

Welcome.

Please enjoy the music. We will begin shortly.

Can you hear the music? Make sure your audio is working. If your computer doesn't have a mic or you are having trouble with the audio, you can also call in on your phone using the information in your registration confirmation or this number: 301-715-8592 Meeting ID: 825 5492 1581 Passcode: 711416

Springfield to Quantico Enhanced Public Transportation Feasibility Study



Virginia Department of Rail and Public Transportation

drpt.virginia.gov/transit/springfield-to-quantico/

Bienvenidos.

Si usted solo habla español, tenemos un intérprete disponible. Utilice el chat para decirnos su nombre y el idioma que necesita.



Virginia Department of Rail and Public Transportation

Springfield to Quantico Enhanced Public Transportation Feasibility Study

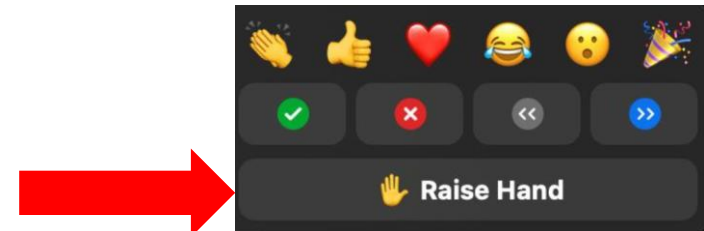
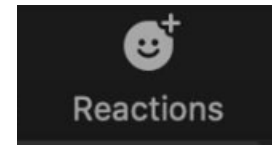
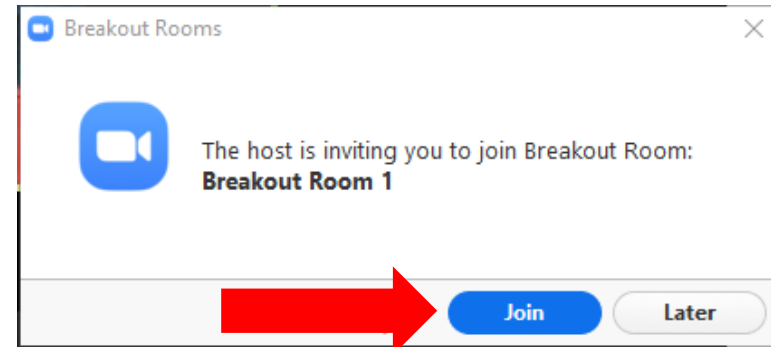
Public Meetings
September 2021



Virginia Department of Rail and Public Transportation

What you can expect during this meeting

- Zoom meeting with breakout room portion
- Please remain muted during the large group portion of the meeting
- Breakout rooms will be an opportunity for you to unmute and ask questions in a smaller group setting
- Please raise your hand if you want to speak during the breakout room portion
- Breakout rooms will be active for approximately 20 minutes
- There will be a notetaker in each breakout room to capture the discussion
- You are always welcome to use the chat feature



Introductions

- **DRPT:**
 - Jennifer DeBruhl, Chief of Transit
 - Todd Horsley, Director of Northern Virginia Transit Programs
 - Tim Roseboom, NoVA Senior Program Manager, Major Capital Investments
 - Ciara Williams, NoVA Transit Planning Manager
- **Consultant Team:**
 - Diana Barreto, PRR
 - Tom Harrington, Cambridge Systematics
 - Dalia Leven, Cambridge Systematics
 - Sue Knapp, KFH Group
 - Aditya Inamdar, Kittelson & Associates

Meeting Agenda

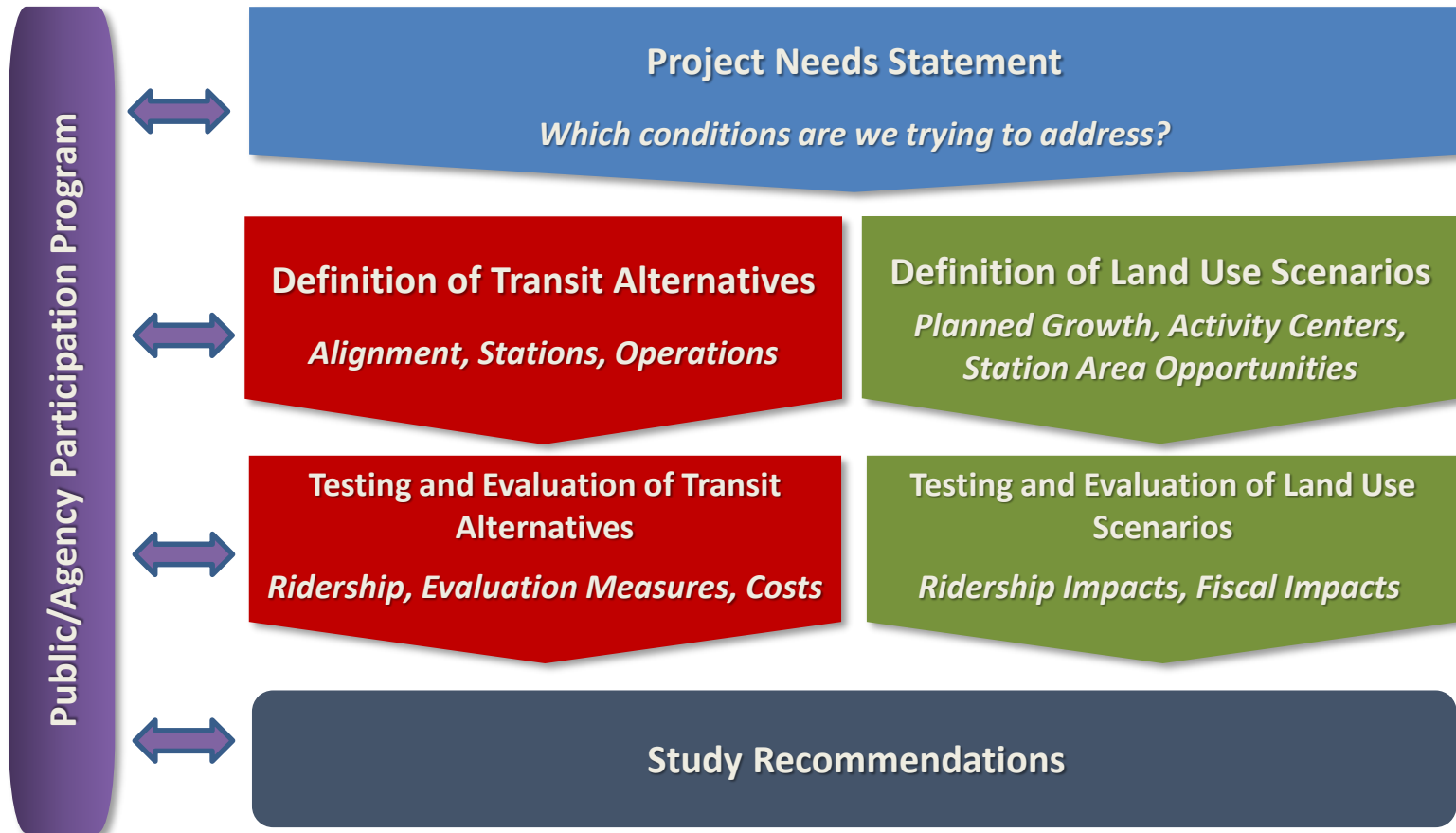
- Introductions / Study Overview
- Transit Alternatives Evaluated
- Summary of Evaluation Results
- Sensitivity Tests
- Land Use Assessment
- Other Considerations and Next Steps
- Q&A
- Breakout Discussions
- Wrap-up

Study Outcomes

Comprehensive, objective evaluation of a range of potential future enhanced transit alternatives that compares the cost, benefits, and impacts of each option to inform recommendations about future investment in the corridor.



Study Technical Approach



Study Schedule



Transit Alternatives Evaluated

Enhanced Public Transit is Needed Because...

Existing transit does not
serve all trips well

Transit services may need
enhancements to support **future
development**

Transit can improve **equity** by
connecting low-income and minority
populations to opportunities

Transit connections to key regional
activity centers, such as Fort Belvoir
and Quantico bases, are limited

Traffic congestion is severe and
continuing to get worse

Access to Transit Services is reliant on
park & ride or long walks to the bus

Transit Alternatives Evaluated in the Study



Metrorail – Blue Line Extension



Metrorail – Yellow Line Extension



Bus Rapid Transit

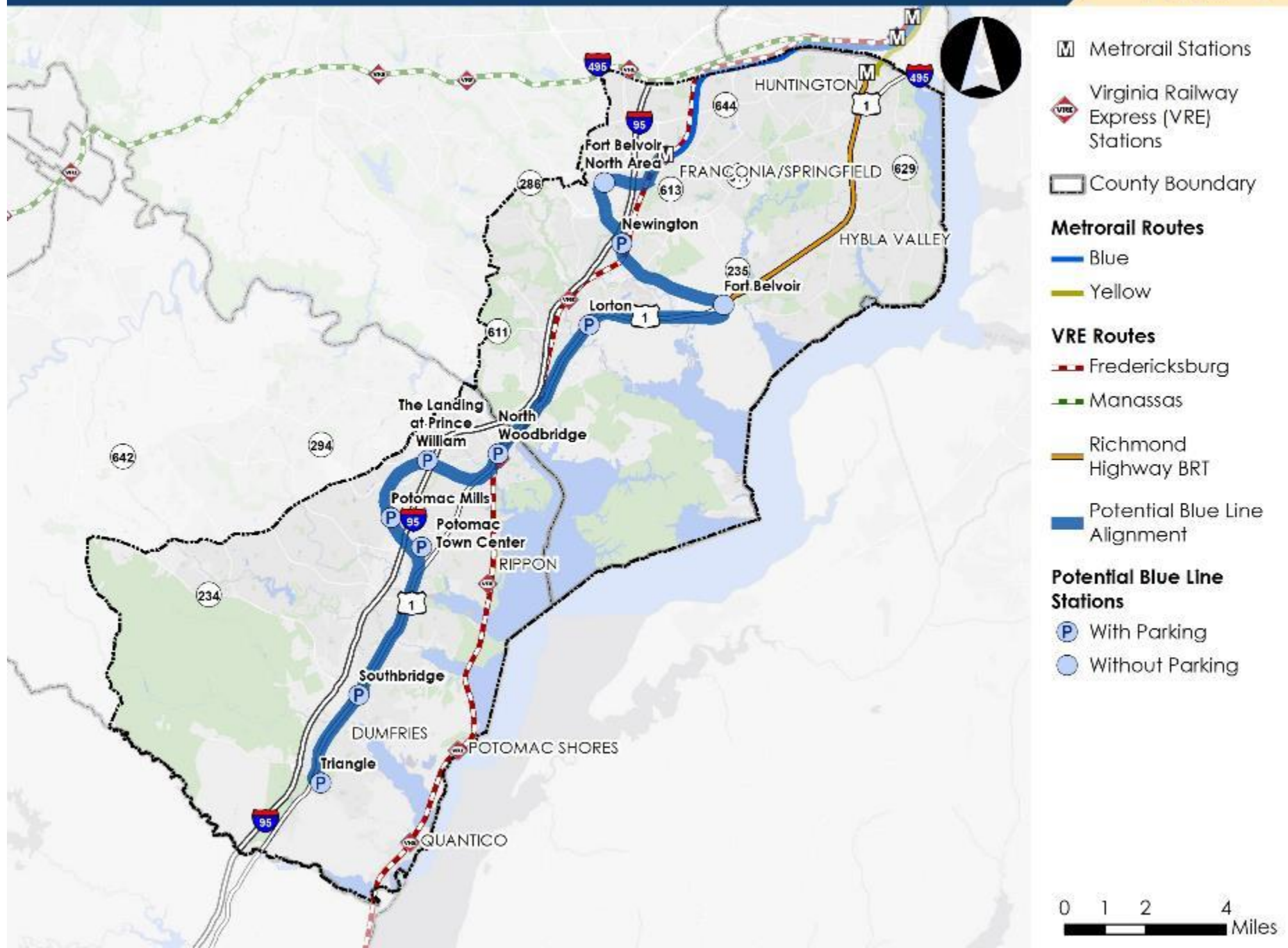


VRE Service Improvements

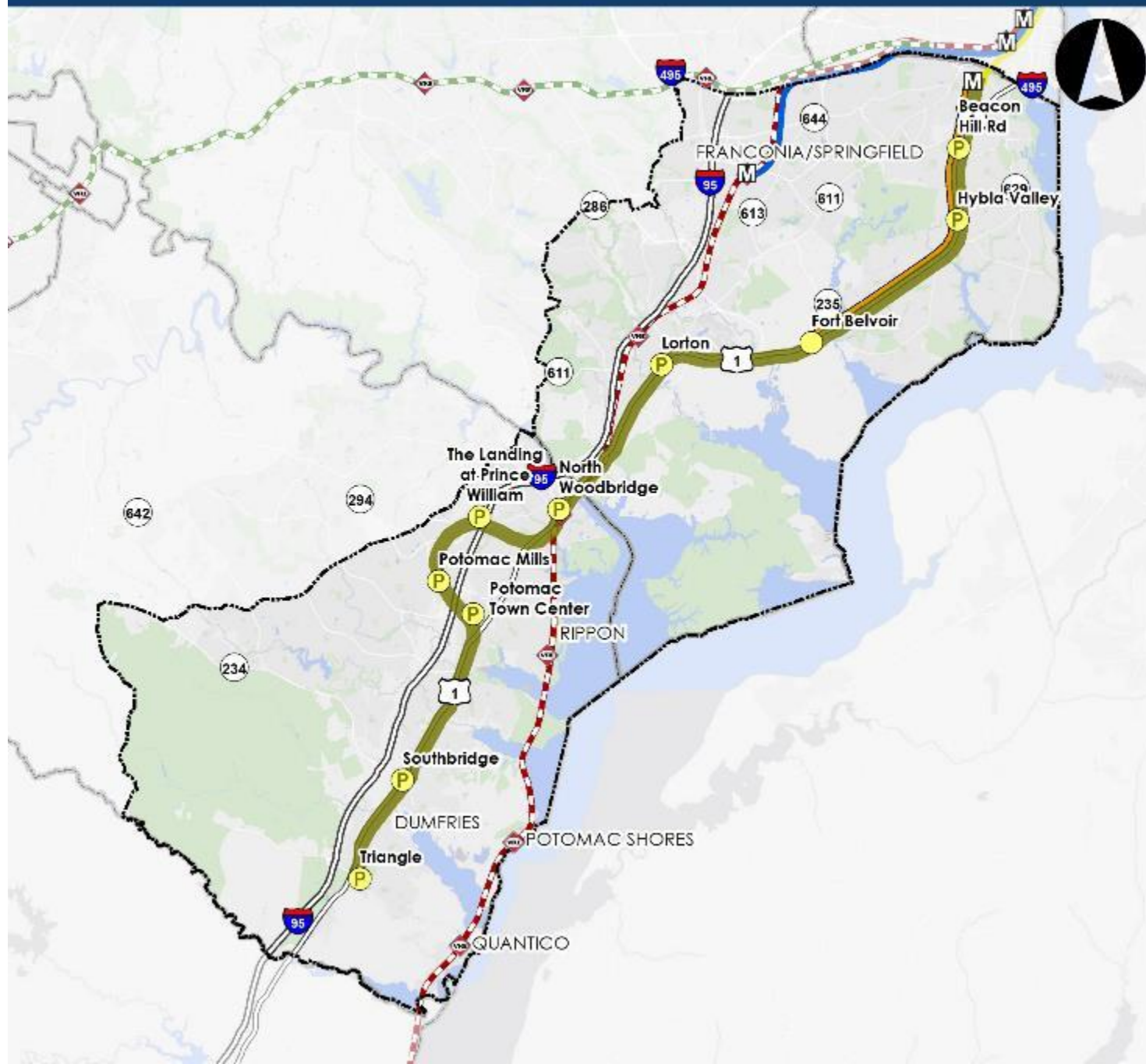


Express Bus Routes

Potential Blue Alternative



Potential Yellow Line Alternative



M Metrorail Stations

Virginia Railway Express (VRE) Stations

County Boundary

Richmond Highway
BRT

Metrorail Routes

Blue
Yellow

VRE Routes

Fredericksburg
Manassas

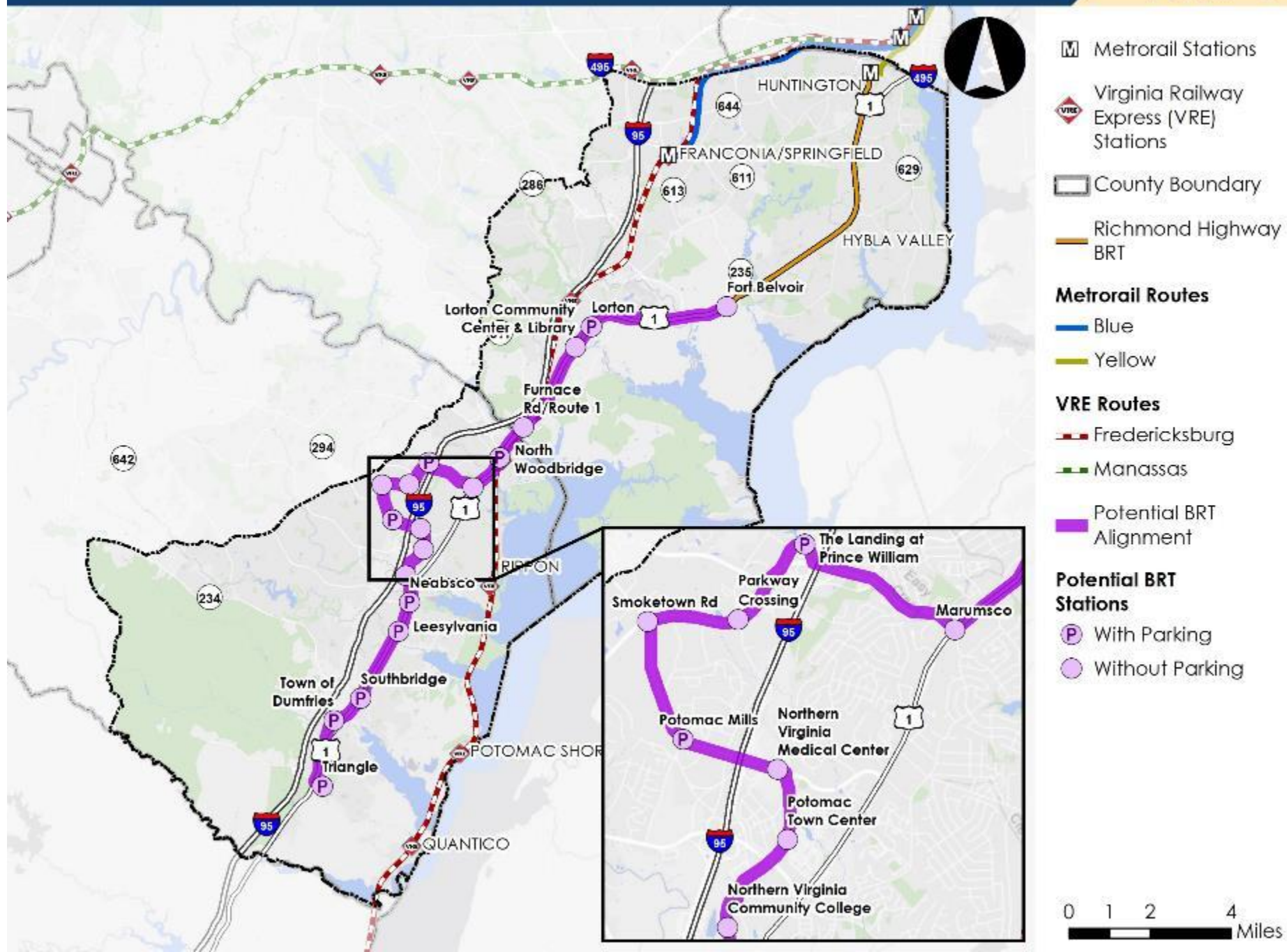
Potential Yellow Line Alignment

Potential Yellow Line Stations

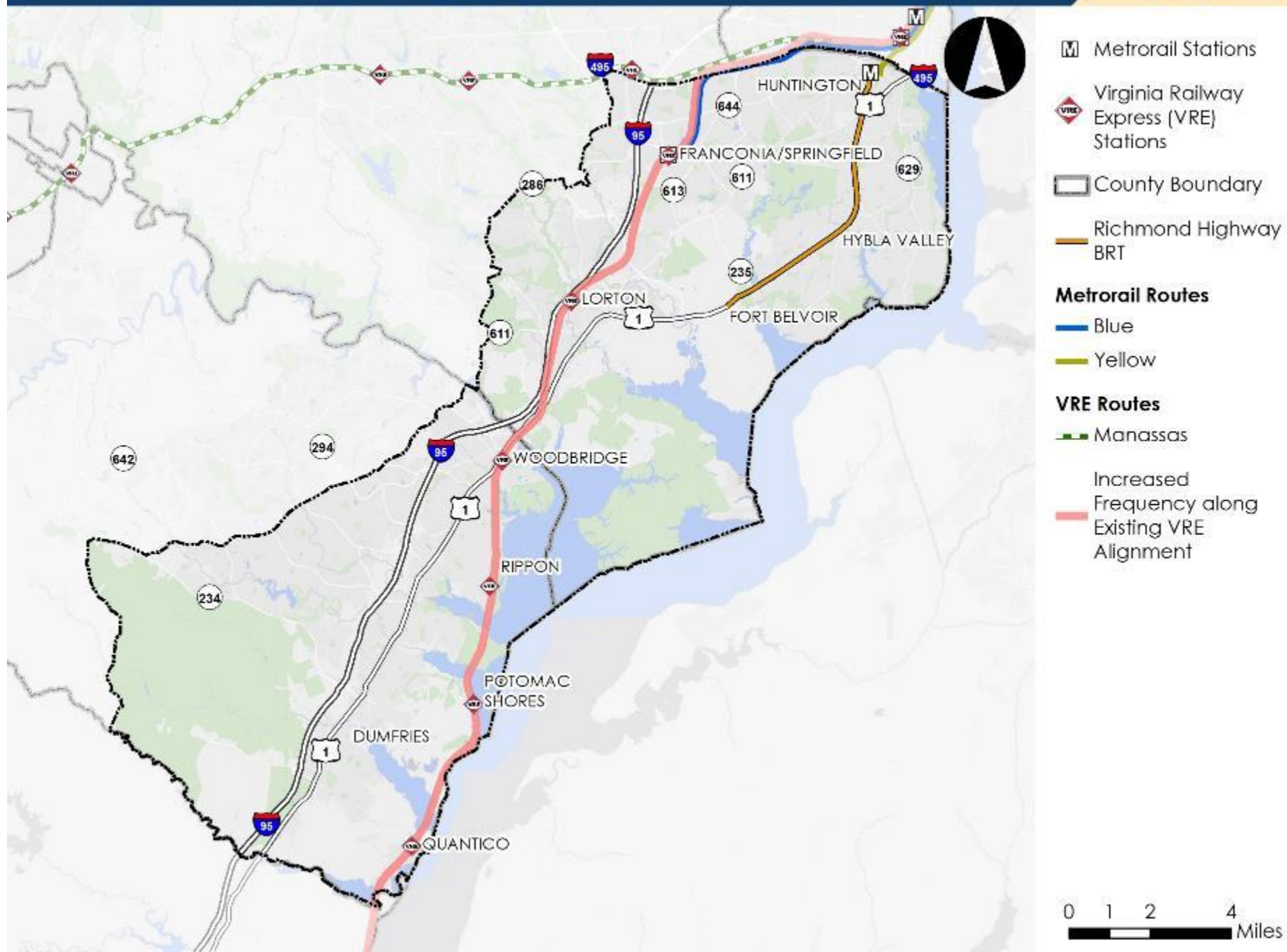
P With Parking
Without Parking



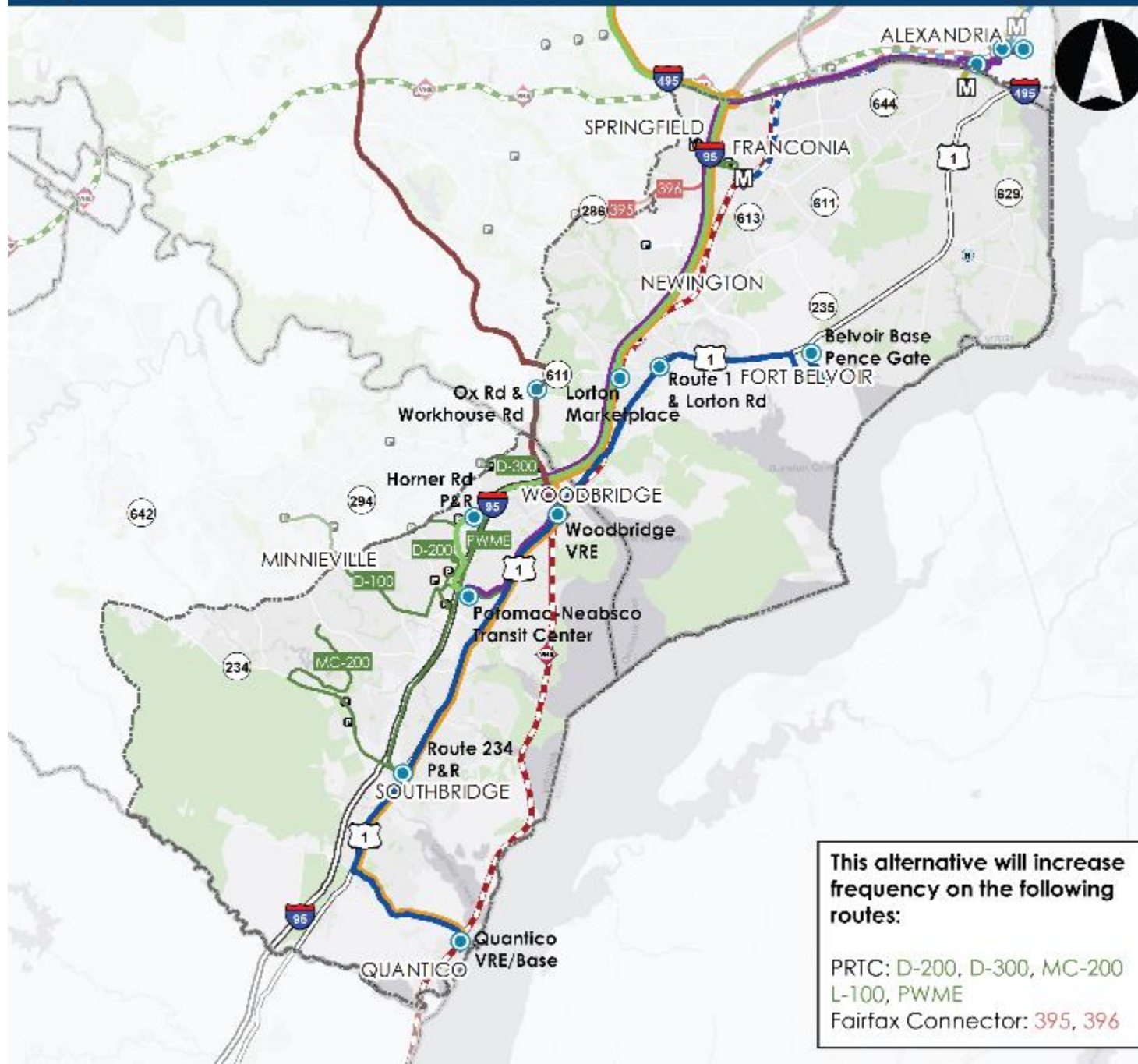
Potential BRT Alternative



Potential VRE Alternative



Express Bus Alternative



Study Area

Proposed Stops

New Express Bus Routes

Quantico/Dale

City/Woodbridge - Ft. Belvoir

Quantico/Dumfries/... - Tysons

Woodbridge - Alexandria

Woodbridge - Fairfax City

Woodbridge - Reston

Existing Routes with Increased Service

Fairfax Connector

OMNIRIDE

Metrorail Routes

Blue

Yellow

VRE Routes

Fredericksburg

Manassas

I-95

US Route 1

This alternative will increase frequency on the following routes:

PRTC: D-200, D-300, MC-200

L-100, PWME

Fairfax Connector: 395, 396

0 1 2 4 Miles

Summary of Evaluation Results

How are we evaluating feasibility?

Goals for Enhanced Transit		
Ridership Potential  Increase transit usage in the study corridor	Congestion Mitigation  Reduce the amount of traffic congestion in the study corridor	Equity  Provide a fair distribution of costs and benefits across different population groups
Regional Accessibility/Connectivity  Increase access to regional activity centers and meet identified service gaps	Cost-effectiveness  Ensure that resources are used efficiently	Development Potential  Create opportunities for development around stations or stops

Ridership Potential

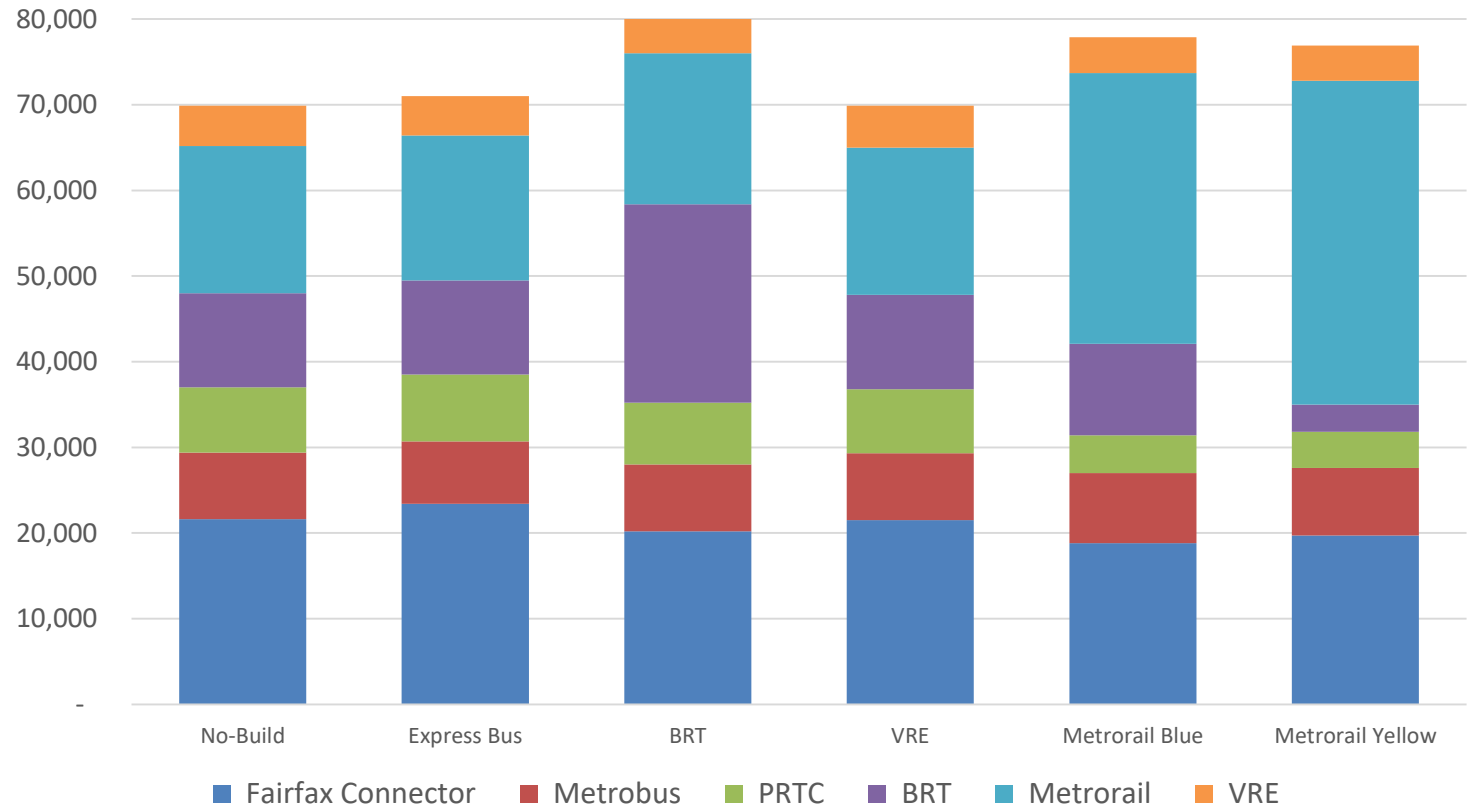


Increase transit usage in the study corridor

Total Transit Boardings

BRT Alternative has the highest number of transit boardings in the Study Corridor.

Total Transit Boardings in the Study Corridor



A 'boarding' is counted every time someone gets on a new transit vehicle

Includes only rail stations in the Study Corridor (Note: VRE alternative does not include new stations.)

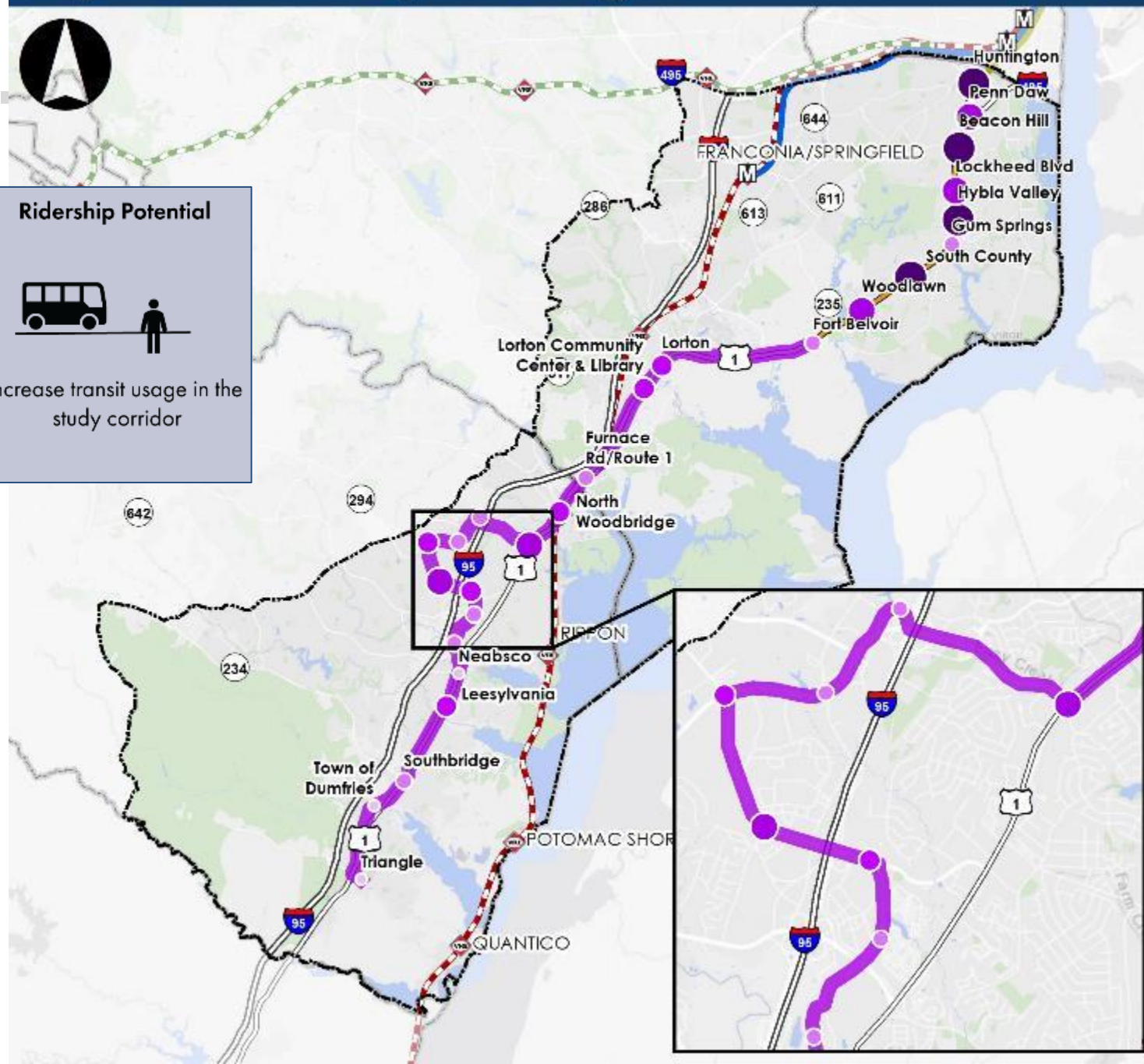
Projected BRT Daily Boardings



Ridership Potential



Increase transit usage in the study corridor



Metrorail Stations

Virginia Railway Express (VRE) Stations

County Boundary

Richmond Highway BRT

Metrorail Routes

Blue

Yellow

VRE Routes

Fredericksburg

Manassas

Potential BRT Alignment

Projected BRT Daily Boardings

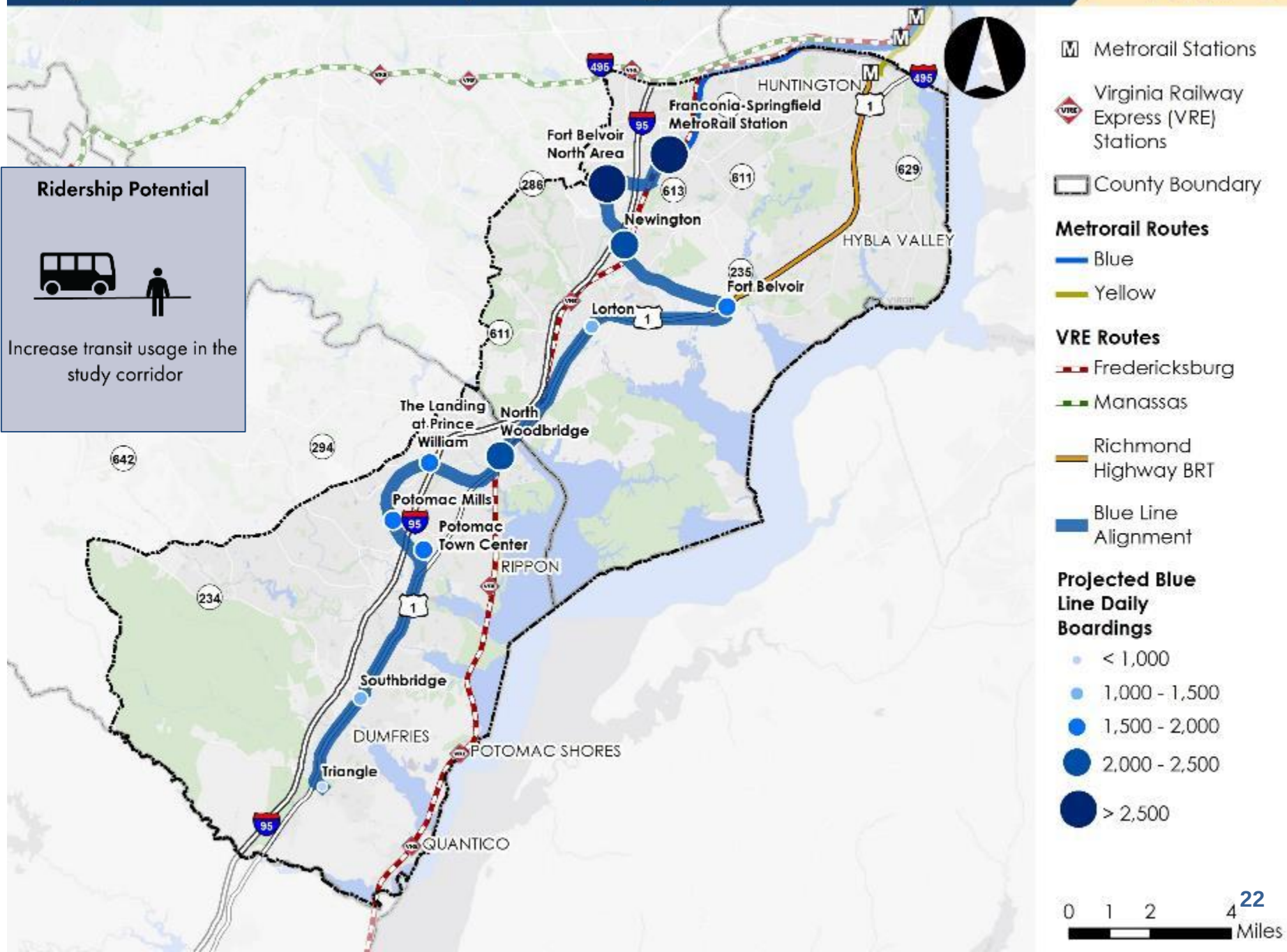
- < 250
- 250 - 500
- 500 - 750
- 750 - 1,000
- > 1,000

Projected Blue Line Daily Boardings

Ridership Potential



Increase transit usage in the study corridor



•DRPT•



Ridership Potential

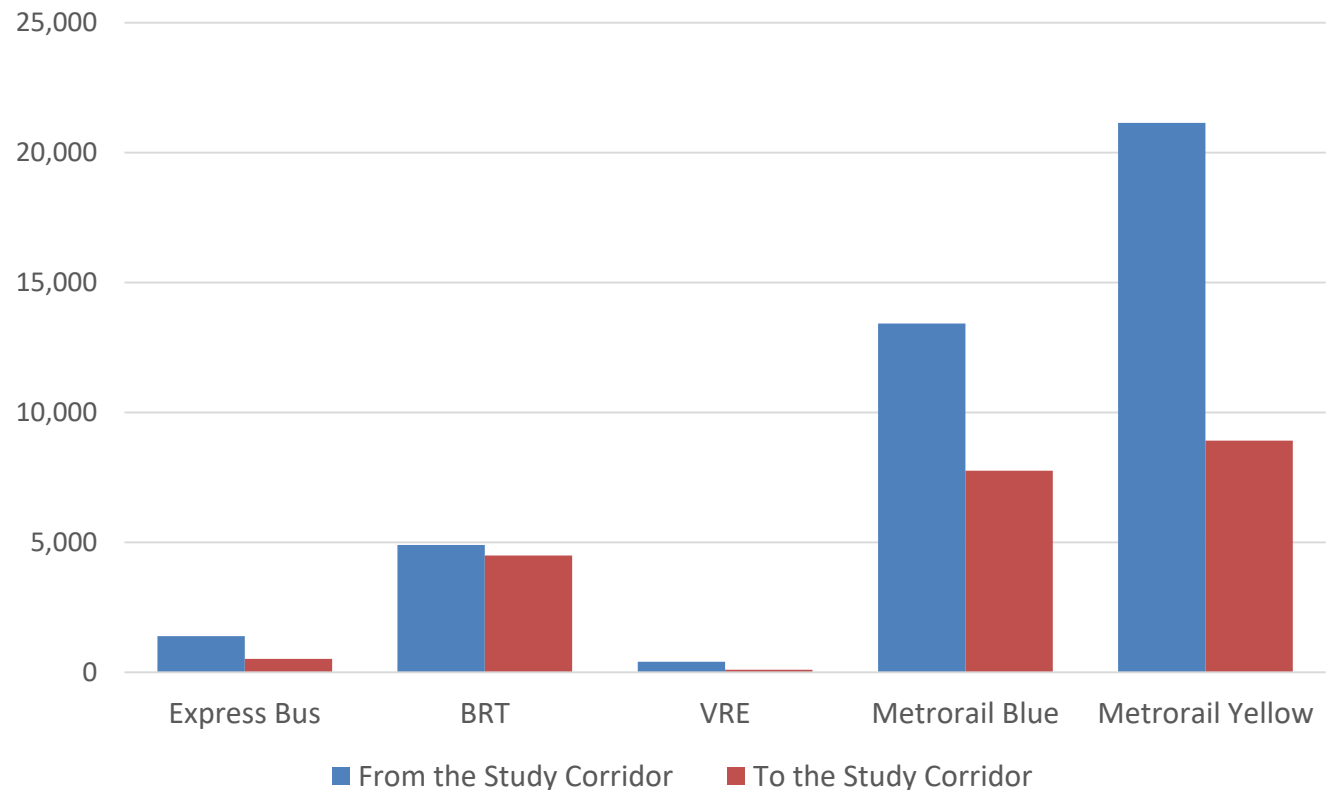


Increase transit usage in the study corridor

New Transit Trips

The Yellow Line Alternative creates the most new transit trips to and from the Study Corridor compared with the No-Build.

New Transit Trips in the Study Corridor



Unlike boardings, transit trips are only counted once end to end, regardless of how many routes are used.

Summary of Evaluation Results

	Additional Express Bus	BRT Extension	Additional VRE Service*	Metrorail Blue	Metrorail Yellow
Ridership Potential	★★	★★★★	★★	★★★★	★★★★
Congestion Mitigation	★	★★	★	★★★★	★★★★
Regional Accessibility	★★	★★★★	★★	★★★★	★★★★
Equity	★	★★	★★	★★★★	★★★★
Cost-Effectiveness	★★★★	★★	★	★	★

* Additional Service Above Transforming Rail in Virginia Improvements Included in Baseline

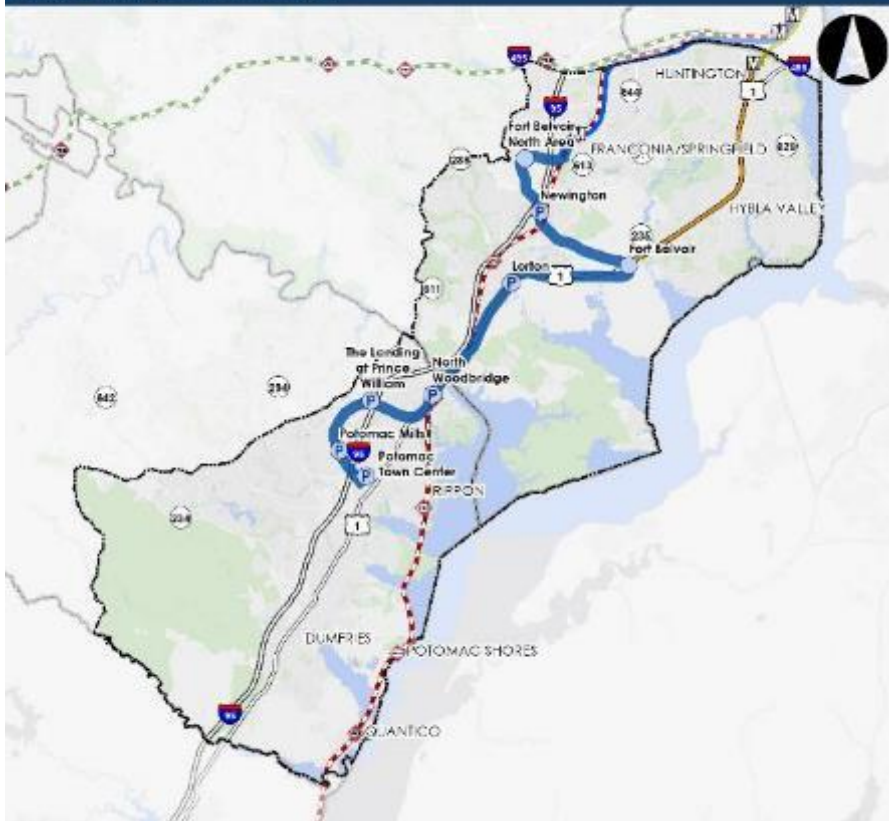
Sensitivity Tests

- Can we make the alternatives more cost efficient by shortening the alignment?
- Uncertainty in long-range planning - What might happen to ridership forecasts if people keep teleworking?
- How would significant changes in land use change ridership forecasts?

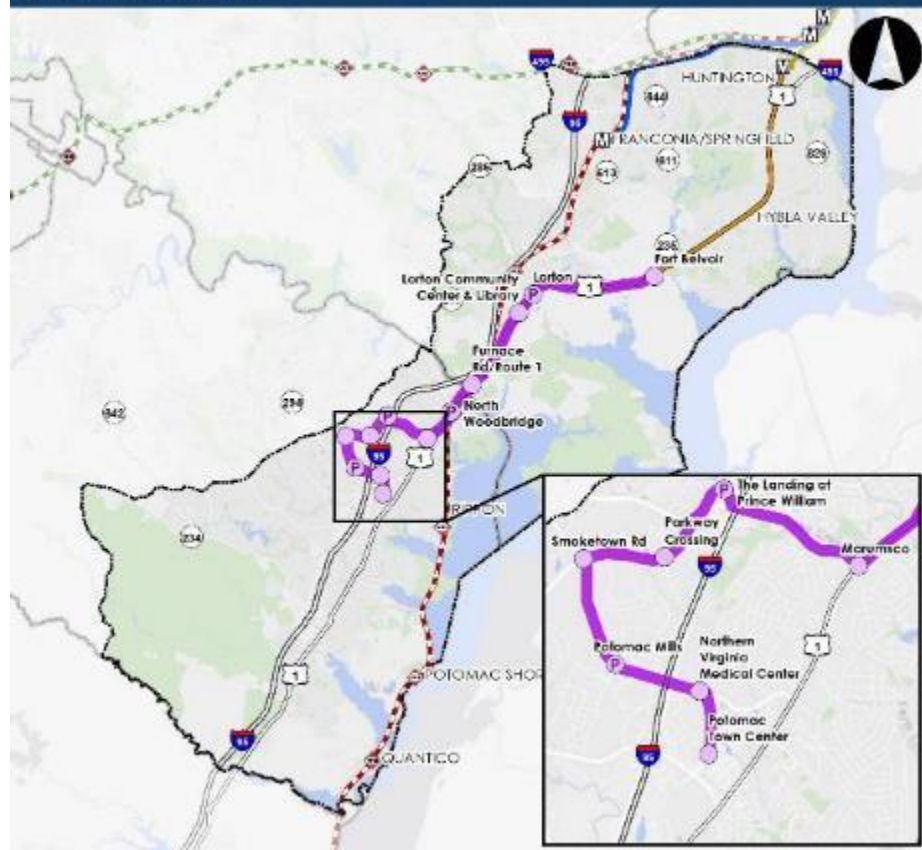
Shorter Alignments

- Tested shorter versions of the Blue Line, Yellow Line, and BRT alternatives
- Remember: Initial model results showed very low ridership for BRT and Metrorail stations south of Potomac Town Center and low cost-efficiency

Blue Line Alternative



BRT Alternative



Shorter Alignments

Can we make the alternatives more cost efficient by shortening the alignment?

Key Sensitivity Results

Change as compared to Full Alignments

	BRT	Metrorail Blue	Metrorail Yellow
Total Corridor Transit Boardings	-4%	--	--
New Transit Trips in Study Corridor	-32%	-10%	-6%
Cost per Rider	+2%	-16%	-18%

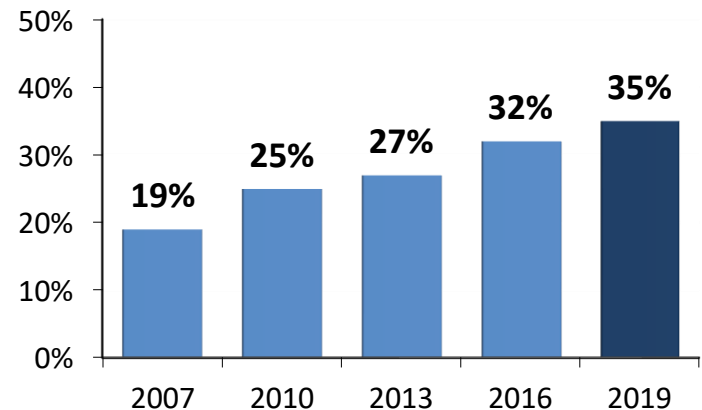
Metrorail ridership is forecast to be less impacted by a shortened alignment than BRT. The shorter alignment results in improved cost-effectiveness for the two Metrorail alternatives.

Telework Sensitivity Tests

Uncertainty in long-range planning - What might happen to ridership forecasts if people keep teleworking?

Base telework conditions – (MWCOC SOC Survey 2019)

- In 2019, 35% of regional workers teleworked regularly or occasionally vs 19% in 2007
- 33% of Fairfax/Prince William workers teleworked 1.1 days/week, a similar frequency to other regional workers



Telework increased substantially during the pandemic – estimated that 60-65% of regional workers worked at home

Telework Sensitivity Tests

Uncertainty in long-range planning - What might happen to ridership forecasts if people keep teleworking?

Key Sensitivity Results

Change as compared to Initial Results

	Future Telework Assumption	BRT Alternative Ridership Impact	Metrorail Alternatives Ridership Impact
Low Telework	45% telework an average 1.1 days/wk	-8%	-12%
High Telework	55% telework an average 1.5 days/wk	-17%	-26%

As shown above, Metrorail would be impacted more significantly by changing telework because of the higher percentage of office-based work trips, as compared with BRT.

Land Use Assessment

How would significant changes in land use change ridership forecasts?

- All of our initial model results used MWCOC Cooperative Land Use Forecasts for 2045.
- This sensitivity analysis looked at two different land use scenarios that added transit-oriented development (TOD) by increasing densities around the station areas:
 - Metrorail-focused TOD
 - BRT-focused TOD

Land Use Impacts on Ridership

How would significant changes in land use change ridership forecasts?

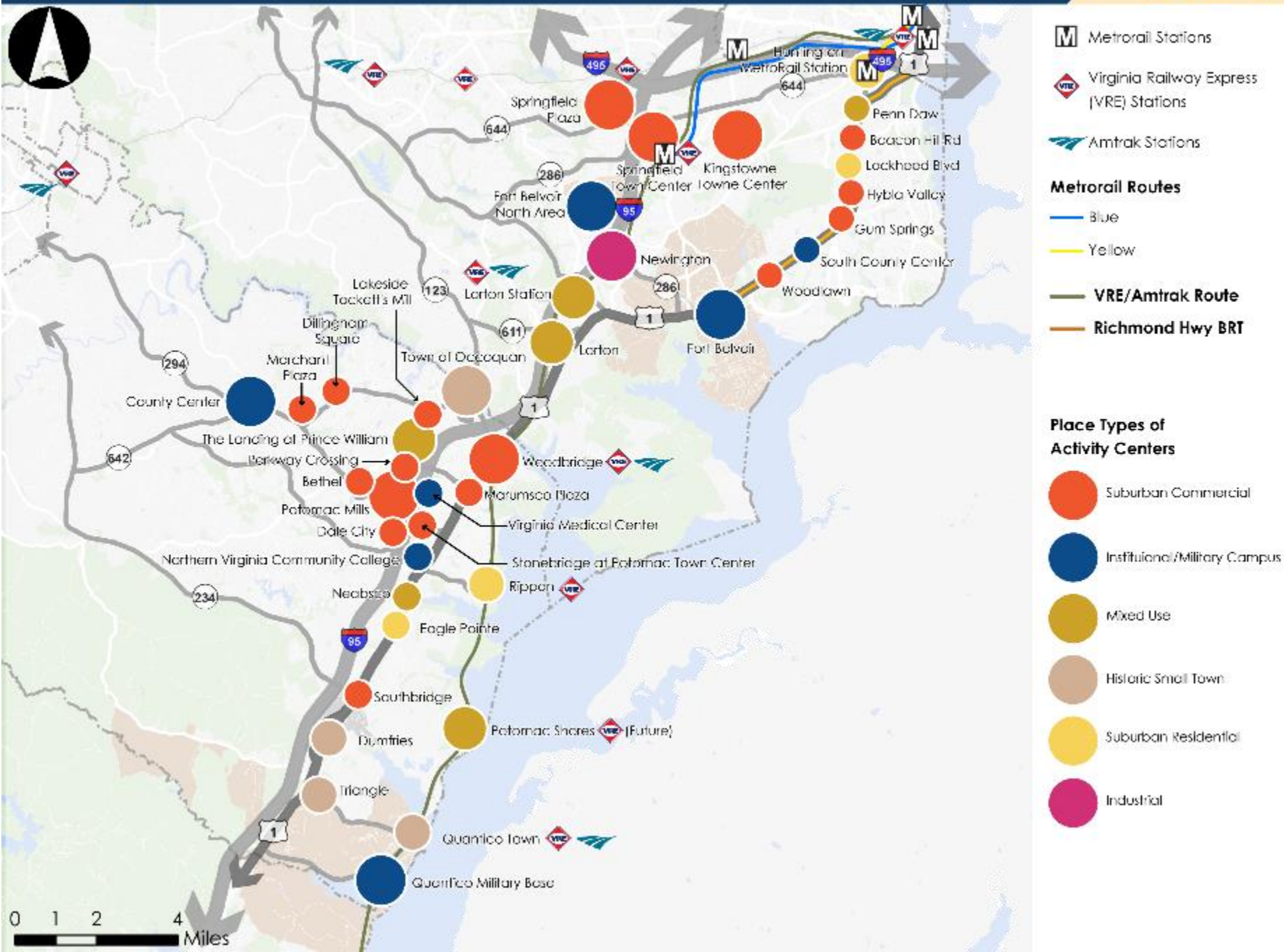
Key Sensitivity Results

Change as compared to Initial Results

	Residents Added to Station Areas	Jobs Added to Station Areas	Ridership Increase
Blue Line Alternative	162,000 (+96%)	59,000 (70%)	+66%
Yellow Line Alternative	118,000 (+76%)	56,000 (+102%)	+32%
BRT Alternative	134,000 (+80%)	45,000 (+53%)	+29%

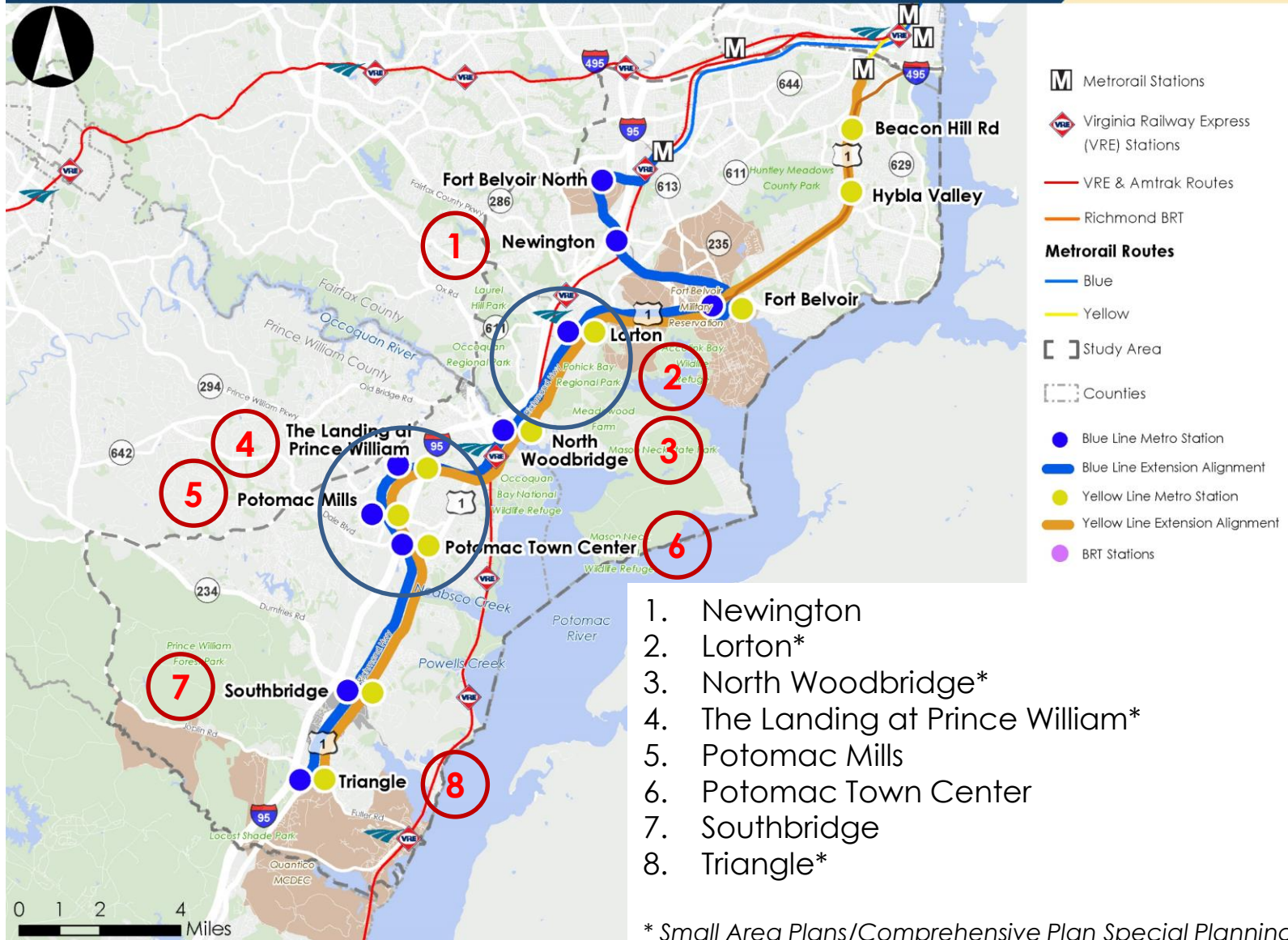
Transit-Supportive Land Use

Activity Centers

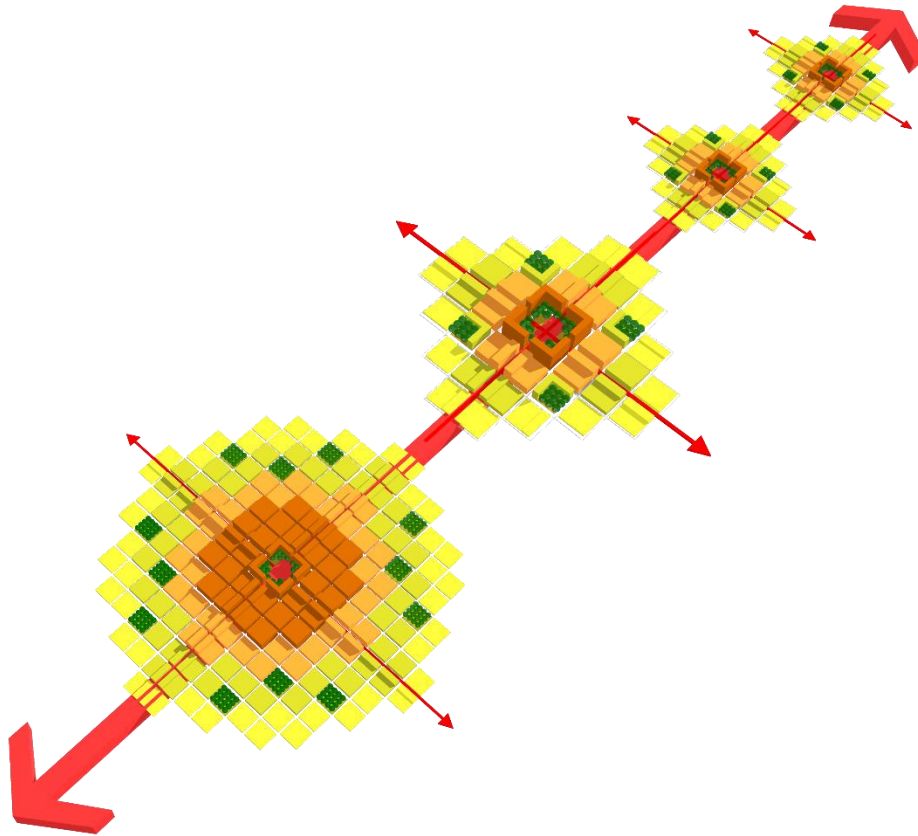


Station Areas Considered for Additional Density

Potential Metro Stations



Transit Oriented Development (TOD)



TOD at Different Scales & Context Along a Transit Corridor

Land Use



Access & Connectivity



Community Identity & Placemaking



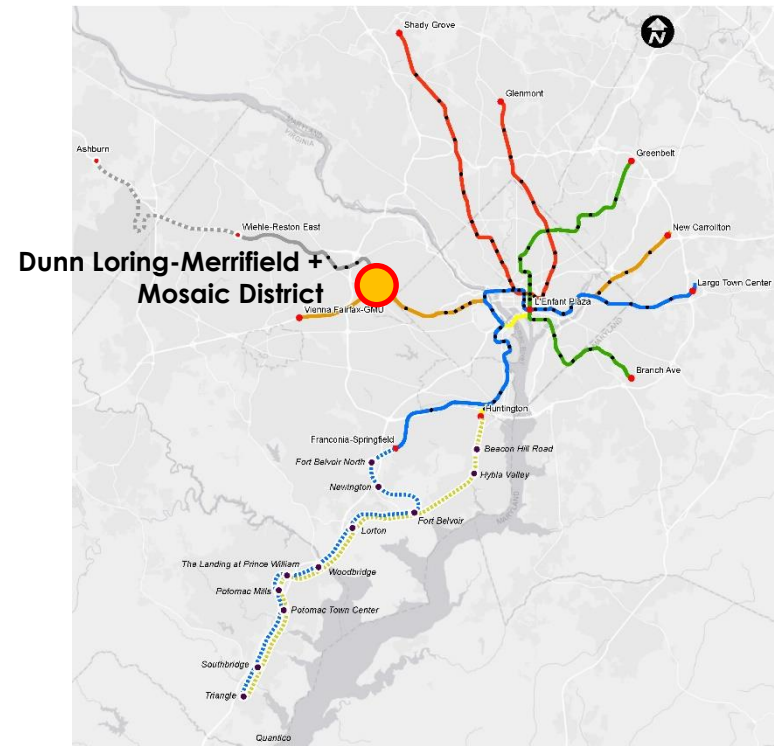
Case Study of Transit Readiness: Dunn Loring-Merrifield + Mosaic District



Source: Northern Virginia Magazine

Key Takeaways:

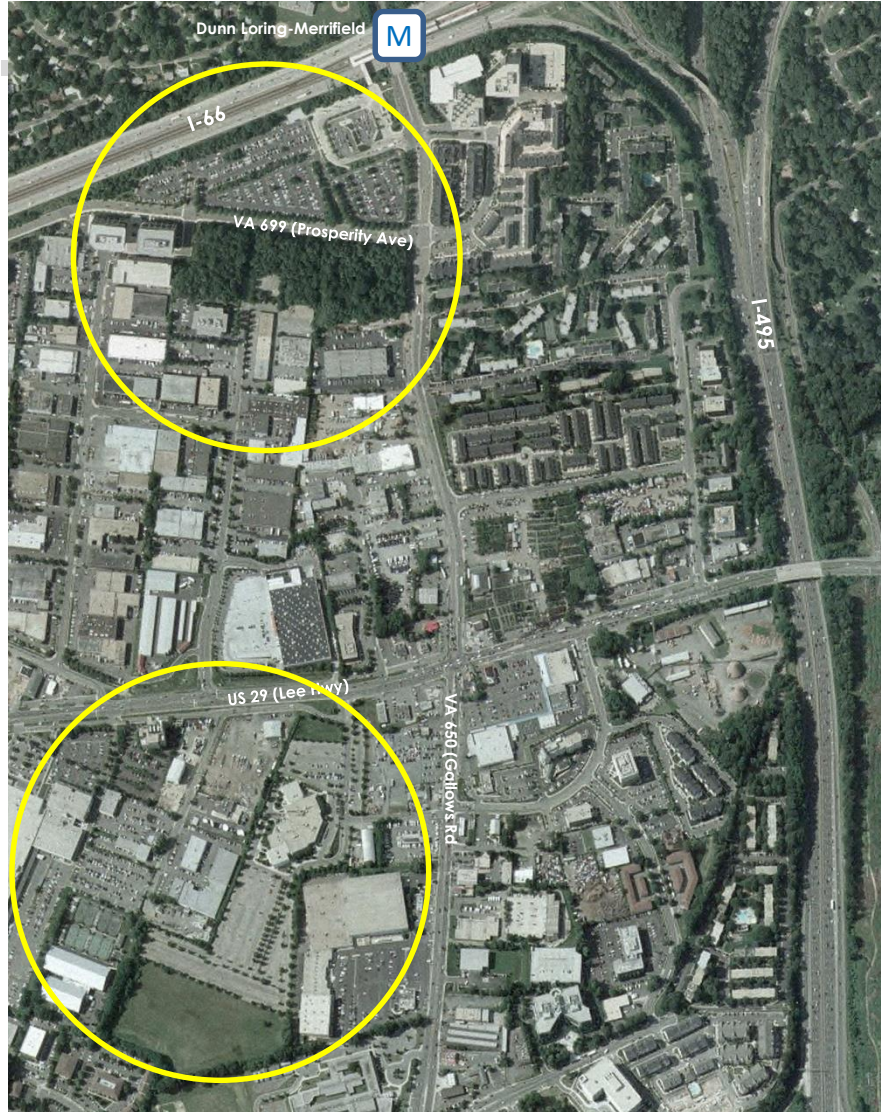
- Transformed multiplex theatre to compact, walkable, mixed-use development.
- Plan to convert auto-oriented arterial corridors to multi-modal corridors.
- Reduced impervious surface and added green infrastructure.
- Implemented TIF to finance new infrastructure through public-private partnerships.



Key Map

- Location: Merrifield, Fairfax County, VA
- Transit Stop: Dunn Loring-Merrifield (Orange)
- Redevelopment Area: 31 acres
- Previous Use: Industrial, Parking, Movie Theatre
- Distance to Downtown DC: 10 miles

Key street connections and mixed-use redevelopment support walkable community investment



Source: Google Earth

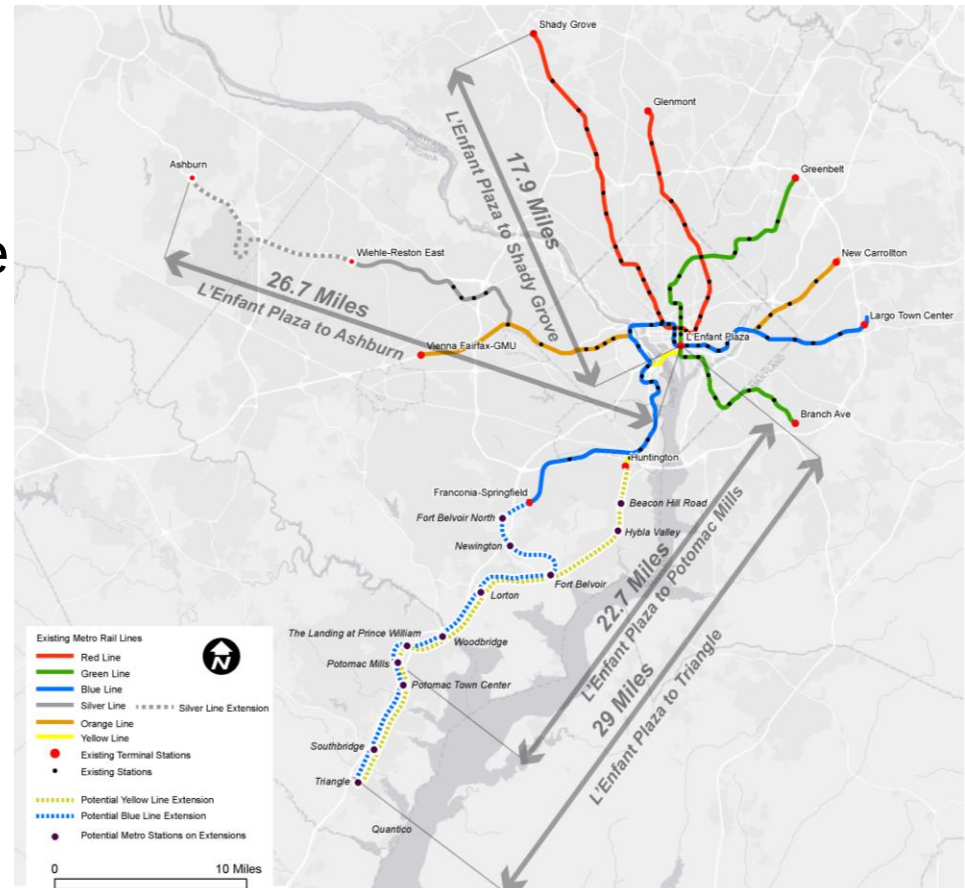


Source: Google Earth

Other Considerations & Next Steps

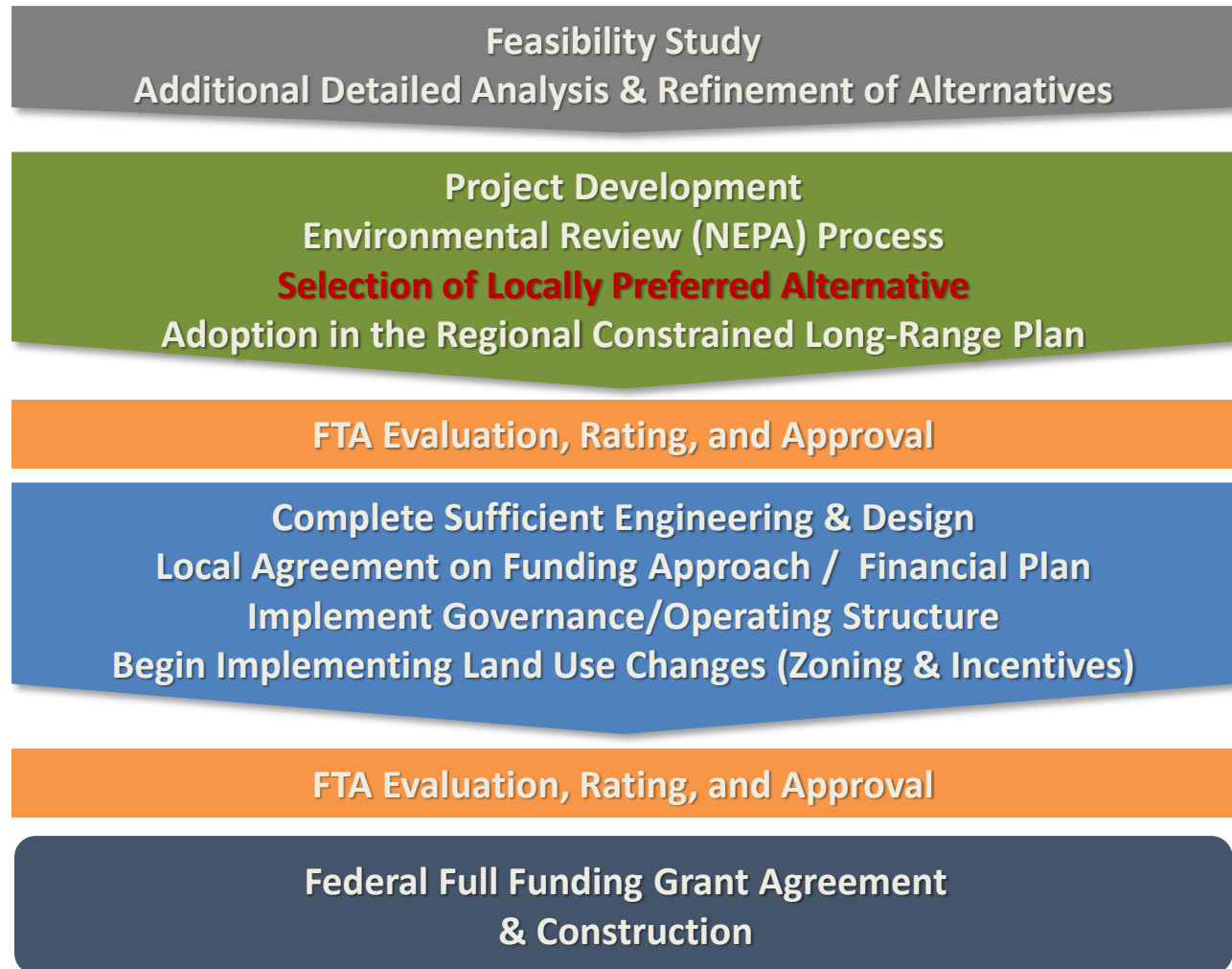
Other Considerations for Metrorail Extensions

- Metrorail extension would be a significant addition to the Metro system
- Core capacity needs must be addressed first
- Legal / governance implications of adding Prince William County to the WMATA compact jurisdictions
- Annual capital and operating budget subsidy contributions for Prince William County (and an increase for Fairfax County)



L'Enfant Plaza to Triangle
Track Length = 46 Miles (Blue)
Track Length = 37 Miles (Yellow)

Corridor Feasibility Study is the 1st Step in Multi-Step Project Development Process*



Q&A

Type your clarification questions into the chat box.



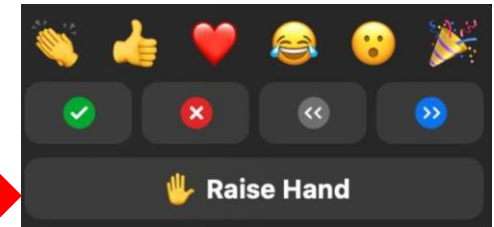
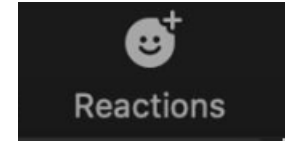
Breakout Rooms

Breakout rooms are scheduled for 20 minutes.

After the breakout rooms, breakout room leads will report discussion highlights back to the full group in the public meeting.

Welcome to the breakout room!

- Please raise your hand if you want to speak
- Please remain muted if you have not been called on to ask a question
- Breakout rooms will be active for approximately 20 minutes
- There is a notetaker in each breakout room to capture the discussion
- You are always welcome to use the chat feature to ask questions



Wrap-Up

- Draft report will be completed in October
- Final report submitted to General Assembly by December 1, 2021

Thank you for your participation!

Springfield to Quantico Enhanced Public Transportation Feasibility Study

Project Information:

<http://www.drpt.virginia.gov/transit/springfield-to-quantico/>

Extra Slides – for backup only

Congestion Mitigation

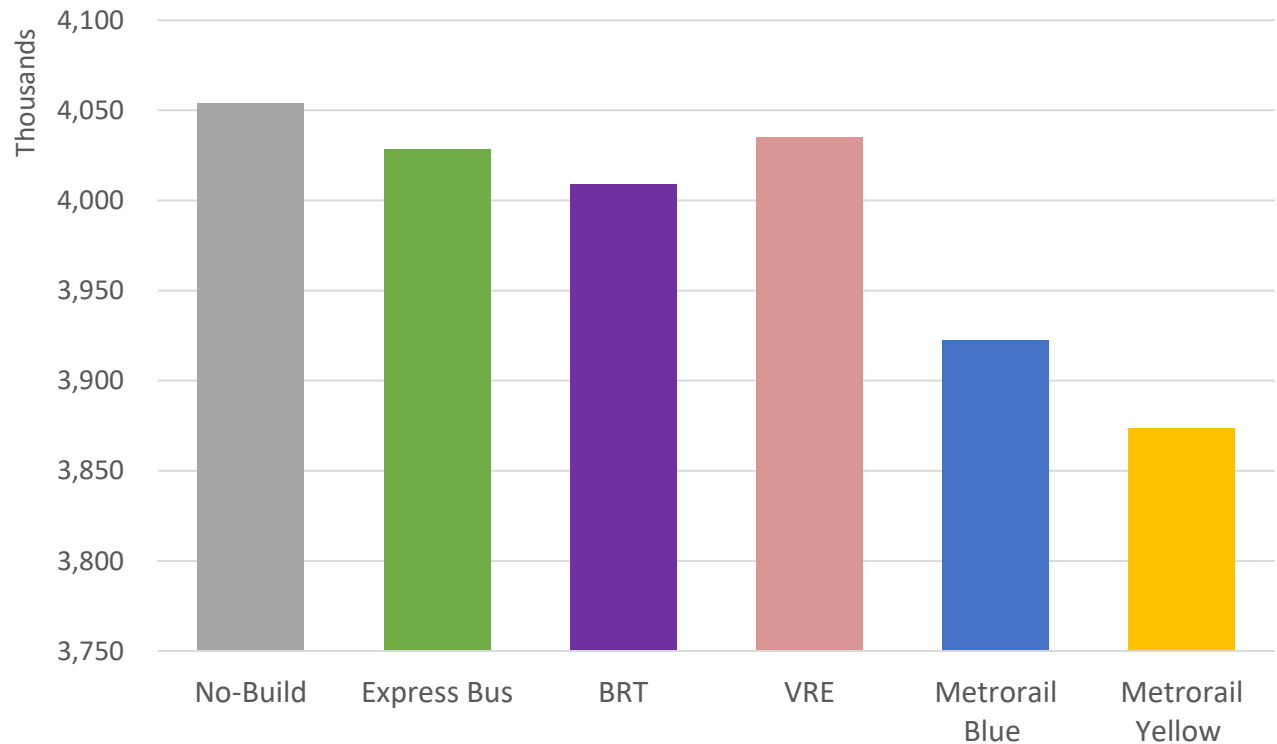


Reduce the amount of traffic congestion in the study corridor

Congested VMT

All of the alternatives decrease congestion on roads in the Study Corridor compared with the No-Build.

Congestion in the Study Corridor



Includes “severe congestion” and “congestion” – so lower is better

Regional Accessibility/ Connectivity

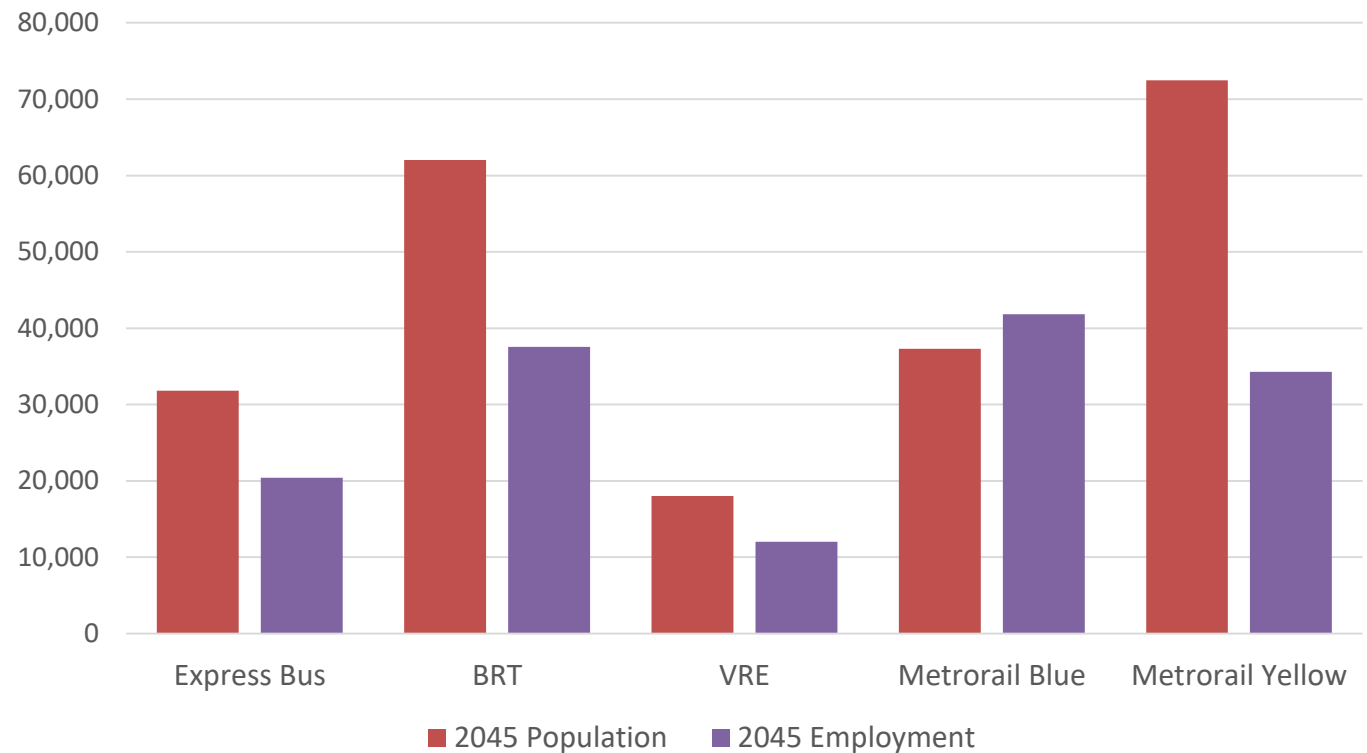


Increase access to regional
activity centers and meet
identified service gaps

Walk Access to Transit

By 2045, the Yellow Line and BRT Alternatives will provide high quality transit to the most residents. The Blue Line Alternative will have the most jobs within a half-mile of transit

Jobs and Population near Transit



Within a half-mile
of transit stops with
new/improved
service

Includes only rail stations in the Study Corridor. (Note: BRT alternative only includes the extension south of Ft. Belvoir.)

Regional Accessibility/ Connectivity

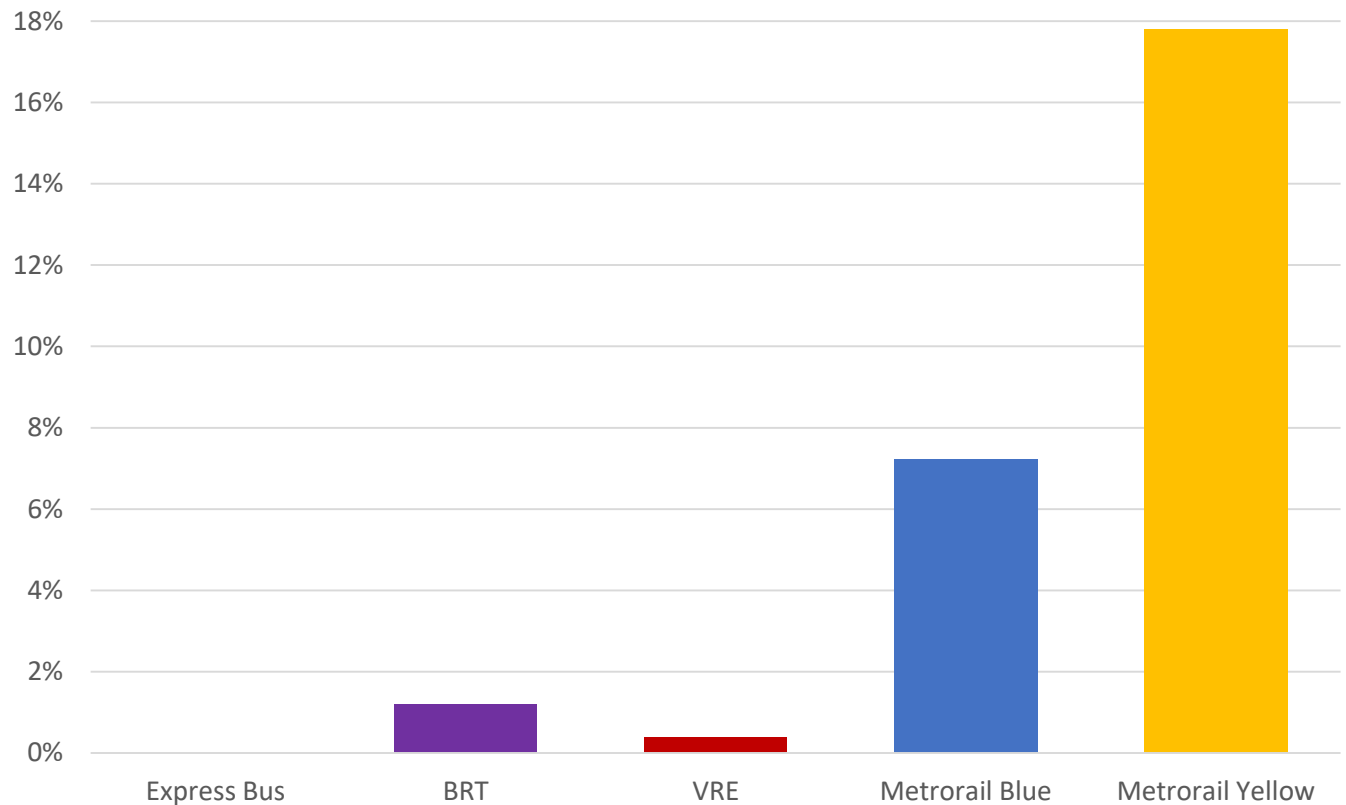


Increase access to regional activity centers and meet identified service gaps

Access to Jobs

The Yellow Line Metrorail Alternative provides the biggest increase in accessibility to jobs by transit for Study Corridor residents.

New Jobs Accessible within 60 mins by Transit (Peak)



Percent of new jobs accessible to residents of the Study Corridor within 60 mins by transit as compared to the No-Build.

Equity



Provide a fair distribution
of costs and benefits
across different population
groups

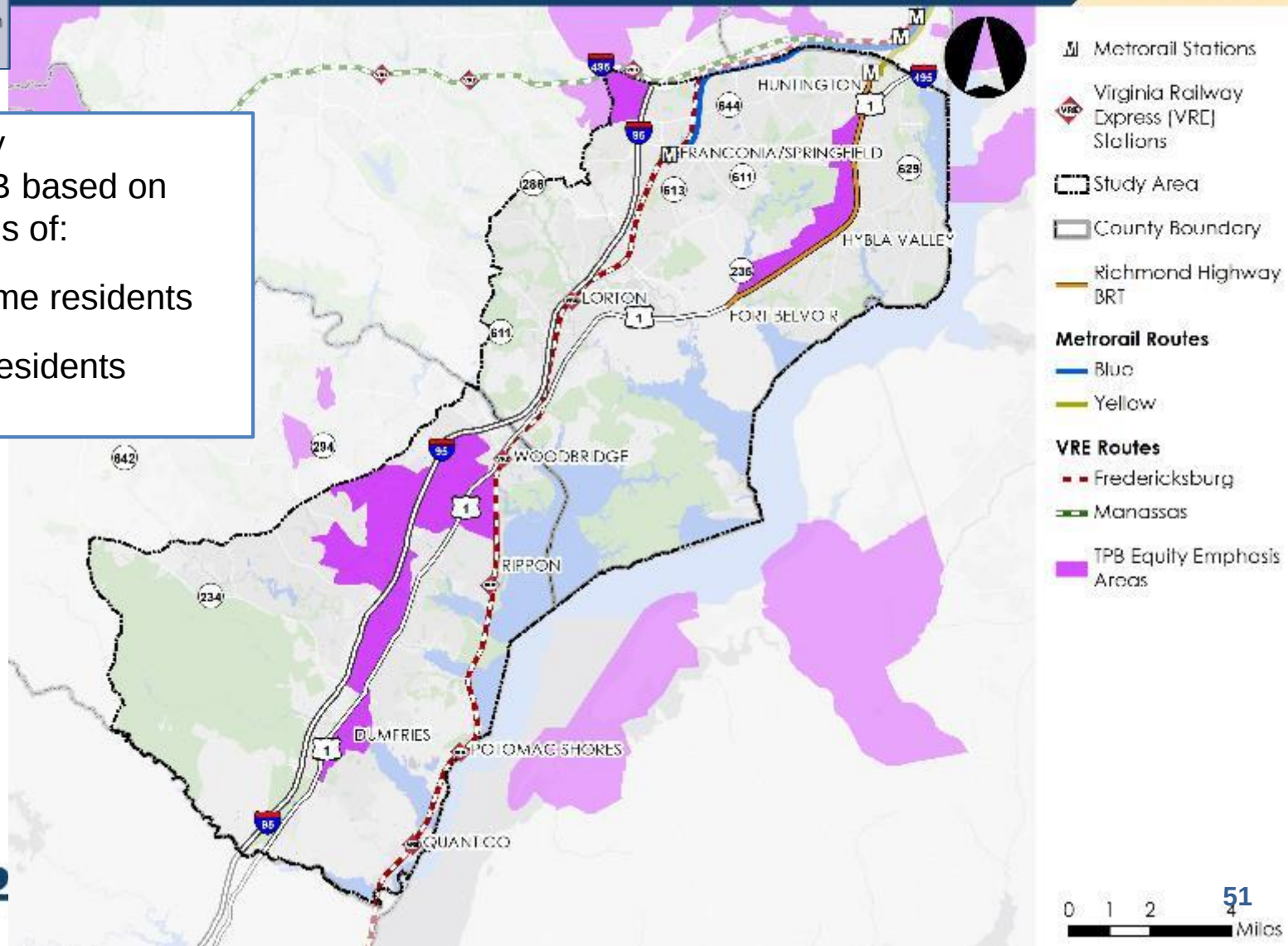
Equity Emphasis Areas

Equity Emphasis Areas

DRPT

Developed by
MWCOG/TPB based on
concentrations of:

- Low-income residents
- Minority residents



Equity

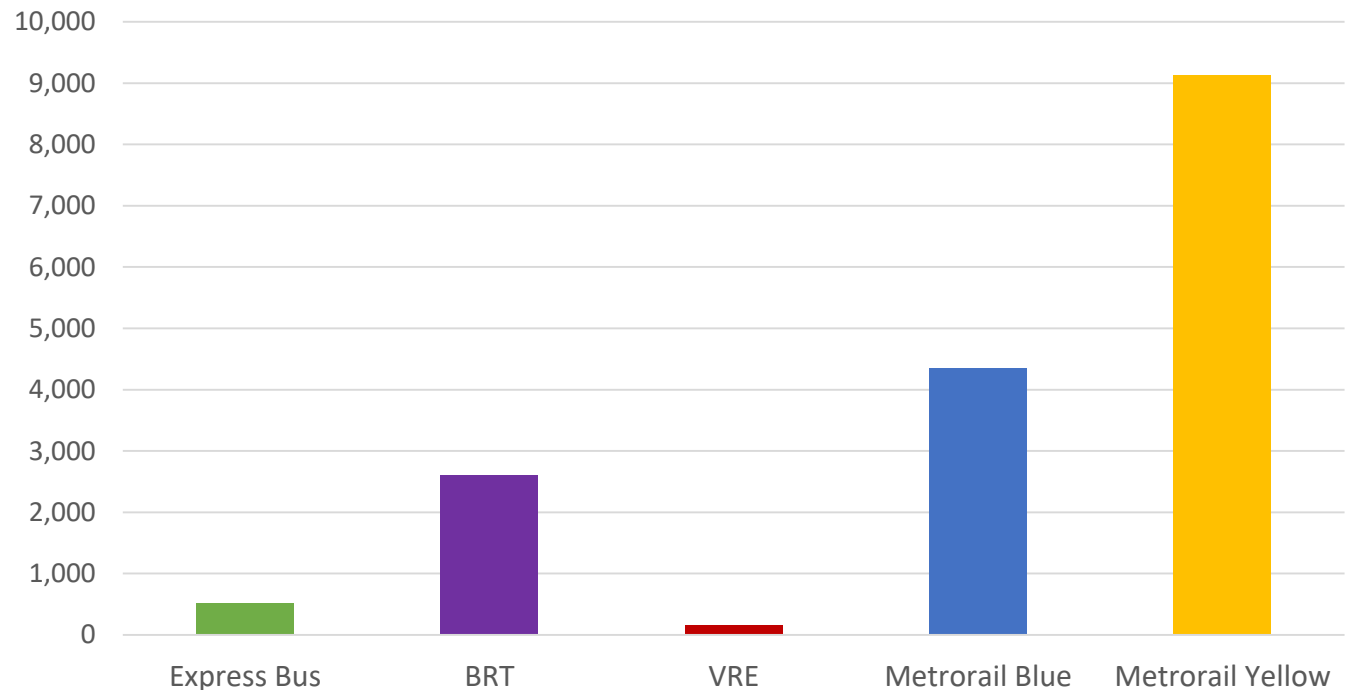


Provide a fair distribution
of costs and benefits
across different population
groups

Equity Transit Trips

- Across all Alternatives, new transit trips from EEAs grow more than from the overall Study Corridor.
- The Yellow Line Alternative includes the most new transit trips made by EEA residents

New EEA Transit Trips from the Study Corridor



New transit trips
from EEAs in the
Study Corridor
as compared to
the No-Build.

Equity

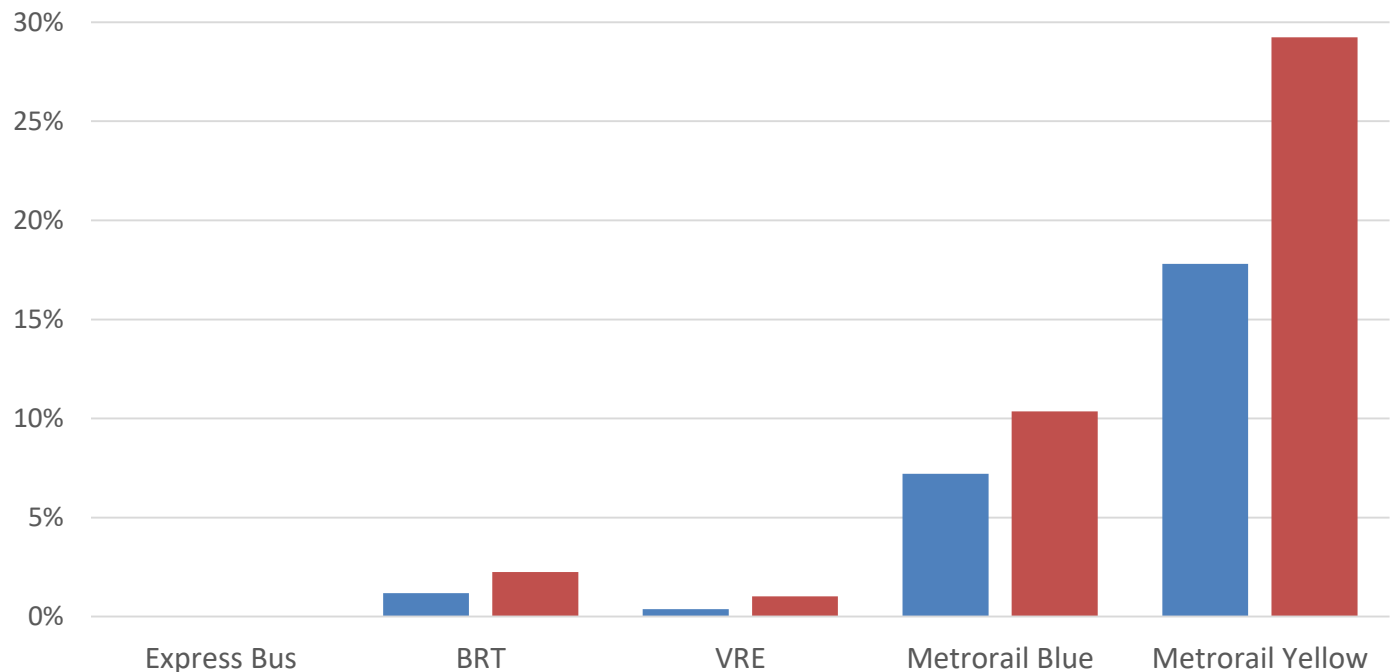


Provide a fair distribution
of costs and benefits
across different population
groups

Job Accessibility for EEAs

- Across all Alternatives, job accessibility for EEAs grow more than for the overall Study Corridor.
- The Yellow Line Alternative shows the biggest increase in accessibility for EEA residents

New Jobs Accessible within 60 mins by Transit (Peak)



Percent increase
in the average
number of jobs
accessible for
residents of EEAs
in the Study
Corridor as
compared to the
No-Build

Equity

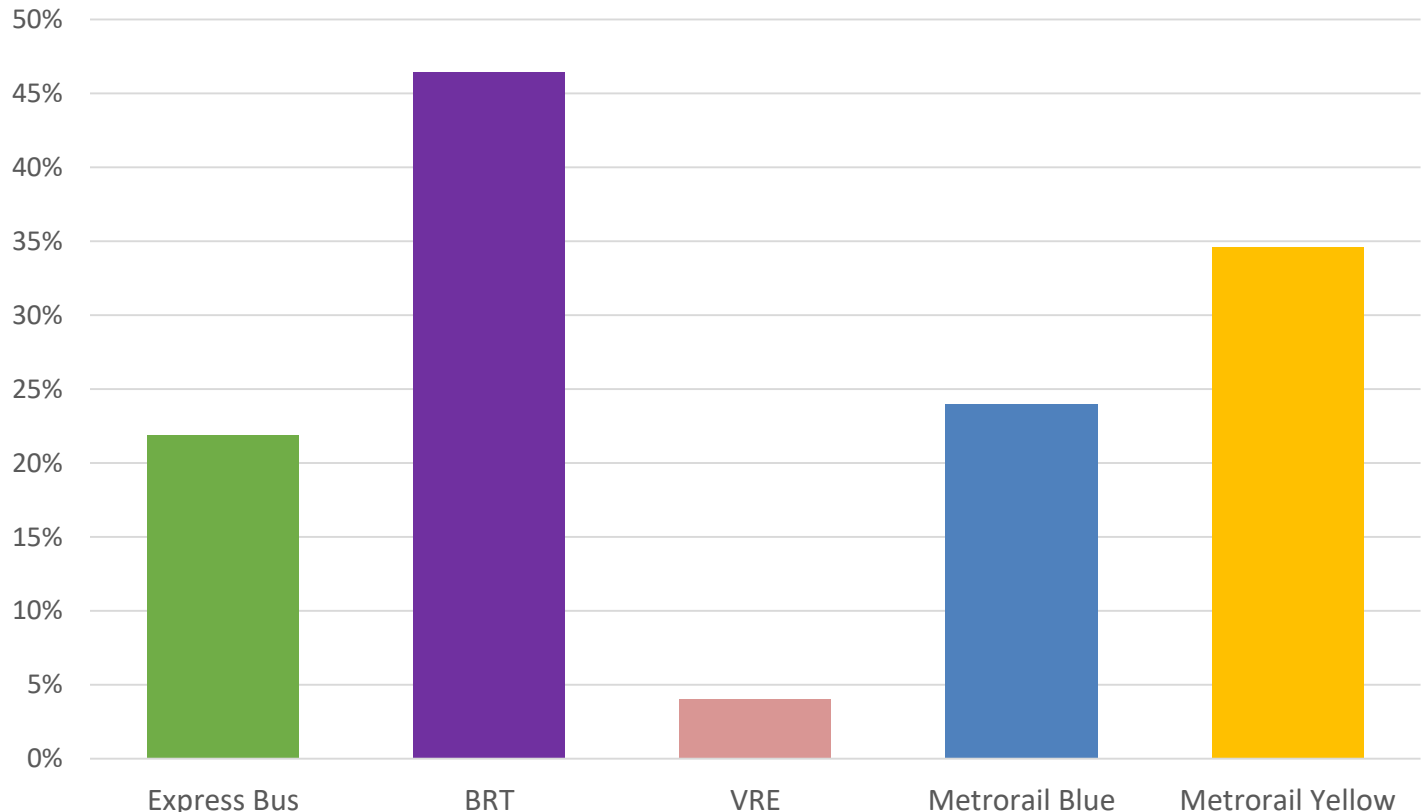


Provide a fair distribution
of costs and benefits
across different population
groups

EEA Residents at Transit Stations

Residents near the BRT Alternatives are more than 45% residents of EEAs and most likely to be low-income and/or minority.

Portion of Residents near Transit that live in EEAs



EEA percentage
of the people who
live within half-
mile of transit

Cost-effectiveness

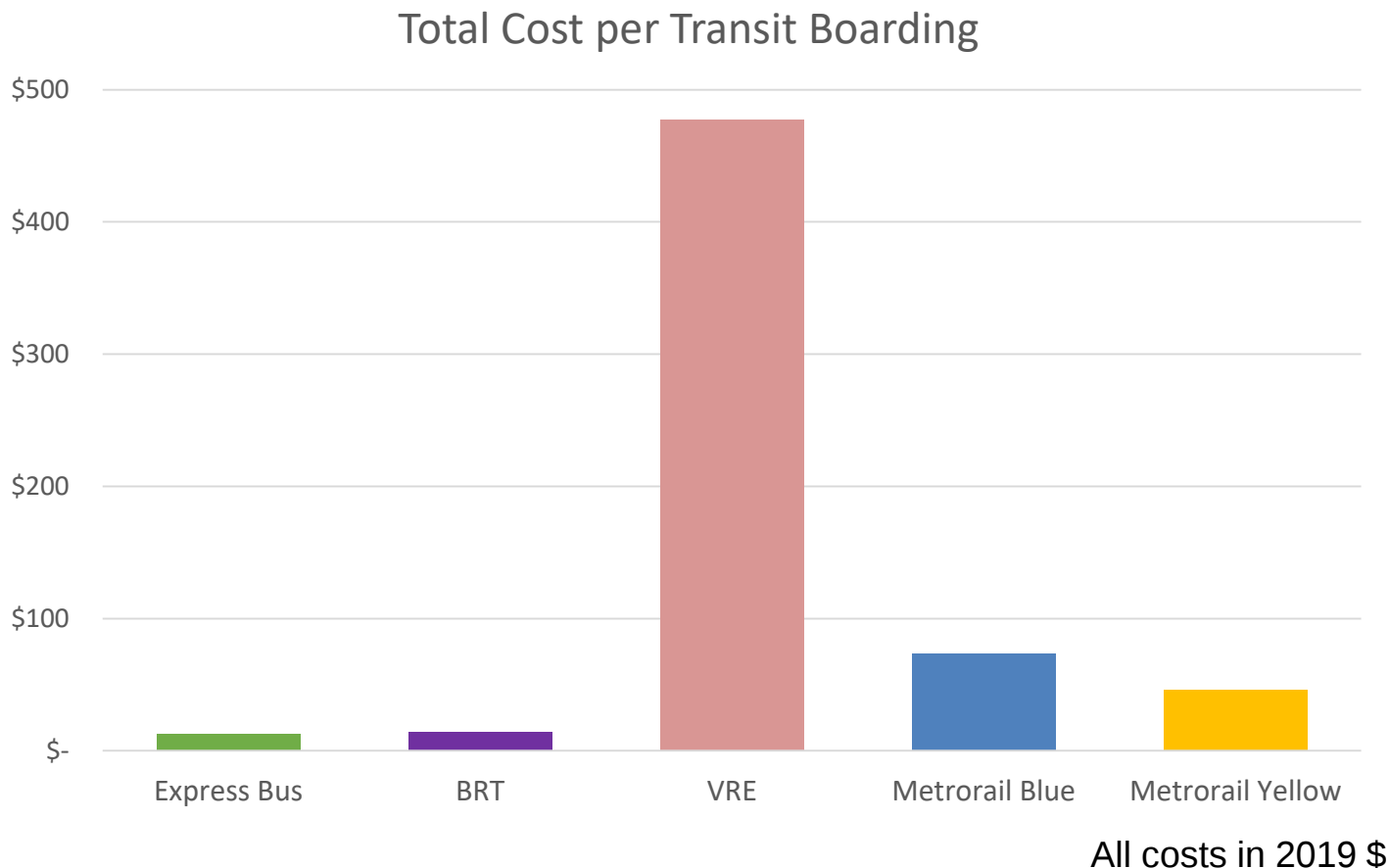


Ensure that resources are used efficiently

Total Cost per Transit Boarding

The Bus Alternatives are significantly more cost effective than the rail alternatives.

Estimated cost per transit boarding in the Study Corridor – lower is better. Note that the VRE ridership gains due to Transforming Rail in Virginia are in the No Build and are not reflected here.



Summary of Evaluation Results

Goal	Measure	Additional Express Bus Service	BRT Extension	Additional VRE Service*	Metrorail Blue Extension	Metrorail Yellow Extension
Ridership Potential	Total Transit Boardings	71,000	80,600	69,900	77,900	76,900
	New Transit Boardings	1,100	10,700	-	8,000	7,000
	New Transit Trips	953	4,696	256	10,592	15,034
	Change in Transit PMT	50,674	103,952	19,831	408,917	462,541
Congestion Mitigation	Change in Congested VMT	(25,617)	(45,094)	(18,607)	(131,780)	(180,391)
Regional Accessibility	Walk Access to Population	31,796	62,038	18,014	37,288	72,486
	Walk Access to Jobs	20,431	37,555	12,051	41,827	34,285
	Change in Regional Job Accessi	0.0%	1.2%	0.4%	6.8%	7.2%
	Change in Access to Job Center	0.5%	5.4%	0.4%	12.0%	20.6%
Equity	New EEA Transit Trips	520	2,599	153	4,346	9,122
	Change in EEA Job Accessibility	0.0%	2.2%	1.0%	7.1%	9.9%
Cost-Effectiveness	Cost per Rider	\$ 4.58	\$ 40.19	\$ 342.87	\$ 159.50	\$ 103.69
	Cost per Transit PMT	\$ 0.13	\$ 1.89	\$ 7.09	\$ 5.24	\$ 4.74

* Additional Service Above Transforming Rail in Virginia Improvements Included in Baseline

Land Use Intensity Thresholds

Inputs for Urban Footprint Scenario Modelling

Place Type & Transect Zone Description	Net floor area ratio (FAR)	Gross residential density (du/ac)	Gross population density (pop/ac)	Gross employment density (emp/ac)	Gross Activity Density (pop+emp per ac)	Gross parking density (spcs/1000 sq ft)
T-1 Very low intensity	0.02	0.10	0.22	0.40	0.62	2.24
T-2 Low intensity	0.12	1.18	2.14	1.67	3.81	1.97
T-3 Moderate intensity	0.28	4.69	8.11	4.64	12.75	1.7
T-3.5 Moderate intensity	0.59	12.20	21.01	8.23	29.24	2.07
T-4 Moderate intensity	0.91	17.96	30.92	12.47	43.39	1.67
T-4.5 Moderate-to-high intensity	1.36	32.03	54.55	22.52	77.07	1.78
T-5 High intensity	1.75	42.79	72.88	29.52	102.40	1.66
T-5.5 High intensity	2.21	54.43	92.69	37.04	129.73	1.52
T-6 High intensity	3.15	76.59	129.84	59.98	189.82	1.27

Place type T-4.5 (or higher) achieves the Metro guideline of > 50 activity density.

WMATA Ridership Thresholds: Suburban Metrorail

Criteria	Metric	Thresholds		
		Low	Medium	High
Density	Population Density (People per Acre)	< 31.7	31.7 – 47.5	> 47.5
	Employment Density (Jobs per Acre)	< 19	19 – 26	> 26
	Activity Density (People + Jobs)	< 50.7	50.7 – 73.5	> 73.5
Ridership	Ridership per Mile	< 3,500	3,500 – 7,000	> 7,000

Source: Transit Corridor Expansion Guidelines (2015)

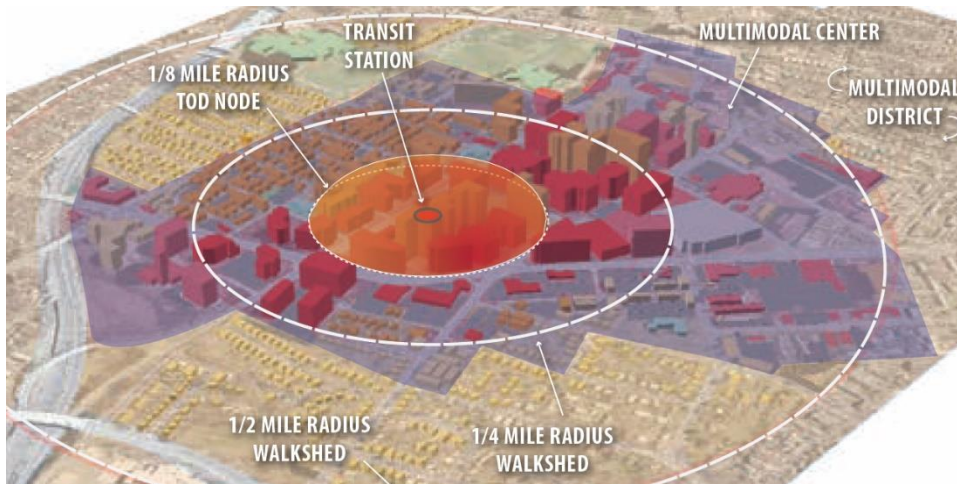
Ridership per Mile = Total Number of Daily Entries/Number of Miles of Extension

Existing (and Planned) Density at Potential Stations in Study Area

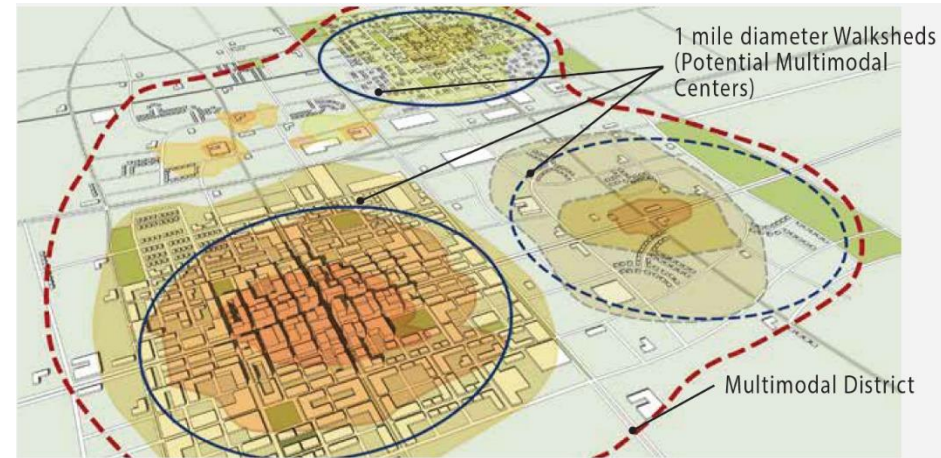
No.	Station	Location	Population Density (1 Mile Radius) (People/Acre)	Employment Density (1 Mile Radius) (People/Acre)	Activity Density (1 Mile Radius) (People + Jobs/Acre)	Place Type
1	Beacon Hill Road**	Fairfax County, VA	10.6	1.8	12.4	P4
2	Hybla Valley**	Fairfax County, VA	12.4	2.1	14.5	P4
3	Fort Belvoir	Fairfax County, VA	2.4	0.7	3.1	P-MB
4	Fort Belvoir North	Fairfax County, VA	4.0	2.4	6.4	P-MB
5	Newington	Fairfax County, VA	3.9	5.7	9.6	P4
6	Lorton**	Fairfax County, VA	6.8	1.5	8.3	P3
7	North Woodbridge**	Prince William County, VA	6.0	1.3	7.3 (26.7 – 40.0)**	P4
8	The Landing at Prince William**	Prince William County, VA	7.1	2.5	9.6 (11.0 – 23.0)**	P4
9	Potomac Mills	Prince William County, VA	4.4	5.9	10.3	P4
10	Potomac Town Center	Prince William County, VA	6.8	4.0	10.8	P3
11	Southbridge	Prince William County, VA	4.2	0.9	5.1	P3
12	Triangle**	Prince William County, VA	2.6	0.5	3.1 (6.7 – 18.0)**	P3

** Higher Density proposed in Small Area Plans

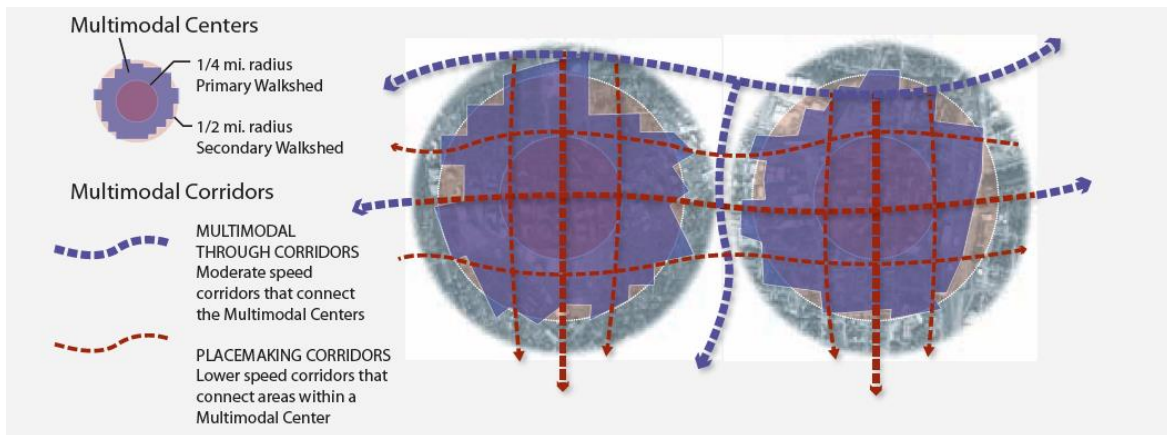
Multimodal Centers and TOD



TOD Node Walksheds



Multimodal District and Multimodal Centers

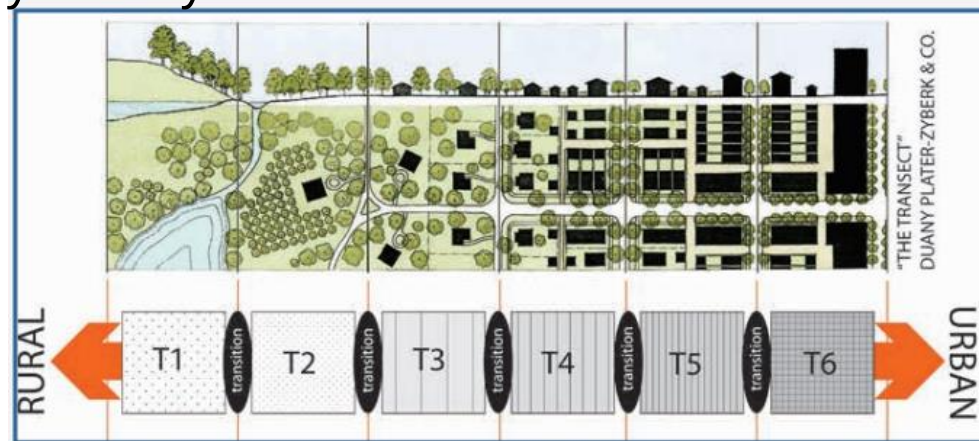


Multimodal Centers & Multimodal Corridors

Source: DRPT Multimodal System Design Guidelines

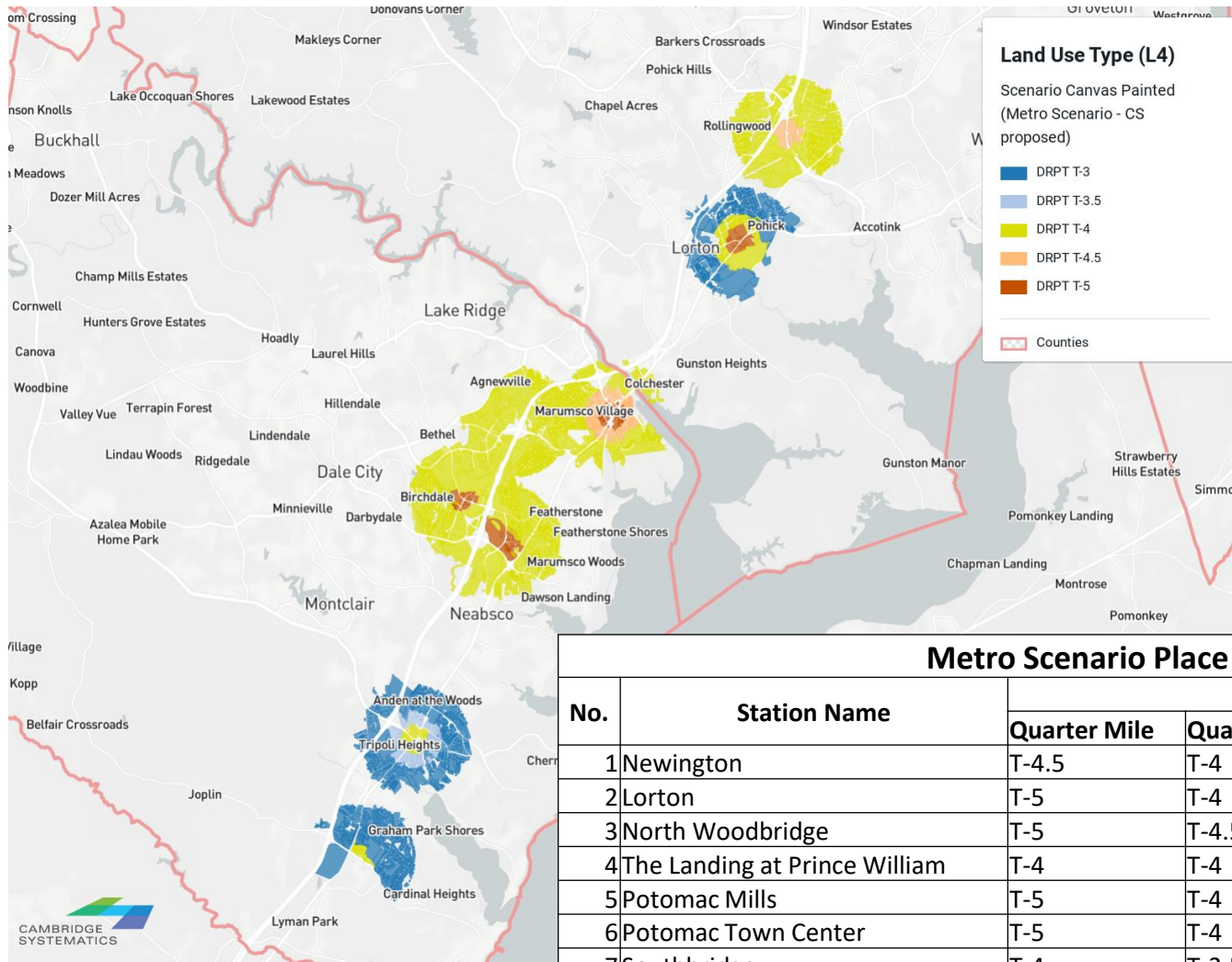
Density Assumptions and Place Type

For each station area, identified current and planned (MWCOCG Forecasts) place types based on activity density



MULTIMODAL CENTER INTENSITY			
Center Type	Activity Density (Jobs + people/acre)	Gross Development FAR (residential + non-residential)	Net Development FAR (residential + non-residential)
P-6 Urban Core	70.0 or more	1.0 or more	1.6 or more
P-5 Urban Center	33.75 to 70.0	0.5 to 1.0	0.8 to 1.6
P-4 Large Town or Suburban Center	13.75 to 33.75	0.21 to 0.5	0.3 to 0.8
P-3 Medium Town or Suburban Center	6.63 to 13.75	0.10 to 0.21	0.15 to 0.3
P-2 Small Town or Suburban Center	2.13 to 6.63	0.03 to 0.10	0.05 to 0.15
P-1 Rural or Village Center	2.13 or less	0.03 or less	0.05 or less
SP Special Purpose Center	Varies	Varies	Varies

Land Use Assumptions - Metrorail Scenario



To develop the land use scenarios, more intense place types were assumed within 1 mile of station areas.

Metro Scenario Place Types				
No.	Station Name	Place Type		
		Quarter Mile	Quarter to Half Mile	Half to One Mile
1	Newington	T-4.5	T-4	T-4
2	Lorton	T-5	T-4	T-3
3	North Woodbridge	T-5	T-4.5	T-4
4	The Landing at Prince William	T-4	T-4	T-4
5	Potomac Mills	T-5	T-4	T-4
6	Potomac Town Center	T-5	T-4	T-4
7	Southbridge	T-4	T-3.5	T-3
8	Triangle	T-4	T-3	T-3

Metrorail Scenario by Station

Station Name	Increase in Population	% Population Increase	Increase in Jobs	% Jobs Increase	Activity Density (pop+emp / acres)
Newington	43,900	346%	2,600	9%	14.3
Lorton	11,600	63%	2,900	48%	20.6
North Woodbridge	18,900	67%	12,400	218%	27
The Landing at Prince William	25,500	97%	11,800	118%	28.6
Potomac Mills	22,500	146%	6,700	45%	28
Potomac Town Center	29,100	105%	12,700	120%	25.7
Southbridge	8,000	28%	5,600	88%	12.2
Triangle	2,200	19%	3,700	285%	8.8
Yellow Total	117,800	76%	55,800	102%	
Blue Total	161,700	96%	58,400	70%	