

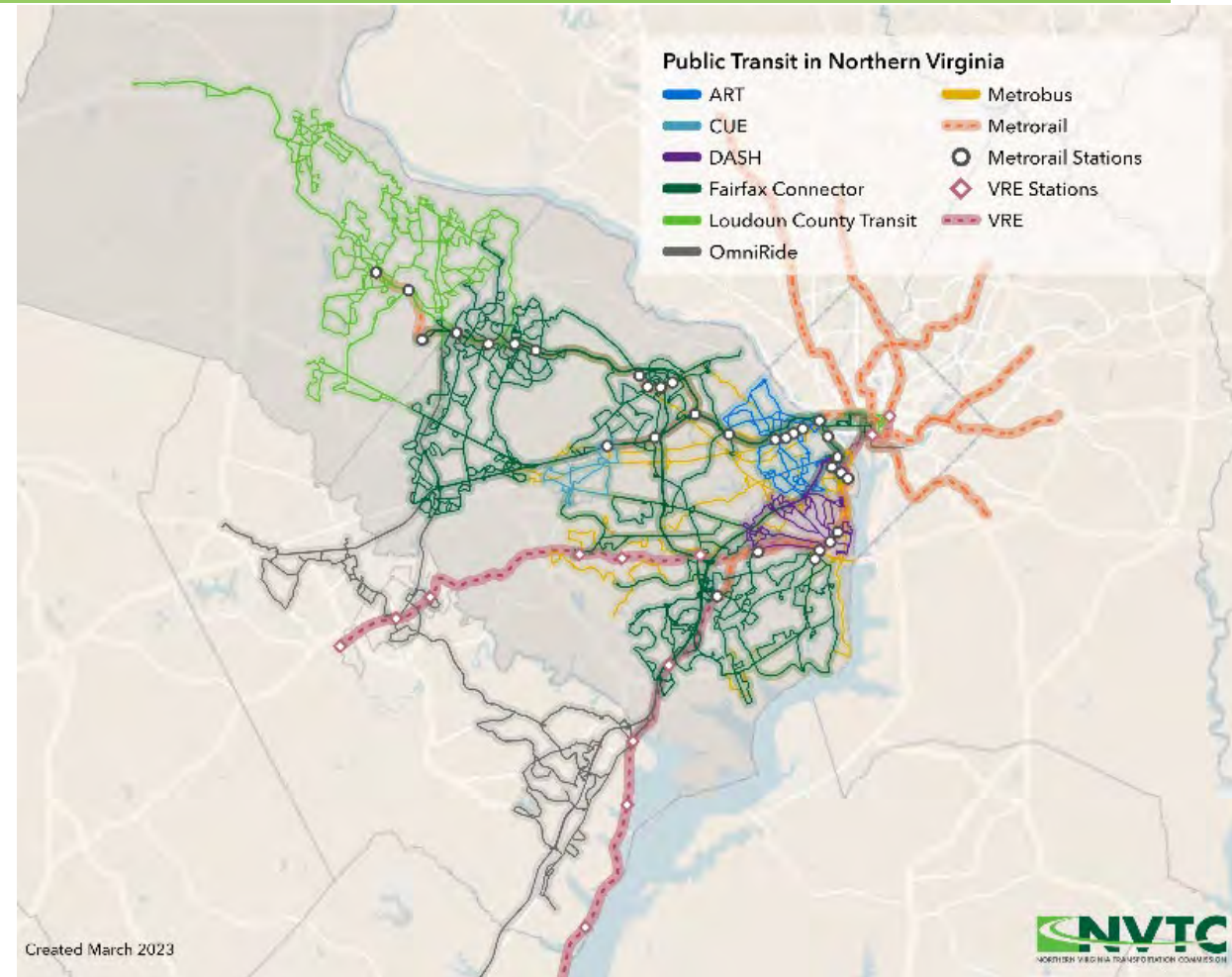


# Value of Northern Virginia Transit to the Commonwealth

**Ann McGrane, Senior Program Manager**

# Why Study the Value of NoVa Transit?

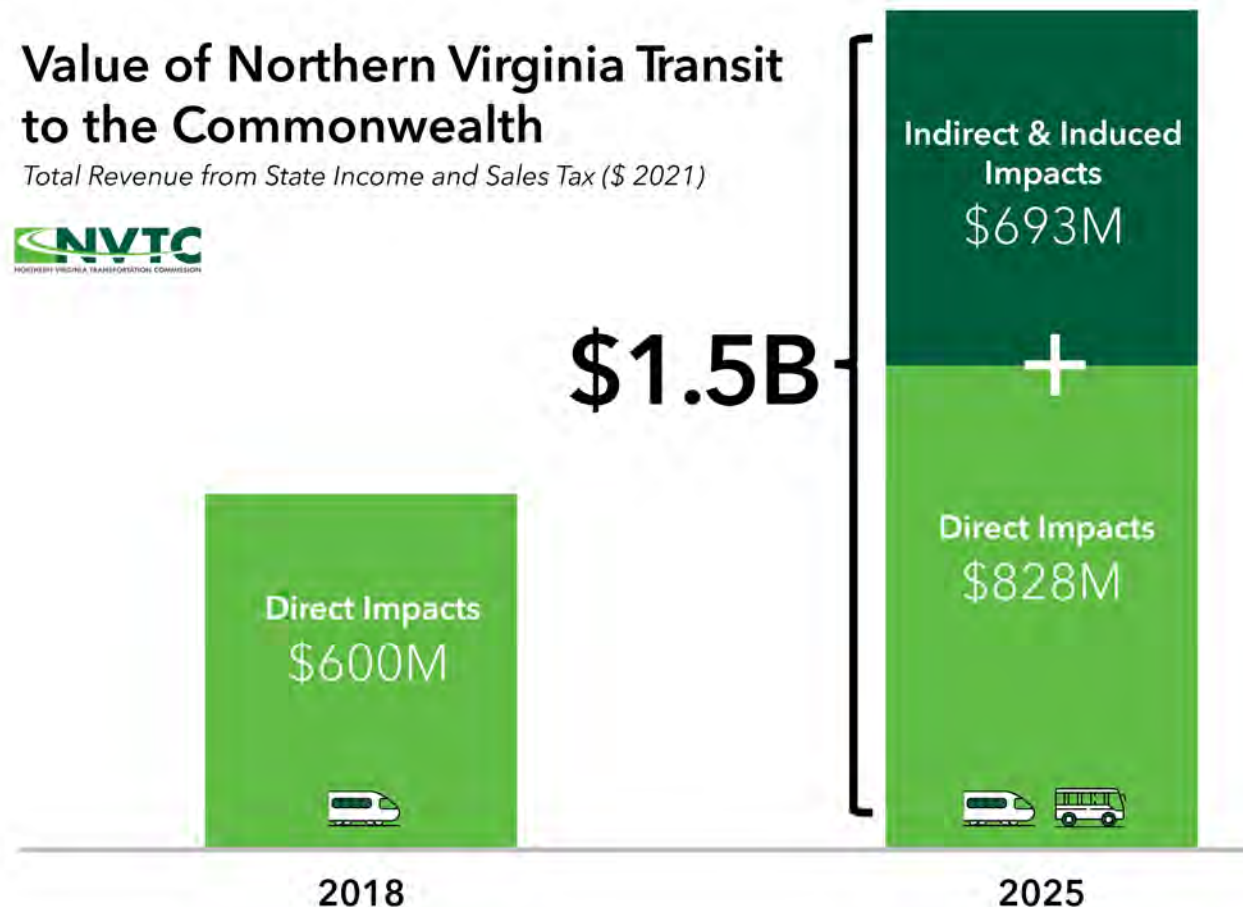
- Northern Virginia's transit network supports the region's quality of life and economic competitiveness.
- Given the important role of state funding for transit, understanding the value of transit in terms of personal income and sales tax revenue is critical to showing the Commonwealth's return on investment for NoVa's bus, Metrorail, and VRE systems.



# What Did We Find?

- NoVa's transit network generates **\$1.5 billion\*** in income and sales tax revenue to the Commonwealth.
  - We estimate that at least \$1 billion can be attributed to Metrorail.
- This study's revenue estimate is more robust compared to the 2018 Value of Transit report because it:
  - Includes the bus systems in addition to Metrorail and VRE,
  - Calculates indirect and induced impacts in addition to direct ones, and
  - Considers additional years of regional growth (while accounting for COVID-related changes).

\* (2021 dollars), 2025 analysis year



(Created May 2023)

# Traffic Impacts Across NoVa

In 2025, nearly 500,000 transit trips would start and/or end in Northern Virginia.

Without transit...

more people must drive to more places, leading to:

- 278,000 new vehicle trips per day
- 1.8 million more miles traveled by car during a typical day's commute
- 209,000 additional hours stuck in traffic for commuters each day (a 64% increase in delay due to congestion)

Without NoVa transit, there would be an extra **278,000** trips a day.

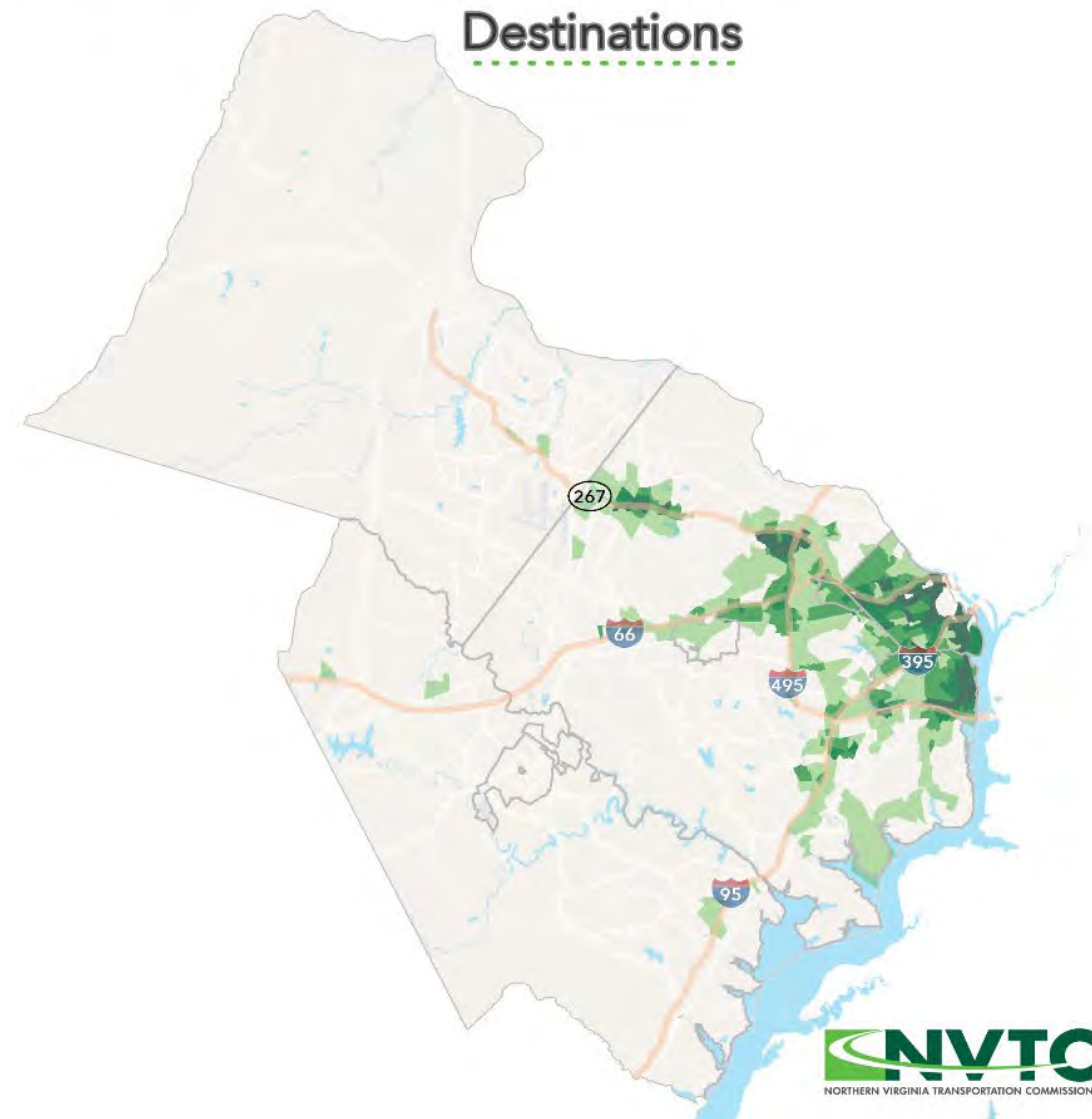
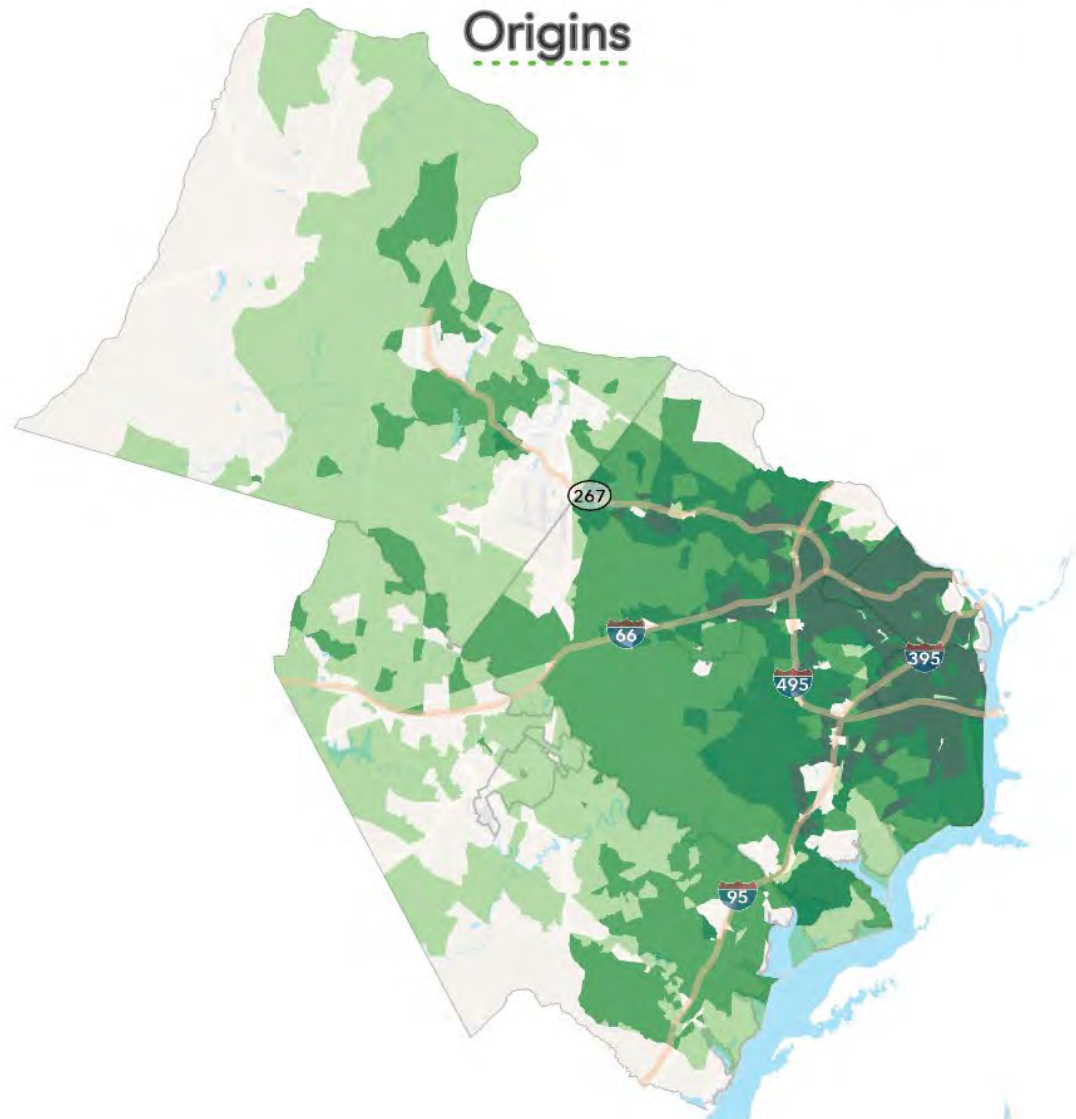
A line of these cars would be **790 miles** long and reach from **NYC to Chicago**.



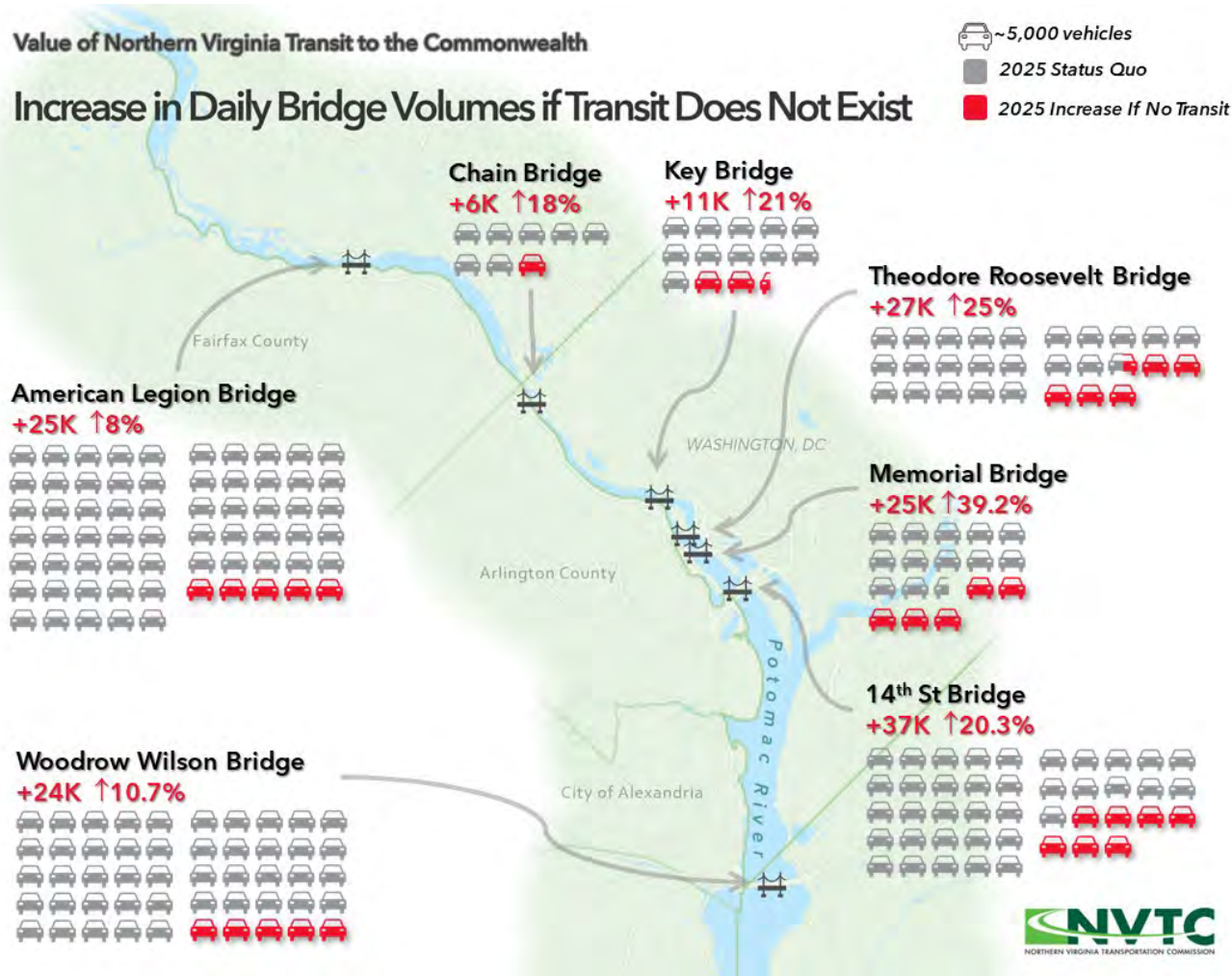


# Increase in Vehicle Trips if Transit Does Not Exist AM Peak

0.0% to 2.0%   2.1% to 4.0%   4.1% to 8.0%   8.1% to 12.0%   12.1% to 54.4%



# Impacts to Bridges Across the Potomac

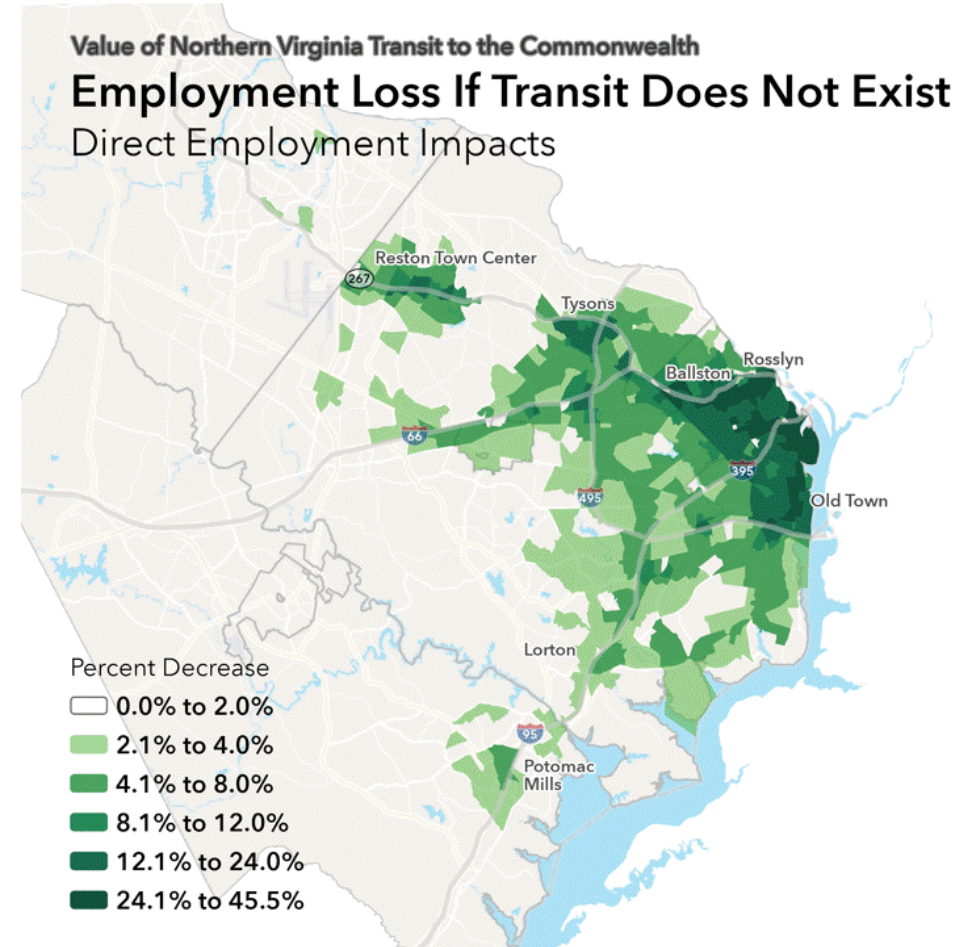


- **Over 155,000 additional vehicles** would cross the Potomac River each day.
- The increase in vehicles is equivalent to:
  - The daily traffic volume that crosses both the Hampton Roads Bridge-Tunnel (I-64) and the Monitor-Merrimac Memorial Bridge-Tunnel (I-664), or
  - The **population of Roanoke and Harrisonburg combined**.
- During peak periods, some bridges will be overwhelmed by congestion. If we tried to handle all the additional traffic:
  - Memorial, Roosevelt, and Wilson Bridges would need two additional lanes
  - **14th St Bridge would need three additional lanes**



# Employment Impacts

- If transit did not exist, there are 157,000 directly impacted jobs that could not be located in the region without major changes to the road network.
- 76% of those jobs are currently within ½ mile of a Metro station.
- Not having transit disproportionately affects low-income households. They make up about 17% of the NoVa labor force but would represent 32% of the job losses.



# What Is Indirect & Induced Employment?

Value of Northern Virginia Transit to the Commonwealth



## Calculating Total Employment Supported by Northern Virginia Transit



**157,000**  
jobs\*

+

**154,000**  
jobs

=

**Total Employment**  
**311,000**  
jobs

### Direct Impact

Jobs in NoVa that cannot be supported due to roadway congestion levels

### Indirect Impact

Jobs that provide goods and services to directly impacted firms, e.g., accountants, IT support, deliveries

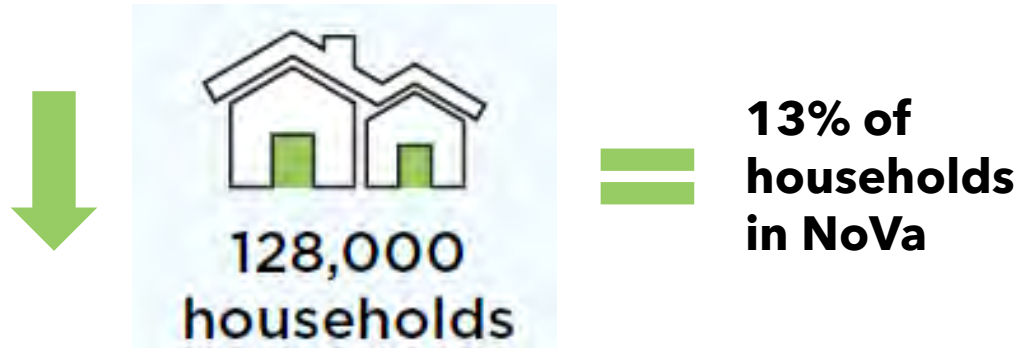
### Induced Impact

Jobs that depend on people employed at the directly or indirectly impacted firms using their wages to buy things, e.g., work lunch, movie ticket, sporting event

\*76% of these jobs are within ½ mile of a Metro station



# Household Impacts

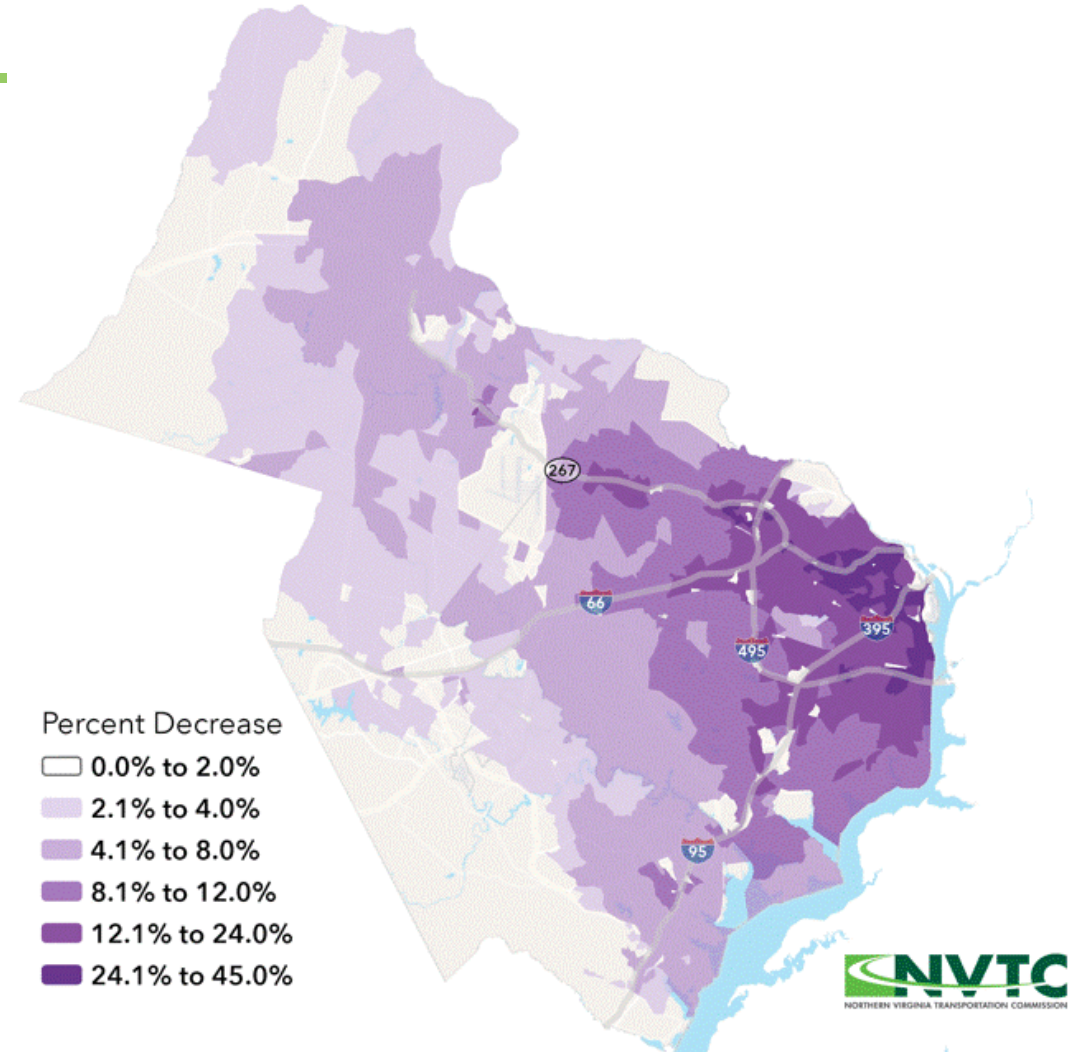


If transit did not exist, the existing road network could not support 128,000 existing households.

The required reduction in households is more distributed across the region compared to employment. Approximately 42% of the households lost are within ½ mile of a Metro station.

Value of Northern Virginia Transit to the Commonwealth

Household Loss if Transit Does Not Exist



# Key Findings for Our Region

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## Transit in Northern Virginia in 2025:

Supports 128,000  
households

Supports 270,000  
jobs in NoVa  
(311,000 statewide)

Saves commuters  
\$130M in vehicle  
operating costs

Avoids about  
70,000 metric tons  
of CO<sub>2</sub> emissions

Avoids over 400  
serious injuries

Saves Northern  
Virginians over  
\$1.7B in time spent  
sitting in traffic

# Why Is Funding for Transit Important?

---

- The **\$1.5 billion in revenue** that transit brings to the Commonwealth equals about **5% of Virginia's general fund revenue**. This money helps fund programs and services for people across Virginia.
- The Commonwealth has a **160% return on investment** for transit in Northern Virginia. For every \$1 spent, it receives the original dollar back plus an additional \$1.60 in return.
- Northern Virginians using transit removes congestion from I-95 and I-66, improving the reliability of travel for both people and freight across Virginia and along the East Coast.
- Transit is a key part of Northern Virginia's ecosystem. Metrorail is the transportation backbone that has supported the region's growth and success for almost half a century.



# Questions?



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[katemattice@novatransit.org](mailto:katemattice@novatransit.org) | (571) - 457 - 9523



# Prioritizing Bus Priority in Northern Virginia

**NVTC Commission**  
**June 1, 2023**

**Xavier Harmony**  
*Senior Program Manager,  
Transit Resource Center*

**Sophie Spiliotopoulos**  
*Program Analyst*



# Congestion Hurts Buses

## Traffic congestion

- › Lengthens trips
- › Decreases reliability
- › Increases costs

... and is a particularly big issue in the Washington, DC region

## Buses

- › Get stuck in congestion like cars
- › Can carry many more people than cars
- › Should be prioritized

**Bus priority treatments can help, but where should we focus our efforts?**



*Loudoun County Transit and WMATA buses stuck in traffic*  
Northern Virginia Transportation Commission



# Where do buses slow and where can we speed them up?

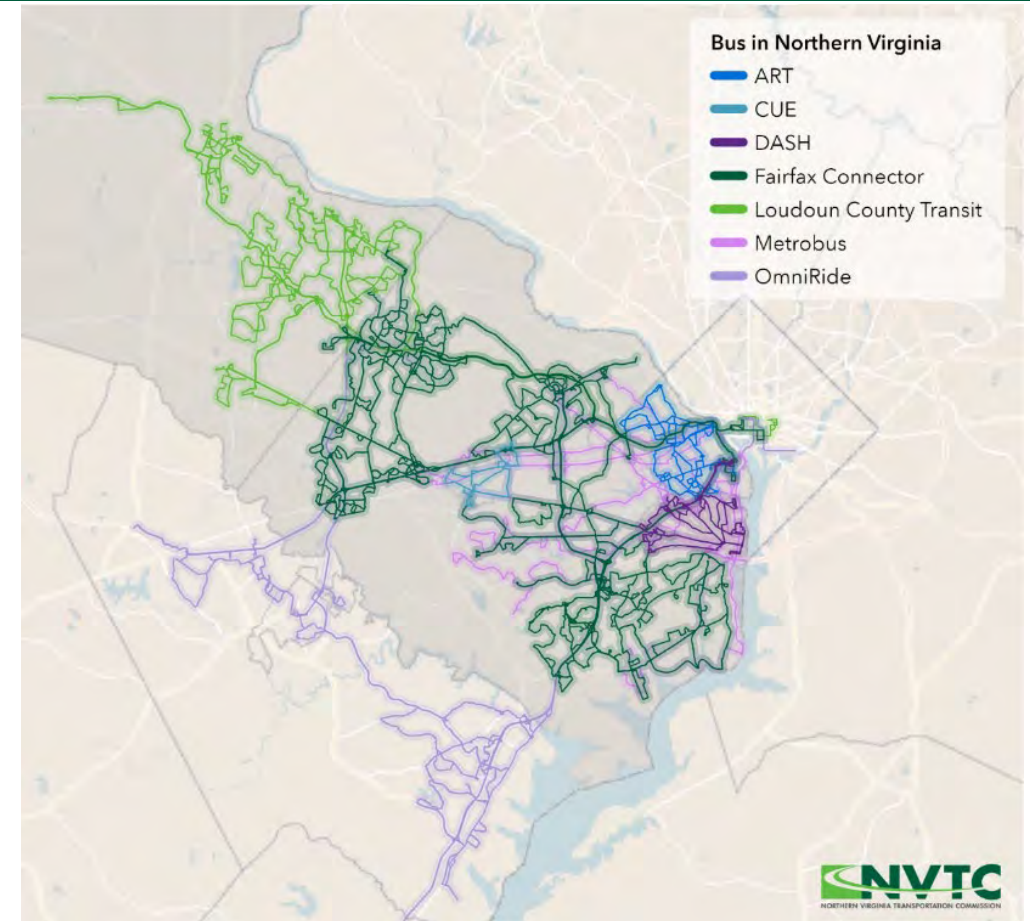
## Two primary types of analysis using transit schedules (GTFS)

### 1. Regional bus trends

- › How trip times vary throughout the day
- › How speeds and stop spacing vary across agencies
- › How speed varies across geographies

### 2. Cost of bus delays

- › By agency
- › By route
- › By location



Northern Virginia bus GTFS (March 2023)

# Calculating Speed & the Cost of Congestion

Two buses traveling between the same stops and covering the same distance might take different times

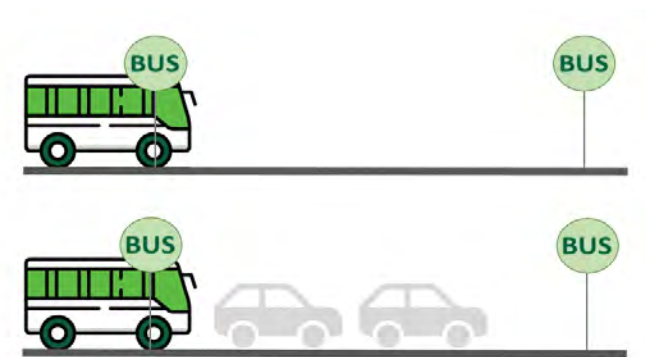
▶ Eastbound To King St.-Old Town station

Monday thru Friday — Lunes a viernes

Route Number	Tysons Corner (south side)	Tysons Corner Center	Leesburg-Pike & Ramada Rd.	West Falls Church	Washington & Broad Sts.	Leave Seven Corners Transit Center	Columbia Pike & Carlin Springs Rd.	Fillmore Ave. & Bisdorf Dr. (NVCC)	Southern Towers (Stratford Bldg.)	Seminary Rd. & Howard St. *	W. Braddock Rd. & Marlee Way *	KING ST-OLD TOWN
AM Service — Servicio matutino												
28A	5:30	5:33	5:37	5:45	5:54	6:03	6:14	6:22	6:25	6:31	6:33	6:41
28A	5:55	5:58	6:02	6:10	6:19	6:28	6:39	6:47	6:50	6:56	6:58	7:06
28A	6:15	6:18	6:22	6:30	6:40	6:54	7:05	7:13	7:17	7:24	7:27	7:36
28A	6:35	6:38	6:42	6:50	7:00	7:14	7:25	7:33	7:37	7:44	7:47	7:56
28A	6:55	6:58	7:02	7:10	7:20	7:34	7:45	7:53	7:57	8:04	8:07	8:16
28A	7:15	7:18	7:22	7:30	7:40	7:54	8:05	8:13	8:17	8:24	8:27	8:36
28A	7:35	7:38	7:42	7:50	8:00	8:14	8:25	8:33	8:37	8:44	8:47	8:56
28A	7:55	7:58	8:02	8:10	8:20	8:34	8:45	8:53	8:57	9:04	9:07	9:16

71 mins

81 mins



Screenshot of WMATA 28A bus schedule

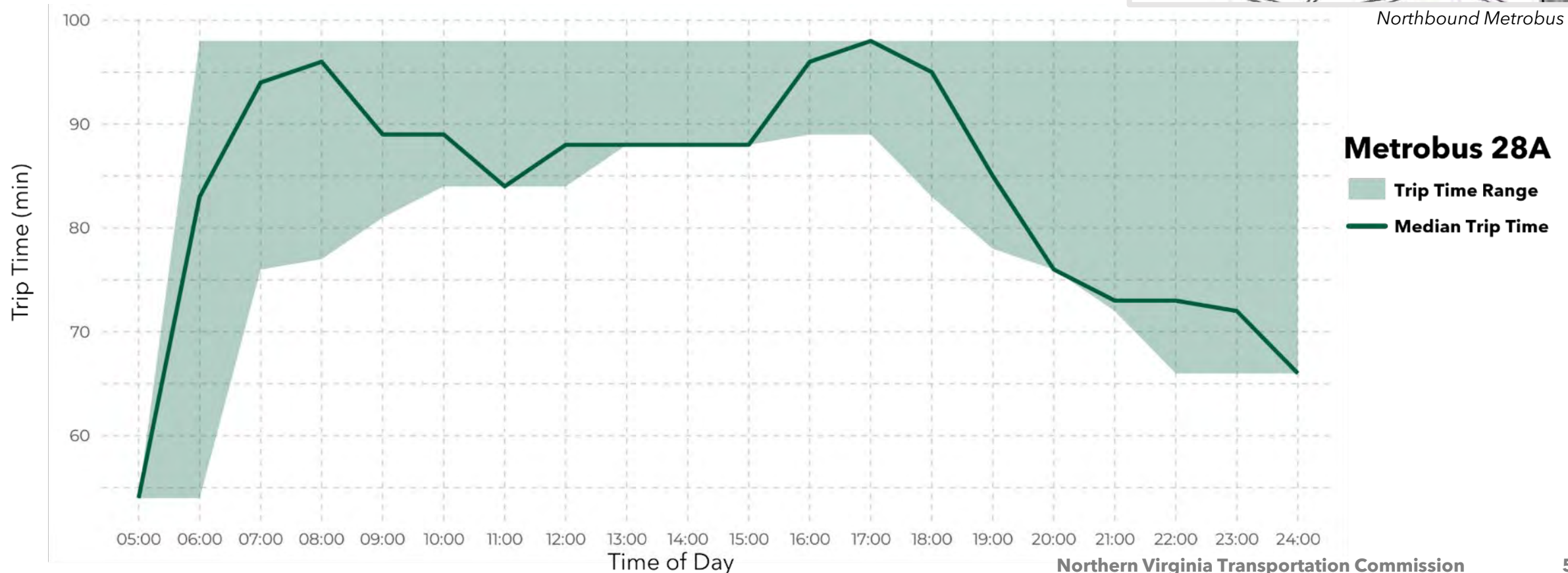
# How do bus trip times vary?

## Metrobus 28A Case Study

- › Trip times vary by **time, day, and direction**
- › A northbound trip **nearly doubles** throughout the day, from 54 to 106 min



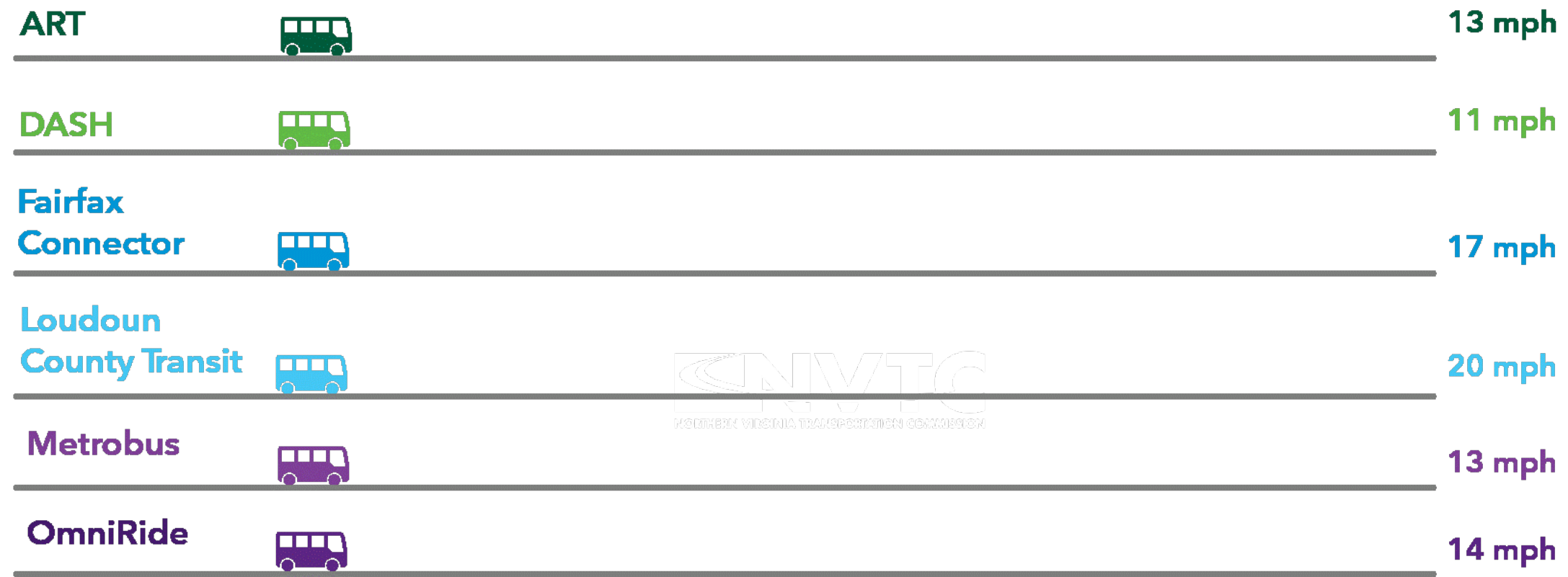
Northbound Metrobus 28A





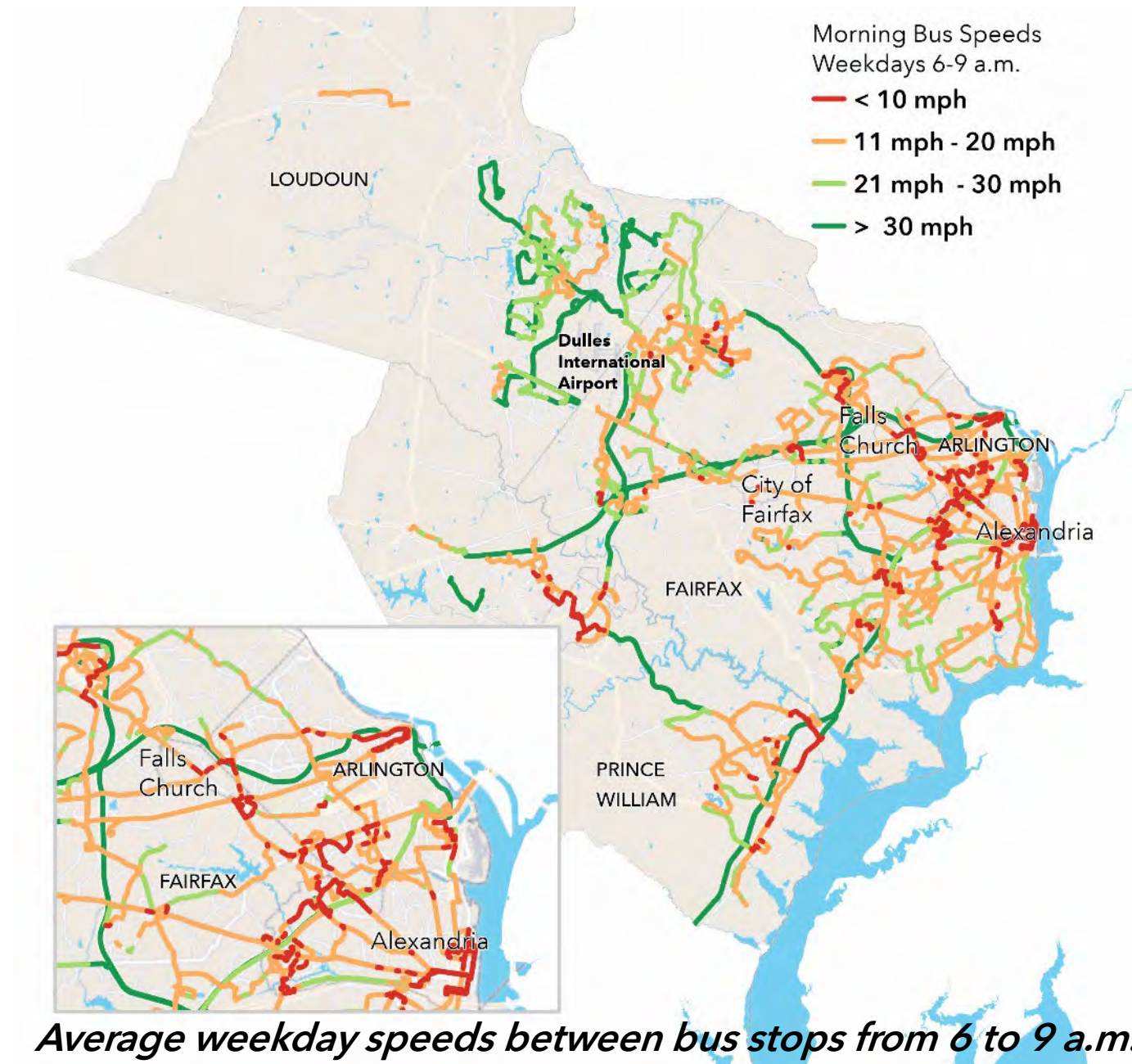
# Summarizing Speeds

Median Bus Speeds for Northern Virginia



# Bus Speeds

- › Average bus speeds are slow across the region
- › As expected, speeds are slowest inside the beltway
- › Regional bus speeds vary significantly by time of day





## Change in NoVa Bus Speeds

7-8 a.m. compared to 10-11 a.m.

- Slow down of more than 25%
- Slow down of up to 25%
- No Change
- Speed up of up to 25%
- Speed up of more than 25%





## Change in NoVa Bus Speeds

5-6 p.m. compared to 10-11 a.m.

- Slow down of more than 25%
- Slow down of up to 25%
- No Change
- Speed up of up to 25%
- Speed up of more than 25%





# Cost of Bus Delays

## Transit agency operating cost impacts

- › Bus delays total **\$19 million** in potential annual cost impacts
- › Northern Virginia transit agencies don't all account for delay in their schedules to the same extent

Agency	Average Bus Cost per Operating Hour*	Potential Annual Cost Impact
ART	\$111	\$774,000
DASH	\$108	\$592,000
Fairfax County Connector	\$123	\$6,332,000
Loudoun County Transit	\$137	\$97,000
Metro	\$222	\$10,133,000
OmniRide	\$220	\$1,051,000

\*Source: NTD 2020 Agency Profile

# Cost of Bus Delays

## Routes with Greatest Cost Impact

- › Metro and Fairfax account for most congestion in their schedules
- › Rankings change when considering route length and population density
- › 28A consistently ranks as highest cost route no matter the method

Agency	Route	Annual Cost	Rank	Cost per Mile	Rank	Cost per Person~	Rank
Metrobus	28A	\$2,331,000	<b>1</b>	\$132,000	<b>1</b>	\$29	<b>1</b>
Fairfax Connector	401	\$1,085,000	<b>2</b>	\$59,000	<b>4</b>	\$25	<b>2</b>
Metrobus	1A	\$966,000	<b>3</b>	\$73,000	<b>2</b>	\$18	<b>3</b>
Fairfax Connector	402	\$783,000	<b>4</b>	\$43,000	<b>10</b>	\$17	<b>5</b>
Metrobus	REX	\$740,000	<b>5</b>	\$50,000	<b>7</b>	\$15	<b>6</b>
Fairfax Connector	171	\$641,000	<b>6</b>	\$41,000	<b>11</b>	\$14	<b>7</b>
Metrobus	10B	\$602,000	<b>7</b>	\$54,000	<b>5</b>	\$8	<b>12</b>
Metrobus	29N	\$514,000	<b>8</b>	\$33,000	<b>17</b>	\$8	<b>11</b>
Fairfax Connector	950	\$465,000	<b>9</b>	\$60,000	<b>3</b>	\$18	<b>4</b>
Metrobus	10A	\$440,000	<b>10</b>	\$44,000	<b>9</b>	\$7	<b>15</b>

~Per person is defined as estimate of people who live within a quarter mile of the bus route



# Takeaways

## Understanding bus speed and congestion helps...

- › Identify opportunities for studying bus priority treatment candidate locations
- › Study new potential BRT corridors

## This work affects funding by...

- › Highlighting packages of projects for funding to help the region's bus
- › Providing a way to prioritize funding
- › Demonstrating how increases in capital funding can save operating dollars

## Regional analysis allows for a holistic understanding of street congestion

### This analysis supports related regional work...

- › Metro's Better Bus Network Redesign
- › NVTC's Regional Bus Analysis
- › NVTa's Bus Rapid Transit Preliminary Deployment Plan

# Thank You.

**Xavier Harmony**

*Senior Program Manager,  
Transit Resource Center*

**Sophie Spiliotopoulos**

*Program Analyst*



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# VPRA Update

Northern Virginia Transportation Commission

June 1, 2023



# Virginia Passenger Rail Authority

- Created in 2020 by the General Assembly
- Given all powers necessary for carrying out its statutory purposes:
  - Manage passenger rail in Virginia
  - Design, build, finance, and maintain rail facilities
  - Direct recipient of USDOT Grants
- Partners with Amtrak and VRE to operate passenger and commuter rail service
- Governed by a 15-Member Board





# Virginia Passenger Rail Network: 2023

- Four State-Supported Amtrak Routes: 8 daily roundtrips
    - Roanoke: 2
    - Richmond: 1
    - Newport News: 2
    - Norfolk: 3
  - Five Amtrak Long Distance Roundtrips
  - One NC State-Supported Roundtrip
- Two Virginia Railway Express (VRE) Commuter Routes
  - 16 daily roundtrips
    - Manassas: 8
    - Fredericksburg: 8

*Existing VA Passenger Rail Network a result of dedicated, bipartisan funding since 2006*

## PASSENGER ROUTES



### Virginia State-Supported Services

- Washington-Roanoke (Route 46)
- Washington-Newport News (Route 47)
- Washington-Norfolk (Route 50)
- Washington-Richmond (Route 51)

### Host Railroads

- CSX - CSX Transportation
- NS - Norfolk Southern
- BBRR - Buckingham Branch
- Passenger Station

### Other Services

- Other Amtrak State-Supported
- Amtrak Long-Distance
- VRE Commuter Rail
- Thruway Bus

# Virginia-Supported Monthly Ridership and Station Activity

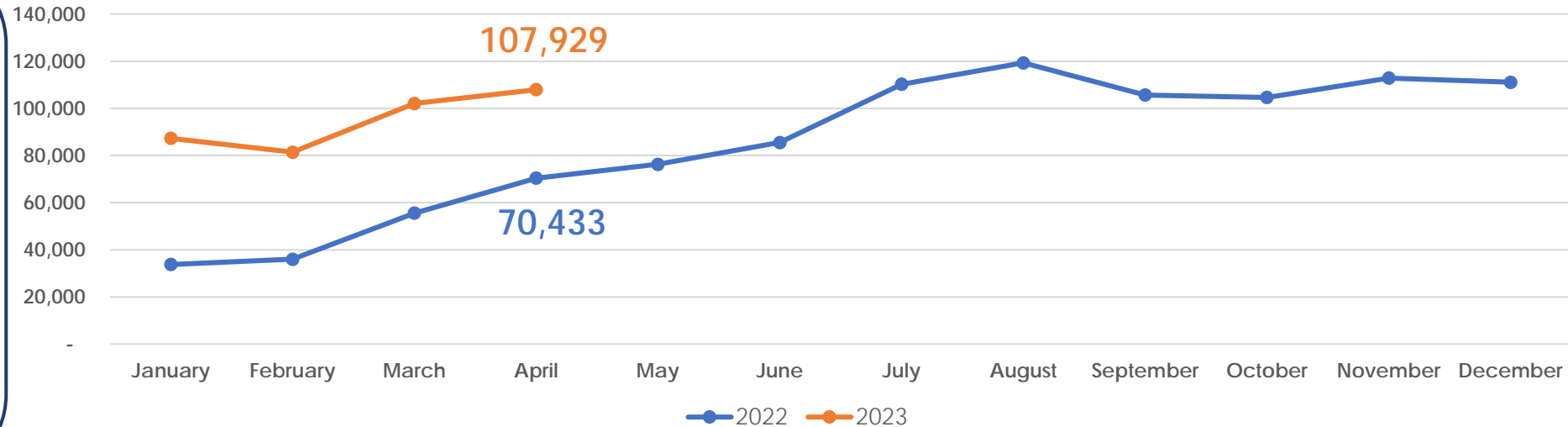
April saw a 53.2% increase in ridership year over year.

Notes: Five daily roundtrips in 2022 vs. eight daily roundtrips in 2023. Year over year comparisons now in place for ridership and on time performance.

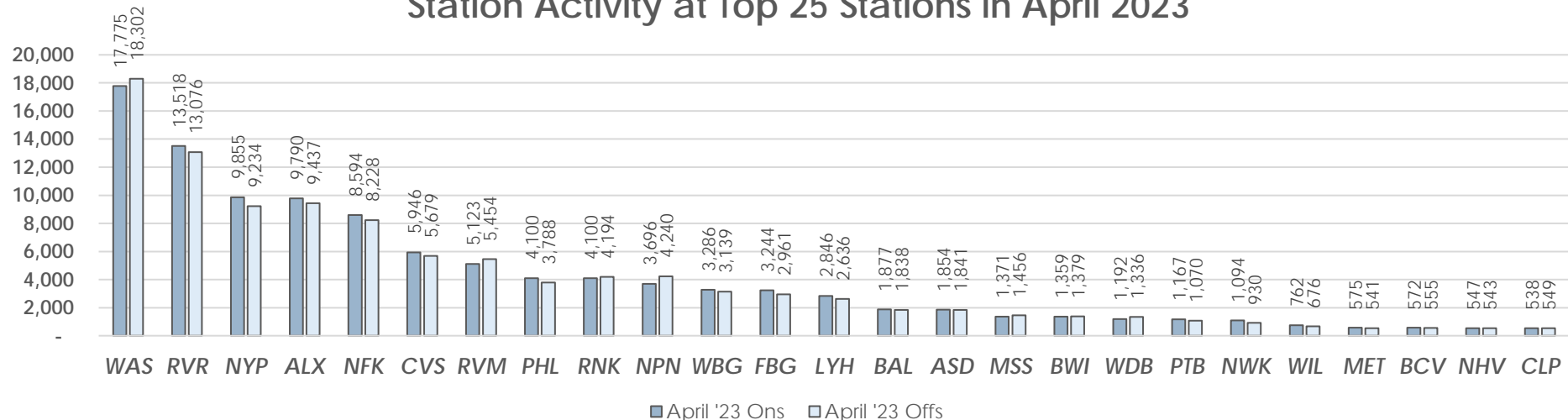
Inside of Virginia, RVR, ALX, and NFK were the most popular stations.



## State-Supported Monthly Ridership Comparison



## Station Activity at Top 25 Stations in April 2023





Planned Service Enhancements	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030 and Beyond	Total Trains
------------------------------	------	------	------	------	------	------	------	------	------	-----------------	--------------

Line	Existing Trains	New Trains (1)	New Trains (2)	New Trains (3)	Total Trains
Amtrak State Supported Service	5	1 (6 in service)	2 (8 in service)	3 (11 in service)	11
VRE Fredericksburg Line (subject to agreement by the VRE Operations Board)	8	1 (9 in service)	3 (12 in service)	2 (14 in service)	14
VRE Manassas Line (subject to agreement by the VRE Operations Board; subject to agreement with Norfolk Southern)	8	1 (9 in service)	3 (12 in service)	-	12

Amtrak State Supported Service

1 New Train to/from Roanoke (2 Trains in Service)

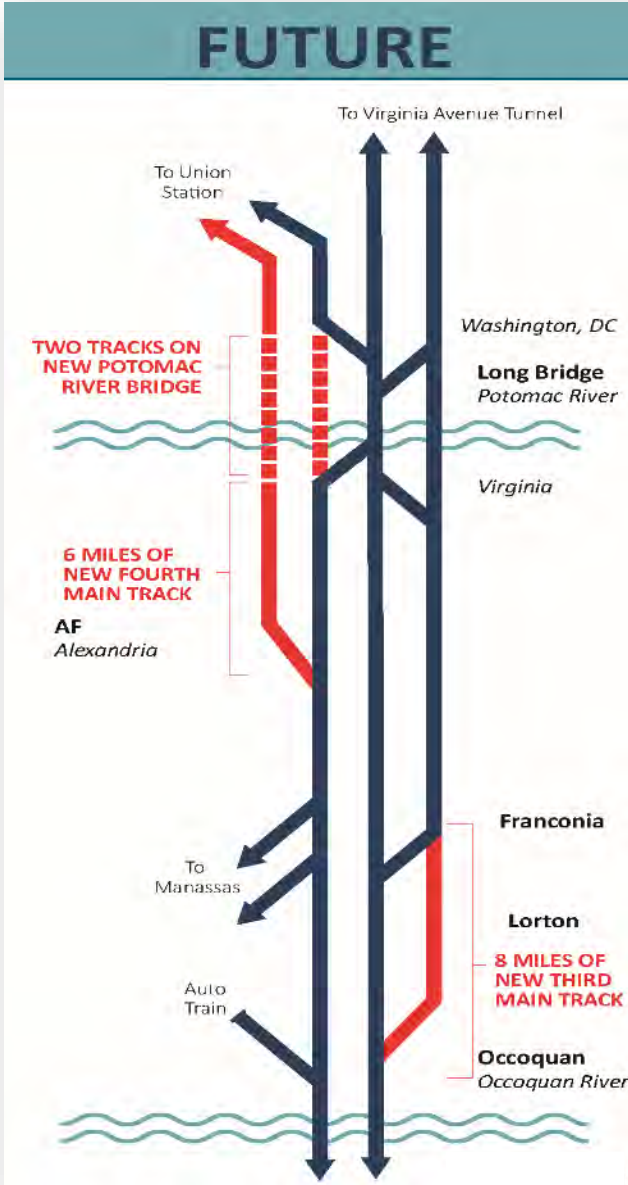
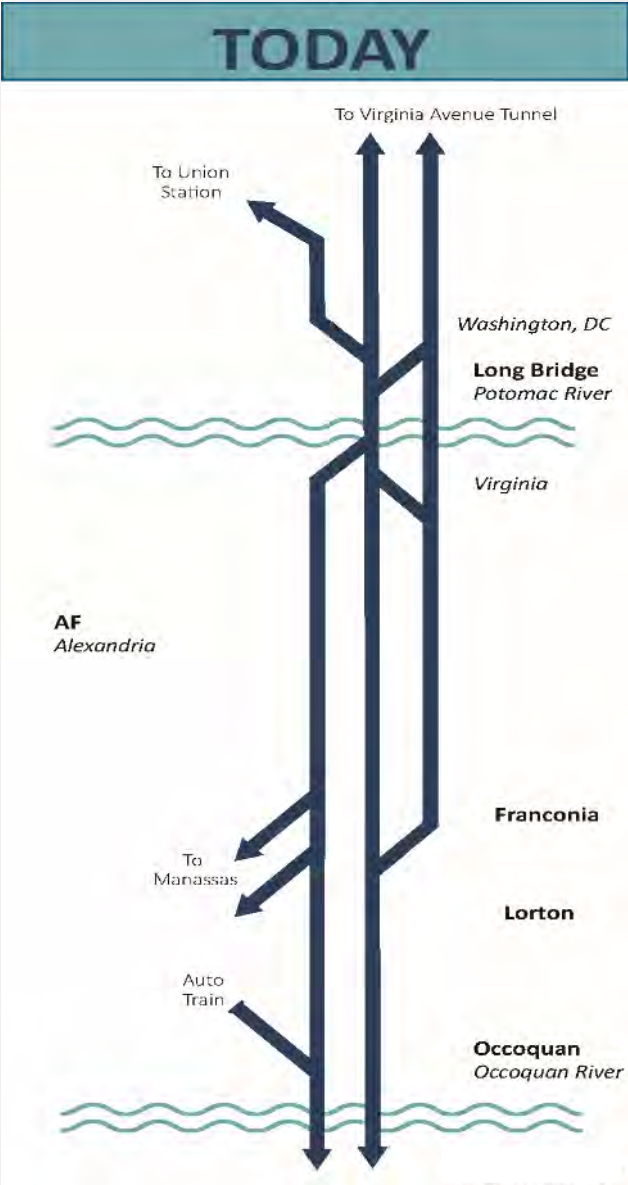
Extend service to New River Valley

1 Existing Train to/from Roanoke

Extend service to New River Valley

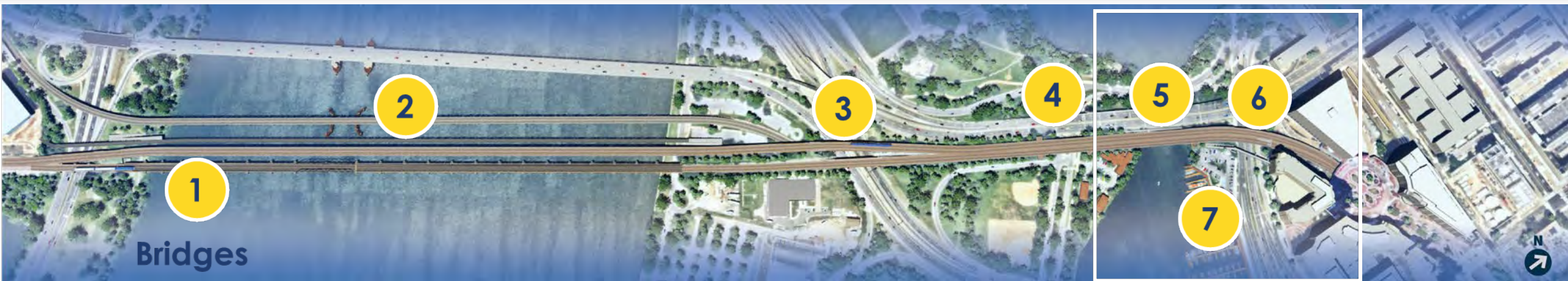
2

# TRV Infrastructure Improvements from DC to Quantico

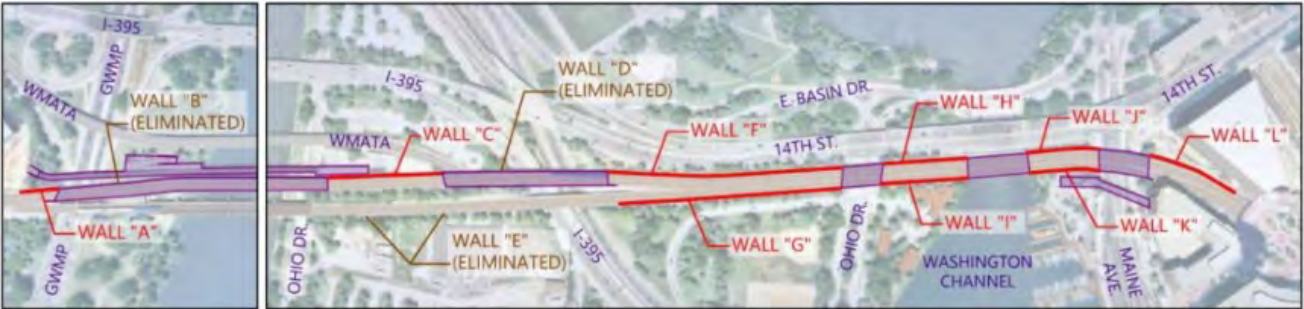




# Long Bridge Project Overview



Project Map – Bridges



Bridge Key	
1	Potomac River Rail
2	Potomac River Bike-Ped
3	I-395 Rail
4	Ohio Drive SW (East) Rail
5	Washington Channel Rail
6	Maine Ave SW Rail
7	Maine Ave SW Ped

# Long Bridge Project Work Progress

- Comment resolution on 30% design plans ongoing
- Utility test pitting
- Plat development for property needs
- Stakeholder coordination
- Permitting outreach
- **Construction contract procurement**



*Amtrak train crossing Potomac River on existing Long Bridge*



# Construction Procurement Schedule



■ - South Package

## South Package (Design Build)

Event	Anticipated Date
Release of Request for Qualifications	June 30, 2023
Statements of Qualification Due	November 30, 2023
Shortlist announcement	January 2024
Release of Request for Proposals	February 5, 2024
Proposals Due	July 2, 2024
Notification of Highest Ranked Proposer	August 16, 2024
Design-Build Agreement execution	October 9, 2024
Substantial Completion	Late 2030

■ - North Package

## North Package (Progressive Design Build)

Event	Anticipated Date
Release of Request for Qualifications	March 24, 2023
Statements of Qualification Due	May 5, 2023
Shortlist announcement	June 21, 2023
Release of Request for Proposals	July 7, 2023
Proposals Due	September 15, 2023
Notification of Highest Ranked Proposer	October 20, 2023
PDB Agreement execution	December 2023
PDB Phase 1 Services	Q1-Q3 2024
PDB Phase 2 (contingent) start	Fall 2024
Substantial Completion	Late 2030

# Crystal City Amtrak Platform

- Amtrak and VPRA have jointly applied for \$33.8m grant on a \$42.3m project
- Project includes design and construction of a new Crystal City high level platform
- Will be constructed on the southern end of the planned new VRE Crystal City island platform.
- Along with improvements related to Amazon HQ2 there will be direct access to Reagan National Airport from the Amtrak platform



*Rendering of Pedestrian Access to Crystal City Station*



# Alexandria Fourth Track

- Construct a new fourth track from Alexandria station to Rosslyn interlocking
- Final design expected by end of 2023
- Utility relocation & property acquisition



*Rail Bridges over Commonwealth Ave, facing North*

# Franconia Bypass

- 1.3 mile Bypass to be located just south of the Franconia-Springfield Station
- Project will design and construct a single track on a bypass bridge with accommodations for a future second track
- Coordination with Franconia third track project from Franconia to Lorton, including Newington Rail Bridge
- Project will allow passenger trains to crossover to serve VRE stations on the west north of Franconia and on the east south of Franconia
- Reduces conflicts between passenger trains and freight trains
- Project at 30% Design (Parsons)
- RFP expected this summer





Questions?

