

Program Advisory Committee (PAC) Meeting

Meeting materials available at novatransit.org

February 20, 2025



Committee Meeting Agenda

1. Welcome and Opening Remarks
2. Meeting Summary
3. PAC Overview and 2025 Workplan
4. I-395/95 Commuter Choice Update
5. Zero-Emission Bus Shared On-Route Charging Update
6. Transit Data and Analysis
 - A. Integrating Transit, Cycling and Micromobility in Northern Virginia Report
7. Other Items





3. PAC Overview and 2025 Workplan



PAC Scope and Responsibilities

Commission

Meets Monthly

- Discuss topics and inform Commissioners during the PAC portion of the agenda
- Take formal action on NVTC programs and studies
- Final approval (along with PRTC and CTB) of Commuter Choice Program

NVTC Program Advisory Committee

Meets 3-4 times a year

- Provides oversight and guidance on NVTC program areas, including:
 - Commuter Choice (I-66 & I-395/95)
 - Route 7
 - Fare Collection
 - Zero-Emission Bus
 - Transit Data & Analysis

Regional Staffing Structure

Schedule is Project Dependent

- NVTC staff regularly coordinate with jurisdictional staff, WMATA and DRPT, often through technical advisory groups for studies or working groups for ongoing coordination activities

Proposed 2025 Workplan



Program Advisory
Committee

- | | | |
|---|--|---|
| <ul style="list-style-type: none"> • 2025 PAC Work Plan • I-395/95 Commuter Choice Update • Shared-On Route Charging Feasibility Study • Micromobility Report | <ul style="list-style-type: none"> • PAC / Joint Commission Working Group: Staff Recommended FY 26-27 I-395/95 Commuter Choice Program of Projects • I-66 Commuter Choice Needs Assessment Update • Route 7 BRT Update • Microtransit Update | <ul style="list-style-type: none"> • I-66 Commuter Choice Needs Assessment Report Discussion • FY 27-28 I-66 Commuter Choice Call for Projects Update • Route 7 BRT Update • Zero-Emission Bus Update |
|---|--|---|

Commission
Engagement

- | | | |
|--|--|---|
| <ul style="list-style-type: none"> • Action: Accept the findings of the shared on-route charging feasibility study • Action: Accept the findings of the micromobility report | <ul style="list-style-type: none"> • Presentation on the Staff Recommended FY 26-27 I-395/95 Commuter Choice Program of Projects (May); Action to approve in June | <ul style="list-style-type: none"> • Action: Authorize the opening of the FY 27-28 I-66 Commuter Choice Call for Projects • Action: I-66 Needs Assessment Final Report • Other updates, as necessary |
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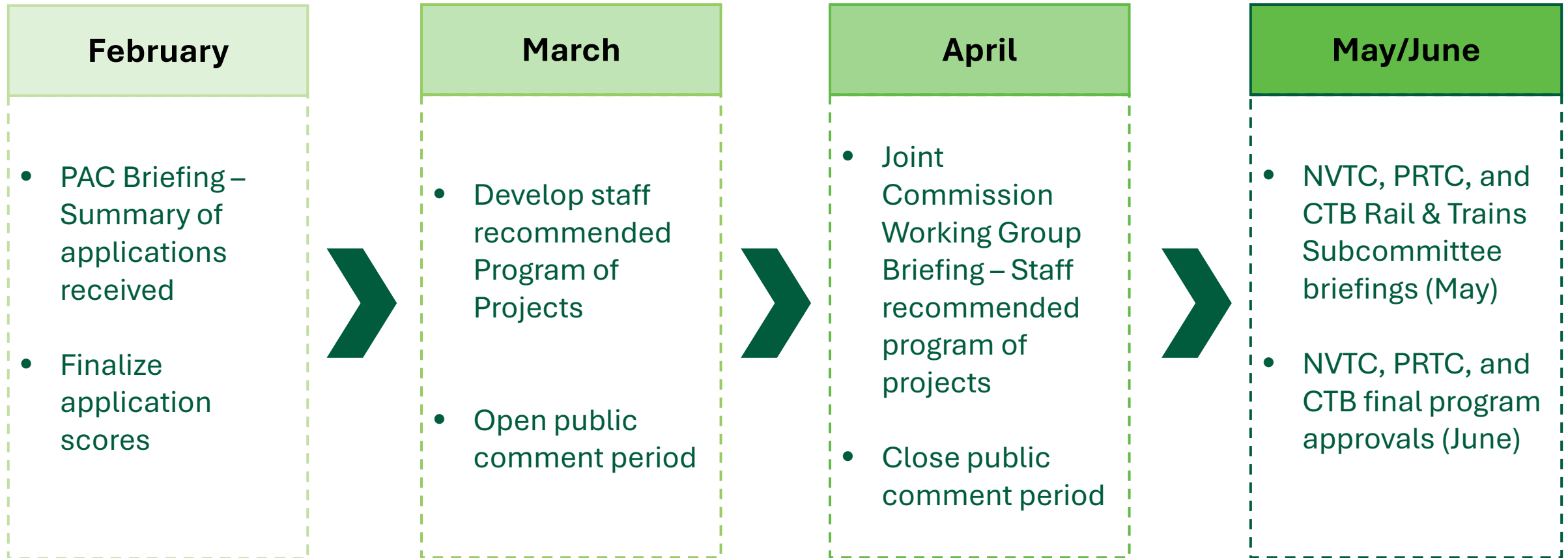
4. I-395/95 Commuter Choice Update

Summary of Applications Received

- \$25-30 million in I-395/95 Commuter Choice funding available for new projects
 - \$10 million programmed "off the top" for the second installment of a previously approved \$20 million dollar award (FY 2024-2025 cycle) to Richmond Highway BRT
- NVTC received 15 applications from 6 applicants with a funding request of \$37.5 million
 - ✓ 12 bus service enhancements (9 continuations)
 - ✓ 1 new bus route
 - ✓ 1 commuter rail station improvement
 - ✓ 1 multi-use trail project
- NVTC and DPRT screened all projects for eligibility
 - 1 application (Arlington County “Cross-Potomac Trail: Northern Virginia Approach”) was deemed ineligible
 - Does not benefit tollpayers by increasing person throughput in the corridor
 - Access to transit (bike/pedestrian) projects must connect to a major transit facility



I-395/95 FY 2026-2027 Program of Projects Schedule





5. Zero-Emission Bus (ZEB) Shared On-Route Charging Update



Northern Virginia's ZEB Progress

Local jurisdictions continue to make progress on ZEBs, specifically battery electric buses (BEBs) and infrastructure



ART opened its new Operations & Maintenance Facility in December; charging infrastructure for BEBs is being installed in preparation for BEBs entering the fleet



Loudoun County Transit recently welcomed two BEBs into its local fleet

Potential Barriers to Progress

- Bus manufacturing delays lead to long waits for new buses – often 18 to 24 months
 - This is partially due to there being only two main manufacturers of buses in the US
- Availability of federal discretionary funding for the Low/No grant program is uncertain
- There might not be sufficient funding available to procure ZEBs and their related infrastructure

Shared On-Route Charging

- In January 2024, NVTC released its Northern Virginia ZEB Strategic Plan
- A key new strategy in this plan was to support the development of shared BEB charging infrastructure, in particular on-route charging



Northern Virginia ZEB Strategic Plan

NVTC has identified six strategies in support of Northern Virginia transit agencies' zero-emission bus transitions.	Quick Wins (Year One)	Short Term (2-3 Years)	Long Term (3+ Years)
Strategy 1 - Serve as a Regional ZEB Forum			
1A - Continue to Facilitate ZEB Working Group	🟢	---	→
1B - Share Operational Data and Findings		🟢	→
Strategy 2 - Advocate for Consistent and Supportive ZEB Standards and Policies			
2A - Educate Staff and Local Elected Officials	🟢	---	→
2B - Advocate for Legislative Support	🟢	---	→
2C - Encourage Interoperability			🟢
Strategy 3 - Provide Regional ZEB Funding Coordination			
3A - Create a ZEB Funding Strategy	🟢		
3B - Develop Multi-Agency ZEB Grant Applications		🟢	
3C - Identify Joint ZEB Procurement Opportunities		🟢	
Strategy 4 - Support Development of Shared BEB Charging Infrastructure			
4A - Conduct a Shared Charging Feasibility Study	🟢		
4B - Pilot Shared On-Route Charging Station		🟢	
Strategy 5 - Evaluate Opportunities for Private Partnerships Related to ZEBs			
5A - Host Industry Listening Sessions	🟢		
5B - Create Transit Technology Proposal Process			🟢
5C - Develop ZEB Request for Information		🟢	
Strategy 6 - Support ZEB Workforce Training and Education			
6A - Identify and Share ZEB Training Resources	🟢	---	→
6B - Engage with Educational Institutions, Regional Partners and DRPT about ZEB Training Opportunities		🟢	→

Shared On-Route Charging – What Is It?

- On-route charging, also known as opportunity charging, occurs outside the depot as part of a layover or other charging opportunity along the route
- It can help extend the range of BEBs; this is useful in cases where a vehicle's daily miles traveled might be more than a current BEB's capabilities
- In areas where multiple agencies have overlapping service, there is a potential opportunity to share on-route charging infrastructure

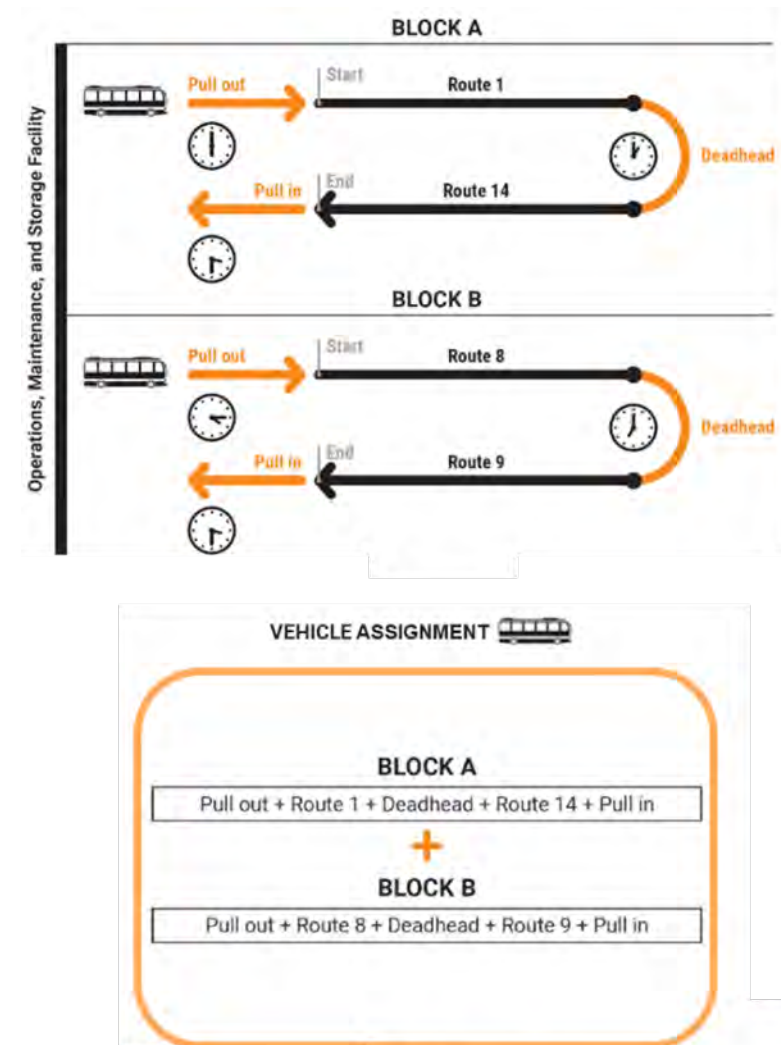
Example of on-route charging in Manhattan



Source: [Marc A. Hermann, MTA](#)

Shared On-Route Charging Feasibility Study

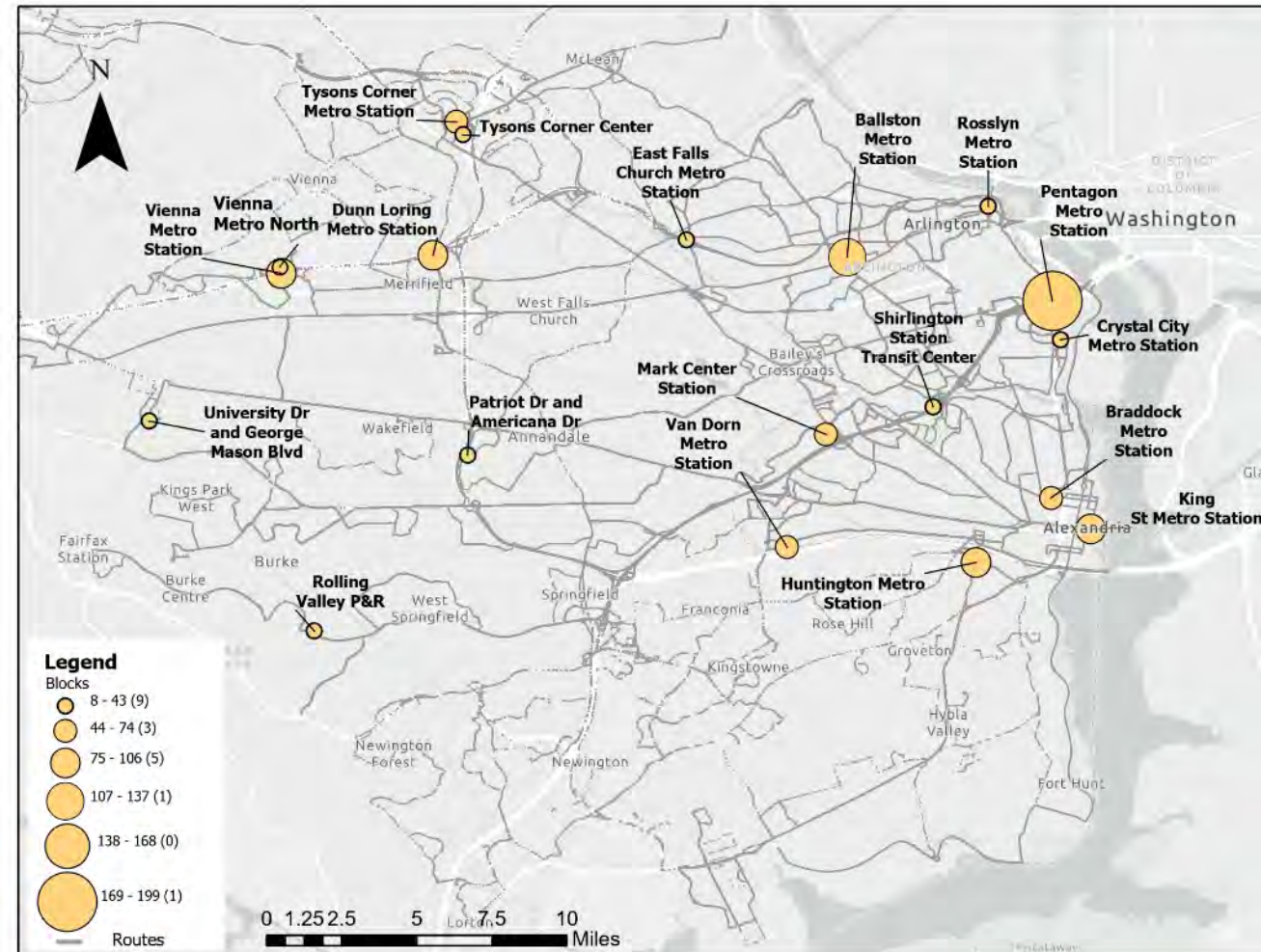
- NVTC requested and received free technical assistance to evaluate the feasibility of shared on-route charging from the National Renewable Energy Laboratory (NREL) via the Joint Office of Energy & Transportation
- The study analyzed the blocks and layovers of four bus operators in Northern Virginia to identify potential locations for shared charging
 - WMATA
 - ART
 - DASH
 - Fairfax Connector



Source: Stantec

Potential Layover Locations for Charging

- The project team identified 18 potential shared on-route charging sites to analyze in more detail
- These 18 sites had at least two or more transit agencies with layovers in the vicinity



Source: Shared On-Route Charging Feasibility Study

Feasibility Criteria

- In August, NVTC held a workshop with participating agencies to discuss challenges and opportunities of shared charging, and to get a sense of which criteria the stakeholders prioritized
- The key criteria were:
 - # of blocks served
 - # of failing blocks
 - Amount of space (based on desktop review of aerial images)
 - High-level cost (based on location of existing utilities)

How would you prioritize the following criteria?



Results from prioritization exercise during agency workshop in August 2024

Weighted List of Sites

Rank	Layover Location(unified)	Number of Blocks Served	Failing Blocks Served	Number of Blocks Served Score 10 - Most 1 - Least	Number of Failing Blocks Served Score 10 - Most 1 - Least	Space Availability 3 - Most Feasible 1 - Less Feasible	Utility Capacity 3 - Most Feasible 1 - Less Feasible	Weighted Score 10 - Highest 1 - Lowest	Agency Served			
									WMATA	FFX	ART	DASH
1	Huntington Metro Station	78	25	6	10	3	3	8.9	x	x		
2	Van Dorn Metro Station	62	18	4	8	3	3	8.0	x	x		x
3	King St Metro Station/ Eisenhower Metro Station	102	9	8	4	2	3	7.7	x			x
4	Pentagon Metro Station	199	26	10	10	2	1	7.0	x	x	x	x
5	Braddock Metro Station	54	2	4	1	3	3	7.0	x			x
6	Ballston Metro Station	132	1	9	1	1	3	6.8	x		x	
7	Dunn Loring Metro Station	77	2	6	1	3	2	6.4	x	x		
8	East Falls Church Metro Station	40	1	2	1	3	3	6.4	x	x	x	
9	Tysons Corner Metro Station	74	20	4	8	2	2	6.1	x	x		
10	Mark Center Station	72	0	4	0	2	3	6.0	x			x
11	Vienna Metro Station	77	2	6	1	3	1	5.4	x	x		
12	Rolling Valley P&R	12	4	1	1	2	3	5.3	x	x		
13	Tysons Corner Center	23	1	1	1	1	3	4.5	x	x		
14	Shirlington Station	40	0	2	0	2	2	4.4	x		x	
15	Rosslyn Metro Station	39	0	2	0	1	2	3.5	x		x	
16	Crystal City Metro Station	42	0	2	0	1	2	3.5	x	x	x	
17	University Dr and George Mason Blvd	34	0	2	0	1	2	3.5	x	x		
18	Patriot and Americana Dr	13	4	1	1	1	1	2.3	x	x		

Note: this list is based on weighting quantitative and qualitative metrics to determine a combined score for each location. Locations that have a weighted score within one point of each other are likely similarly feasible. Source: Shared On-Route Charging Feasibility Study

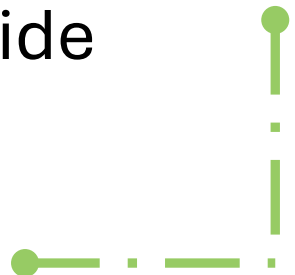
Is Shared On-Route Charging Feasible? What's Next?

- Yes, it is feasible. But there are still questions to resolve around whether the cost savings are worth the potential operational hassles
- Additional analysis and jurisdictional conversations are necessary to better understand:
 - Preferred site(s)
 - Project champions
 - Construction and maintenance considerations
- It is helpful to remember that NoVa agencies are still relatively early in the BEB transition process – we have time to evaluate shared charging further



2025 ZEB Timeline

- In March, we will ask the Commission to accept the findings of the shared on-route charging feasibility study
- We have a FY 2025 technical assistance grant from DRPT to conduct a study to further analyze charging considerations
 - We learned a lot through the free technical assistance, so now NVTC staff are working with jurisdictional staff to refine the FY 2025 technical assistance scope to ensure it is relevant to their current needs
 - NVTC staff expect to return to the Commission in the spring to approve the release of an RFP
- NVTC staff will continue to host a ZEB Working Group and provide ZEB information and education, as needed





6. Transit Data and Analysis:

Integrating Transit, Cycling and Micromobility in Northern Virginia Report

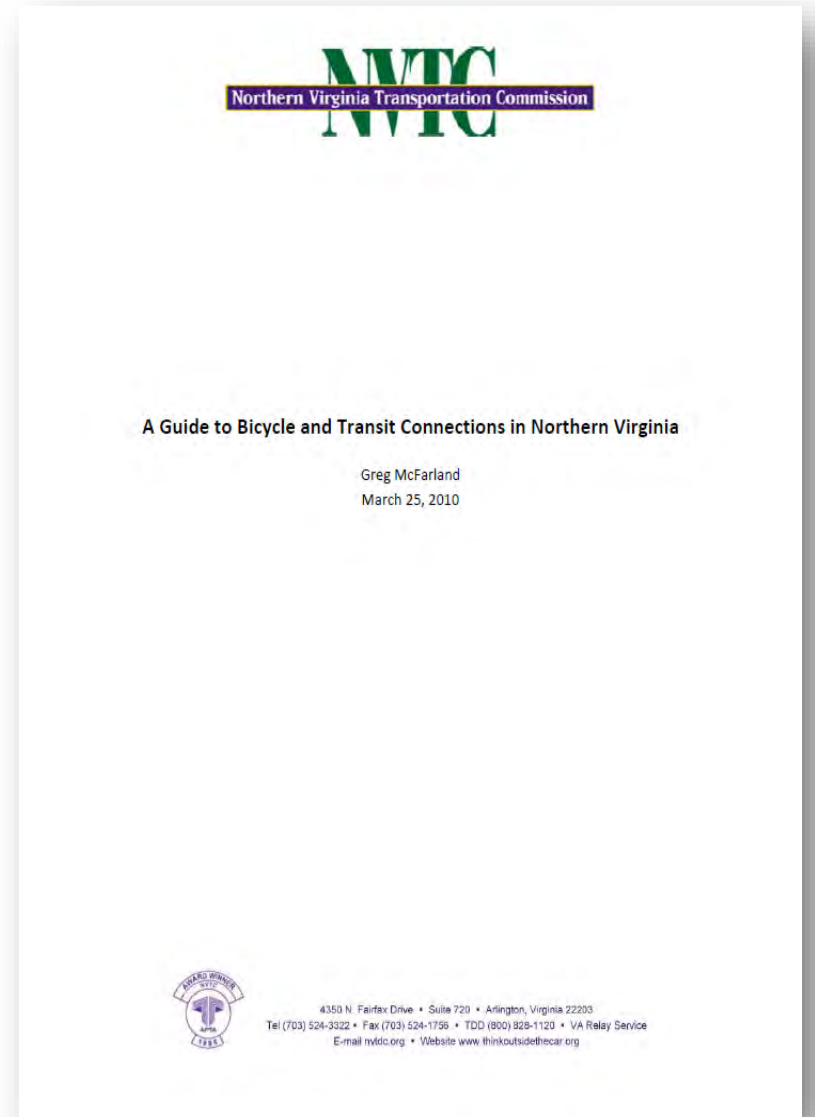
What is micromobility?



Micromobility is a broad term for smaller, lower-speed vehicles that can be electric or human-powered and shared or privately owned. Examples include bicycles, bikeshare and scooters.

Why study transit and bike integration?

- NVTC wrote a report on this topic in early 2010, however much has changed in the world of micromobility
- Washington, DC has featured in existing research but there has been less focus on Northern Virginia
- The region continues to invest heavily in projects that combine transit and biking
 - Currently, about **\$750m is programmed** for transit/biking projects in Northern Virginia
 - Large majority of these projects are about connecting bicycling to transit stops and stations



Why study transit and bike integration?

Integrating transit and biking has many benefits for both modes

Mode	Benefits
Transit Benefits	▪ Bicycle/micromobility and transit connections can increase transit ridership
	▪ Increasing bikeshare use increases transit ridership
	▪ Bicycle and transit connections can increase transit efficiency
	▪ Bicycle/micromobility and transit connections can increase transit catchment areas
	▪ Bicycle and transit connections can reduce personal travel costs
	▪ Bicycle and transit connections can improve trip speed and access to destinations
	▪ Promoting cycling can reduce transit crowding
Bicycling and Micromobility Benefits	▪ Bicycle and transit connections can increase bikeshare and other micromobility use
	▪ Bicycle and transit connections can increase access to bikeshare and other micromobility
	▪ Higher transit use can increase bicycling

Potential benefits of transit and bicycle/micromobility integration

Study Approach

- This study evaluates these connections in five ways:
 1. Bicycle parking at transit stops and stations
 2. Bike rental (e.g., bikeshare and scooter share) at transit stops
 3. Bikes on transit vehicles
 4. Safe routes to transit
 5. Customer communication and education
- Our study explores these dimensions using:
 - Existing plans and policies
 - Spatial and statistical analysis of transit, bike, and micromobility data
 - Case studies from across the US

*CaBi station at Franconia-Springfield Metrorail station
funded by the NVTC Commuter Choice program*



1. Bicycle Parking and Micromobility Storage at Transit Stops

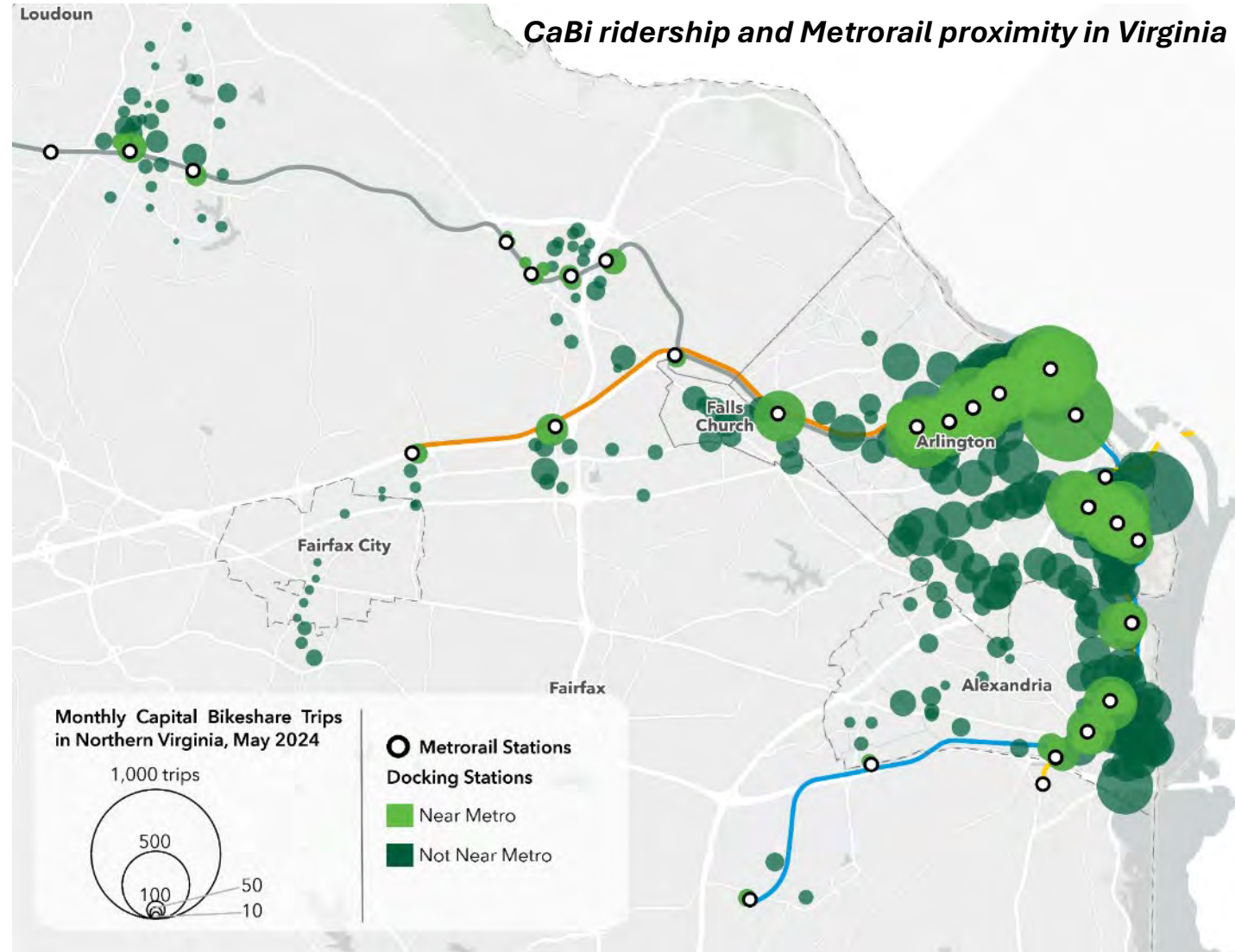
- Metrorail stations
 - In Virginia, **63%** of stations have bike parking
 - Stations in urbanized areas **more likely** to have bike parking
- Not all local transit agencies or jurisdictions track bike parking at transit stops
- Some transit agencies include bike facilities as part of their bus stop amenity policies (e.g., ART, CUE, Loudoun County Transit)

Bicycle and micromobility storage near transit



2. Shared Micromobility Near Transit Stops

- **CaBi is transit accessible**
 - Almost all CaBi is within ½ mile of a bus stop
 - 40% of CaBi is within ½ of Metrorail
- Micromobility (including CaBi and dockless scooters and bikes) is used **more near Metrorail**



3. Bikes on Transit Vehicles

- All NoVA transit agencies allow for bikes on transit vehicles
- Bike usage on transit isn't usually tracked by NoVA agencies
- Only VRE regularly tracks bikes on transit
 - VRE began allowing bikes on trains in 2022
 - VRE averages ~1,200 bikes per month (~1% of all riders)
 - Bikes on board have **increased 123%** between June 2022 and June 2024



A bike on an ART bus

4. Safe Routes to Transit

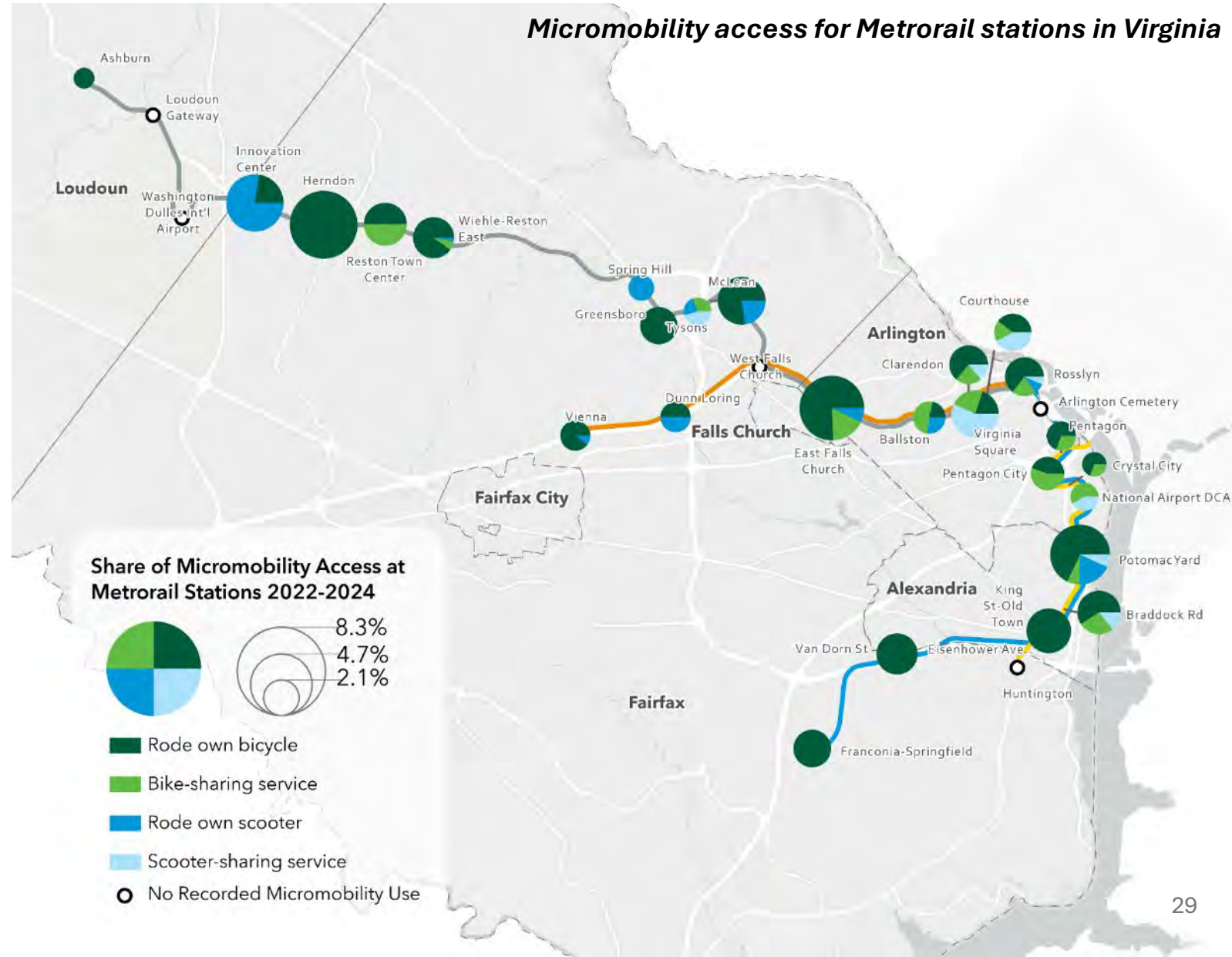
A floating bus stop from Arlington's Bus Stop Guidelines & Standards Manual (2024)

- Safety is important for both transit agencies and bicyclists
- Policies can directly address bicycle and transit conflicts
 - **Bikes in bus lanes**
 - Currently only addressed in local law/policy by Alexandria and Arlington
 - **Bikes and bus stops**
 - Some local laws restrict bicycle parking where it might obstruct pedestrian access within bus stops
 - **Floating bus stops:** a bus stop with a bicycle lane between the stop and the sidewalk



4. Safe Routes to Transit

- ~2% of people use micromobility to access Metrorail stations
- The percentage varies through the region
- 2022 levels of micromobility access is 60% higher than 2016



5. Communication and Education

Multiple ways communication and education is used to improve transit and micromobility integration:

1. Educating riders on alternatives to cars for accessing transit
2. Demonstrating how to put bikes on buses
3. Including bicycling and micromobility in real-time information
4. Incorporating bicycle wayfinding into transit stations



DASH informational video showing how to put a bike on a bus

Conclusions

- **Transit and bicycling integration is an important regional goal**
 - All transit systems in the region have policies that allow bikes on transit vehicles
 - All NVTC jurisdictions have \$750m in programmed projects to improve transit-bike integration
- **Bicycle infrastructure results in large increases in transit access**
 - ~10% more people have access to bus
 - ~50-160% more people have access to Metrorail
 - ~110% more people have access to commuter rail
- **Metrorail is associated with increases in both bikeshare and scooter use**
- **Northern Virginia does a good job but there are still opportunities to learn from others**

ART passenger putting their bike on a bus



Recommendations

- 1. Continued coordination with regional partners including between jurisdictions and transit agencies as well as with private property owners, major employers and major regional travel destinations**
- 2. Increased transit and bicycling integration in suburban areas, especially near commuter transit services, including:**
 - a. Micromobility like CaBi and scooter share at transit stations
 - b. Easier access for bicycles on commuter buses
 - c. More bicycle and other micromobility parking at transit stops
 - d. More bicycle facilities connecting bicyclists safely to and between transit stops
- 3. Package more transit and bicycle improvements together into larger funding requests and infrastructure projects**
- 4. Increased clarity in infrastructure policies when transit and bicycling intersect; specifically:**
 - a. Bicycle use in bus lanes
 - b. Floating bus stops
- 5. Increasing the collection and sharing of data focusing on transit-bicycling integration**
 - a. Bicycle and other micromobility parking at transit stops
 - b. The number of people bringing bicycles on transit vehicles (buses and trains)
 - c. The number of people using bicycles and other micromobility to access transit services



7. Other Items





To All Trains



Thank you!



NORTHERN VIRGINIA TRANSPORTATION COMMISSION

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Zero-Emission Buses in Northern Virginia

Transit providers in Northern Virginia are in various stages of their transition to zero-emission buses (ZEBs). Converting to ZEBs requires significant investment in vehicles and supporting infrastructure, so it is important to share lessons learned from early adopters and to identify opportunities for interoperability of infrastructure.

NVTC coordinates among agencies to help Northern Virginia's transit fleets reach sustainability goals while providing safe, reliable and cost-effective transit service to riders.



What are ZEBs and why are they challenging to implement?

ZEBs produce zero tailpipe emissions and can be either battery electric buses (BEBs) or hydrogen-powered fuel cell electric buses (FCEBs).



1

Cost and Funding

ZEBs typically cost more than \$1 million per bus and require new charging or fueling infrastructure.

2

Operational Differences

Current BEBs cannot replace diesel buses on a 1:1 basis for all routes due to their shorter range.

3

Availability

Grid capacity for BEBs and hydrogen supply for FCEBs remain critical pathways to successfully implementing ZEBs.
















4

Workforce Development

Whether a BEB or a FCEB, ZEBs require new skills for the transit workforce.



Northern Virginia ZEB Strategic Plan

<p>NVTC has identified six strategies in support of Northern Virginia transit agencies' zero-emission bus transitions.</p>	<p>Quick Wins (Year One)</p>	<p>Short Term (2-3 Years)</p>	<p>Long Term (3+ Years)</p>
<p>Strategy 1 - Serve as a Regional ZEB Forum</p>			
<p>1A - Continue to Facilitate ZEB Working Group</p>		<p>-----></p>	<p>-----></p>
<p>1B - Share Operational Data and Findings</p>			<p>-----></p>
<p>Strategy 2 - Advocate for Consistent and Supportive ZEB Standards and Policies</p>			
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Integrating Transit, Cycling and Micromobility in Northern Virginia


February 2025

This report studies the integration between transit, cycling and micromobility in Northern Virginia. Connecting these modes can result in benefits like increasing transit access, expanding transit's reach and the efficiency of its services, while also increasing the use of both bikeshare and dockless micromobility.


Key Takeaways




Transit and bicycling integration is an important regional goal



Bicycle infrastructure results in large increases in transit access



Metrorail is associated with increases in both bikeshare and scooter use



Northern Virginia does a good job integrating transit and micromobility but there are still opportunities to learn from others



Recommendations

The region can improve integration between transit and micromobility by focusing on the following:

Continue coordination with regional partners, including jurisdictions, transit agencies, private property owners, major employers and major regional travel destinations

Increase transit and bicycling integration in suburban areas, especially near commuter transit services

Package more transit and bicycle improvements together into larger funding requests and infrastructure project

Enhance clarity infrastructure policies when transit and bicycling intersect

Improve collection and sharing of data focusing on transit-bicycling integration






What is Micromobility?

Micromobility is a broad term for smaller, lower-speed vehicles that can be electric or human-powered and shared or privately owned. Examples include bicycles, bikeshare and scooters.

Investing in Transit and Micromobility

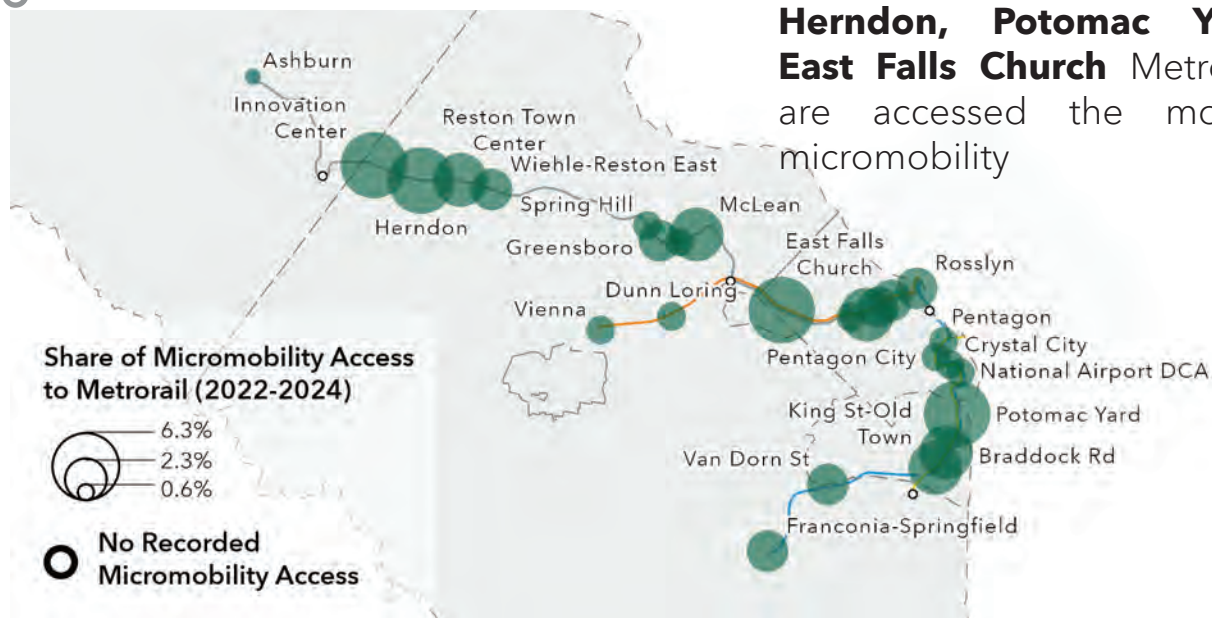
The region has more than **\$750M** in programmed projects that include transit-bicycling improvements

Micromobility at Transit Stops

 **86%** of all Virginia Capital Bikeshare stations are near* transit stops

 Proximity to Metrorail is associated with **higher** Capital Bikeshare, shared scooters and other micromobility

Safe Routes to Transit



*Near is defined as 1/8 mile from location

