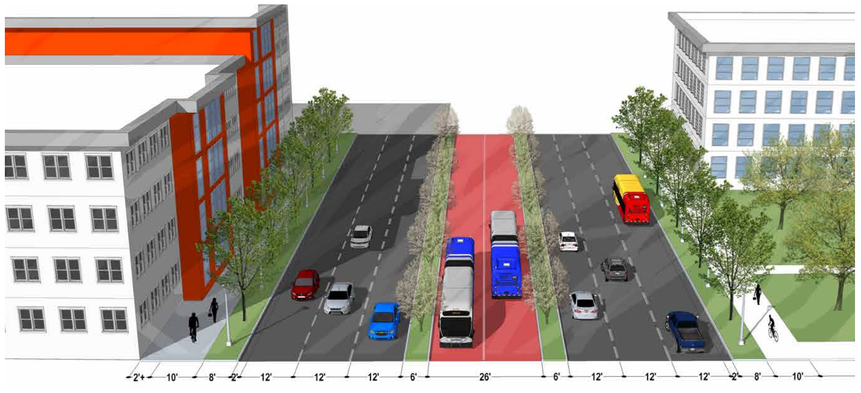
- Bus operates in median in dedicated lanes for the entire length of the corridor and in mixed traffic in Prince William County

Average Weekday Ridership (2035)	16,600
Conceptual Capital Cost	$780 M
Annual O&M Cost	$17 M
Cost Per Rider	$15

Typical Intersection



Typical Mid-block



Refined Transit Alternatives

Alternative 3: Light Rail Transit - Median

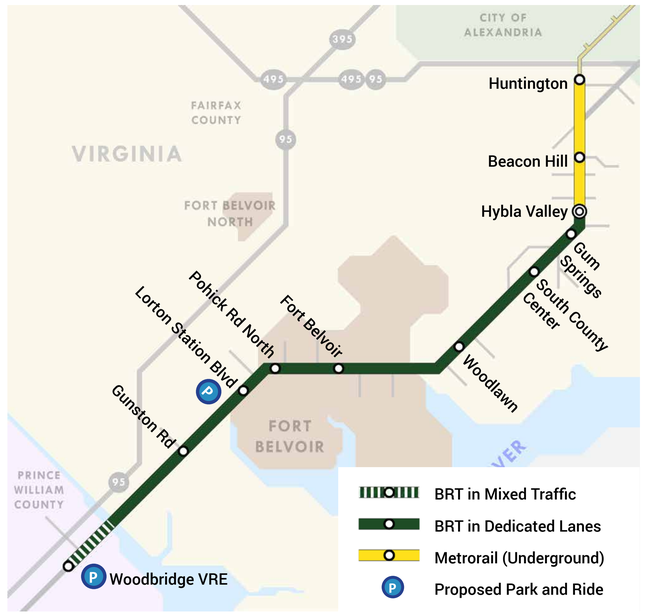
- Light Rail operates in the median in dedicated lanes for the entire length of corridor

Average Weekday Ridership (2035)	18,400
Conceptual Capital Cost	$1.20 B
Annual O&M Cost	$24 M
Cost Per Rider	$21

Typical Intersection

Typical Mid-block

Alternative 4: Metrorail/BRT Hybrid - Median

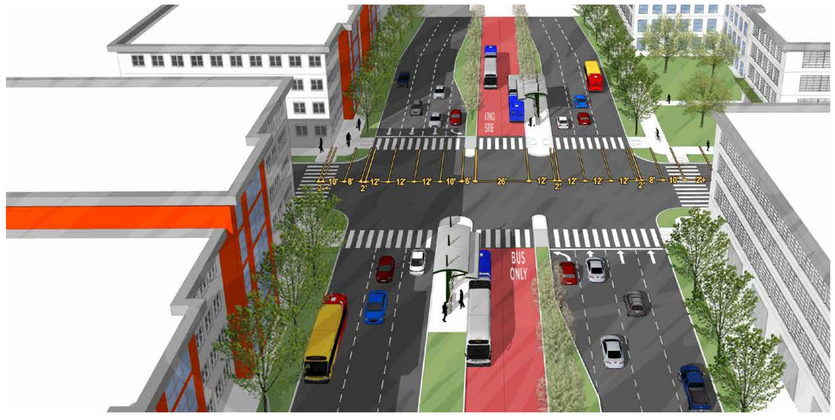


- Metrorail underground from Huntington to Hybla Valley; transfer to BRT service from Hybla Valley to Woodbridge
- BRT operates in dedicated lanes and transitions into mixed-traffic in Prince William County

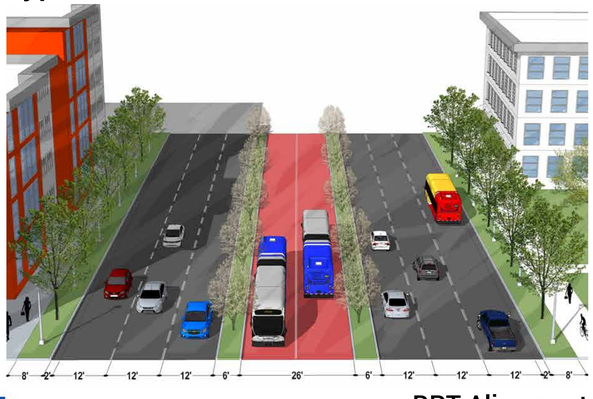
Average Weekday Ridership (2035)	26,500* (BRT - 10,600, Metrorail - 22,900)
Conceptual Capital Cost	$1.57 B
Annual O&M Cost	$31 M
Cost Per Rider	$18

*Corridor ridership, excluding transfers between Metrorail and BRT Portions

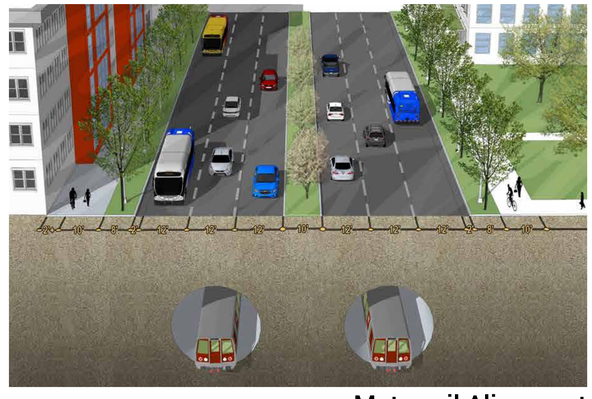
Typical Intersection



Typical Mid-block



BRT Alignment



Metrorail Alignment

Land Use: Transit-Supportive Activity Densities

Conceptual view of the Beacon Hill Land Use Scenario Two. Compact, pedestrian-oriented, mixed-use urban design supports a premium transit investment.

Beacon Hill Area Today

Cleveland, OH
(Bus Rapid Transit)

Richmond, VA
(Bus Rapid Transit)

Charlotte, NC
(Light Rail)

Norfolk, VA
(Light Rail)

Arlington, VA
(Metrorail)

Tysons Corner, VA
(Metrorail)

- Transit oriented development is seen throughout the country around BRT, LRT, and Metrorail systems.
- The higher population and employment associated with premium transit leads to a larger tax base, which supports investment in the public realm.

Route 1 Multimodal Alternatives Analysis

DRPT Virginia Department of Rail and Public Transportation

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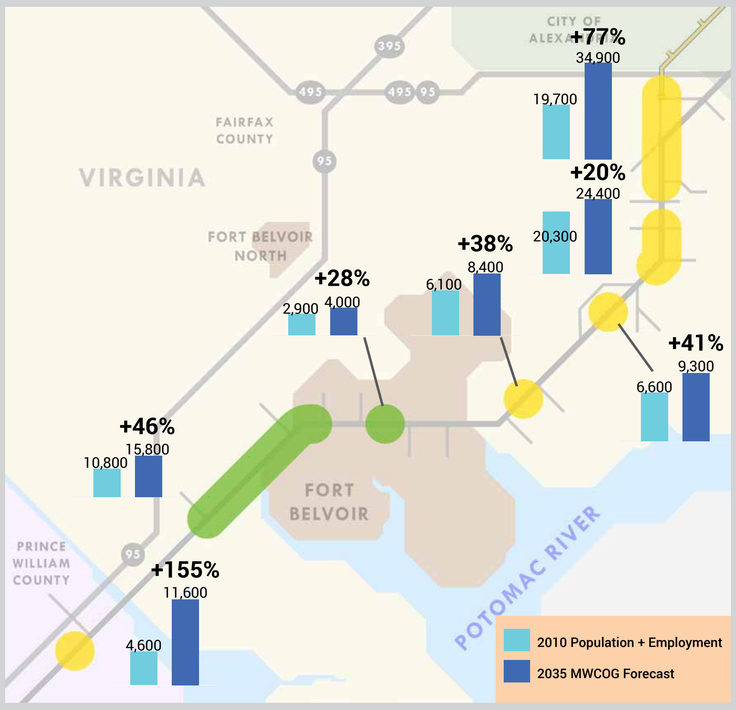
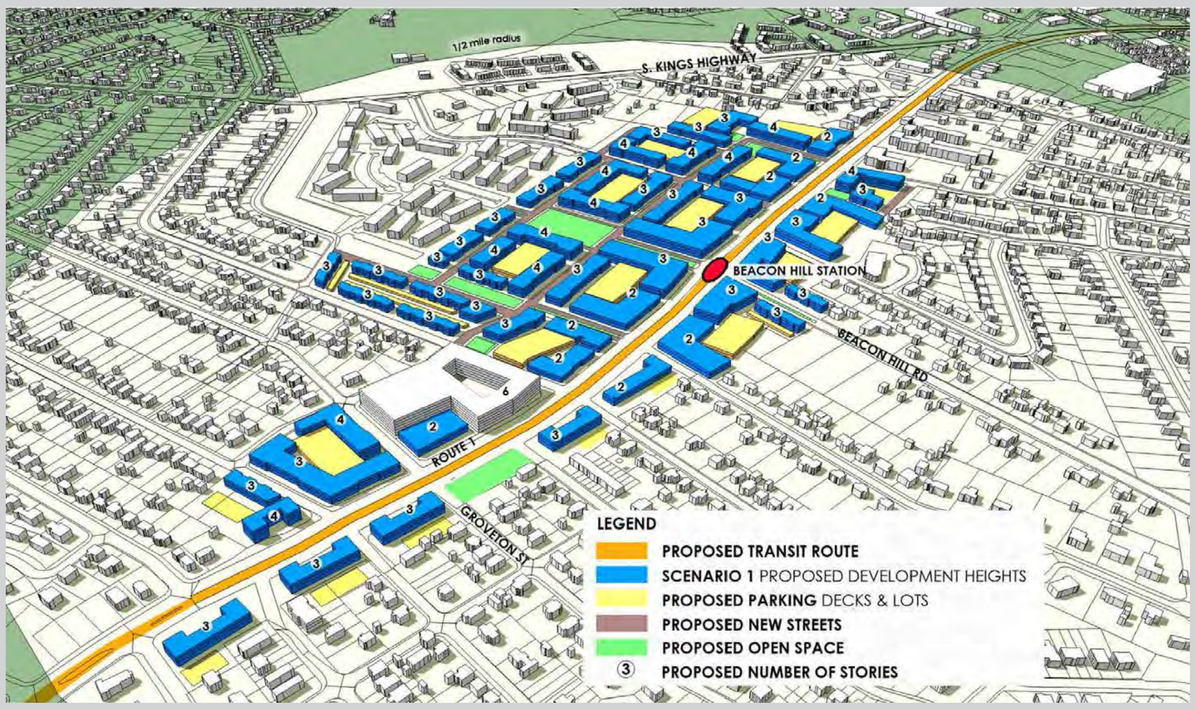
Land Use Scenarios and Beacon Hill Station Example

Growth Analysis

Beacon Hill Station Example

Scenario One: 2035 Regional Forecast





Urban Core (Rail)
Activity Density = 70.0 or more, FAR = 1.41 or more

Urban Center (BRT/LRT)
Activity Density = 33.75 - 70.0, FAR = 0.77 - 1.41

Large Town / Suburban Center (Express Bus)
Activity Density = 13.75 - 33.75, FAR = 0.32 - 0.77

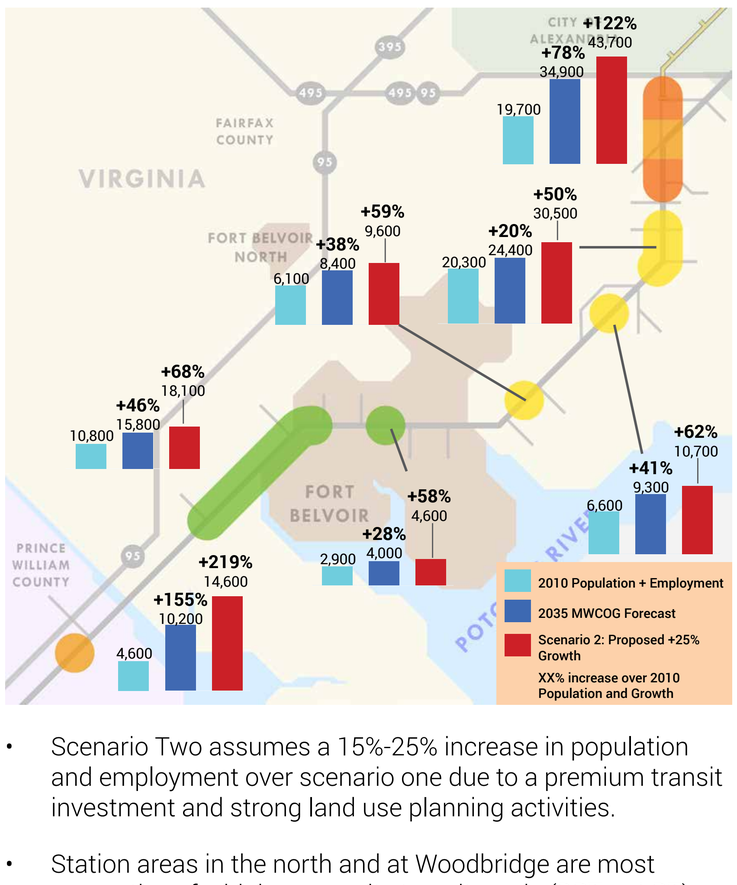
Medium Town / Suburban Center (Fixed Route Bus)
Activity Density = 6.63 - 13.75, FAR = 0.25 - 0.32

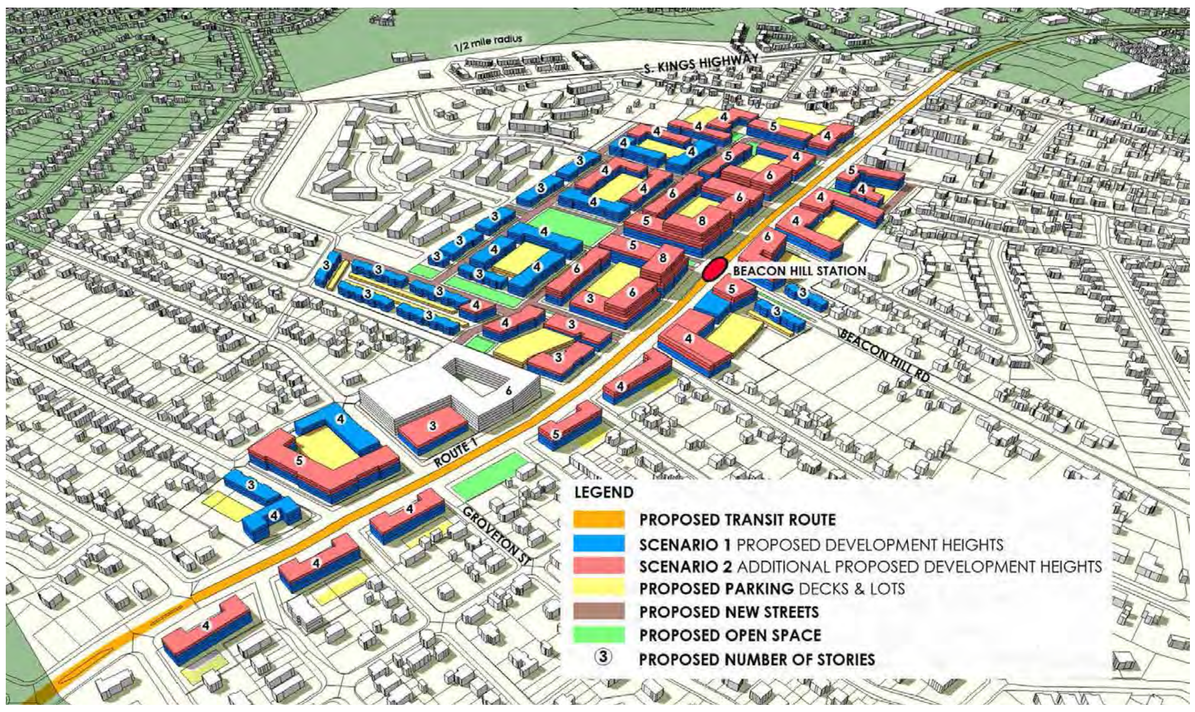
Source: DRPT Multimodal Design Guidelines (2013)

- Scenario One (the 2035 regional forecast) anticipates high growth that varies along the corridor.
- Station areas (within ½ mile) in the north and at Woodbridge are supportive of express bus.

Demonstration of how projected 2035 growth could occur in a compact, pedestrian-oriented development pattern.

Scenario Two: Incremental Growth Response to Transit





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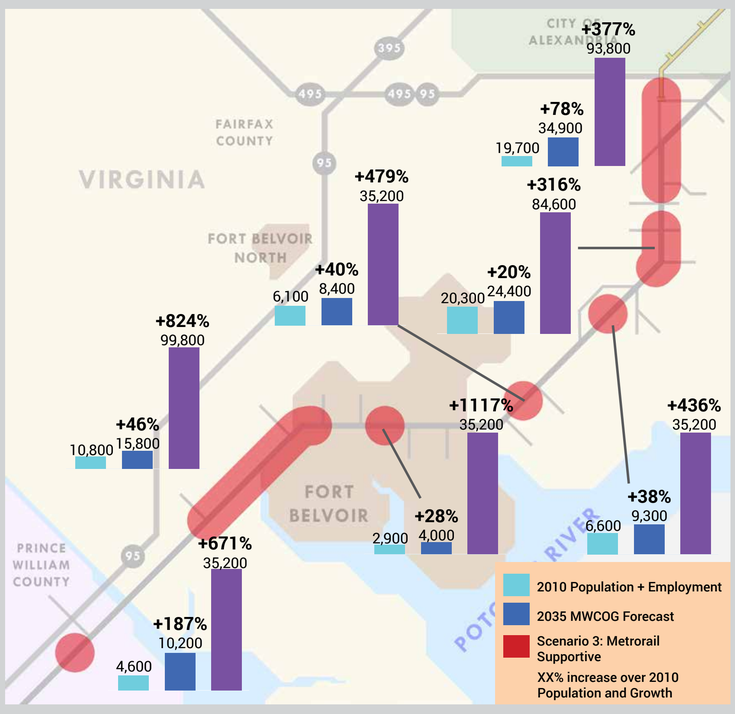
Medium Town / Suburban Center (Fixed Route Bus)
Activity Density = 6.63 - 13.75, FAR = 0.25 - 0.32

Source: DRPT Multimodal Design Guidelines (2013)

- Scenario Two assumes a 15%-25% increase in population and employment over scenario one due to a premium transit investment and strong land use planning activities.
- Station areas in the north and at Woodbridge are most supportive of a higher capacity transit mode (BRT or LRT).

Demonstration of higher-density development and pedestrian-oriented design, supportive of a BRT or LRT investment.

Scenario Three: Land Use Supportive of Metrorail



Urban Core (Rail)
Activity Density = 70.0 or more, FAR = 1.41 or more

Urban Center (BRT/LRT)
Activity Density = 33.75 - 70.0, FAR = 0.77 - 1.41

Large Town / Suburban Center (Express Bus)
Activity Density = 13.75 - 33.75, FAR = 0.32 - 0.77

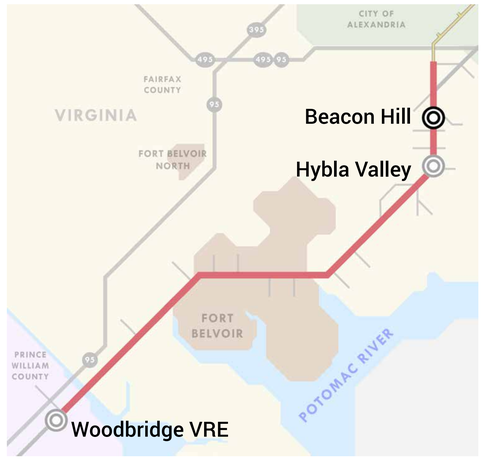
Medium Town / Suburban Center (Fixed Route Bus)
Activity Density = 6.63 - 13.75, FAR = 0.25 - 0.32

Source: DRPT Multimodal Design Guidelines (2013)

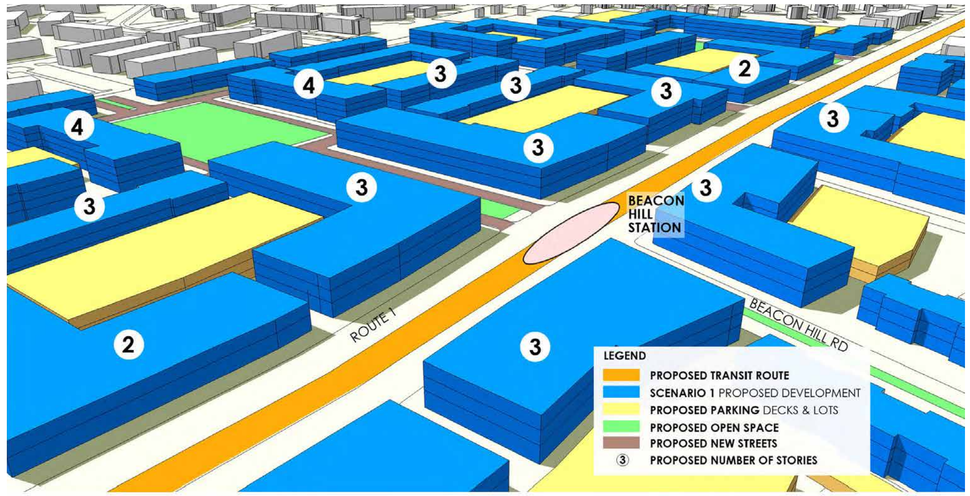
- Scenario Three demonstrates that densities around stations would need to increase dramatically in order to meet development levels typically associated with Metrorail.

Demonstration of Metrorail supportive densities and development patterns.

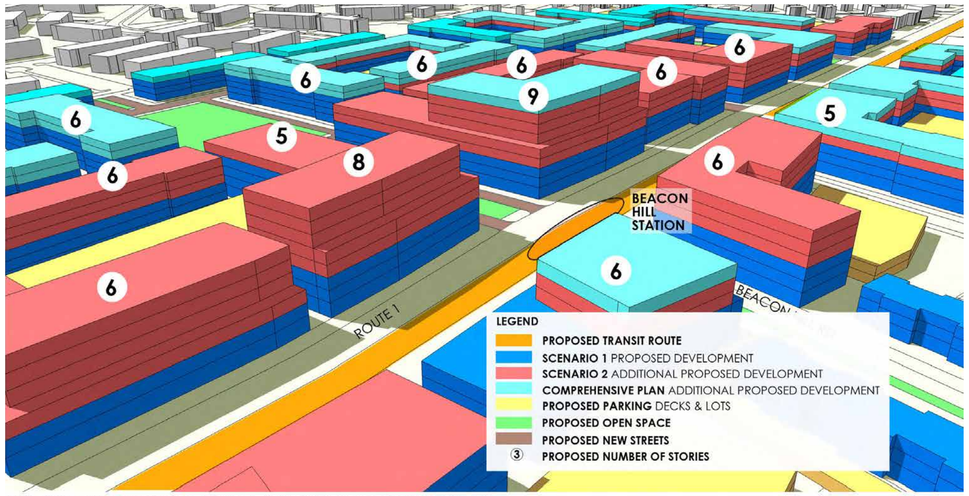
Beacon Hill Station Land Use Scenarios



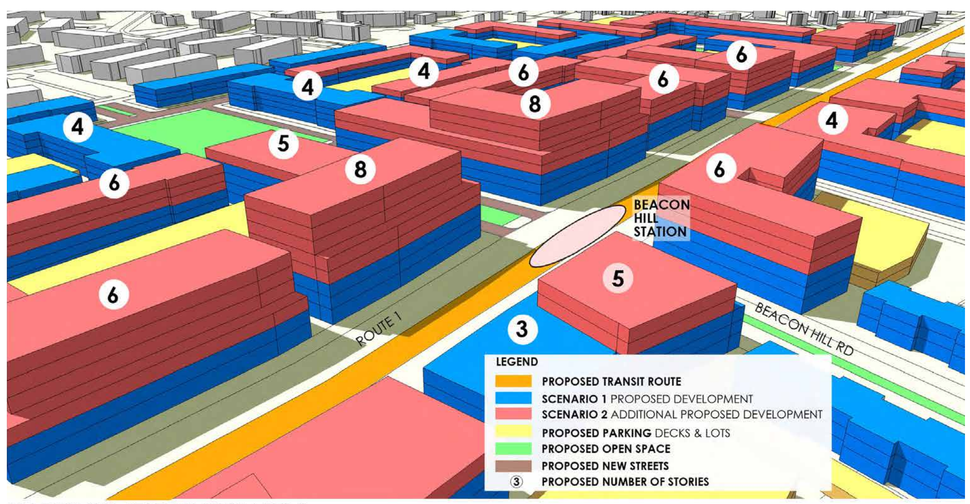
- As the quality of transit improves, so does the potential for higher density, mixed use development
- Current MWCOG projections support future low-rise development around Beacon Hill station
- Projections that consider a high-quality premium transit investment, such as Bus Rapid Transit, Light Rail, or Metrorail, support future mid- and high-rise development options indicative of neighborhoods associated with these transit options



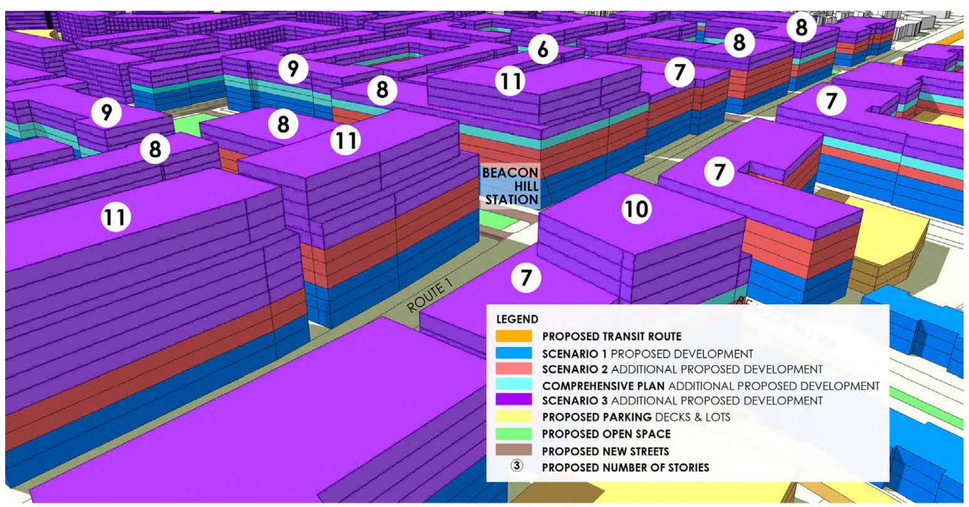
BEACON HILL STATION SCENARIO 1



BEACON HILL STATION SCENARIO COMPREHENSIVE PLAN



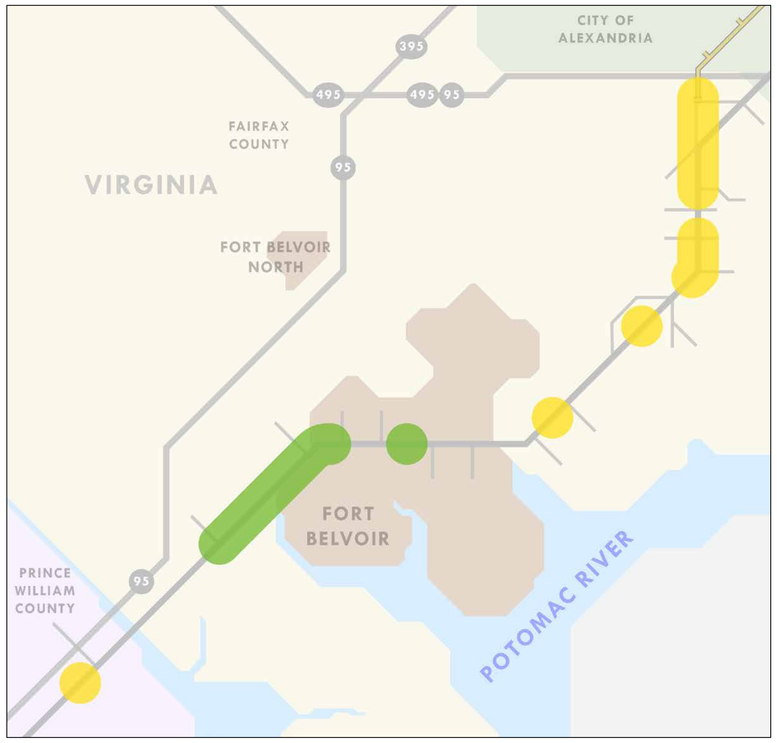
BEACON HILL STATION SCENARIO 2



BEACON HILL STATION SCENARIO 3

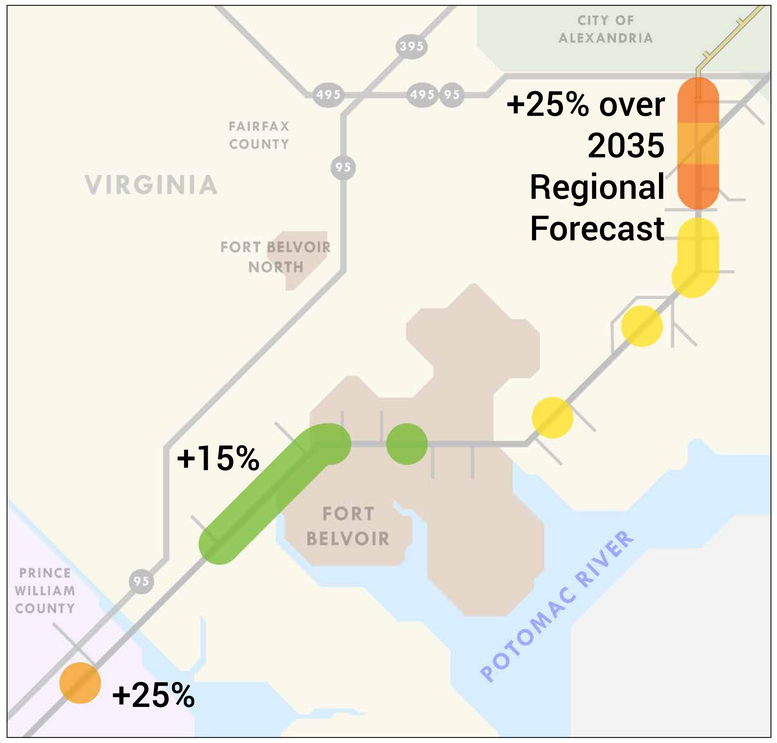
Land Use: Scenarios Approach

Scenario 1:
2035 Regional Forecast



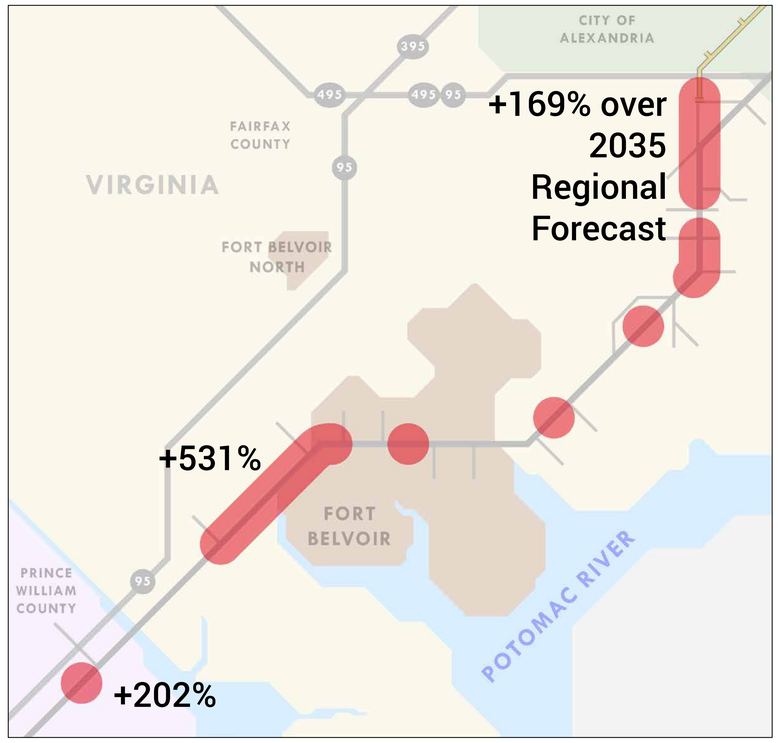
"Base Land Use Scenario"
2035 MWCOG Regional Forecast

Scenario 2:
Incremental Growth Response to Transit



What is a reasonable growth expectation for a corridor that invests in high-quality transit (BRT or LRT)?

Scenario 3:
Land Use Supportive of Metrorail



How much do population and employment need to increase to achieve density levels typically supportive of Metrorail?

Supported Transit Technologies by Multimodal Center Type

Multimodal Center Intensity		
Center Type	**Activity Density (Jobs + people/acre)**	**Typical Supported Transit Technology**
P-6 Urban Core	70.0 or more	LRT/Rail
P-5 Urban Center	33.75 to 70.0	BRT/LRT
P-4 Large Town or Suburban Center	13.75 to 33.75	Express Bus
P-3 Medium Town or Suburban Center	6.63 to 13.75	Fixed Route Bus

DRPT Multimodal Design Guidelines (2014)

Densities and Intensities within the Eighth-Mile Radius TOD Node

	Inside TOD Node (1/8 mile radius circle)							
	Activity Density		Total Floor-Area-Ratio based on Activity Density (combined residential and commercial)				Building Height based on visual inspection (No. of stories)	
Multimodal Center Types	Activity Density = (Jobs + HH)/acre		Gross Building FAR (includes res + com)		Net Building FAR (includes res + com)		Average Building Height	Typical Maximum Bldg Height
	Low	High	Low	High	Low	High		
P-3 Medium Town or Suburban Center	13.3	27.5	0.20	0.41	0.30	0.63	4	7
P-4 Large Town or Suburban Center	27.5	67.5	0.41	1.01	0.63	1.55	7	12
P-5 Urban Center	67.5	140.0	1.01	2.09	1.55	3.21	9	18
P-6 Urban Core	140.0	-	2.09	-	3.21	-	13	28

Densities and Intensities outside the Eighth-Mile Radius TOD Node

Inside TOD Node (1/8 mile radius circle)	Outside TOD Node (1/8 mile to 1/4 radius ring)							
	Activity Density		Total Floor-Area-Ratio based on Activity Density (combined residential and commercial)				Building Height based on visual inspection (No. of stories)	
Multimodal Center Types	Activity Density = (Jobs + HH)/acre		Gross Building FAR (includes res + com)		Net Building FAR (includes res + com)		Average Building Height	Typical Maximum Bldg Height
	Low	High	Low	High	Low	High		
P-3 Medium Town or Suburban Center	4.4	9.2	0.07	0.14	0.10	0.21	3	5
P-4 Large Town or Suburban Center	9.2	22.5	0.14	0.34	0.21	0.52	4	8
P-5 Urban Center	22.5	46.7	0.34	0.70	0.52	1.07	6	12
P-6 Urban Core	46.7	-	0.70	-	1.07	-	9	19

Project Funding and Finance

- **Project funding should be considered along with development and evaluation of alternatives**
- **Consider capital and long-term operating expenses**
- **Project will likely be implemented with a mix of several sources**
- **Federal Transit Administration grants are becoming more competitive; greater focus on local funding commitment**

Funding Source	Type	Notes
Federal	FTA New Starts/Small Starts	Limited Funding for highly competitive nationwide program
	FHWA Surface Transportation Program, CMAQ	Formula grants applied according to state and metropolitan priorities
Regional	NVTA Funding	Dedicated funding for northern Virginia priorities
State	VDOT Highway	Grants applied to statewide priorities
	DRPT Matching Grants	Match on local investment for all capital projects
Local	County Managed funds	Application of existing local revenue sources to cover costs of transportation infrastructure and services such as sales tax and property tax
	Value Capture	Corridor-specific tools that leverage added value of development to finance the transportation investment
Public-Private Partnership	Private financing or equity investment	Applied with Alternative Project Delivery approaches; Project risks and rewards allocated among partners

Evaluation Criteria: Project Goals and Objectives

Goal	Objectives	Multimodal Measures	Indicate here the measure that is most important to you within each goal
GOAL 1: Expand attractive multimodal travel options to improve local and regional mobility	Increase transit ridership	Transit ridership	
	Improve transit to reduce travel times	Transit travel time, automobile travel time	
	Increase transportation system productivity	Total person throughput	
	Improve bicycle and pedestrian networks	Continuous sidewalk and bike pathway	
	Integrate with other transit service	Connections to existing and planned transit	
GOAL 2: Improve safety; increase accessibility	Provide accessible pathways	Walkability Index and Bicycle Level of Service	
	Reduce modal conflicts	Separate facilities for separate modes	
	Improve pedestrian crossings	Average pedestrian delay to cross, adequate pedestrian refuges	
	Maintain traffic operations	Traffic Level of Service	
GOAL 3: Increase economic viability and vitality of the corridor	Support higher activity levels	Accommodate 2035 density (growth scenarios)	
	Investments are financially feasible to construct and operate	Project costs, cost effectiveness, allows incremental implementation	
	High-capacity transit facilities at appropriate locations	Serves low-income residents, value added to adjacent properties	
GOAL 4: Support community health and minimize impacts on community resources	Minimize negative impacts to the natural environment	Right of way impacts on environmental and historic resources	
	Contribute to improvements in regional air quality	Change in vehicle miles traveled	
	Increase opportunities for bicycling and walking	Continuous sidewalk and bike pathway	

Evaluation Criteria: FTA New Starts/Small Starts

Criteria		Transit Measures	Indicate here the measure that is most important to you within each set of criteria
Project Justification	Economic Development	Transit supportive plans and policies Plans to preserve affordable housing	
	Mobility Improvements	Total project boardings Transit-dependent ridership is weighted 2x	
	Cost Effectiveness	Annualized cost per annual linked trip on the project	
	Land Use	Quantitative analysis of station area development Proportion of legally binding affordability	
	Environmental Benefits	Environmental benefits are monetized and compared to the annualized costs	
	Congestion Relief	Project sponsors will receive a medium rating until further guidance is released	
Financial Commitment	Current Financial Condition	Capital and Operating	
	Commitment of Funds	Capital and Operating	
	Reasonableness of Assumptions and Financial Capacity	Capital and Operating	