Springfield to Quantico Enhanced Public Transportation Feasibility Study

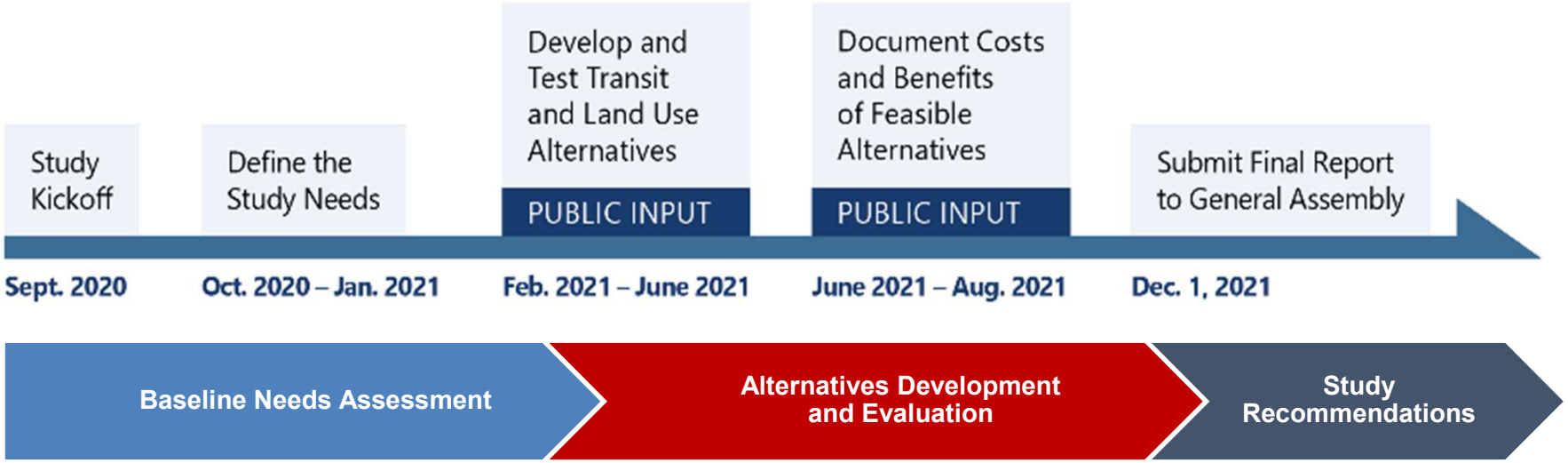
Technical Advisory Committee Meeting #8
July 1, 2021

Virginia Department of Rail and Public Transportation

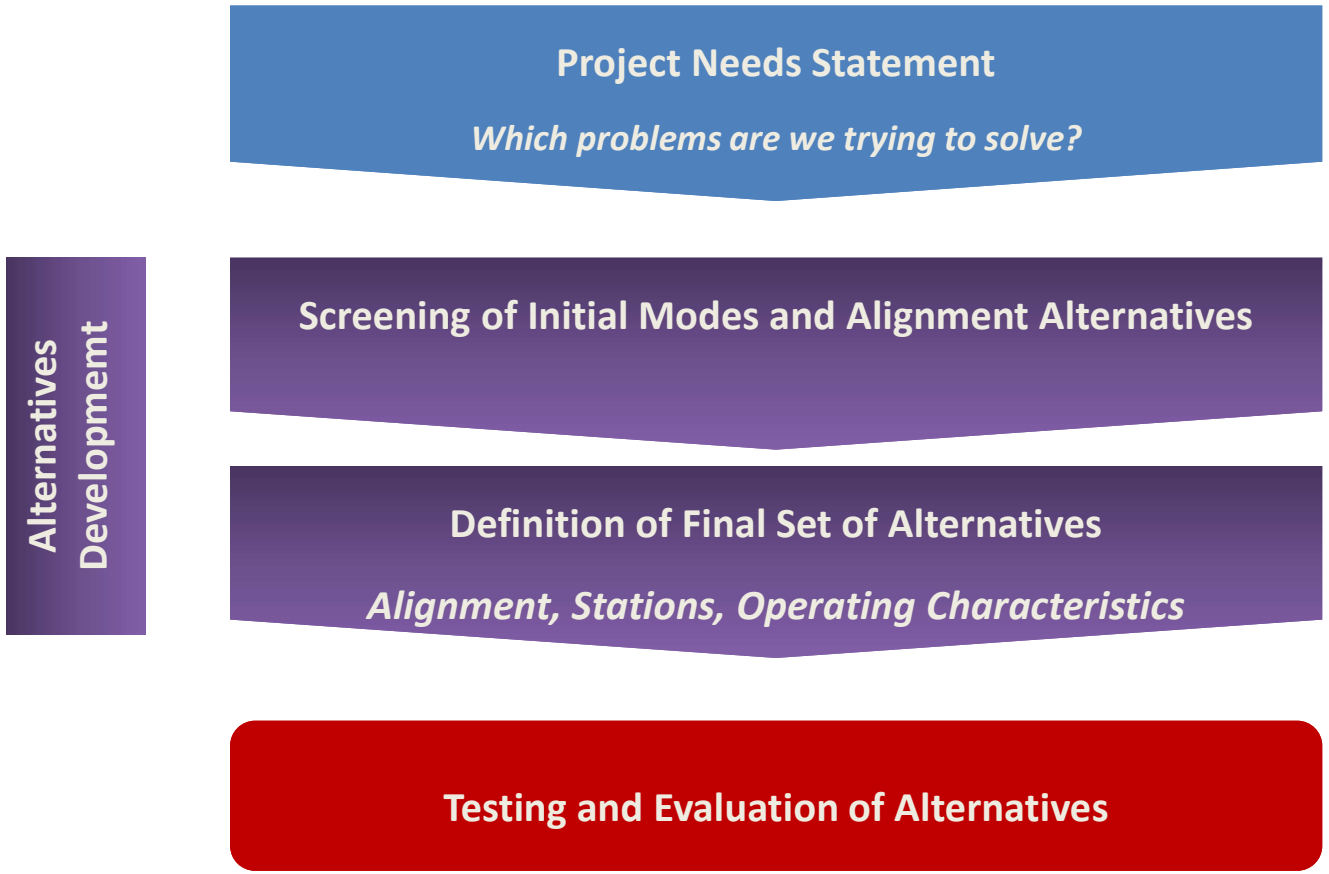
Meeting Agenda

- Introductions / Welcome
- Public and Stakeholder Outreach Status
- Land Use Assessment Update
- Initial Evaluation Results
- Next Steps – Future TAC Meetings

Study Schedule



Transit Alternatives Development



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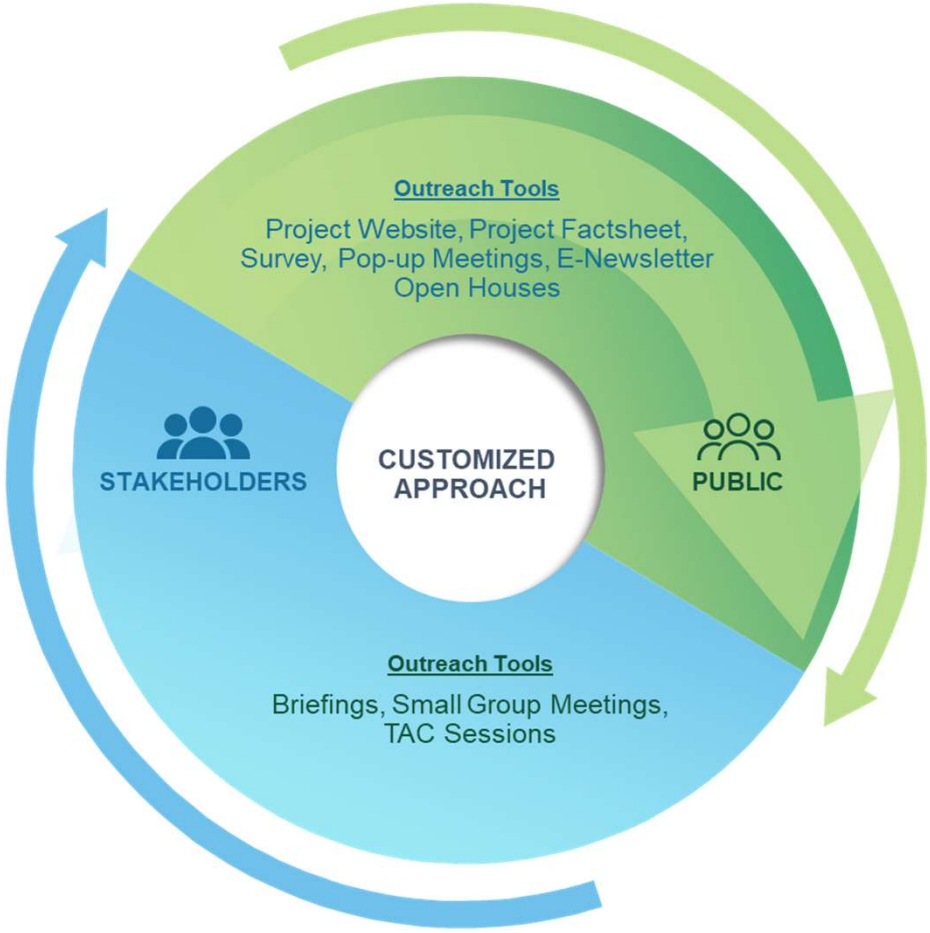
Public and Stakeholder Outreach

Outreach Status

- Completed Activities
  - On-Line Survey
  - Virtual Public Meeting (May 4)
  - Elected Official Briefing (June 16)
- Upcoming Activities
  - 2nd Public Meeting – Tuesday, July 27th (virtual)
  - 3rd Round Public Meeting(s) - September



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

Survey Results

- Survey objectives: gain an understanding of 1) regional and local corridor use both pre-and post-pandemic, 2) travel behavior, and 3) how different transit alternatives could best serve the needs of corridor users.

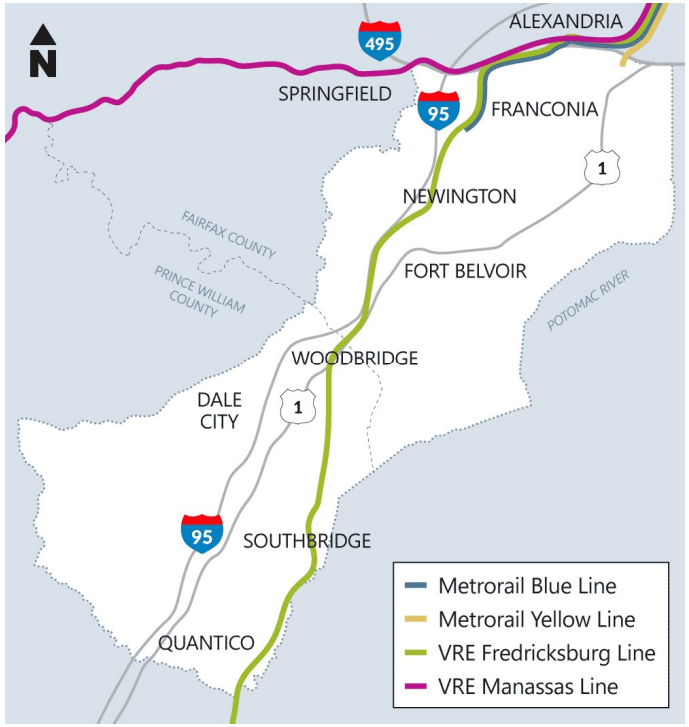
SURVEY PERIOD

April 19 to
May 18, 2021

NUMBER OF RESPONDENTS

1,352
people took the survey

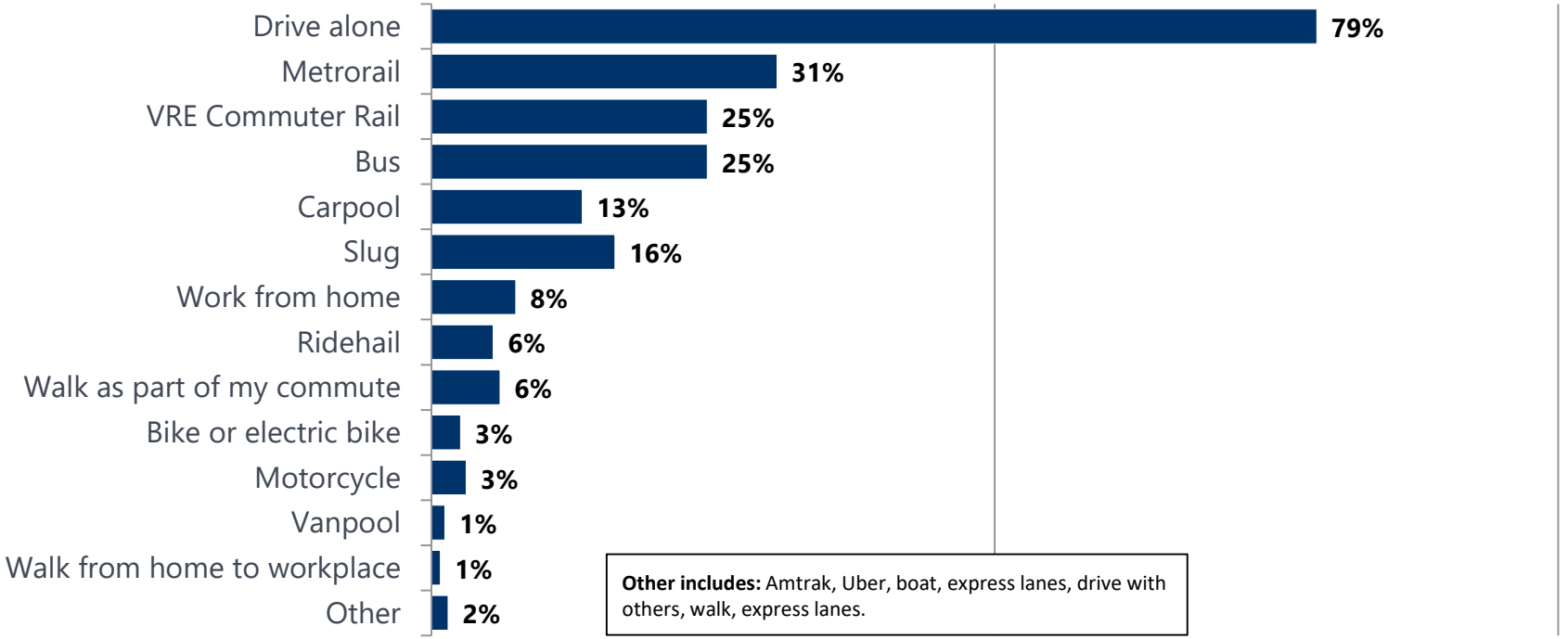
54% of respondents live in Prince William County
32% of respondents live in Fairfax County



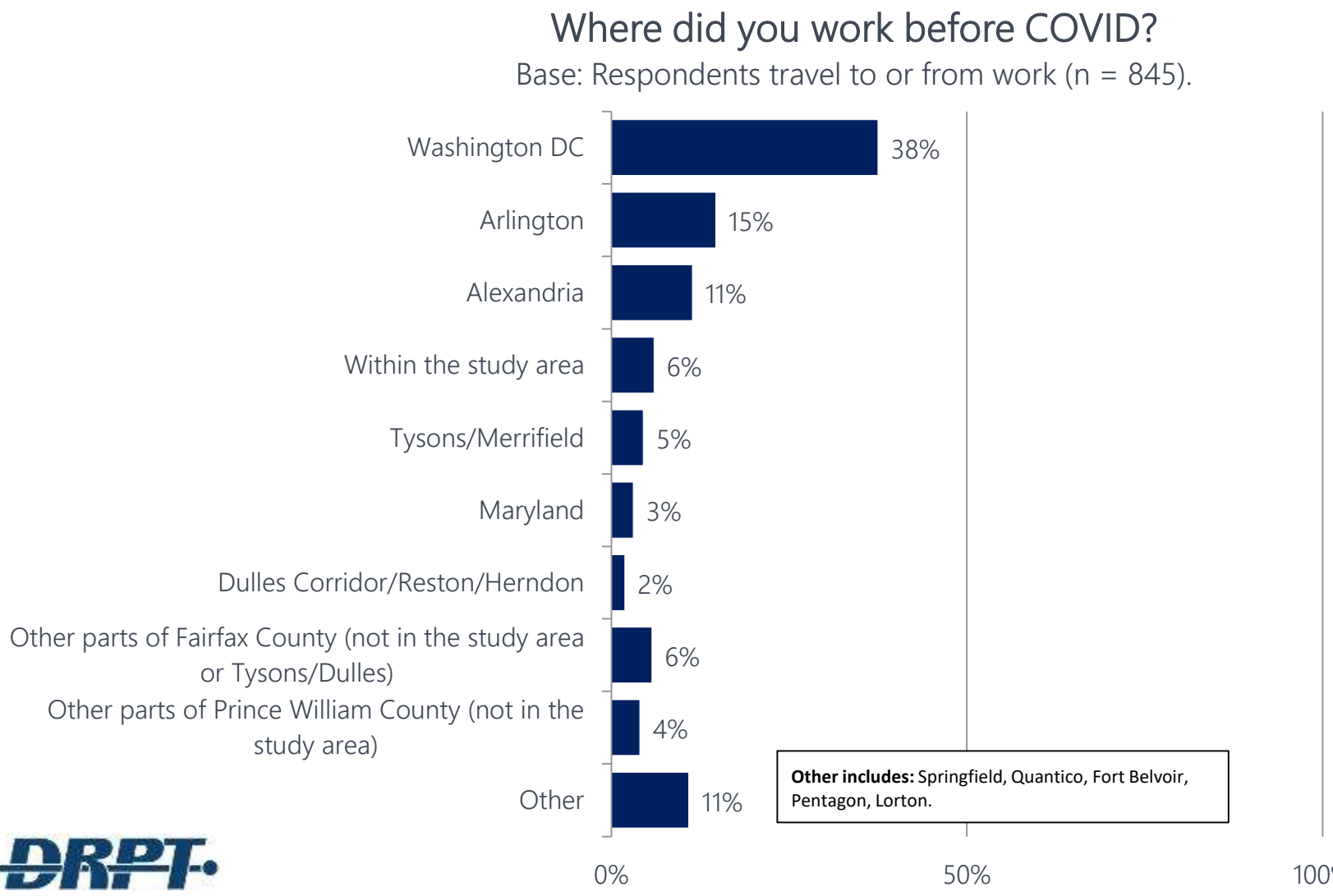
Drive alone, Metrorail, VRE Commuter Rail, and bus are the most common travel modes for work commutes before the pandemic.

Please tell us how you typically traveled anywhere along the study corridor for your work commute before COVID

Base: Respondents travel to or from work (n = 889). Percentages sum to more than 100%.



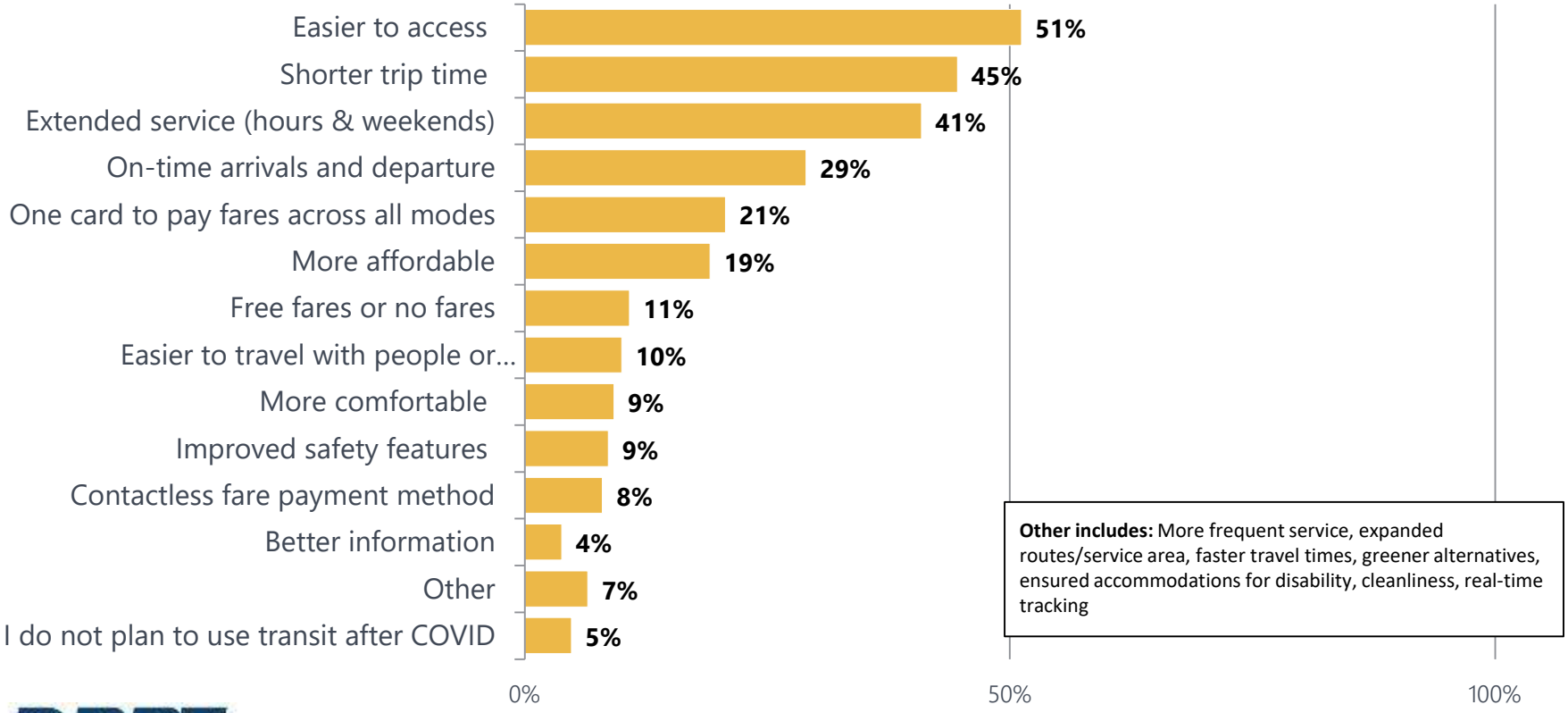
Over a third (38%) commuted to Washington D.C. for work before COVID.



Easier access, shorter trip time, and extended service time are the top motivators for using public transit.

What are the top three features that would motivate you to use (or use more often) public transit for your trips along the study corridor when things return to normal after COVID?

Base: all respondents (n = 1,184). Percentages sum to more than 100%.

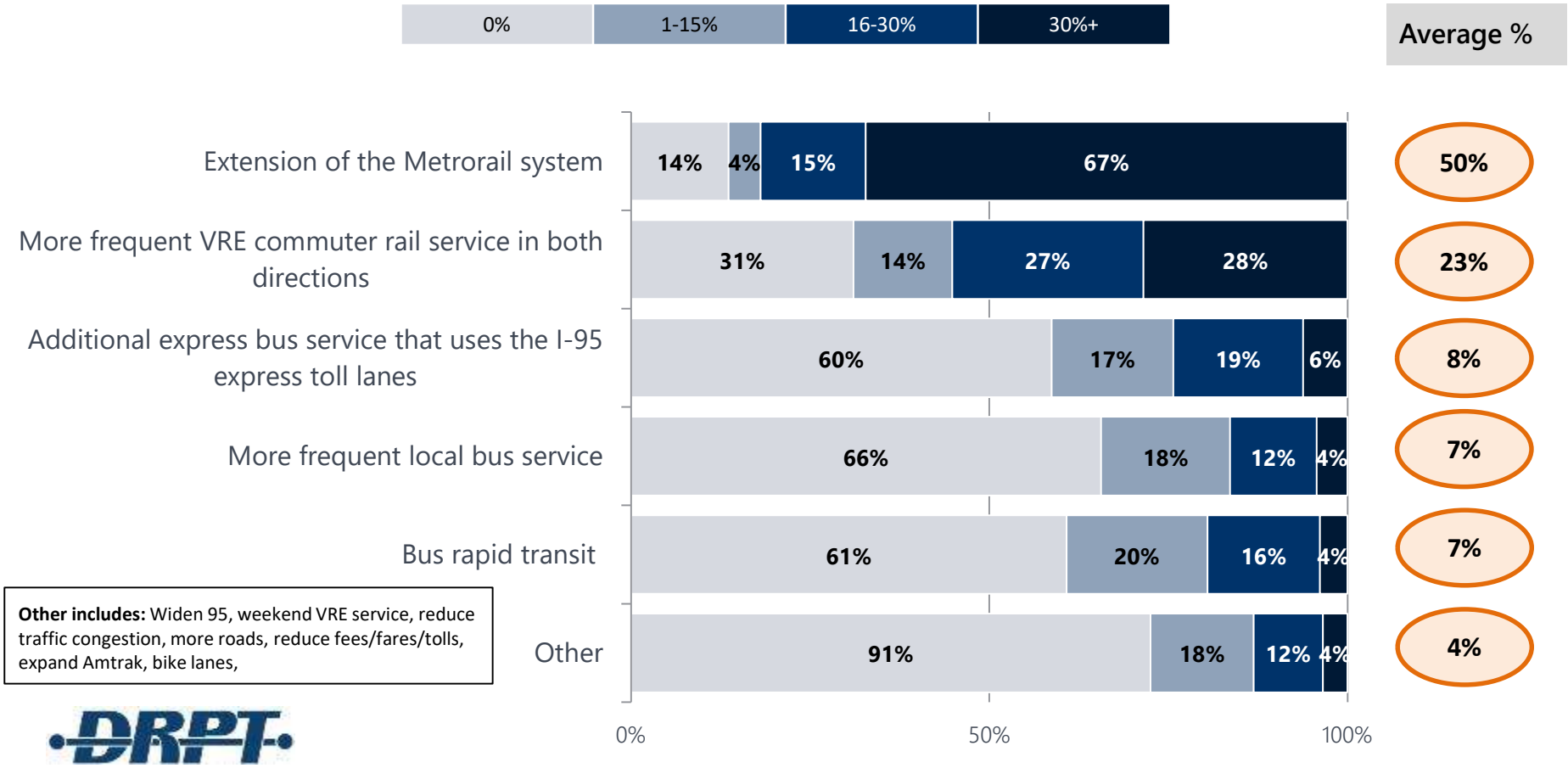


Other includes: More frequent service, expanded routes/service area, faster travel times, greener alternatives, ensured accommodations for disability, cleanliness, real-time tracking

When balancing trade-offs in funding, respondents favor extending the Metrorail system more than any other transportation improvement.

Let's imagine you could allocate the budget for transportation improvements in the study corridor. What percent should be spent on the following enhanced transit options?

Base: all respondents (n = 1,117).



Other includes: Widen 95, weekend VRE service, reduce traffic congestion, more roads, reduce fees/fares/tolls, expand Amtrak, bike lanes,

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A majority (61%-81%) expect to use the corridor for commuting to work, regardless of preferred type of transit improvement.

For your preferred type of enhanced transit _____, what do you expect would be the purpose of your trips along the study corridor during weekdays?

Base: all respondents.

	Extension of the Metrorail system (n = 680)	More frequent VRE commuter rail service in both directions (n = 225)	Additional express bus service that uses the I-95 express toll lanes (n = 58)	More frequent local bus service (n = 48)	Bus rapid transit (n = 38)	Other (n = 62)
Travel to or from work	66%	61%	81%	65%	66%	66%
Recreational activities	56%	53%	12%	46%	29%	42%
Errands/shopping	44%	37%	12%	52%	32%	40%
Visit family or friends	33%	35%	9%	27%	13%	35%
Medical appointments	27%	17%	16%	40%	26%	24%
Non-commute work-related travel	25%	26%	9%	27%	18%	18%
Travel to or from school	8%	6%	7%	4%	5%	3%
Other	4%	3%	10%	10%	5%	13%

Other includes: work, volunteering, traveling to airport, community/cultural/religious events, entertainment/leisure

Franconia/Springfield/Newington, Woodbridge, and Potomac Mills are the most expected destinations within the study area.

For your preferred type of enhanced transit _____, what do you expect would be your most likely destinations <u>within the study area</u>?

Base: all respondents.

	Extension of the Metrorail system *(n = 680)*	More frequent VRE commuter rail service in both directions *(n = 225)*	Additional express bus service that uses the I-95 express toll lanes *(n = 58)*	More frequent local bus service *(n = 48)*	Bus rapid transit *(n = 38)*	Other *(n = 62)*
Franconia/Springfield/Newington	48%	46%	53%	52%	41%	41%
Woodbridge	45%	33%	41%	54%	35%	41%
Potomac Mills	48%	33%	22%	60%	24%	26%
Fort Belvoir	29%	21%	33%	29%	24%	25%
Dumfries	32%	26%	22%	27%	21%	23%
Quantico Marine Base	32%	22%	19%	25%	15%	28%
Lorton	28%	19%	16%	27%	18%	21%
Lake Ridge	19%	9%	22%	27%	18%	13%
Dale City	18%	10%	14%	23%	21%	13%
Mount Vernon/Hybla Valley	20%	11%	5%	21%	15%	20%
Triangle	11%	7%	10%	21%	9%	10%
Other	4%	7%	14%	4%	15%	21%

Other includes: Stafford, Rippon, Potomac shores, Occoquan, Fredericksburg, Alexandria

Washington D.C. is the most expected destination outside the study area.

For your preferred type of enhanced transit _____, what do you expect would be your most likely destinations outside of the study area?

Base: all respondents.

	Extension of the Metrorail system (n = 680)	More frequent VRE commuter rail service in both directions (n = 225)	Additional express bus service that uses the I-95 express toll lanes (n = 58)	More frequent local bus service (n = 48)	Bus rapid transit (n = 38)	Other (n = 62)
Washington DC	78%	77%	66%	58%	56%	59%
Alexandria	49%	48%	19%	54%	35%	34%
Arlington	39%	39%	24%	44%	21%	26%
Pentagon	26%	16%	40%	23%	32%	11%
Tysons/Merrifield	34%	22%	17%	29%	24%	21%
Dulles Corridor/Reston/Herndon	28%	22%	17%	13%	12%	18%
Other parts of Prince William County	18%	9%	9%	31%	24%	16%
Other parts of Fairfax County	18%	12%	9%	23%	18%	16%
Maryland	15%	9%	5%	8%	6%	11%
Mark Center	9%	4%	16%	8%	9%	7%
Other	2%	10%	3%	6%	9%	11%

Other includes: Richmond, Fredericksburg, Stafford, airport, Spotsylvania

Land Use Assessment Update

Assessing Land Use Compatibility for Potential Metrorail Extension

- Existing population and employment densities around some of the potential Metro stations is already higher than some of the existing Metro stations.
- TOD planning can enhance feasibility and performance of Metro extension alternatives.
- Difficult to identify a specific threshold related to ridership or population/employment density to assess feasibility of Metro extension alternatives given the wide range of ridership and densities around existing Metro stations.
- Metro extension alternatives are longer than existing lines in the system.

Comparative Study: Existing Stations

Existing population and employment densities around some of the potential Metro stations is already equal or higher than some of the existing Metro stations in the system

Station	Average Weekday Boardings (2019)	Population Density (1 Mile Radius) (People/Acre)	Employment Density (1 Mile Radius) (Jobs/Acre)	Activity Density (1 Mile Radius) (People + Jobs/Acre)
Fort Belvoir	N/A	2.4	0.7	3.1
Triangle**	N/A	2.6	0.5	3.1 (6.7 – 18.0)**
Southbridge	N/A	4.2	0.9	5.1
Fort Belvoir North	N/A	4	2.4	6.4
Congress Heights	2,503	6.3	0.4	6.8
Branch Ave*	5,496	5.5	1.5	7.0
North Woodbridge**	N/A	6	1.3	7.3 (26.7 – 40.0)**
Addison Road-Seat Pleasant	2,788	6.8	0.6	7.4
Cheverly	1,029	5.1	2.7	7.8
Morgan Boulevard	1,832	6.2	1.6	7.8
Lorton**	N/A	6.8	1.5	8.3
Deanwood	1,474	5.4	3.1	8.5
Van Dorn Street	2,038	7.4	1.8	9.2
Suitland	4,593	6.6	2.8	9.4
Newington	N/A	3.9	5.7	9.6
The Landing at Prince William**	N/A	7.1	2.5	9.6 (11.0 – 23.0)**
Largo Town Center*	4,147	5.4	4.3	9.7
Potomac Mills	N/A	4.4	5.9	10.3
Naylor Road	2,423	7.7	3	10.7
Potomac Town Center	N/A	6.8	4	10.8
Franconia-Springfield*	4,869	6.9	4.9	11.8
Landover	1,754	8.8	3.3	12.1
Beacon Hill Road**	N/A	10.6	1.8	12.4
Shady Grove*	11,480	6.3	6.5	12.8
Hybla Valley**	N/A	12.4	2.1	14.5
Huntington*	5,320	13.2	2	15.2
Dunn Loring-Merrifield	3,970	8.1	8.5	16.6

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Potential Metro Stations

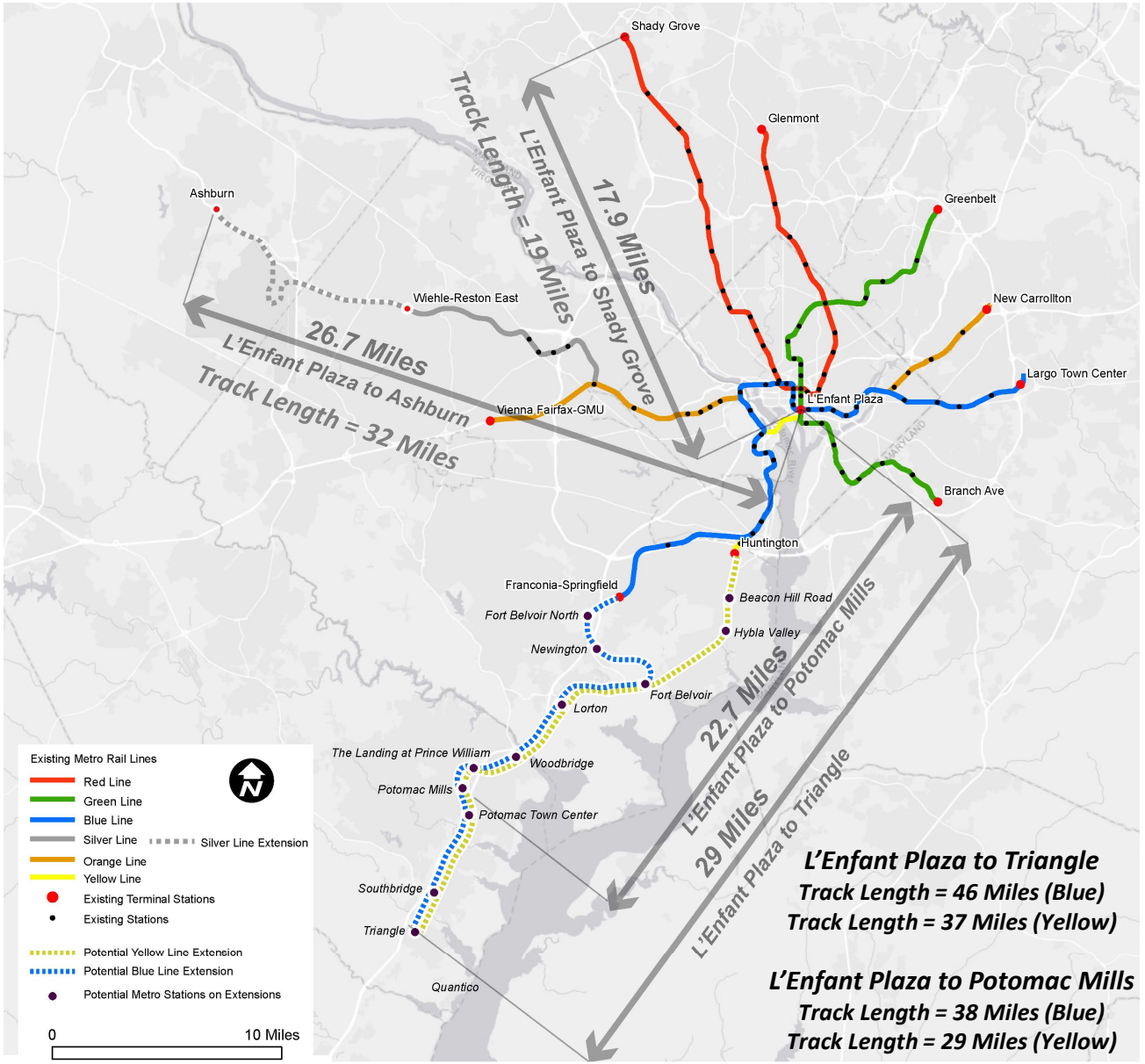
Existing Metro Stations

*Terminal Station

** Higher Density proposed in Small Area Plans

Comparative Study: Existing Stations

Metro extension alternatives are longer than existing lines in the system



DRPT Multimodal Center Intensity

TOD planning can enhance feasibility and performance of Metro extension alternatives.

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

Activity Center Comparison to Shortlist Station Areas

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	Equity Emphasis Area
1	Beacon Hill Road**	Fairfax County, VA	10.6	1.8	12.4	P4	Yes
2	Hybla Valley**	Fairfax County, VA	12.4	2.1	14.5	P4	Yes
3	Fort Belvoir	Fairfax County, VA	2.4	0.7	3.1	P-MB	Yes
4	Fort Belvoir North	Fairfax County, VA	4.0	2.4	6.4	P-MB	No
5	Newington	Fairfax County, VA	3.9	5.7	9.6	P4	No
6	Lorton**	Fairfax County, VA	6.8	1.5	8.3	P3	No
7	North Woodbridge**	Prince William County, VA	6.0	1.3	7.3 (26.7 – 40.0)**	P4	Yes
8	The Landing at Prince William**	Prince William County, VA	7.1	2.5	9.6 (11.0 – 23.0)**	P4	Yes
9	Potomac Mills	Prince William County, VA	4.4	5.9	10.3	P4	Yes
10	Potomac Town Center	Prince William County, VA	6.8	4.0	10.8	P3	Yes
11	Southbridge	Prince William County, VA	4.2	0.9	5.1	P3	Yes
12	Triangle**	Prince William County, VA	2.6	0.5	3.1 (6.7 – 18.0)**	P3	Yes
13	Lorton Station	Fairfax County, VA	8.5	1.7	10.2	P3	No
14	Rippon	Prince William County, VA	5.0	1.0	6.0	P3	No
15	Potomac Shores	Prince William County, VA	2.8	0.2	3.0	P3	No
16	Quantico	Prince William County, VA	1.5	0.7	2.1	P3	No
17	Dumfries	Prince William County, VA	4.4	1.5	5.8	P3	Yes
18	Leesylvania	Prince William County, VA	7.0	0.3	7.3	P3	Yes
19	Neabsco	Prince William County, VA	6.1	0.5	6.6	P3	Yes

** Higher Density proposed in Small Area Plans

Potential Metro/BRT Stations

VRE Stations

Potential BRT Stations

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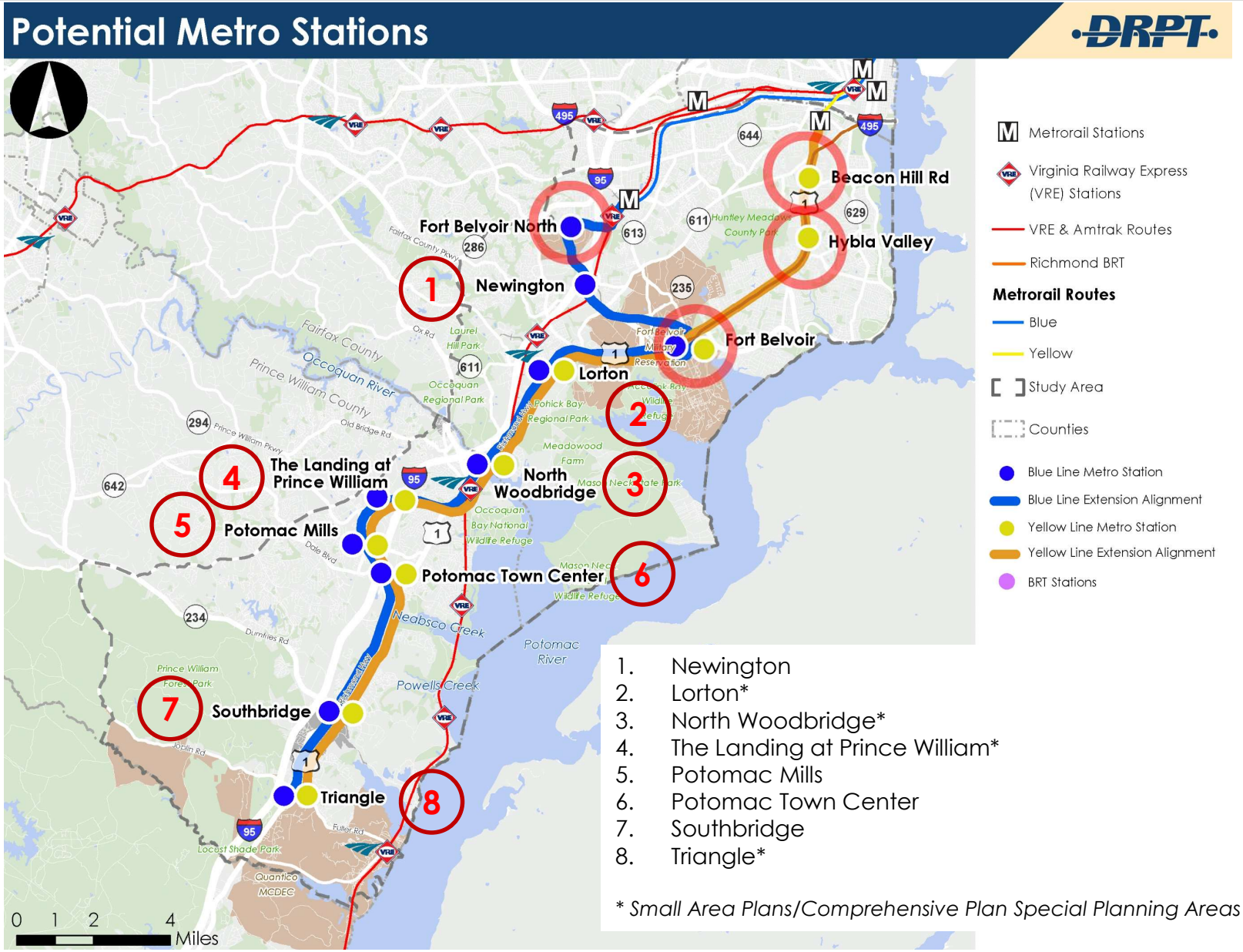
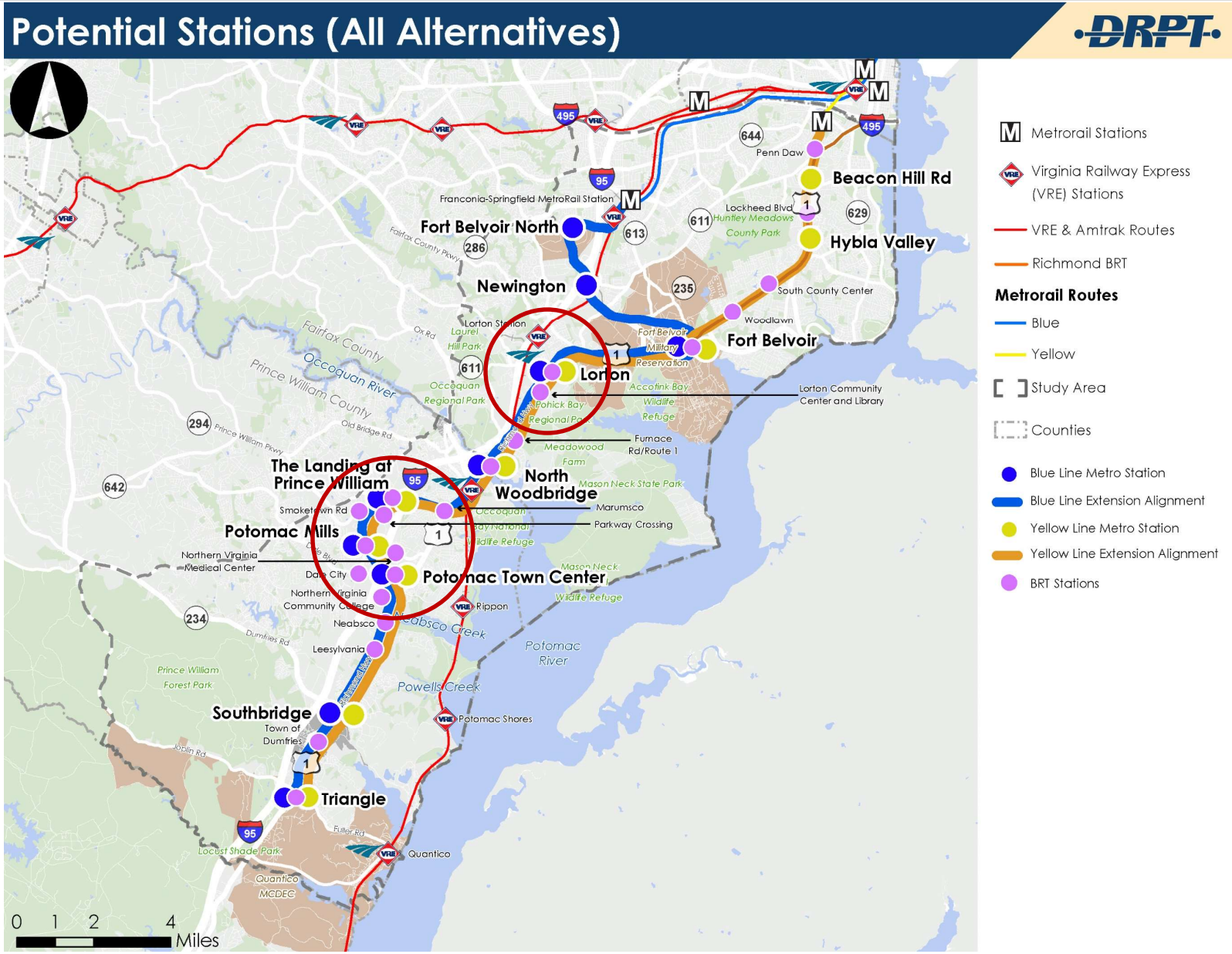
Recommended Station Areas for In-depth Analysis & Review



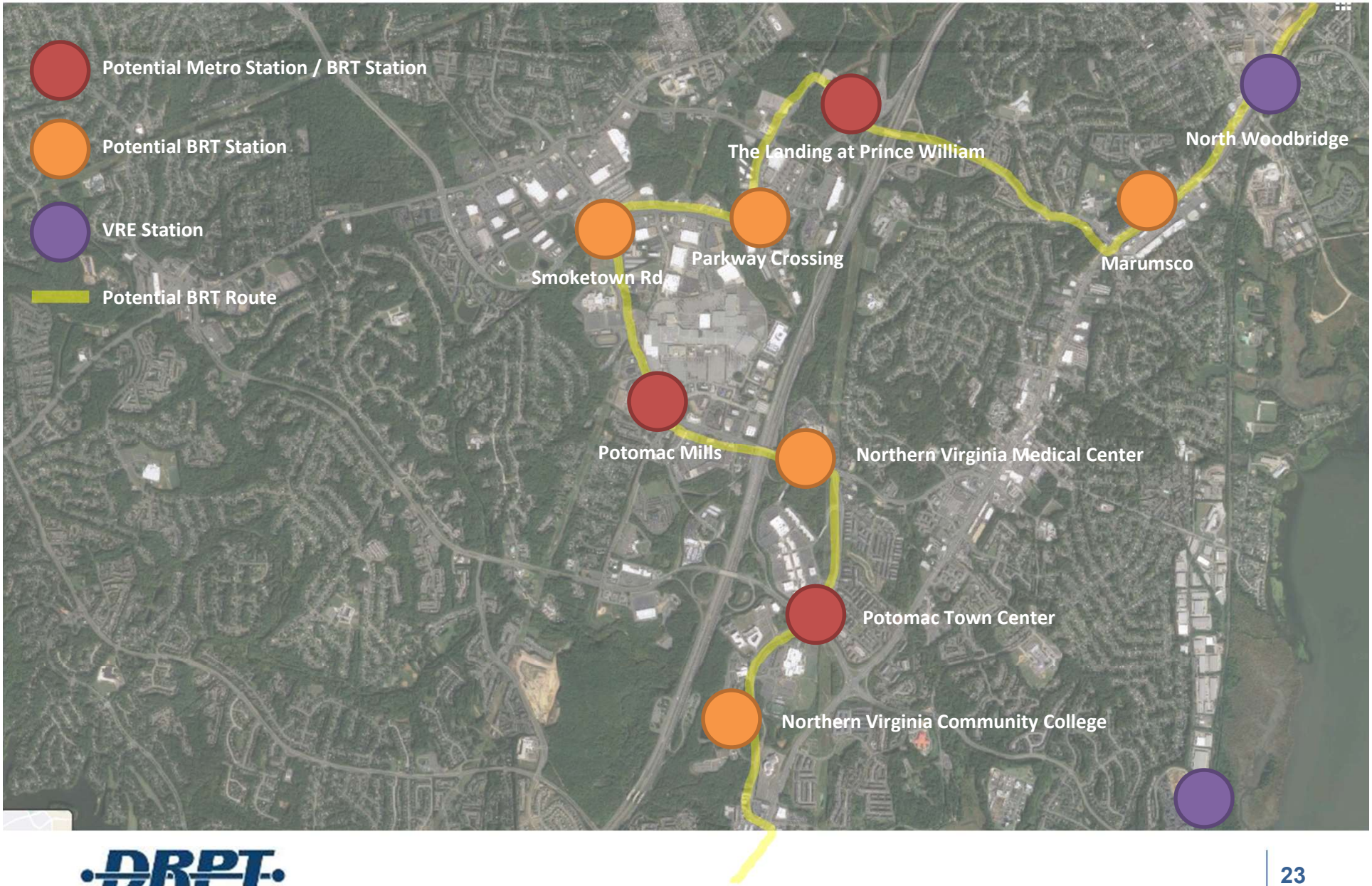
1. Newington
2. Lorton*
3. North Woodbridge*
4. The Landing at Prince William*
5. Potomac Mills
6. Potomac Town Center
7. Southbridge
8. Triangle*

** Small Area Plans/Comprehensive Plan Special Planning Areas*

A Different TOD Scale: Multimodal Districts



Potomac Mills Multimodal District



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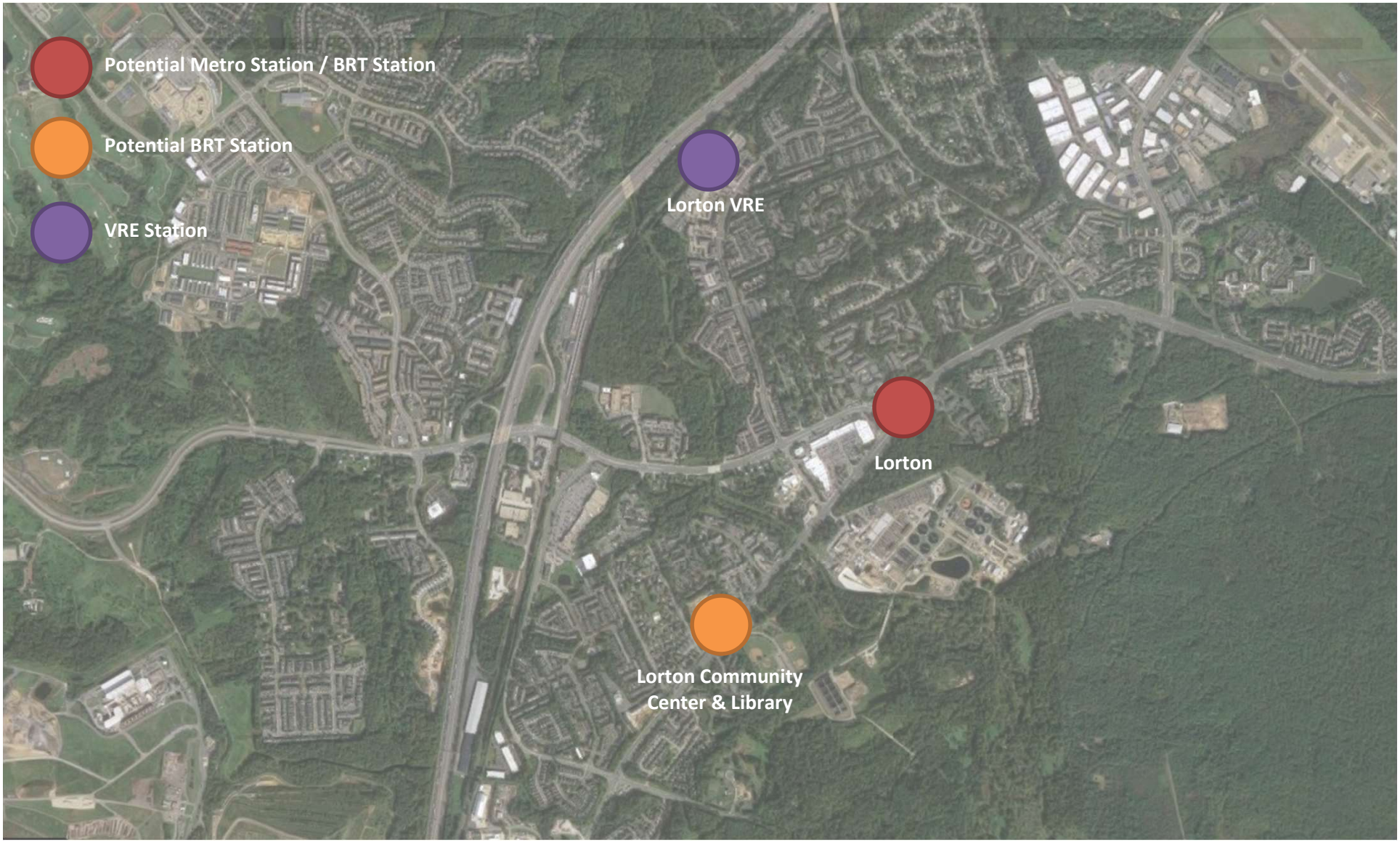
Lorton Multimodal District

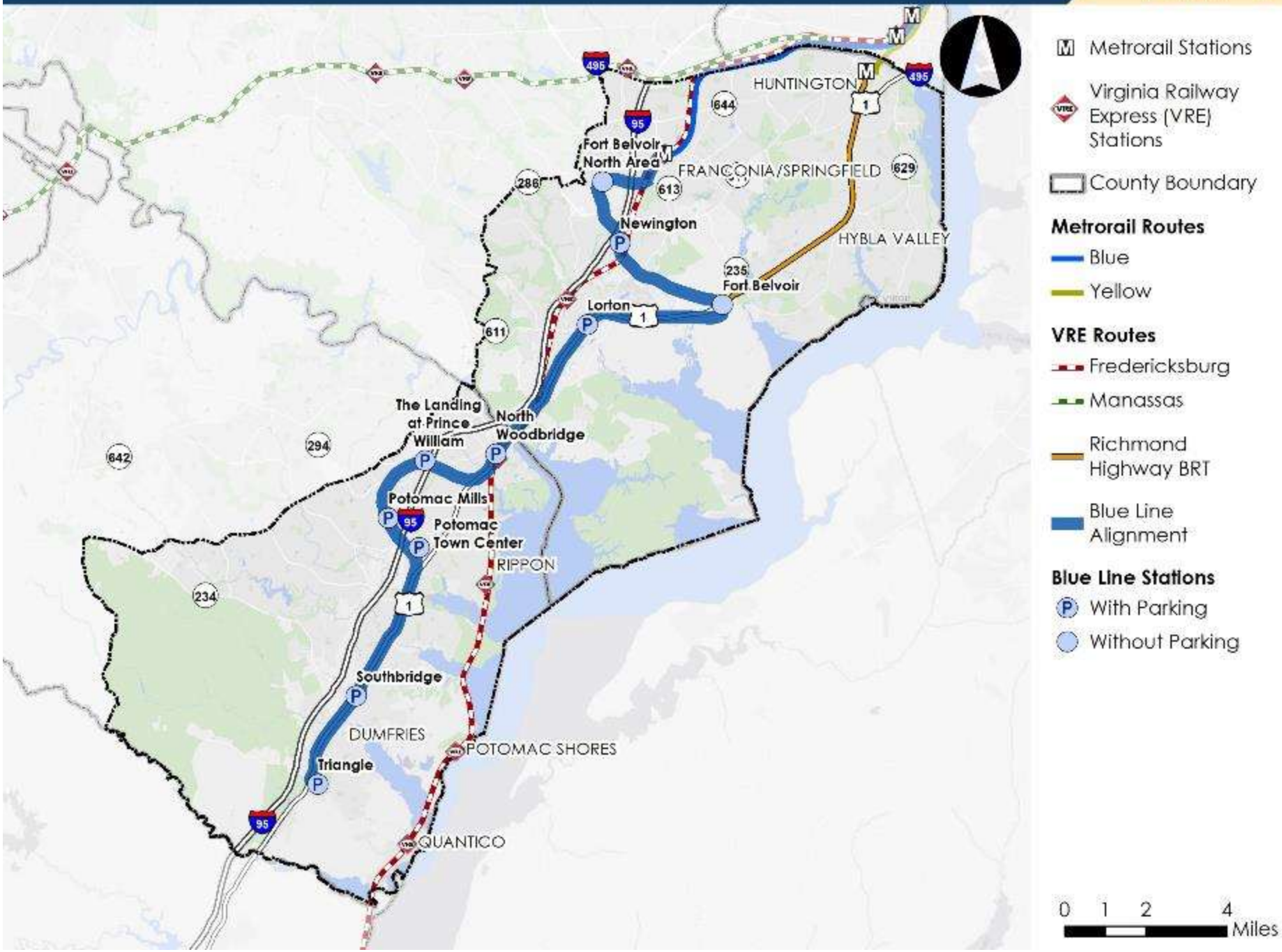


Land Use Assessment - Next Steps

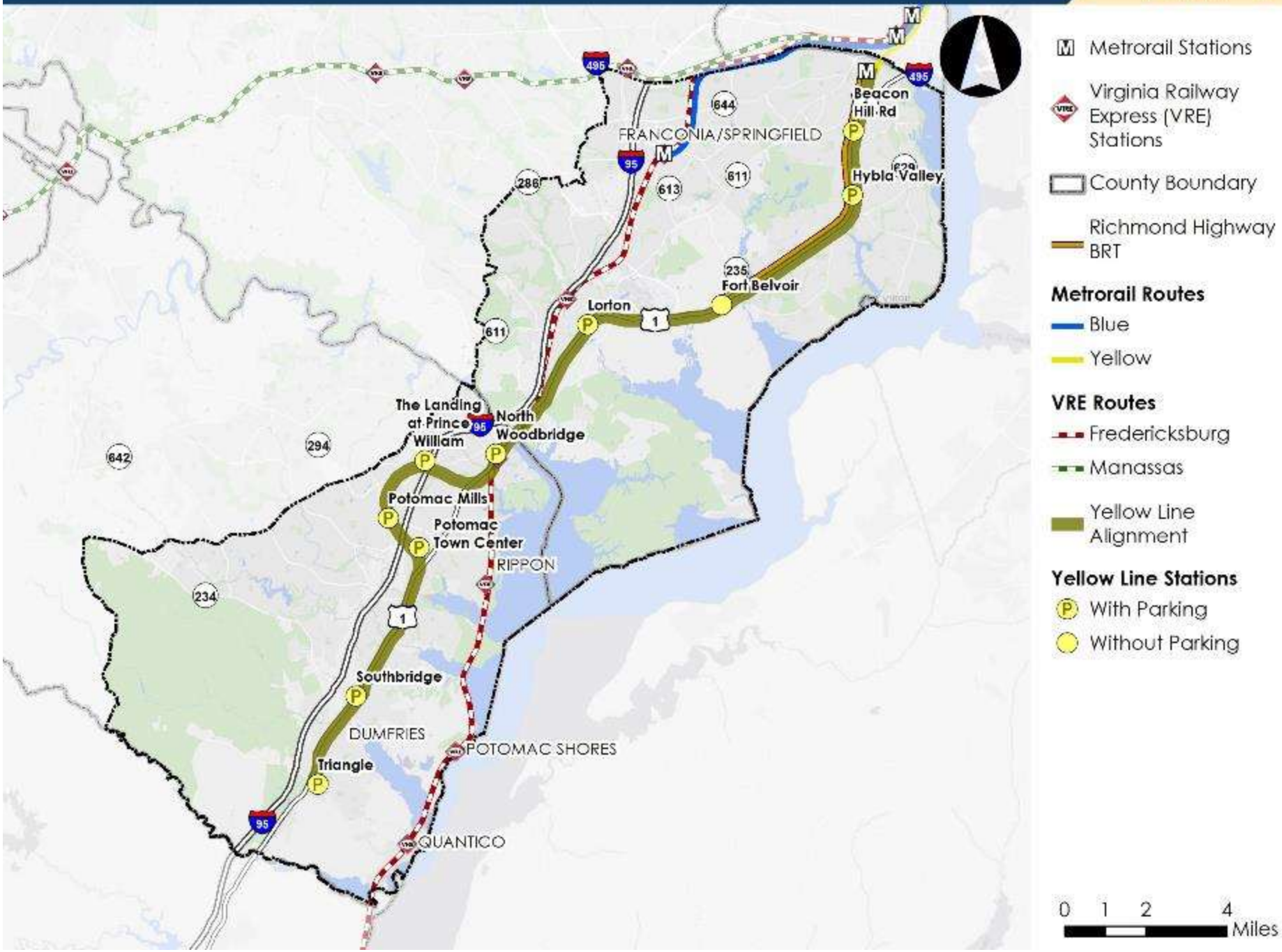
- Finalize selection of station areas for additional detailed analysis and review
- Develop land use density thresholds by place type for selected station areas
- Modeling and testing of land use scenarios
  - Urban Footprint analysis for land use yields and mix
- TOD guidance for selected station areas
  - TOD development and multimodal transportation guidance

Preliminary Evaluation Results

Blue Line Alternative



Yellow Line Alternative



BRT Alternative

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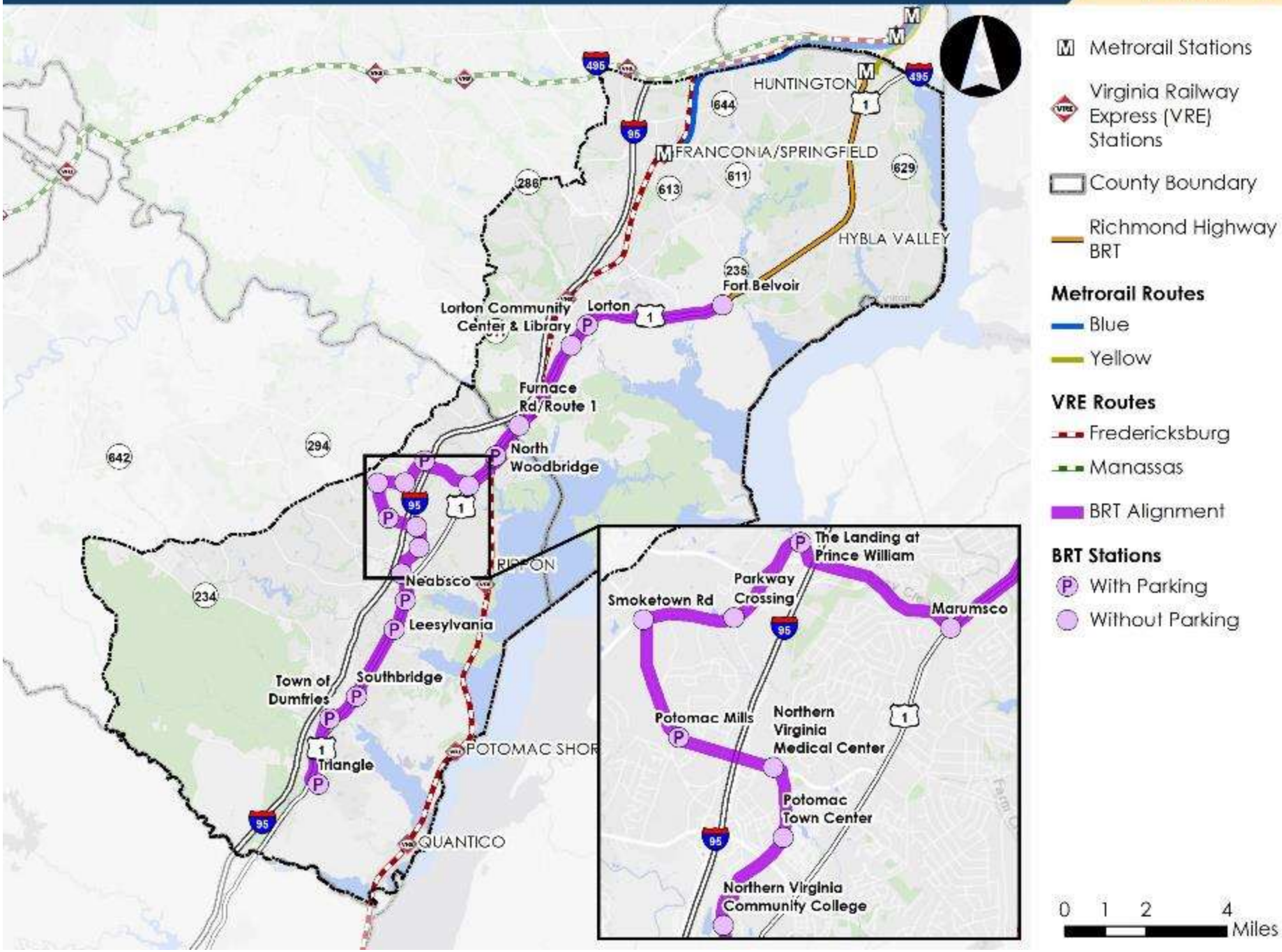

VRE Alternative

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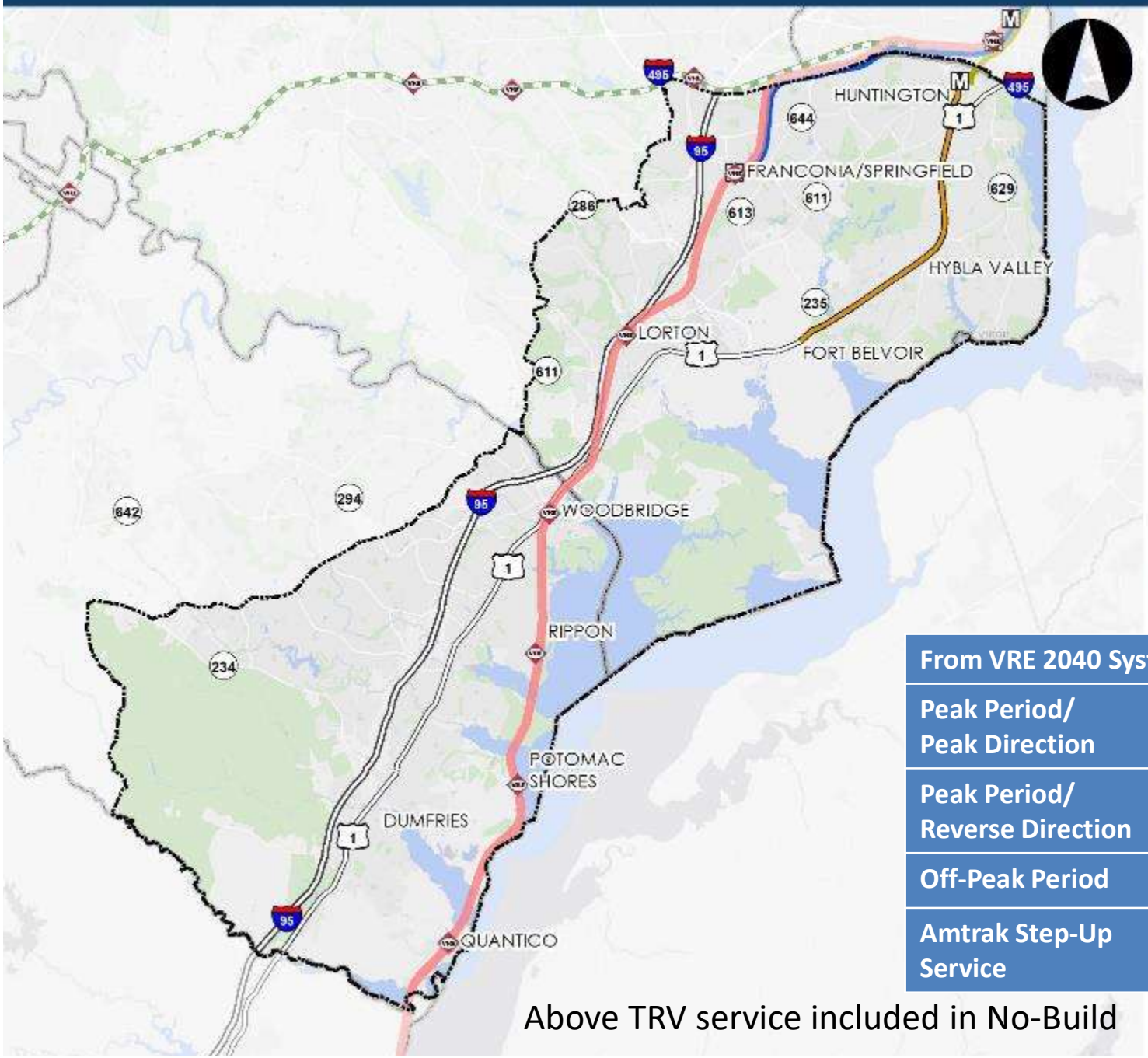


- Metrorail Stations
- Virginia Railway Express (VRE) Stations
- County Boundary
- Richmond Highway BRT

Metrorail Routes

- Blue
- Yellow

VRE Routes

- Manassas
- Increased Frequency along Existing VRE Alignment

From VRE 2040 System Plan	
Peak Period/ Peak Direction	15 mins
Peak Period/ Reverse Direction	30 mins
Off-Peak Period	60 mins
Amtrak Step-Up Service	60 mins peak period/ direction only

Above TRV service included in No-Build

0 1 2 4 Miles

Express Bus Alternative Additions

New Routes

Origins	Destinations
Lake Ridge	Old Town Alexandria via I-95
Dale City/Potomac Mills, Quantico	Tysons
Woodbridge	Reston
Woodbridge	Fairfax City
Woodbridge/Dale City/Quantico	Ft. Belvoir South

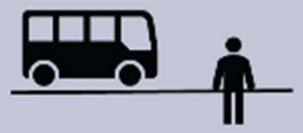
Improved Service on some existing Routes

Final Transit Alternatives for Testing

Alternative	New Stations	Peak Headway	Off-Peak Headway	Speed Assumptions
Metrorail – Blue Line Extension	Up to 9 Total (5 w/ parking)	8 min	12 min	35 mph (average)
Metrorail – Yellow Line Extension	Up to 9 Total (4 w/ parking)	8 min	12 min	35 mph (average)
Bus Rapid Transit	Up to 17 Total (7 w/ parking)	6 min	12 min	20-25 mph (average)
VRE Service Improvements (TRV service included in the Baseline)	n/a (Potomac Shores in Baseline)	15 min (pk dir); 30 min (off-pk dir)	60 min	Same as current
Express Bus Routes	n/a	30 min	60 min (Ft. Belvoir only)	Congested speed (also include HOT lane speed)

How will we evaluate 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

Total Transit Boardings in the Study Corridor

	Alternative					
	No-Build	Express Bus	BRT	VRE	Metrorail Blue	Metrorail Yellow
Fairfax Connector	21,600	23,400	20,200	21,500	19,300	20,400
Metrobus	7,800	7,300	7,800	7,800	8,200	8,000
PRTC	7,600	7,800	7,200	7,500	6,600	6,800
BRT	11,000	11,000	23,200	11,000	10,700	4,200
Metrorail	17,200	16,900	17,600	17,200	26,600	31,300
VRE	4,700	4,600	4,600	4,900	4,700	4,600
Total	69,900	71,000	80,600	69,900	76,100	75,300

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

DRAFT RESULTS – SUBJECT TO CHANGE

Transforming Rail Ridership Gains

- The majority of the ridership increase associated with Transforming Rail in Virginia improvements are included in the Baseline.

Existing VRE Boardings	No-Build VRE Boardings	VRE Alternative Boardings
2,600	4,700 (82% from existing)	4,900 (4% from No-Build)

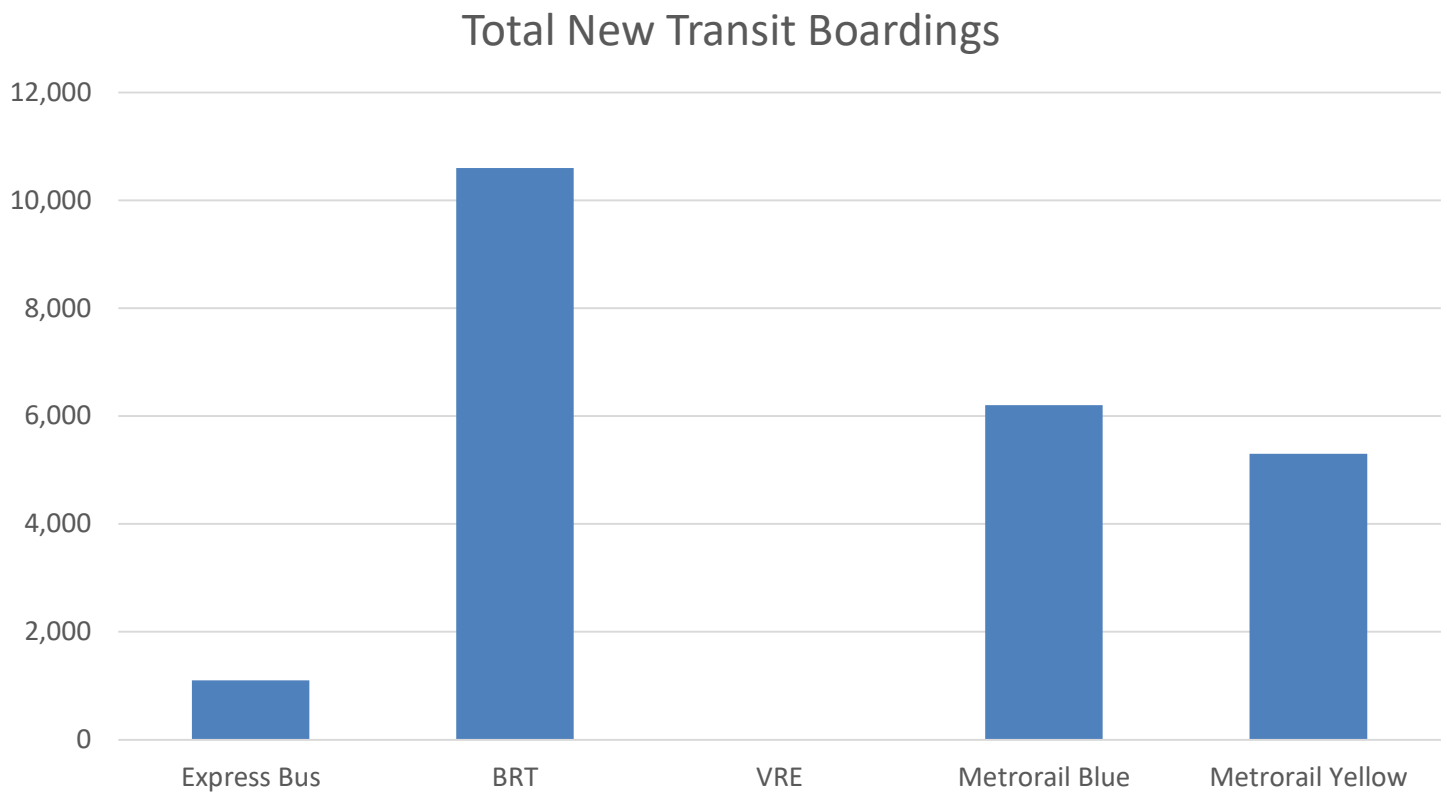
*Includes only rail stations in the Study Corridor. (Note: VRE alternative does not include new stations.)

DRAFT RESULTS – SUBJECT TO CHANGE

Ridership Potential

Increase transit usage in the study corridor

New Transit Boardings



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

New transit boardings in the Study Corridor as compared to the No-Build.

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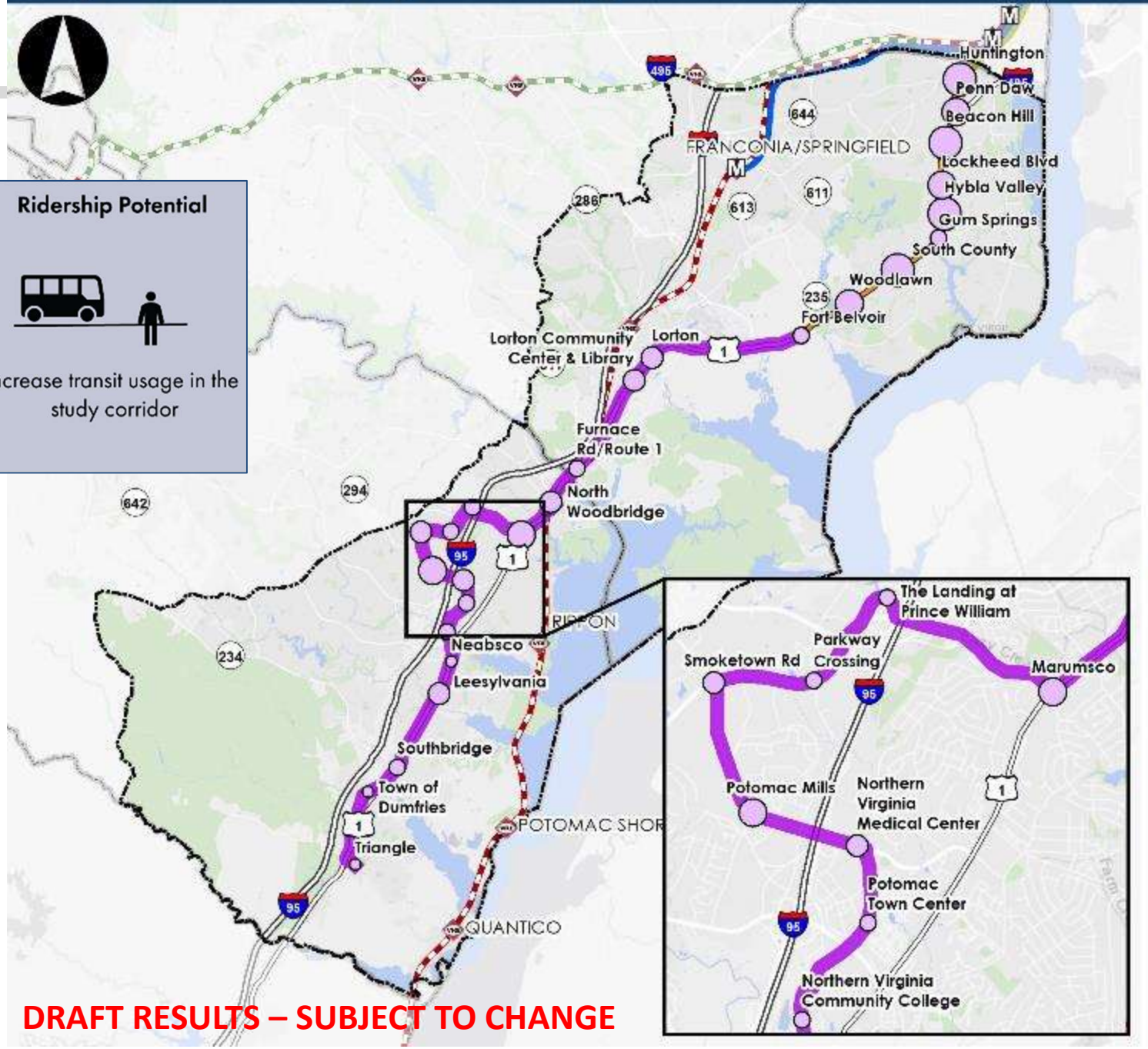
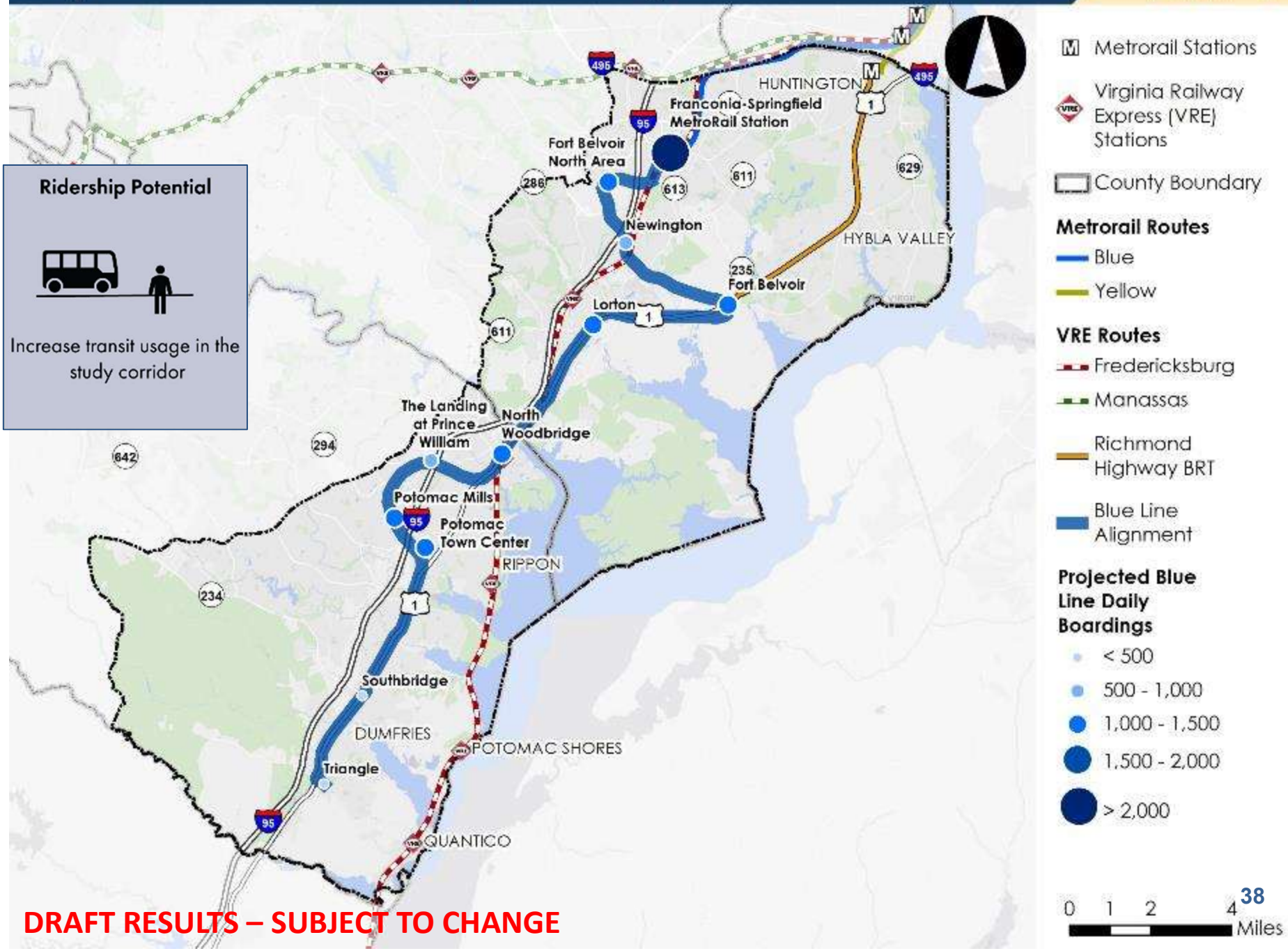
DRAFT RESULTS – SUBJECT TO CHANGE

Projected BRT Daily Boardings



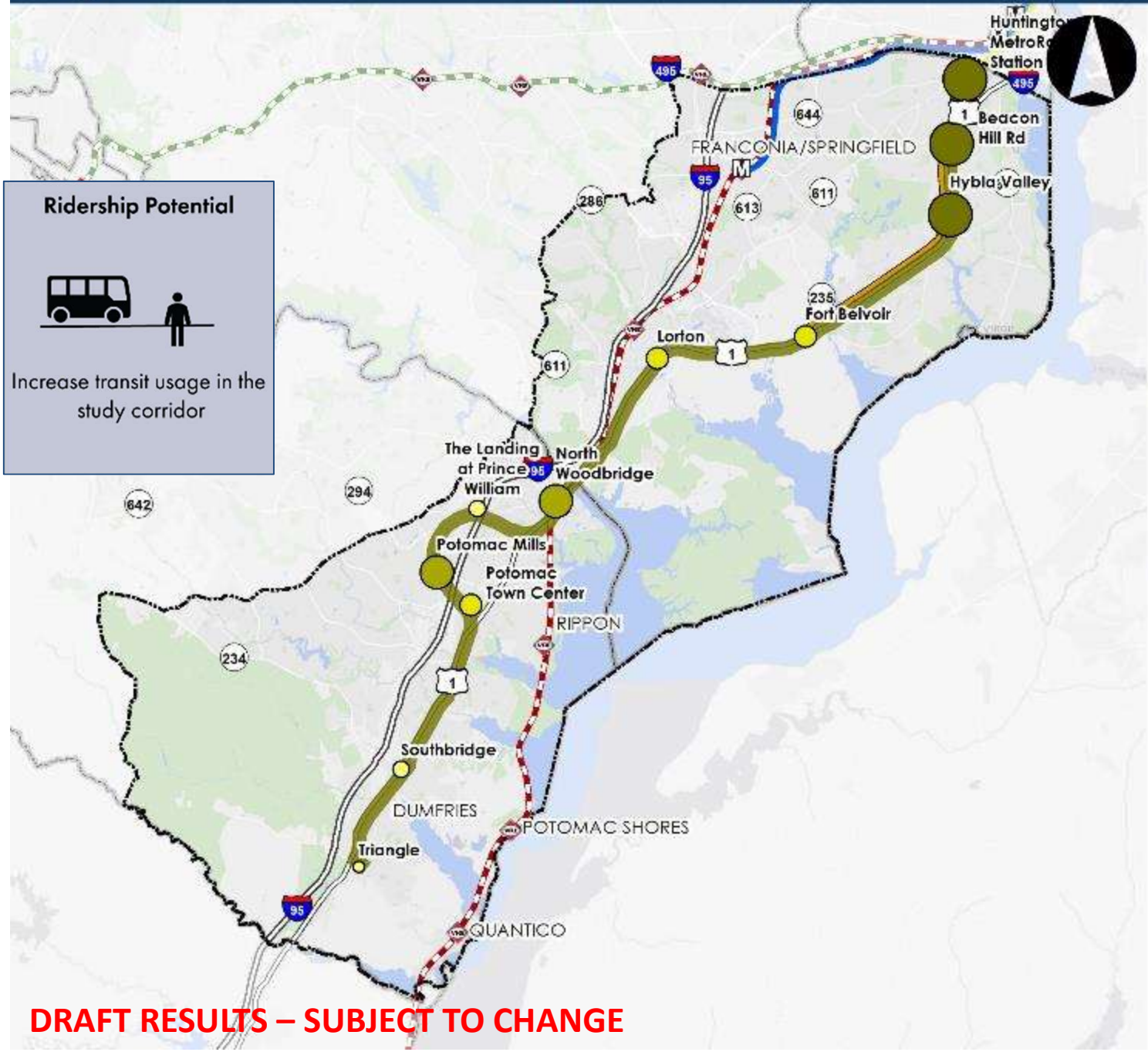
DRAFT RESULTS – SUBJECT TO CHANGE

Projected Blue Line Daily Boardings



DRAFT RESULTS – SUBJECT TO CHANGE

Projected Yellow Line Daily Boardings



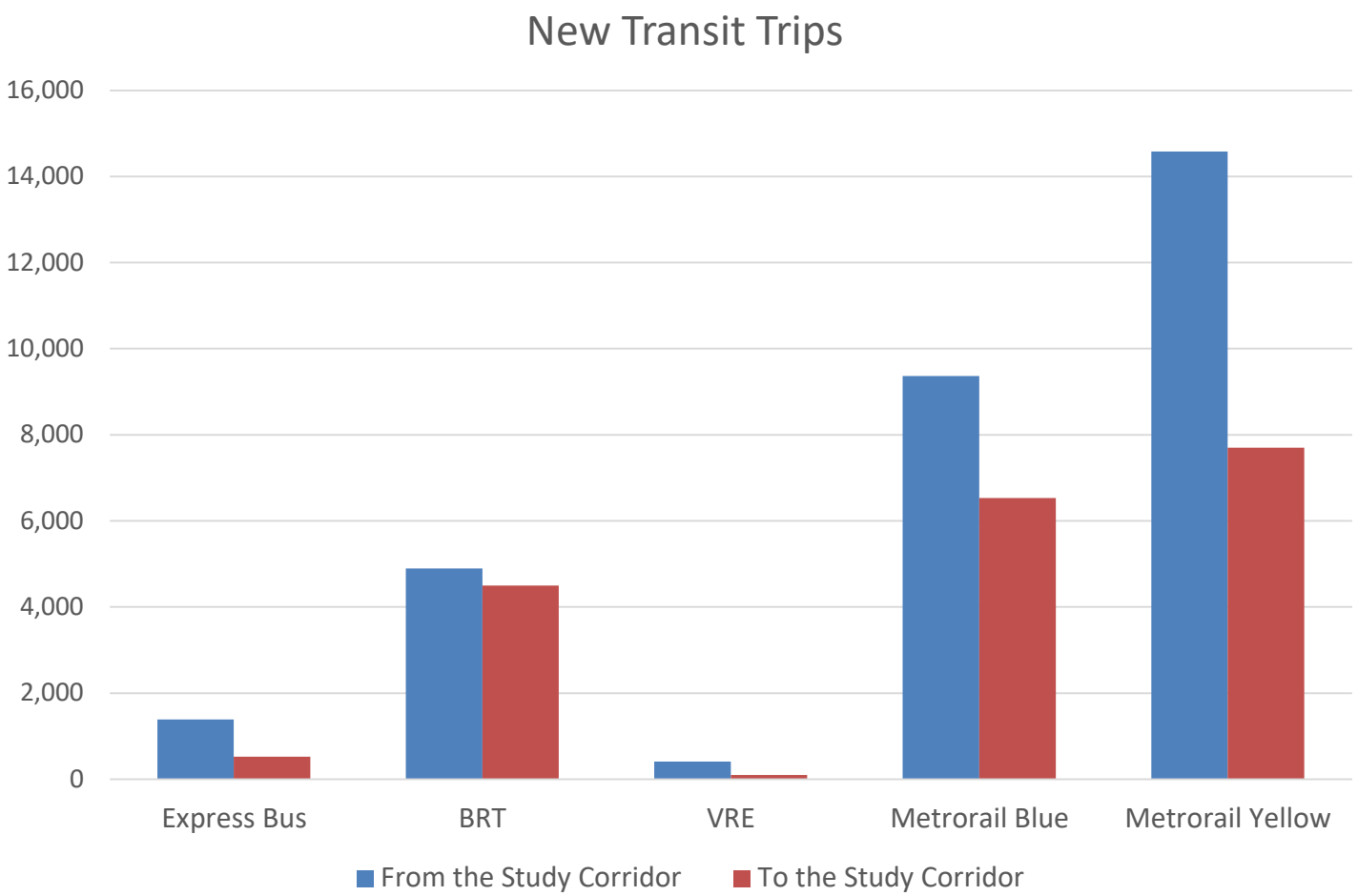
DRAFT RESULTS – SUBJECT TO CHANGE

Ridership Potential

Increase transit usage in the study corridor

New Transit Trips

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

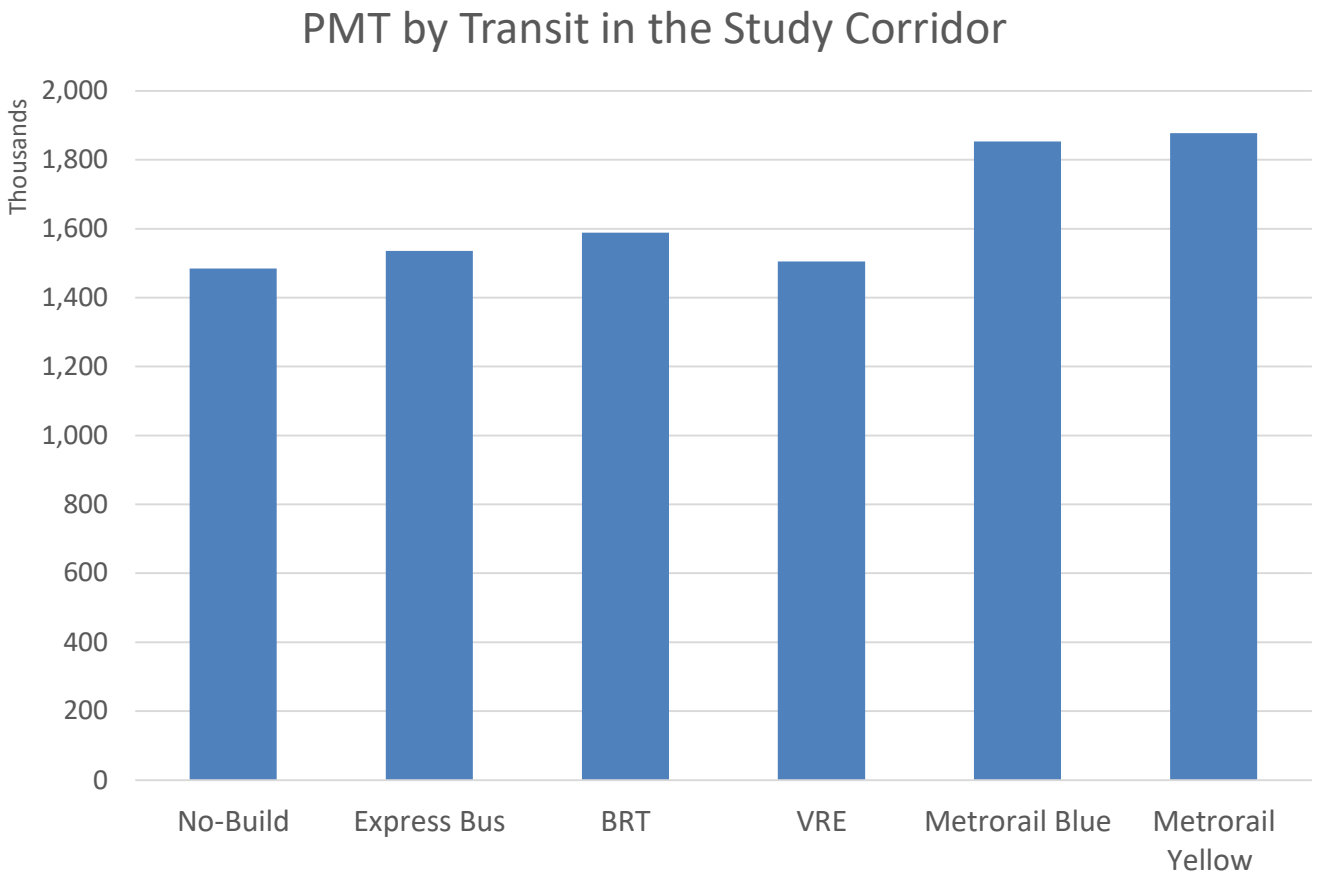


DRAFT RESULTS – SUBJECT TO CHANGE

Ridership Potential

Increase transit usage in the study corridor

Person-Miles Traveled by Transit



Includes all modes

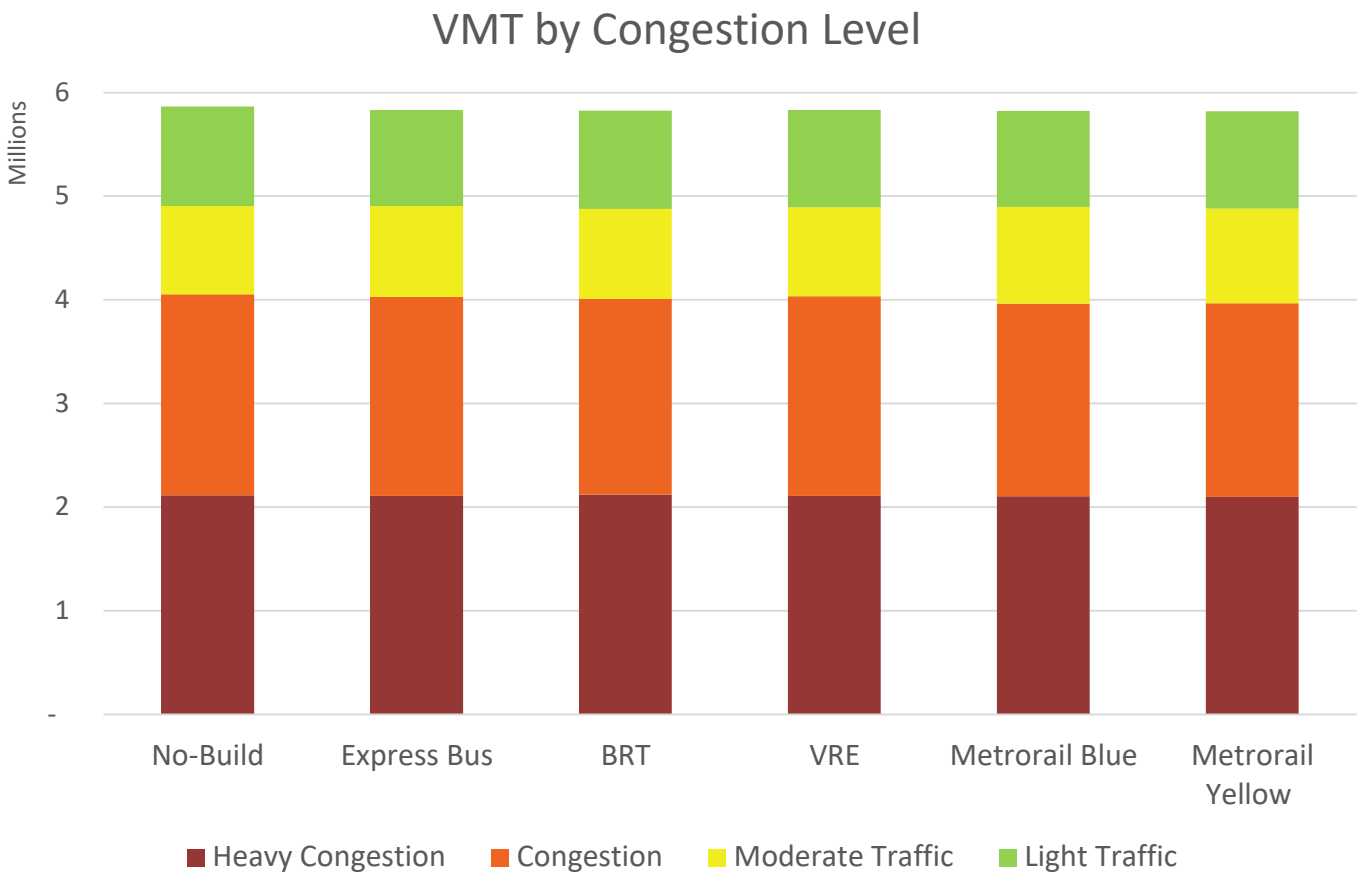
DRPT

DRAFT RESULTS – SUBJECT TO CHANGE

Congestion Mitigation

Reduce the amount of traffic congestion in the study corridor

Vehicle Miles Traveled



In all cases, total VMT goes down – but by less than 1%

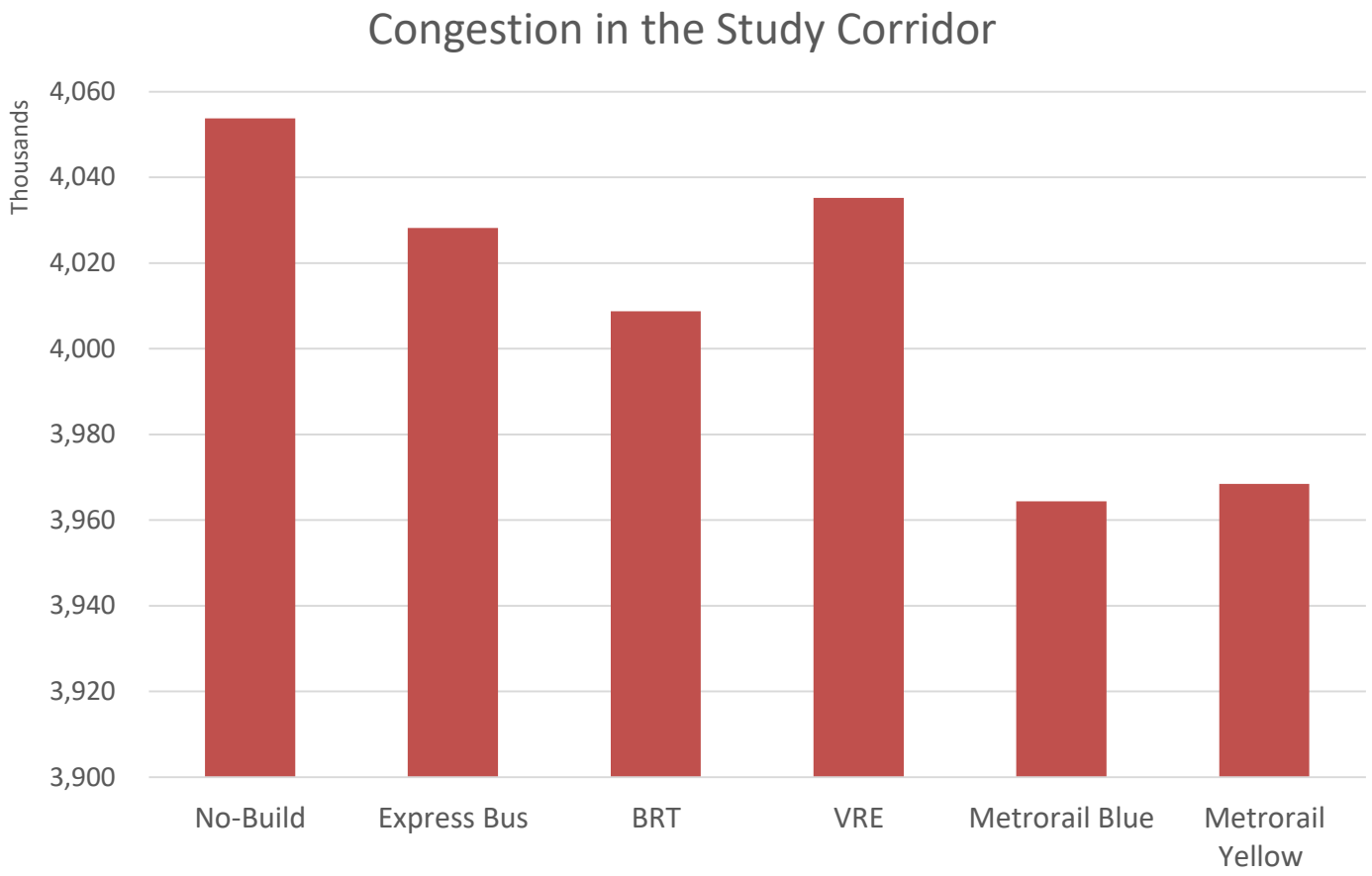
DRPT

DRAFT RESULTS – SUBJECT TO CHANGE

Congestion Mitigation

Reduce the amount of traffic congestion in the study corridor

Congested VMT



Includes “severe congestion” and “congestion”

Congestion decreases in all alternatives

DRPT

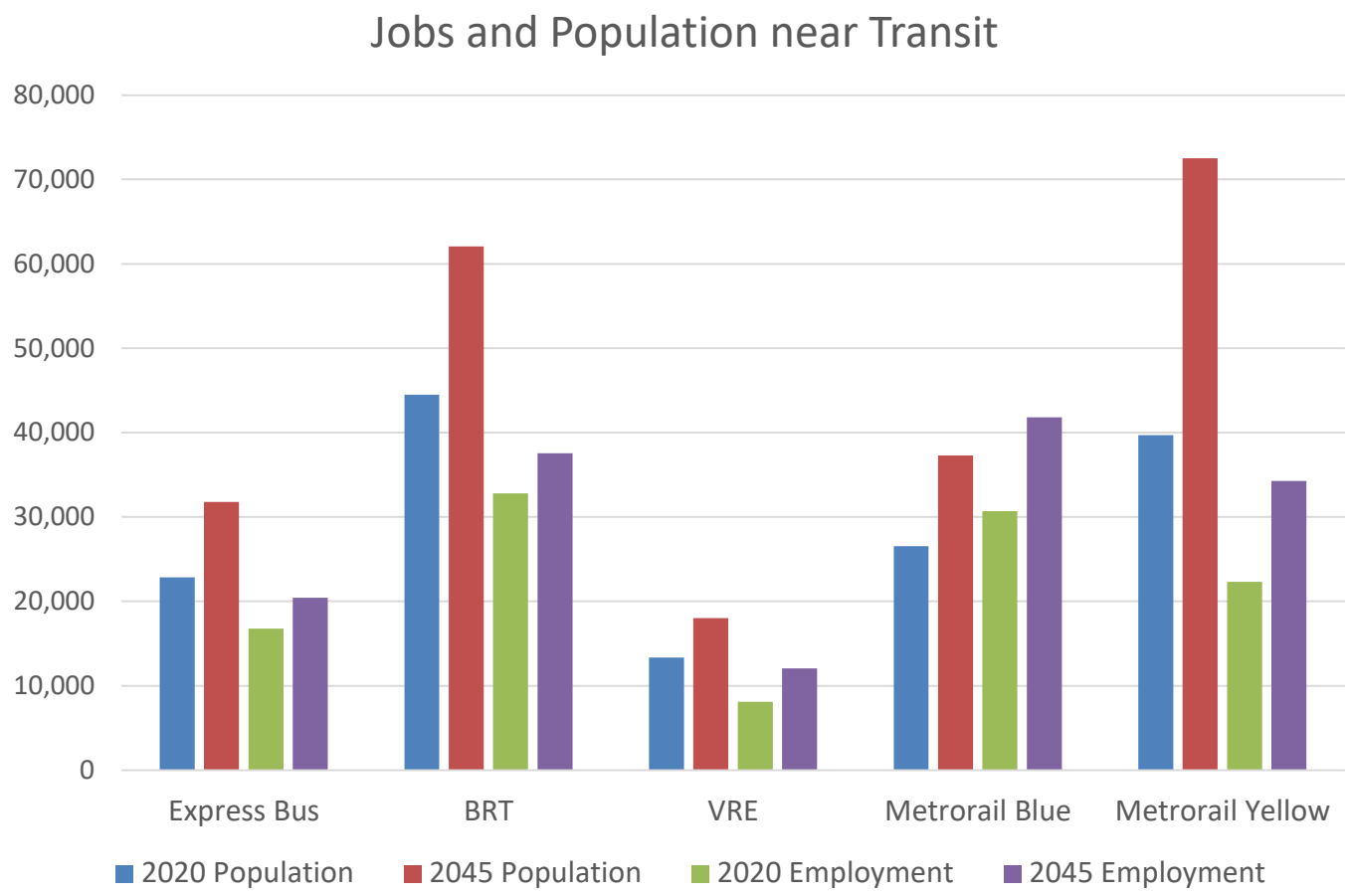
DRAFT RESULTS – SUBJECT TO CHANGE

Access

Regional Accessibility/ Connectivity

Increase access to regional activity centers and meet identified service gaps

Within a half-mile of new transit stops



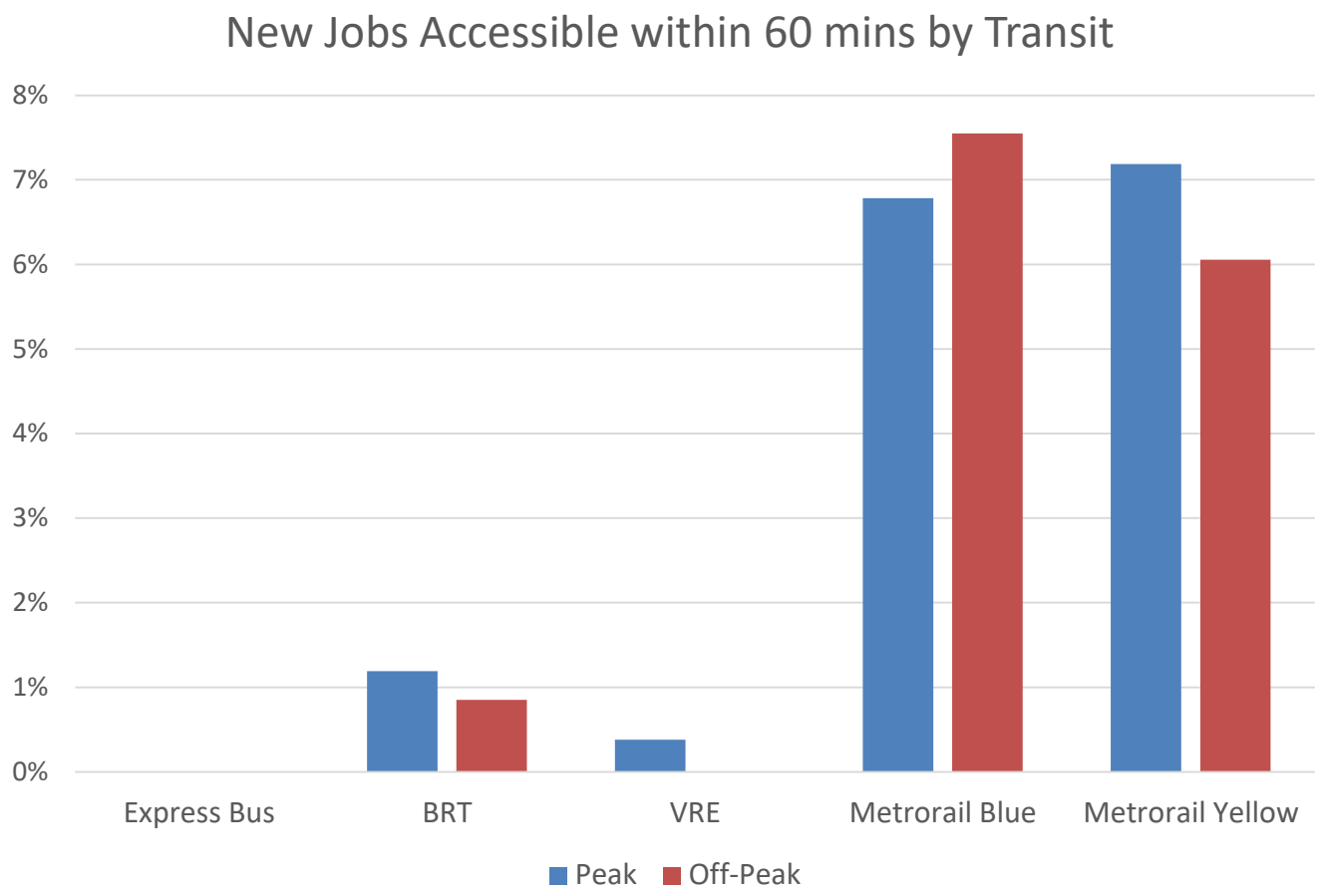
*Includes only stations in the Study Corridor. (Note: VRE alternative does not include new stations.)

DRAFT RESULTS – SUBJECT TO CHANGE

Regional Accessibility/ Connectivity

Increase access to regional activity centers and meet identified service gaps

Access to Jobs



New jobs accessible to residents of the Study Corridor as compared to the No-Build.

Percent increase in the average number of jobs accessible for residents of the Study Corridor

DRPT

DRAFT RESULTS – SUBJECT TO CHANGE

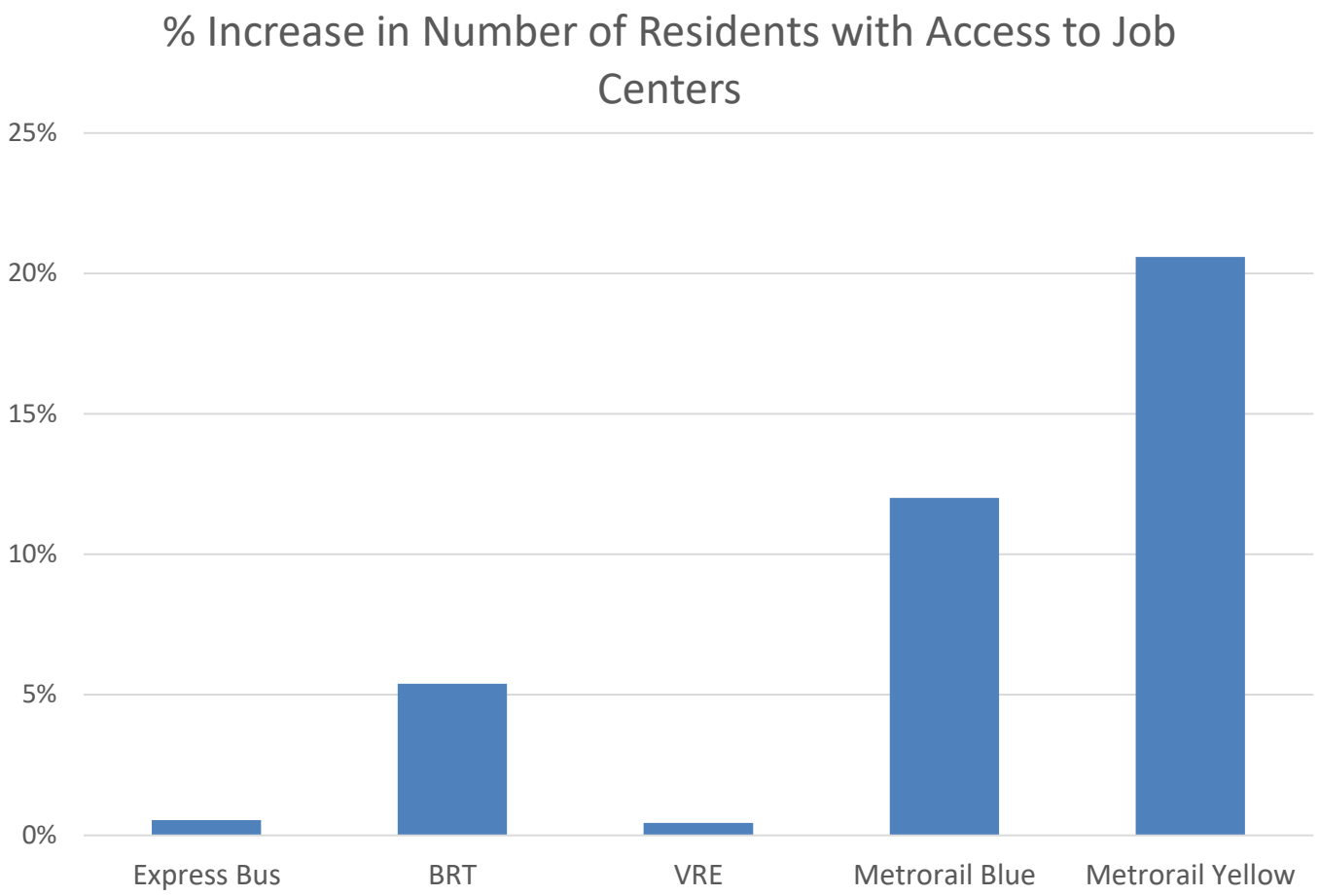
Regional Accessibility/ Connectivity

Increase access to regional activity centers and meet identified service gaps

Access to Employment Centers

Within 60 mins via transit to: Ft. Belvoir, Lorton, Potomac Mills & Quantico

Growth in residents with access to key job centers as compared to the No-Build.



Biggest improvement across all alternatives is to Potomac Mills

DRPT

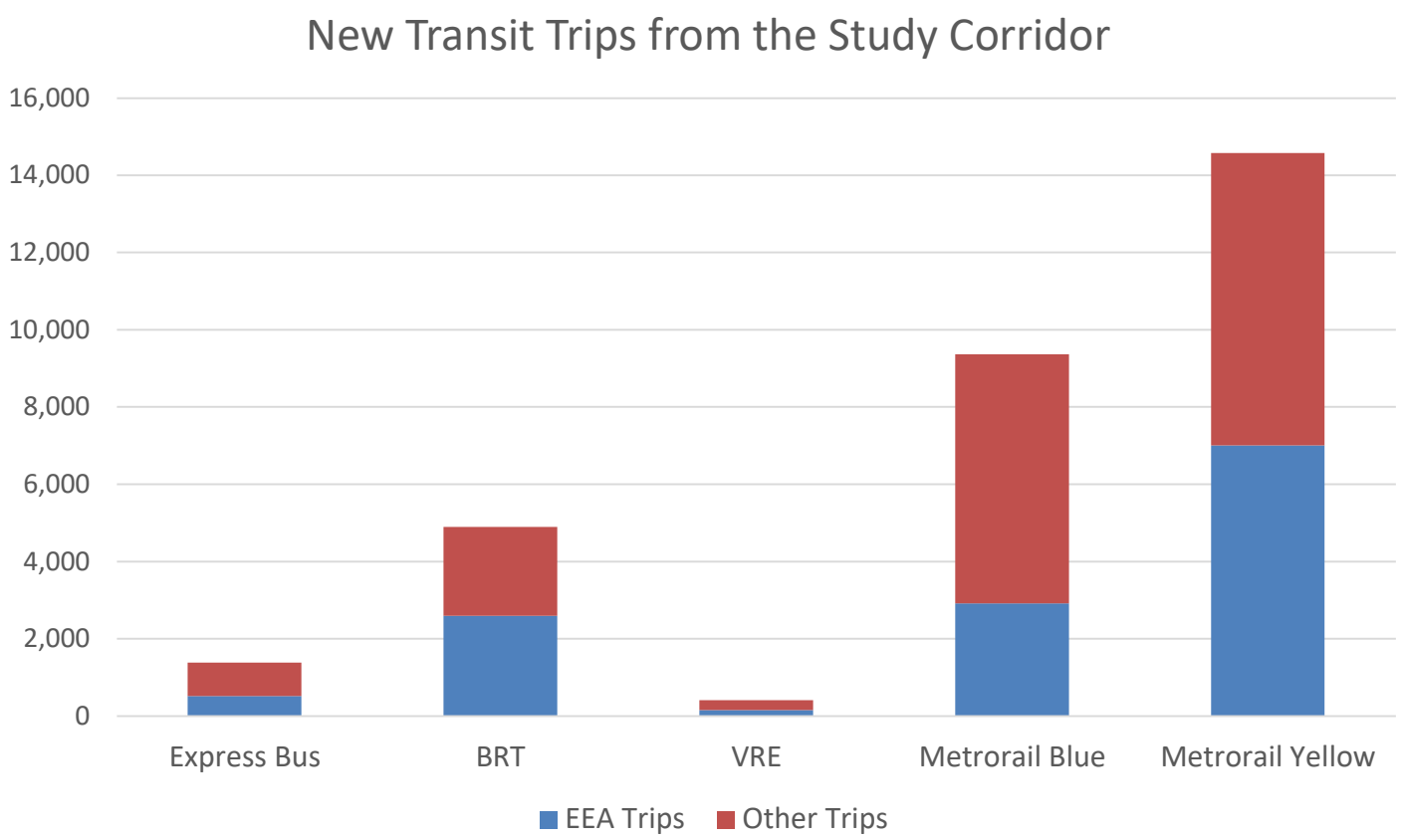
DRAFT RESULTS – SUBJECT TO CHANGE

Equity

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

Equity Transit Trips

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



In all cases, trips from EEAs grow at a higher rate than for the overall Study Corridor

DRPT

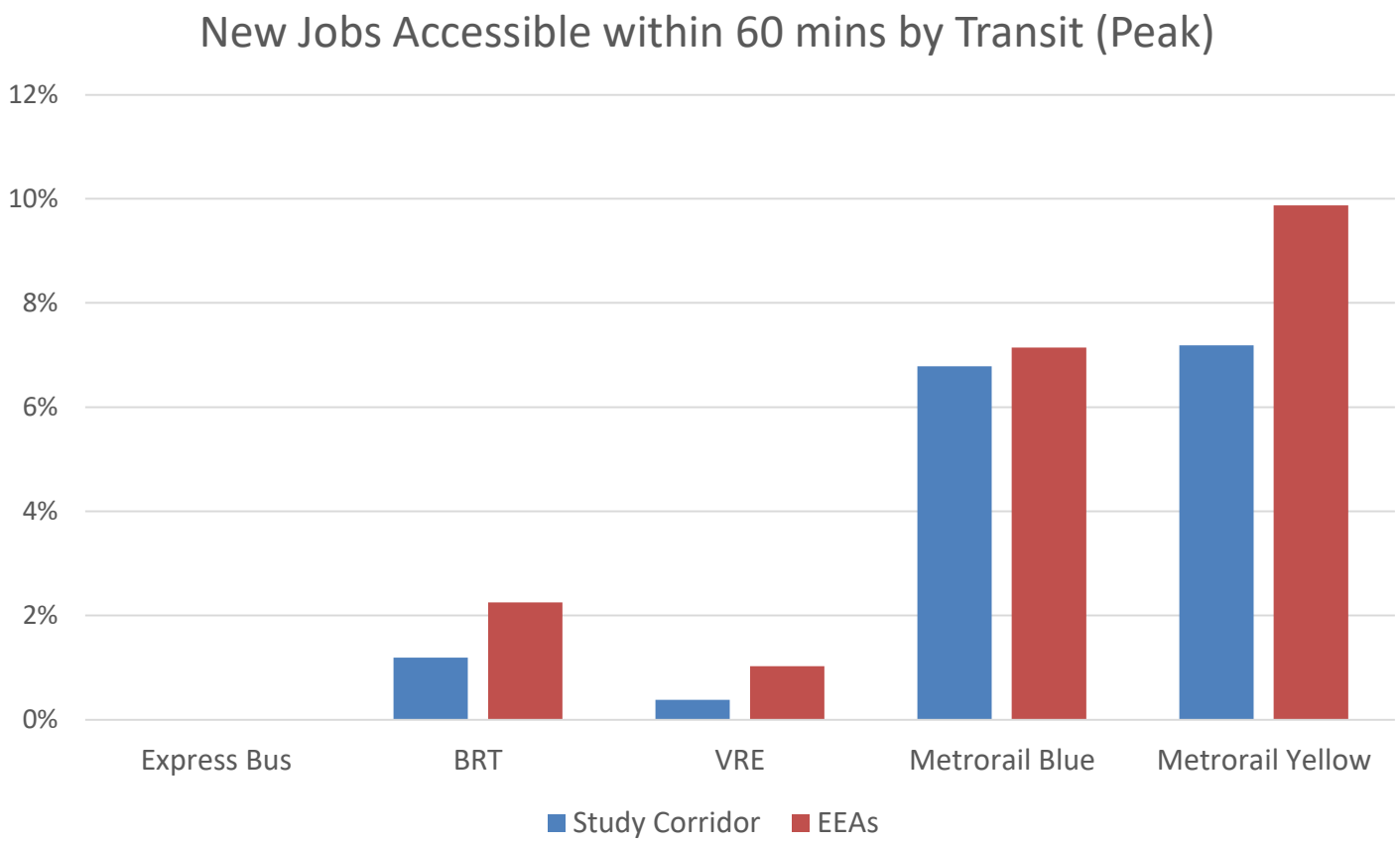
DRAFT RESULTS – SUBJECT TO CHANGE

Equity

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

Job Accessibility for EEAs

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



The alternatives improve accessibility for EEAs more than for the Study Corridor as a whole

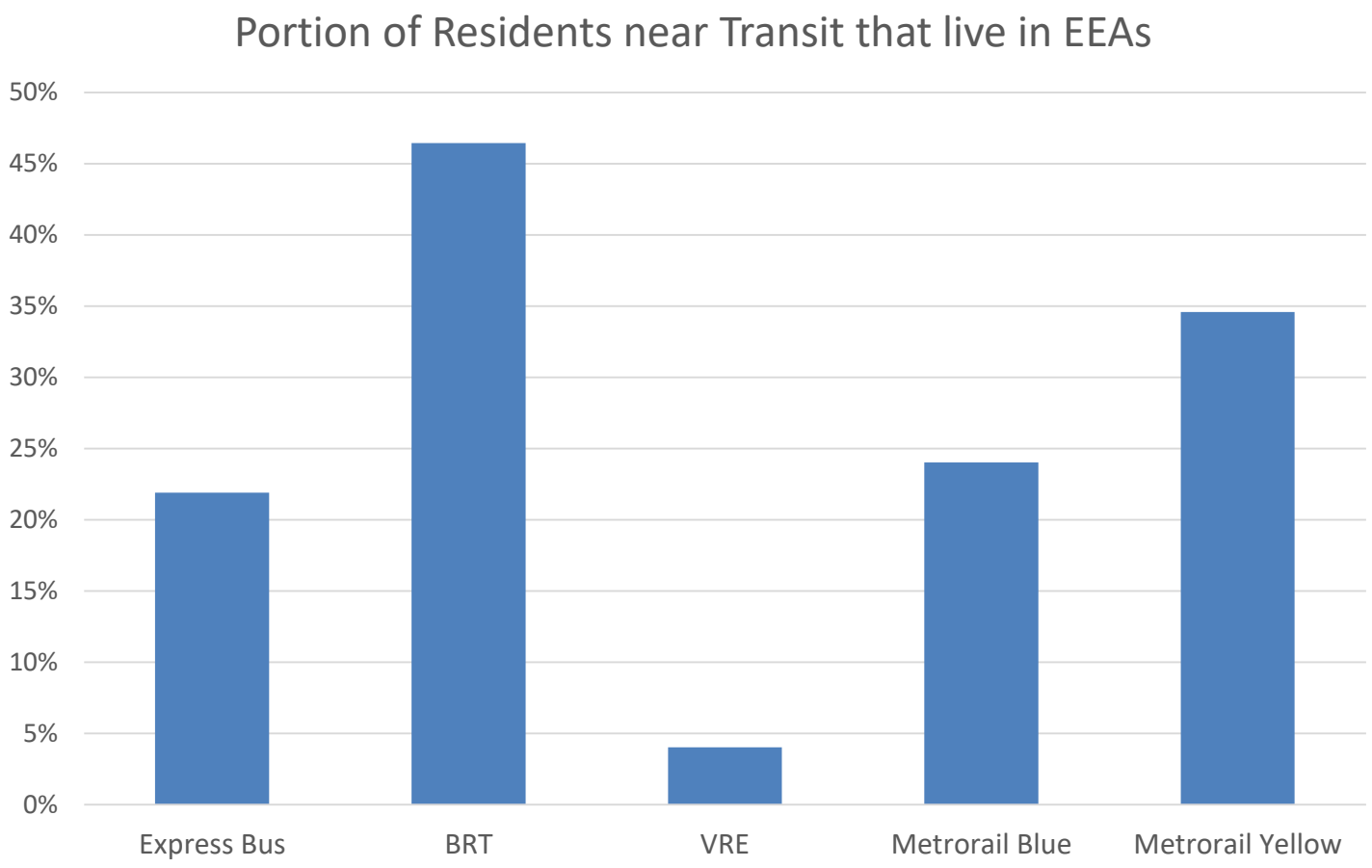
DRPT

DRAFT RESULTS – SUBJECT TO CHANGE

Equity

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

EEA Access to Transit



Within a half-mile of transit

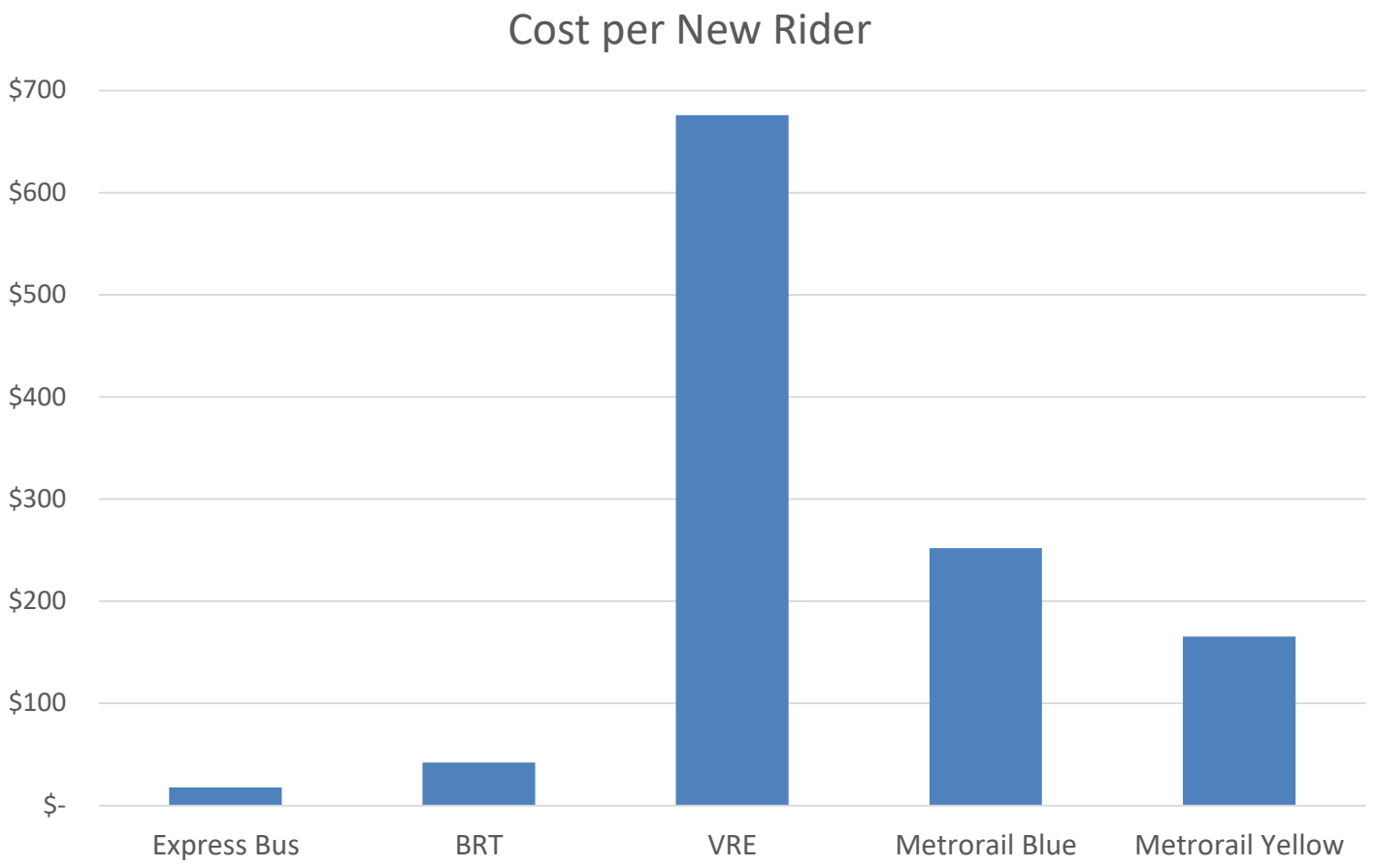
DRAFT RESULTS – SUBJECT TO CHANGE

Cost-effectiveness

Ensure that resources are used efficiently

Total Cost per New Rider

New trips starting in the Study Corridor as compared to the No-Build



All costs in 2019 $

DRPT

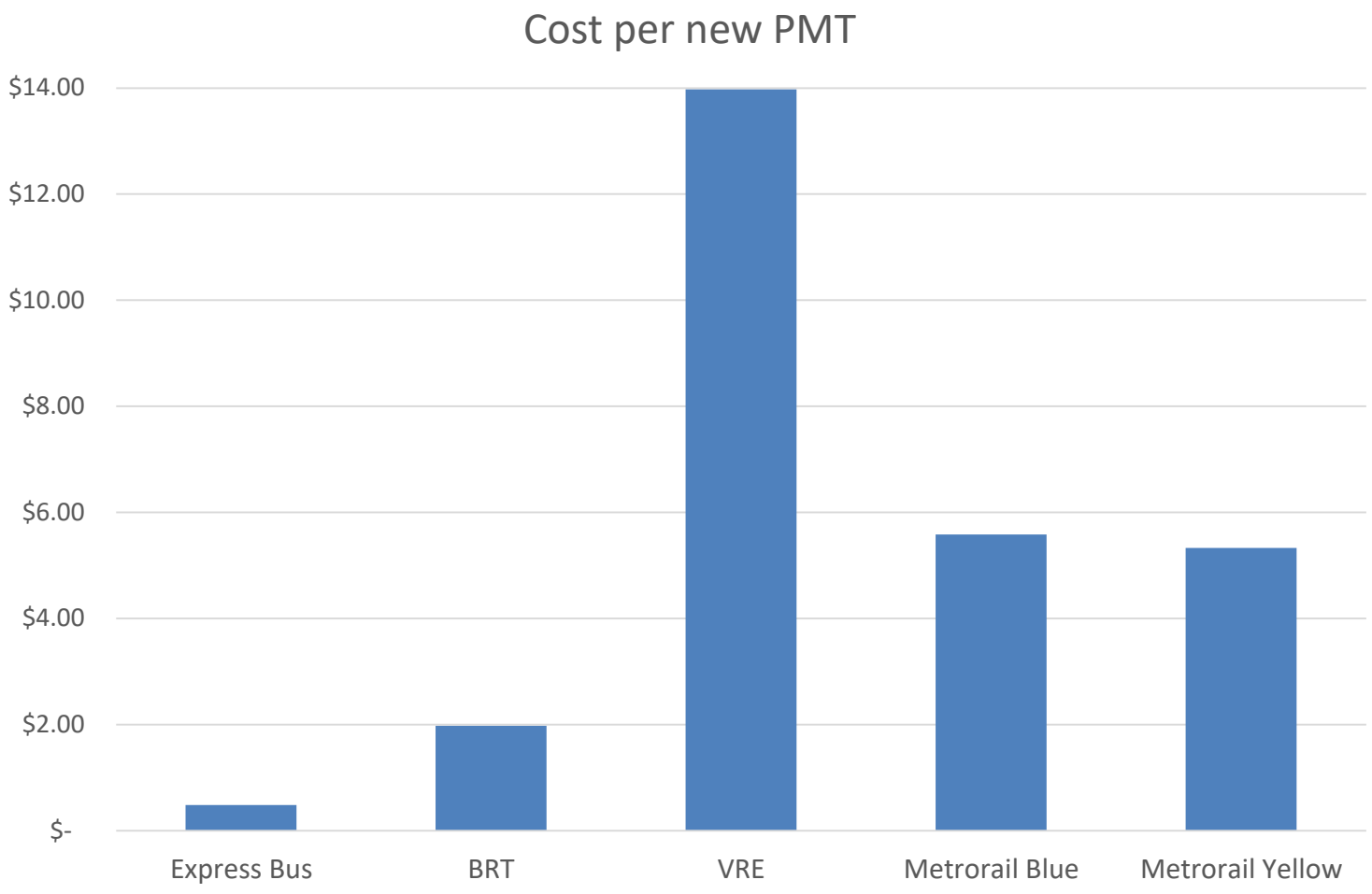
DRAFT RESULTS – SUBJECT TO CHANGE

Cost-effectiveness

Ensure that resources are used efficiently

Total Cost per Transit PMT

New transit PMT in the Study Corridor as compared to the No-Build.



All costs in 2019 $

DRAFT RESULTS – SUBJECT TO CHANGE

How will we evaluate land use?

- Potential development around selected station areas
- Note – to be used in the land use scenario testing phase (wasn't used in the results presented today)

Discussion & Meeting Wrap-Up

Schedule for Future TAC Meetings

TAC #	Month	Topics to Be Covered
9/10	Aug./Sept 2021	• Testing of Alternatives –Refinements and Sensitivity Tests (Task 8) • Draft Costs & Legal Considerations (Tasks 9 and 10) • Summary of Transit Alternatives and Land Use Scenario Evaluation Results (Task 11) • Land Use Assessment (Task 13) • Draft Study Findings and Recommendations (Task 12)