National Capital Region
Transportation Planning Board

TPB REGIONAL PUBLIC TRANSPORTATION SUBCOMMITTEE (RPTS)

Tuesday, October 24, 2023
12:00 – 2:00 P.M.
Conference Room 1

Chair: Nick Ruiz, VRE

IN-PERSON/HYBRID MEETING

AGENDA

12:00 P.M.   **1. WELCOME**

12:10 P.M.   **2. REGIONAL TRANSIT ON-BOARD SURVEY COORDINATION**
Tim Canan, TPB Planning Data and Research Program Director

12:30 P.M.   **3. HIGH-CAPACITY TRANSIT (HCT) NETWORK ANALYSIS UPDATE**
Eric Randall, TPB Transportation Engineer

12:50 P.M   **4. REGIONAL PASSENGER RAIL FORUM**

     A. Amtrak's Terminal Infrastructure Plan
Kyle Nembhard, Amtrak Project Manager – Major Stations

     B. Transforming Rail in Virginia and Related Projects
Christine Fix, Virginia Passenger Rail Authority Director of Planning

     C. VRE System Plan Update
Nick Ruiz, VRE Planning Program Manager

1:50 P.M.   **5. OTHER BUSINESS**

2:00 P.M.   **6. ADJOURN**

The next regular meeting of the RPTS is November 28, 2023 and is <u>virtual</u>.

Reasonable accommodations are provided upon request, including alternative formats of meeting materials.
Go to www.mwcog.org/accommodations or call (202) 962-3300 | (202) 962-3213 (TDD) for more info.

REGIONAL TRANSIT ON-BOARD SURVEY COORDINATION

Timothy Canan, AICP
TPB Planning Data and Research Program Director

TPB Regional Public Transportation Subcommittee
October 24, 2023

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Background

- TPB is developing its next-generation, activity-based regional travel demand model ("Gen3 Model"), which should improve the model's ability to explore policy questions by representing phenomena such as pricing, equity, telecommuting, and vehicle choice

- Observed transit trip data needed for Model Development

    1. Origin & destination (O/D) location and purpose

    2. Access & egress mode (walk, bike, park and ride, kiss and ride, other)

    3. First boarding/alighting transit stops and sequence of transit routes taken

    4. Sociodemographic characteristics (auto ownership, auto sufficiency, income, person type, etc.)

- Data can be obtained through a regionally-coordinated effort to conduct Transit On-Board Surveys (TOBS) among the region's 25 public transportation providers

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Goals of Regional Coordination of TOBS

- Provide data that is needed by transit agencies, e.g.,

    - Title VI information for federal reporting purposes (every 5 years)

    - Customer satisfaction data

    - Subsidy allocation data

- Provide data that is needed by COG/TPB staff to estimate, calibrate, and validate regional travel demand forecasting models, which are used by COG/TPB staff and other modeling stakeholders to forecast both public and private transportation demand

- Provide data that is regionally consistent and available on a regular, on-going basis

Benefits

- TOBS data can be used to:

  - Understand transit market segmented by O/D location and purpose, access and egress mode, and other sociodemographic characteristics

  - Understand transfer rates within and between modes/operators and convert unlinked transit trips to "linked" trips

  - Test transit network and path-building parameters by assigning linked trips onto the transit network

  - Create model estimation, calibration, and validation targets

  - Understand external/visitor transit trip characteristics

  - Provide data that is regionally consistent and available on a regular, on-going basis

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Previous Approaches

- While household travel surveys such as the Regional Travel Survey (RTS) collect similar information (for all trips), transit trips account for too small a percentage of total individual trips to sufficiently represent travel patterns of transit users

- While transit operators often collect information for Title VI compliance, customer satisfaction, and subsidy allocation, these surveys often do not include data needed to calibrate a travel model, such as O/D information

- Regionally coordinated transit on-board surveys have not been a common practice in the metropolitan Washington region

  - 2008 – (1) TPB conducted a regional bus survey for all major bus operators, except for Fairfax Connector; (2) Contractor conducted Metrorail Passenger Survey for MTA and WMATA

  - 2014 – TPB conducted Metrobus Passenger Survey for WMATA

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Proposed Approach

- TPB can play a key role in coordinating agencies' efforts to collect and develop a consistent TOBS dataset that can be used to support modeling and other noted data needs

- Partnership role envisioned where TPB provides technical support and potentially other resources to other transit operators

- TPB staff met with WMATA staff on May 1, 2023, and hopes a strong commitment to partner can strengthen the proposed approach

- Staff intends to reach out to and engage other transit operators individually as well as through the TPB Regional Public Transportation Subcommittee

- Staff intends to coordinate with the travel modeling community via the TPB Travel Forecasting Subcommittee

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Possible services to be provided by TPB

TPB can provide the following elements of coordination and support:

1. Assistance with designing survey instrument(s), including survey questions

2. Assistance with developing sampling methods

3. Provide technical assistance funding and/or consultant assistance for smaller, under-resourced agencies that cannot undertake survey themselves

4. Process and analyze collected data to develop regional TOBS dataset

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Next Steps

- Letter of invitation to be sent to directors of transit agencies

  - Seek formal response to indicate commitment to participate

  - Indicate what level of support would be needed from TPB

  - Letter to WMATA will seek for formal re-affirmation of commitment to participate since WMATA has provided informal commitment already.

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Questions . . .

Timothy Canan

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HIGH-CAPACITY TRANSIT (HCT) LOCAL TRANSIT ACCESS STUDY
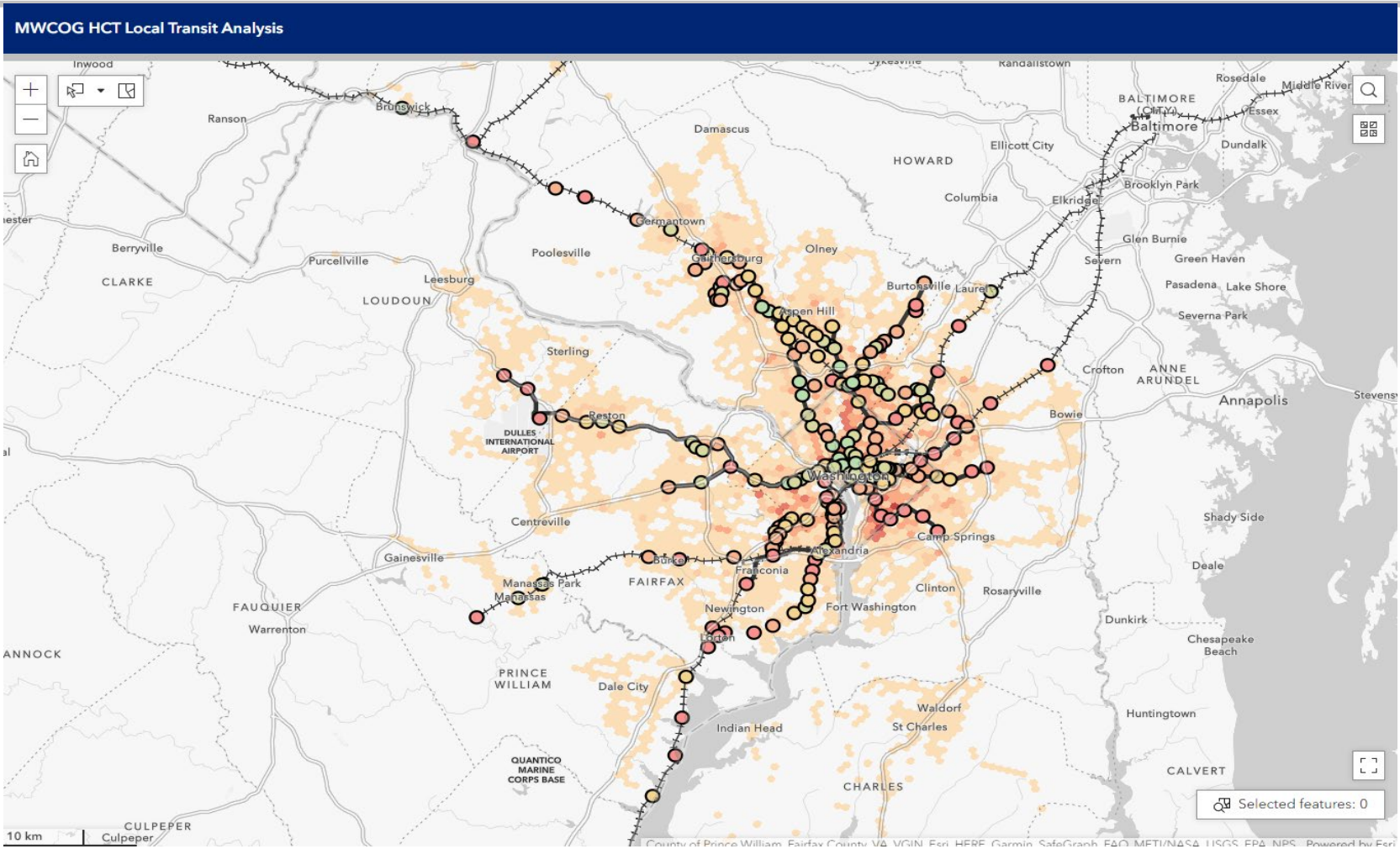
Update

Eric Randall
TPB Transportation Engineer

Regional Public Transportation Subcommittee
October 24, 2023

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Study Objectives

- Build on previous TPB and COG work on High Capacity Transit (HCT) locations
  - part of the Region United framework
    https://www.mwcog.org/about-us/cog-board-and-priorities/2030-framework/

- Analyze local bus transit services to HCT stations and related access issues:
  - Operating agencies, HCT riders per station, bus trips per day, and major destinations served.
  - Connections to other HCT stations, to regional Activity Centers outside HCTs, and HCT stations in COG's Equity Emphasis Areas (EEAs).
  - Assess current and planned HCT station accessibility and any needs for improved bus access and improved pedestrian and non-motorized access.

REGION UNITED
Metropolitan Washington Planning Framework for 2030

Advancing Equity, Transportation, Housing, and Climate Goals

UPDATED: December 2022

Metropolitan Washington
Council of Governments

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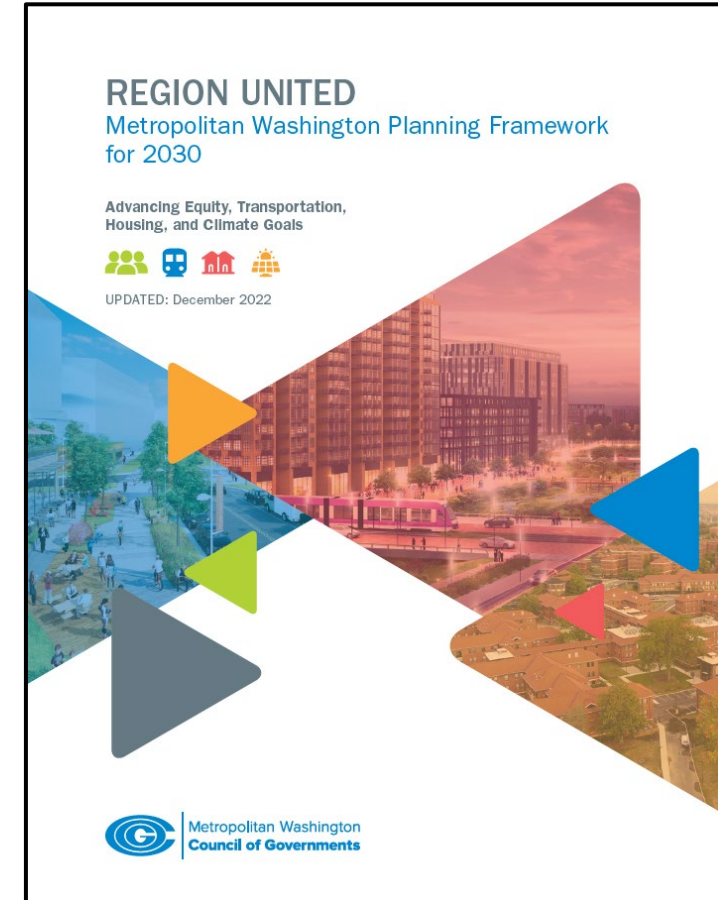
Toolkit and Web Interface in Development

Web Interface: Layers and Indices in Development

- The High-Capacity Transit Station Accessibility layer includes the most robust classification/accessibility data (click on a station to view a pop-up with these fields)

- The HCT Station Classification and HCT Station Accessibility groups contain layers that quickly visualize these various attributes along a Low-High spectrum.

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Web Interface: Alexandria / South Fairfax Close-up
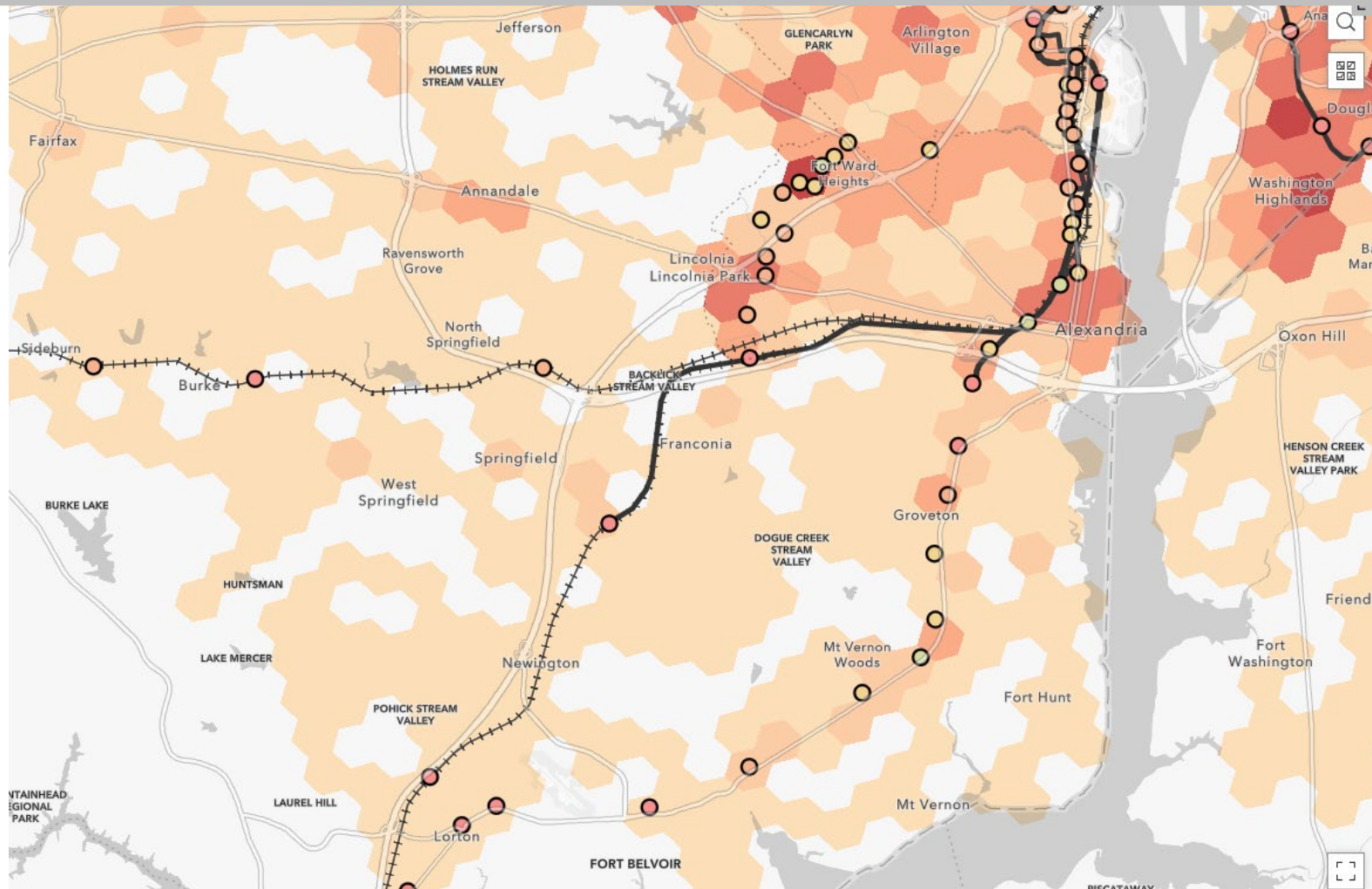
Enhanced Network Analyses

How well are people connected to HCT?

How well does HCT serve points of interest?

Quantifying Access

- 30-minute accessibility determination for each regional hex by mode:
  - Walking
  - Bicycling
  - Transit
  - Driving*

* Select stations; additional experimentation needed to develop speeds/buffer

Mode	Speed (mph)	Buffer (mi)
Walking	2.2	1.1
Bicycling	7.5	3.7
Transit	10	5.0

Foursquare ITP

A Deeper Understanding of Access

- Indices measure networked accessibility relative to a geometric buffer:
  - ☐ Residents
    - Existing and forecast
  - ☐ Jobs
    - Existing and forecast
  - ☐ Points of interest

Foursquare ITP
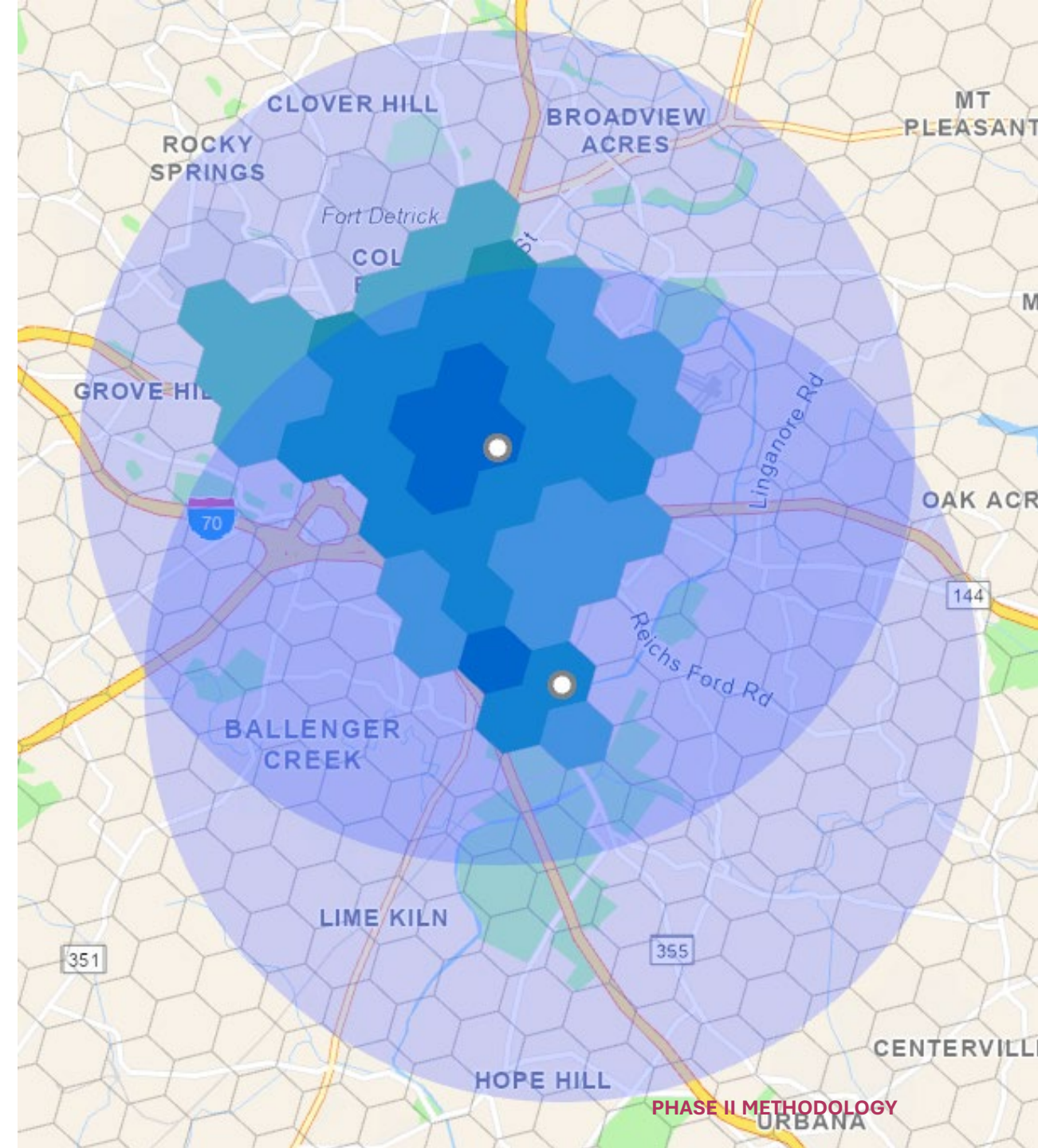
Data

Existing Demographics

- American Community Survey and Longitudinal Employer-Household Dynamics Survey:
  - Population
  - Employment
  - Transit Potential
  - Disabled Population
  - Youth Population
  - Senior Population
  - Zero-car Population
  - Low-income Population
  - Non-white Population

Forecast Demographics

- COG Cooperative Forecast (2030)
  - Population
  - Employment
  - Transit Potential

Foursquare ITP

Points of Interest Index

Counting and binning POIs by category for each hex facilitates a matching index:

- Churches
- Dentists
- Doctors
- Pharmacy
- Primary Schools
- Local Government Offices
- Schools
- Supermarkets
- Hospitals
- Universities

- Drugstores
- Libraries
- Secondary Schools
- Post Offices
- Mosques
- Synagogues
- Courthouses
- Hindu Temples
- City Halls

Typology Assignment

Overview

- Station typologies provide a means of contextualizing index scores, and ensure toolkit recommendations reflect station contexts

- Considerations include:
  - ☐ Regional connectivity (i.e., existing transit service levels)
  - ☐ Surrounding land use (i.e., Activity Center designation)
  - ☐ Forecast growth

Toolkit Development

Overview

- Provide a framework for practitioners to evaluate station amenities
  - Integrate renderings with Phase II web application
- Recommend improvements based on station typology and accessibility scores
- Build on existing work in this space

Example: MBTA Mobility Hub Prioritization

Mobility hubs typologized by anchor services/amenities

Rapid Transit Classifications:

- Core

- Neighborhood

- Regional

Example: LA Metro Mobility Hub Typologies

Mobility Hub Amenities	Bicycle Connections			Vehicle Connections			Bus Infrastructure		Information-Signange			Support Services				Active Uses		Pedestrian Connections	
	2.1. Bike Share	2.2. Bike Parking	2.3. Bicycling Facilities	3.1. Ride Share/Pick up-Drop off	3.2. Car Share	3.3. EV Charging Stations	4.1. Bus Layover Zone	4.2. Bus Shelters	5.1. Wayfinding	5.2. Real-time Information	5.3. Wi-Fi / Smartphone Connectivity	6.1. Ambassadors	6.2. Waiting Area	6.3. Safety and Security	6.4. Sustainable Approach	7.1. Retail	7.2. Public Space	8.1. To the Mobility Hub	8.2. At the Mobility Hub
(N) Neighborhood	●	●	■	■	○	○	■	○	●	○	○	■	○	○	○	■	■	○	○
(C) Central	●	●	○	●	●	●	○	●	●	●	●	○	○	●	●	○	●	●	●
(R) Regional	●	●	●	●	●	●	●	●	●	●	●	●	○	●	●	●	●	●	●

Legend: Vital: ● Recommended: ○ Optional: ■

Foursquare ITP

Example: CATS Bus Priority Study

Three levels of mobility hubs:

- Enhanced Stop Pair

- Mobility Plaza

- Mobility Center
  - Type A
  - Type B
  - Type C

Stop Amenity	Standard Bus Stop (Level 0)			Mobility Hubs		
	Type A	Type B	Type C	Enhance Stop Pair (Level 1)	Mobility Plaza (Level 2)	Mobility Center (Level 3, Types A, B, C)
5'X10' Or 5'X15' Shelter			●	●	●	●
Bench		●	●	●		●
Simme Seats		●	●			
Trash Receptor	●	●	●	●	●	●
Bicycle Rack			●	●	●	●
Scooter & E-Bike Storage					●	●
Bus Stop Marker: Signpost With Sign	●	●	●			
Bus Stop Marker: Pylon				●	●	●
Sidewalk Wayfinding				●	●	
Boarding & Alighting Area	●	●	●	●	●	●
Crosswalk Improvements			●	●	●	●[1]
Operator Restroom						●
Bus & Sidewalk Bulb				●	●	
Bus Bay						●
Offboard Fare Payment						●
Public Wifi				●	●	●
Microtransit Pickup/Dropoff Area						●
Lighting	●	●	●	●	●	●
Information Kiosks					●	●

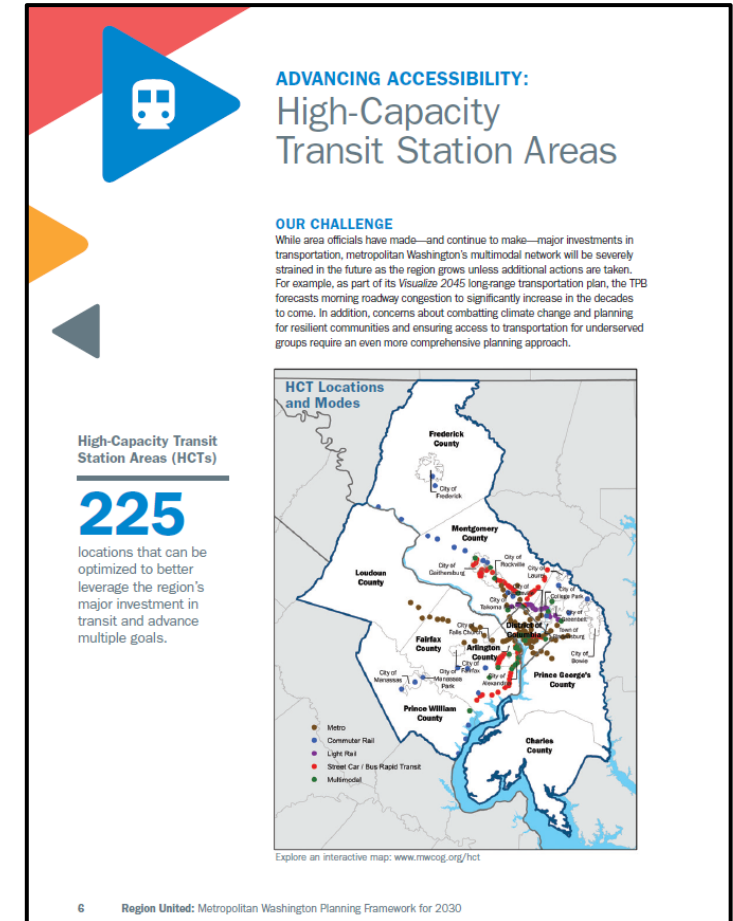# Example: Tri-Met High-Capacity Transit Strategy

Four HCT Station types:

- Central City
- Town Center
- Neighborhood Center
- Regional Center
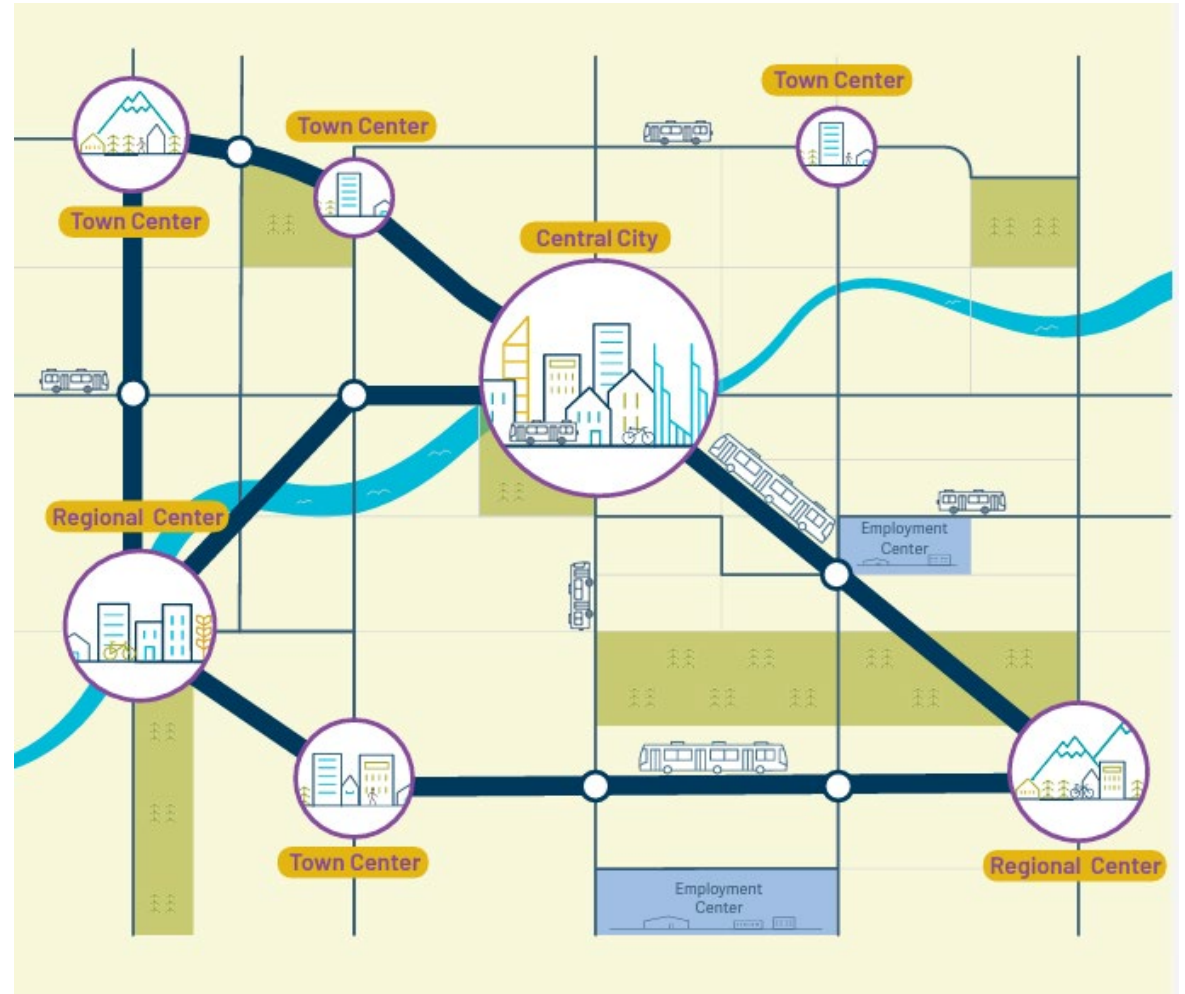
Next Steps

- Upcoming item for the November RPTS meeting with actual demo and discussion
  - TPB staff still reviewing draft
  - ICF and Foursquare ITP still adding and refining information
  - Hope to send out link to web tool for review in advance of meeting
- Goal is a common regional tool that can be used to identify and build support for improved local transit connections and station access improvements at HCT locations

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Station Expansion Project

Washington Union Station Expansion Project

Air-Rights Development

Train Hall, Civic Space & Bus Facility
H Street Bridge Level

Tracks and Platforms
Columbus Circle and Historic Train Hall Level

Public Concourses
First Street and Second Street Level

Parking and Pick-up/Drop-off
Below-grade
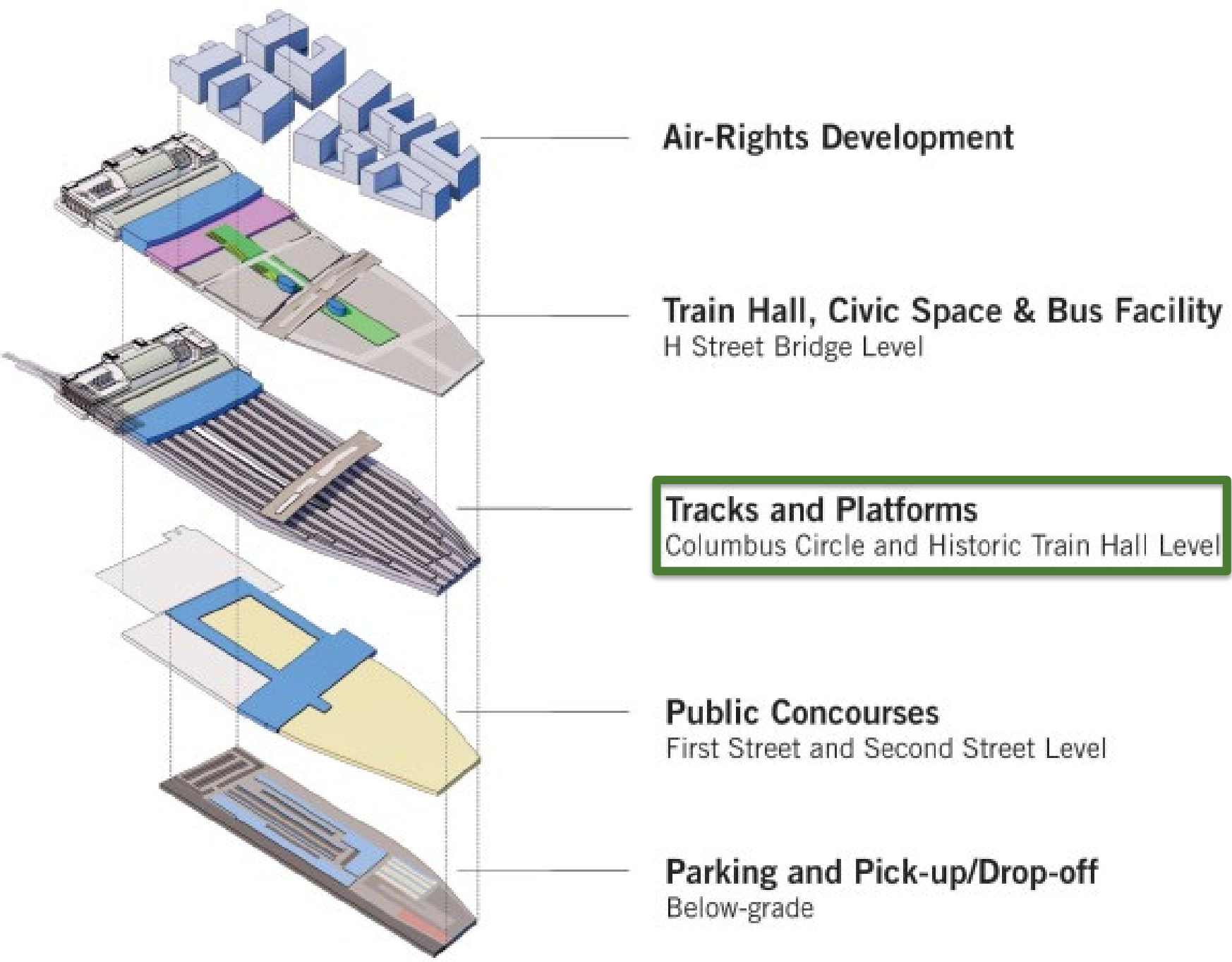
- Ongoing environmental review process (NEPA EIS); FRA lead federal agency.

- Union Station Redevelopment Corporation (USRC) as Project Sponsor

- Considers long-term passenger and train capacity needs with projections to double capacity.

- Expansion alternatives build upon the 2012 Master Plan Vision.

- Includes the footprint of the historic station, terminal rail yard, parking garage and its uses (buses, parking, etc).

- Includes a comprehensive Terminal Infrastructure plan for the rail terminal with consideration for rebuild of H Street Bridge.

AMTRAK®

New Train Hall

Bus Terminal

Station Expansion/TI Improvements
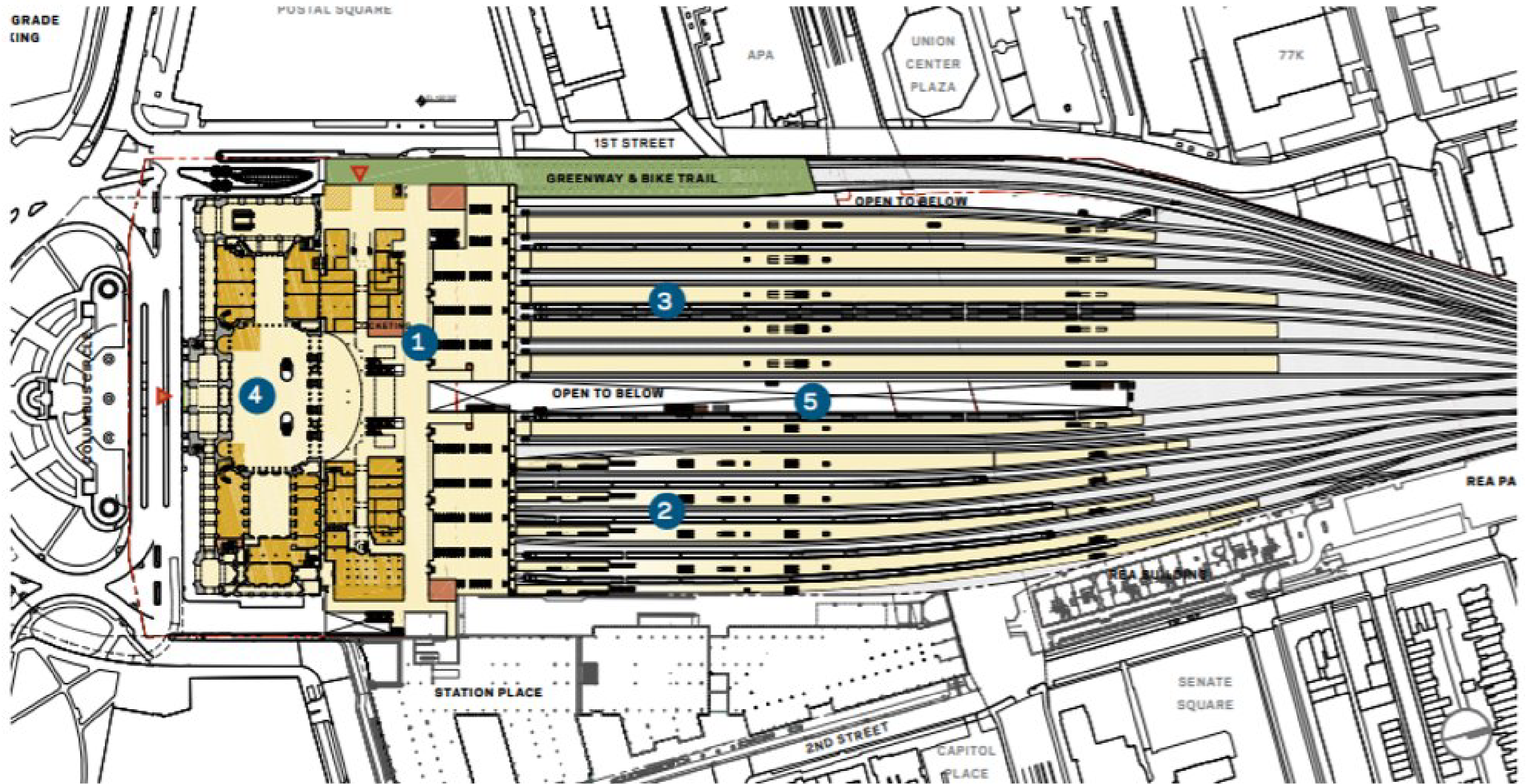
Terminal Infrastructure Run-through Analysis

Purpose of Study

"…to review how elements of the existing Terminal Infrastructure plan can accommodate the necessary train movements for all MARC and VRE services to run through Washington…"

AMTRAK®

National Capital Region Commuter Rail Network

Camden Line

Brunswick Line

Penn Line

UNION STATION
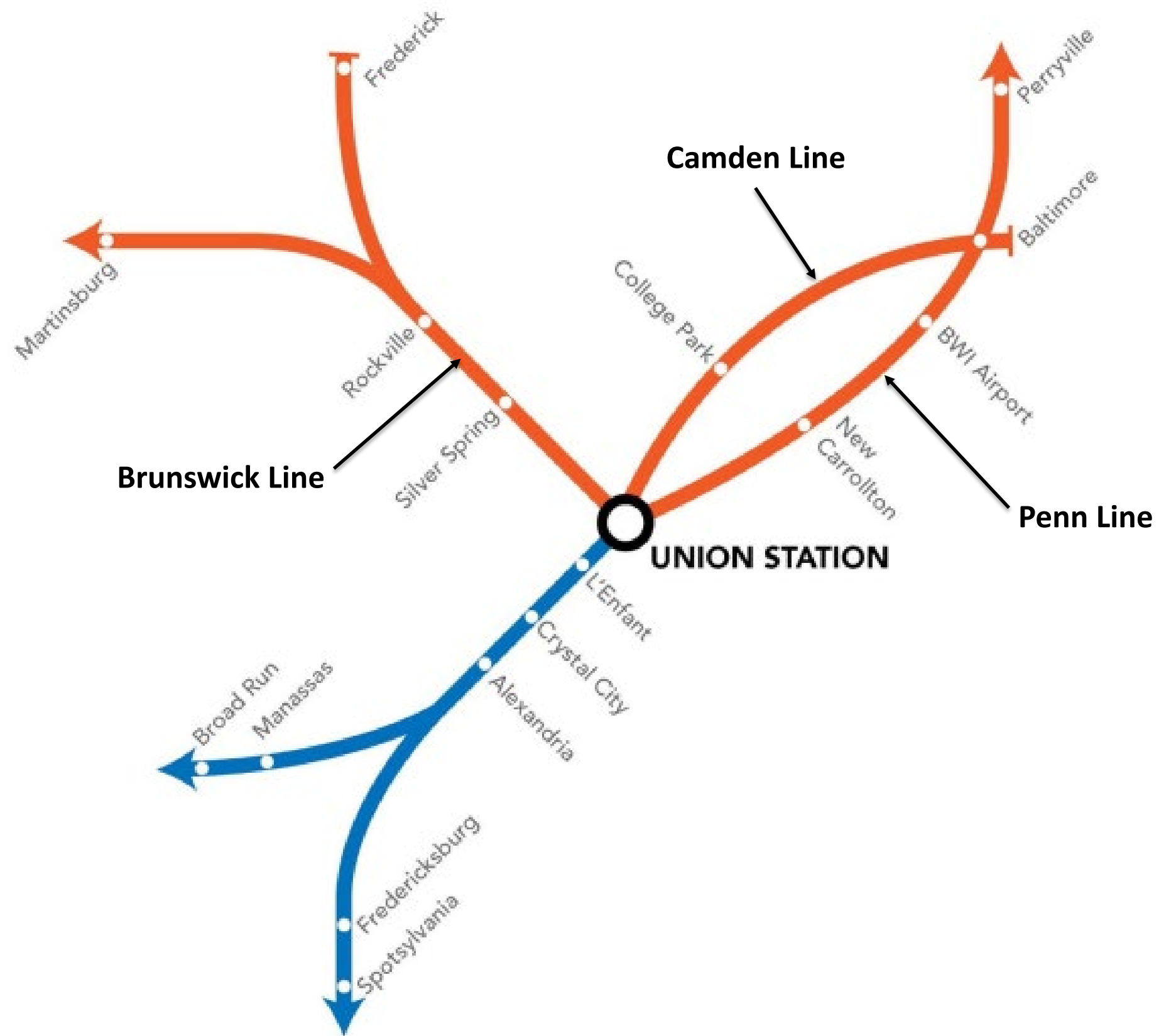
Source: "*Market Assessment and Technical Considerations for VRE-MARC Run-through Service in the National Capital Region*", Metropolitan Washington Council of Governments

VRE-MARC Through-Routing: Brunswick Line (Northbound and Southbound)
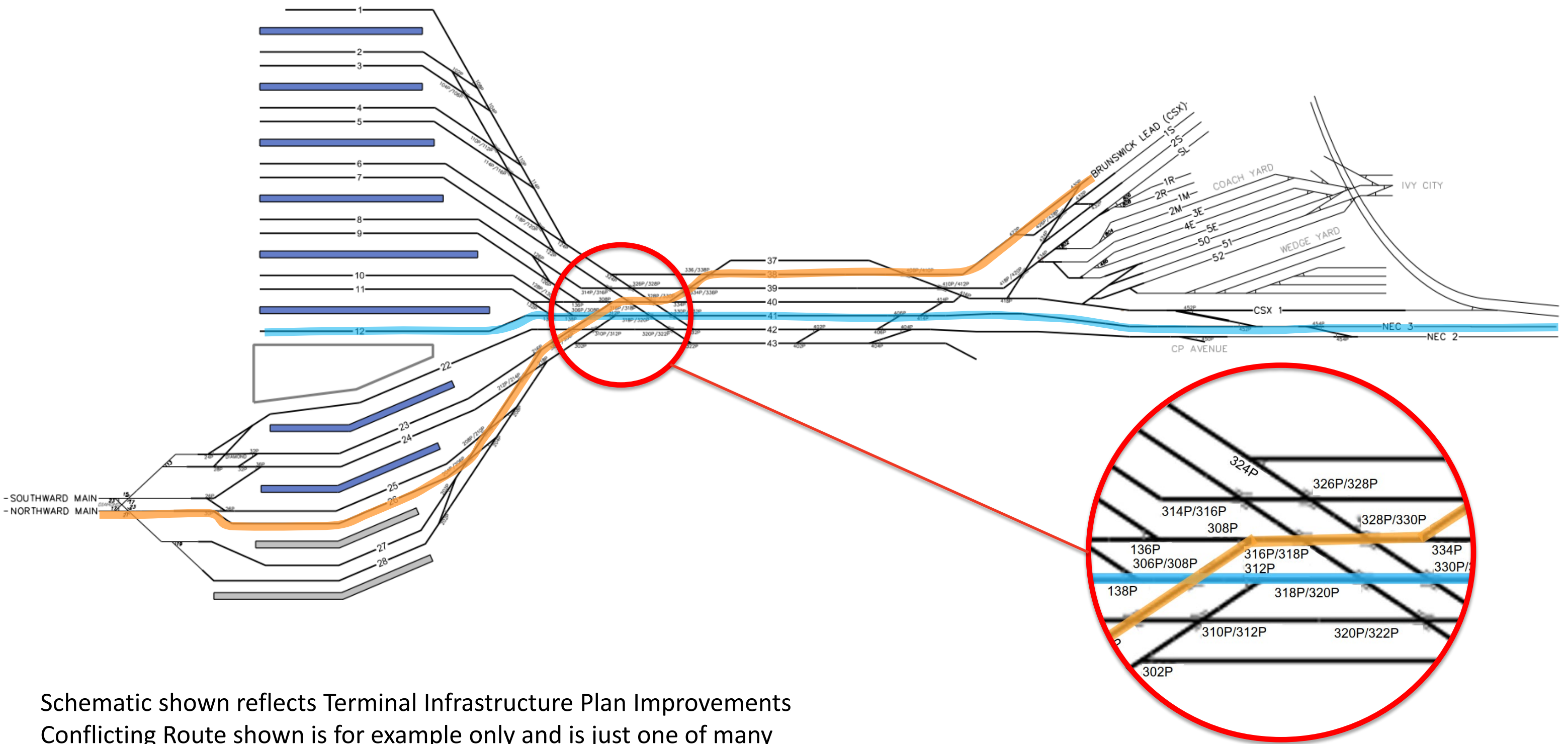
Schematic shown reflects Terminal Infrastructure Plan Improvements
Conflicting Route shown is for example only and is just one of many

VRE-MARC Through-Routing: Camden Line (Northbound and Southbound)
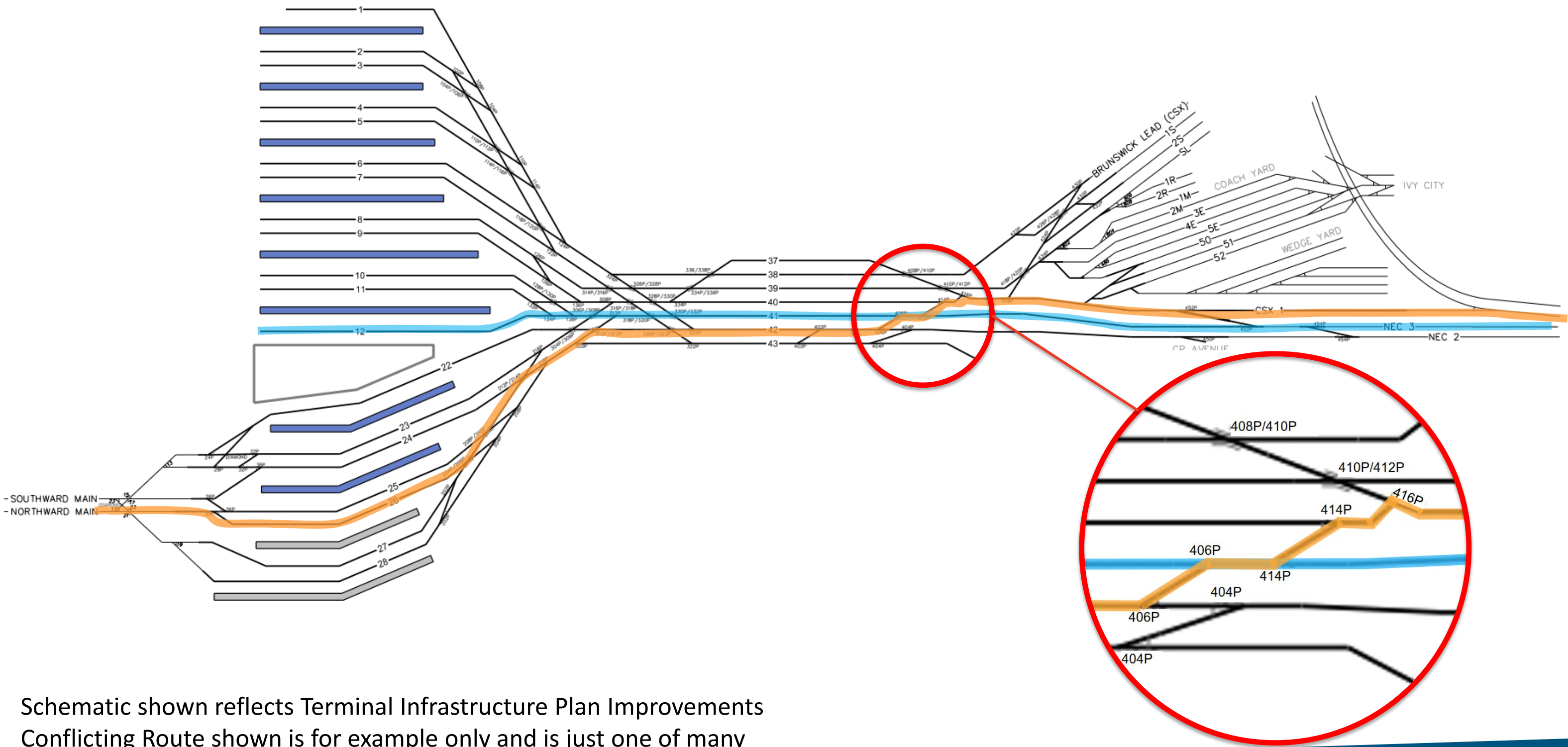
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Future Baseline
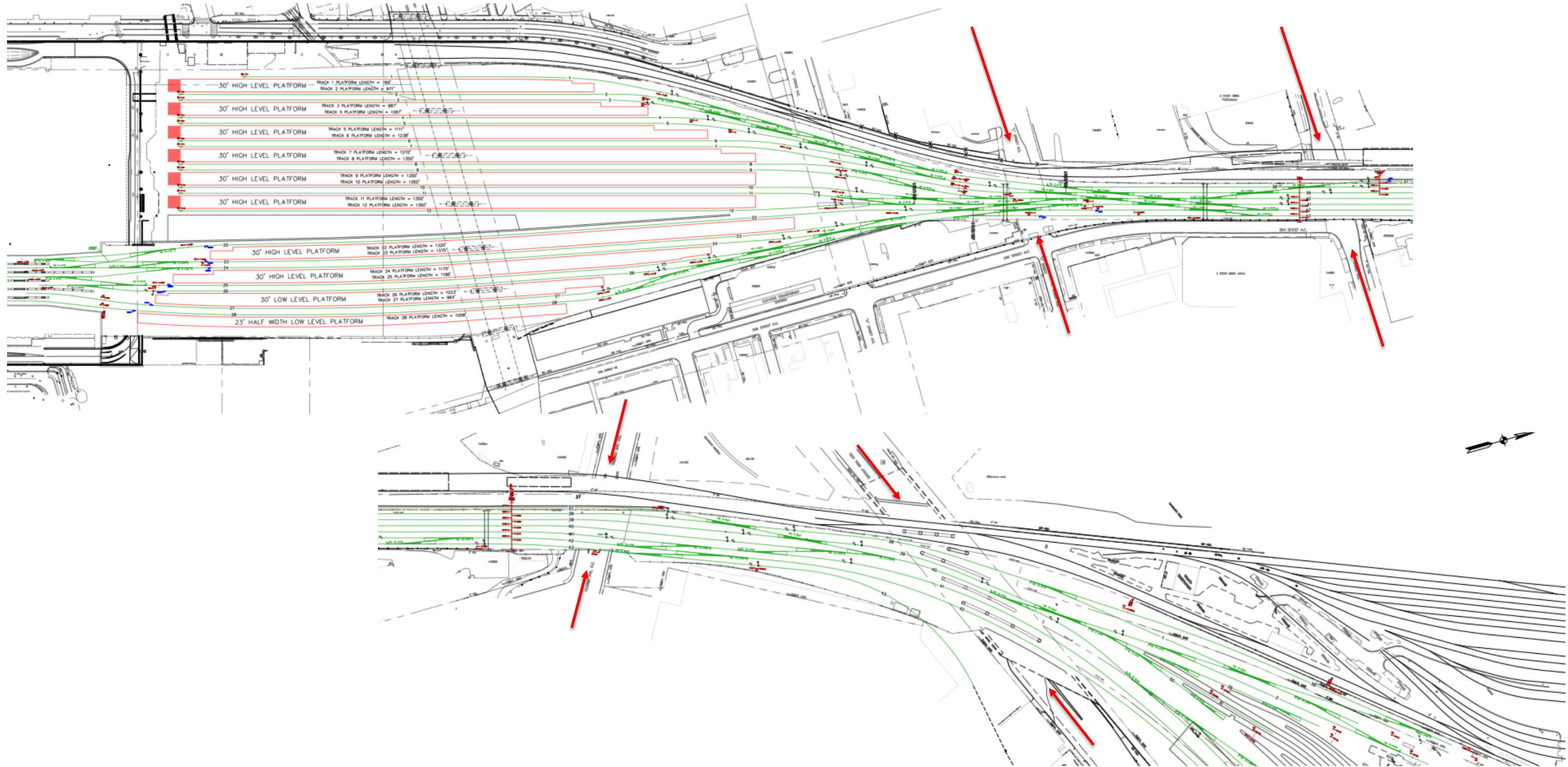
Review Goals & Methods

- Develop **<u>aspirational</u>** schedules to analyze the supplemental run-through service

- Assess run-through service on the TI planned infrastructure (Future Baseline)

- Attempt to identify additional infrastructure requirements to the TI plan to support run-through service

- Evaluate operations with proposed infrastructure

- Conclusions about **<u>achievable</u>** train service level

Analysis Methodology Flowchart

Infrastructure Options

- Identify Potential Routes
- Meets SEP Purpose of Need & Ties to SEP
- Define Track Aligment and Profile
- Calculate Travel Time
- Assess Constructability and Impacts
- Construction Phasing

Infeasible

Feasible

Operational Assessment

- Review Operational Impacts/Conflicts
- Assess against 2030 and 2040 Ops Plan
- Shift Inacheivable Trips to Penn Line Trips

Cost Estimate

Prioritizing Service Assumptions
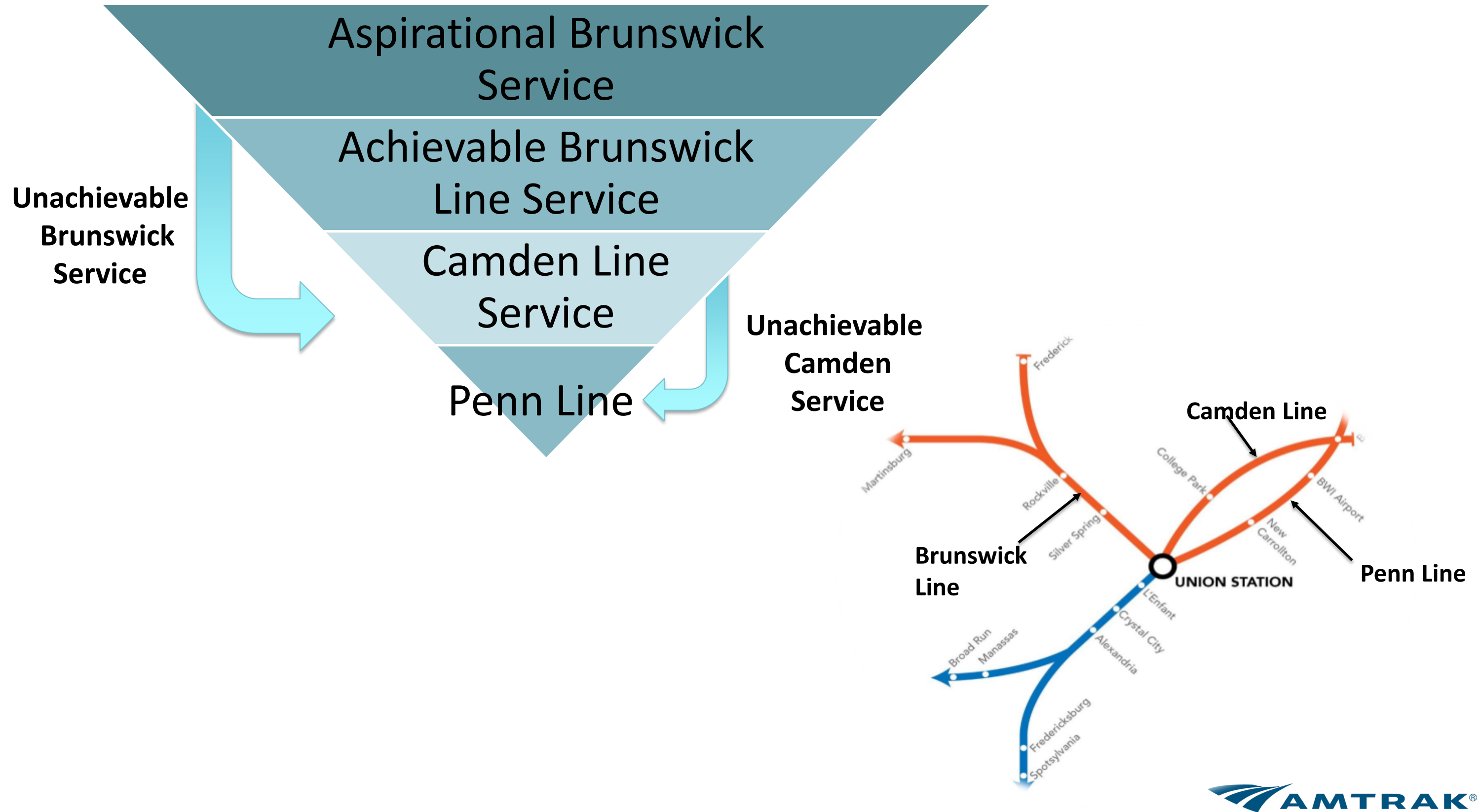
Options Previously Dismissed

Option	Criteria Not Met
New York Avenue Flyover	
Option 1	Geometry Infeasible
Option 2	Geometry Infeasible
Brunswick Connector	Geometry Infeasible
Deep Tunnel	Does not tie to SEP

AMTRAK®

NEC Crossing: Duck Under
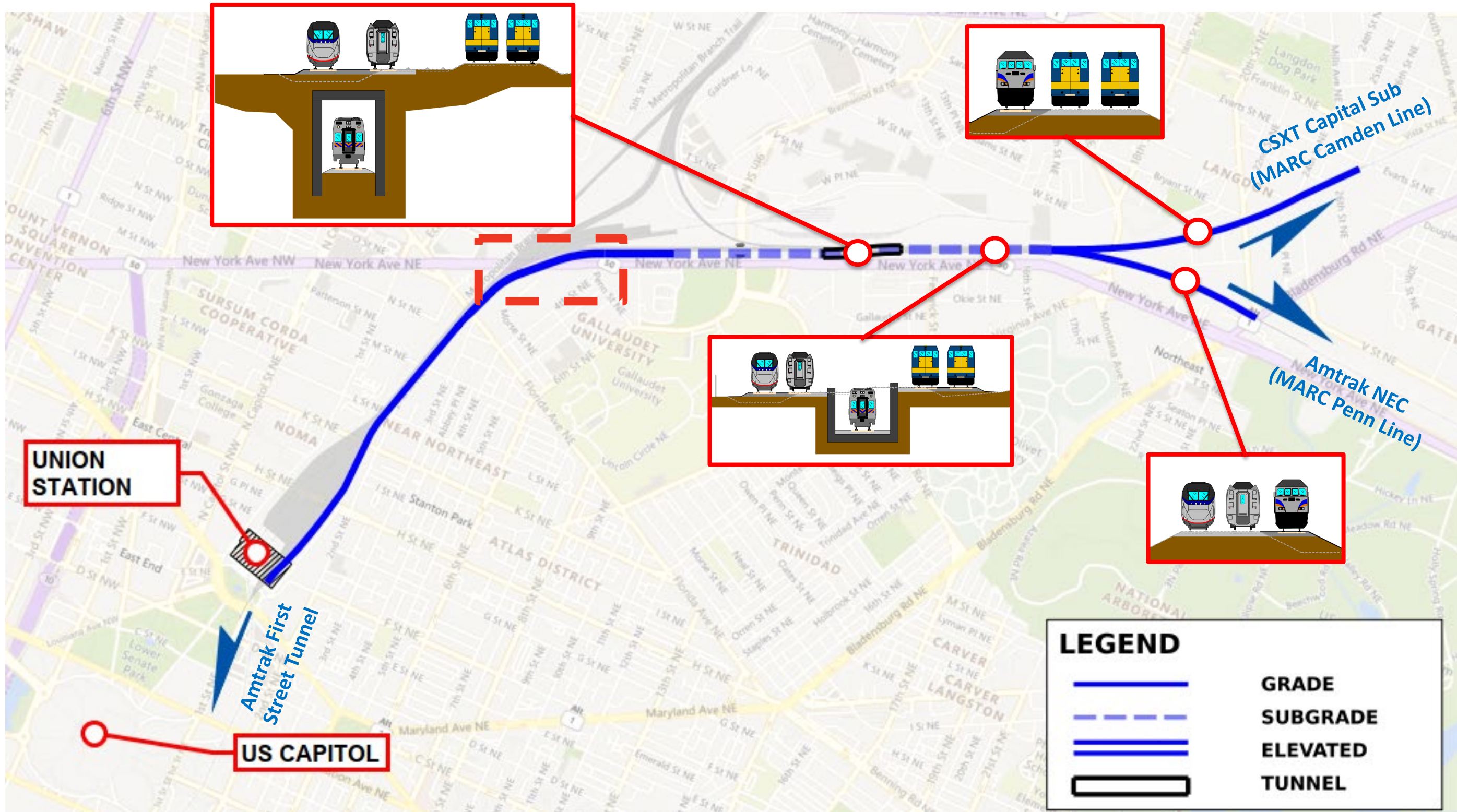
Performance of "NEC Crossing" Option

- Maintained Travel Time

- Minimizes conflicts between Northbound and Southbound trains at WUS

- Enables limited Camden Line Run-through Service

- No potential for MARC Brunswick Line Run-through Service

- Minimal benefit from the improvement relative to the cost of construction and associated land acquisitions.

Station Expansion Project: Platforms & New Connections

Train Hall

Access to WMATA

Stub End Rail Platforms

Run-Through Rail Platforms

Modernized Tracks and Platforms

Access to new Concourse below
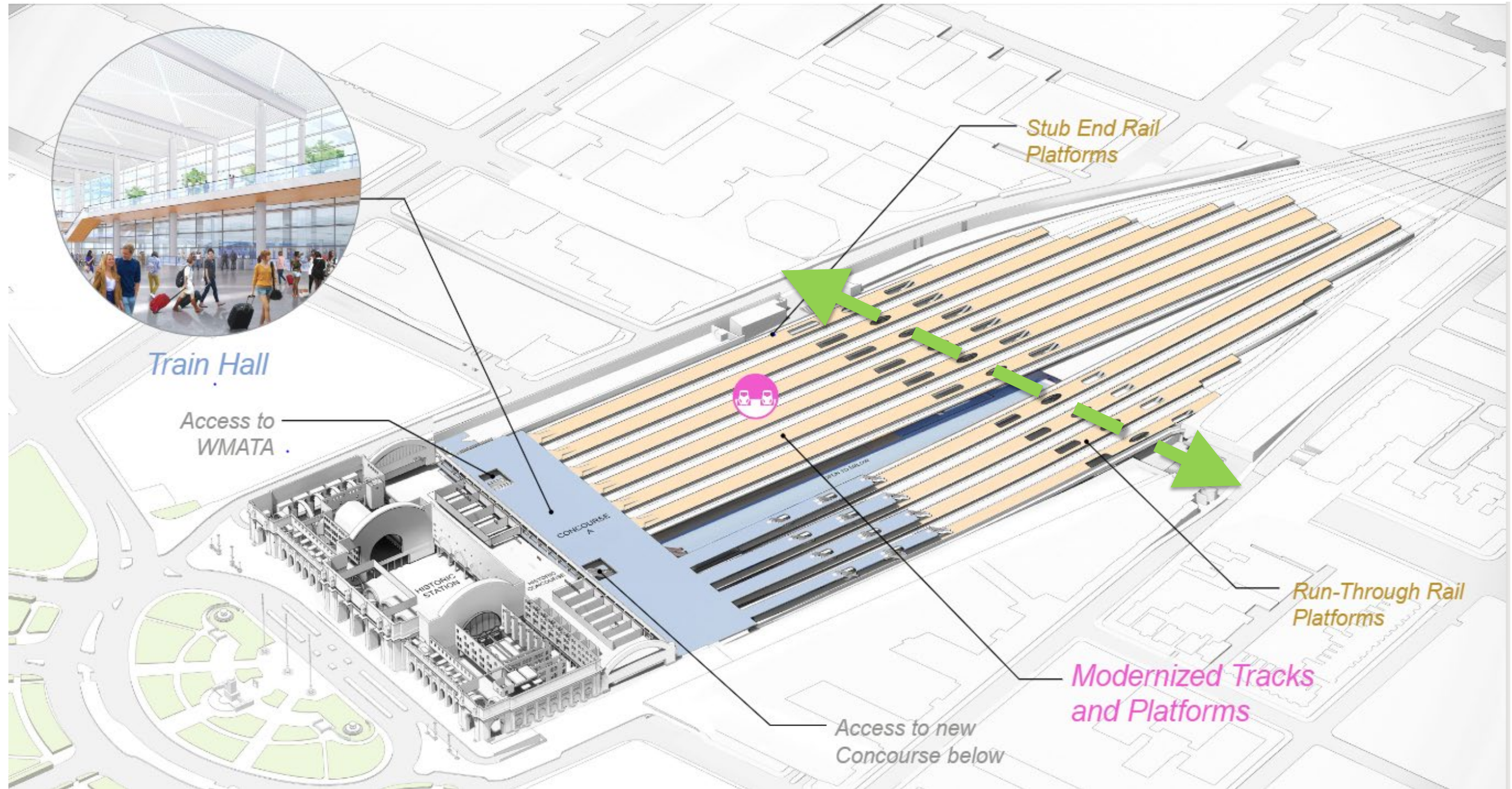
Central Concourse (Left) H Street Concourse (Right)

VPRA Update

Transportation Planning Board

October 24, 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
AUTHORITY

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 PASSENGER RAIL AUTHORITY

3

Washington, DC to Charlotte Corridor

Transforming Rail in Virginia: First Step of the larger DC to Charlotte Intercity Passenger Rail Corridor

- Three Segments
  - DC to Petersburg (Transforming Rail in Virginia)
    - $4.3 billion in Phase 1 & 2 Projects
  - Richmond to Raleigh
  - Raleigh to Charlotte

- Enhancing Amtrak service between NC, VA, and the NEC

- State-supported Amtrak ridership exceeding 2019 levels
  - Calendar Year 2022 exceeded one million passengers on Virginia state-supported Amtrak routes – 2023 showing rising ridership.

VIRGINIA
PASSENGER RAIL
AUTHORITY

4
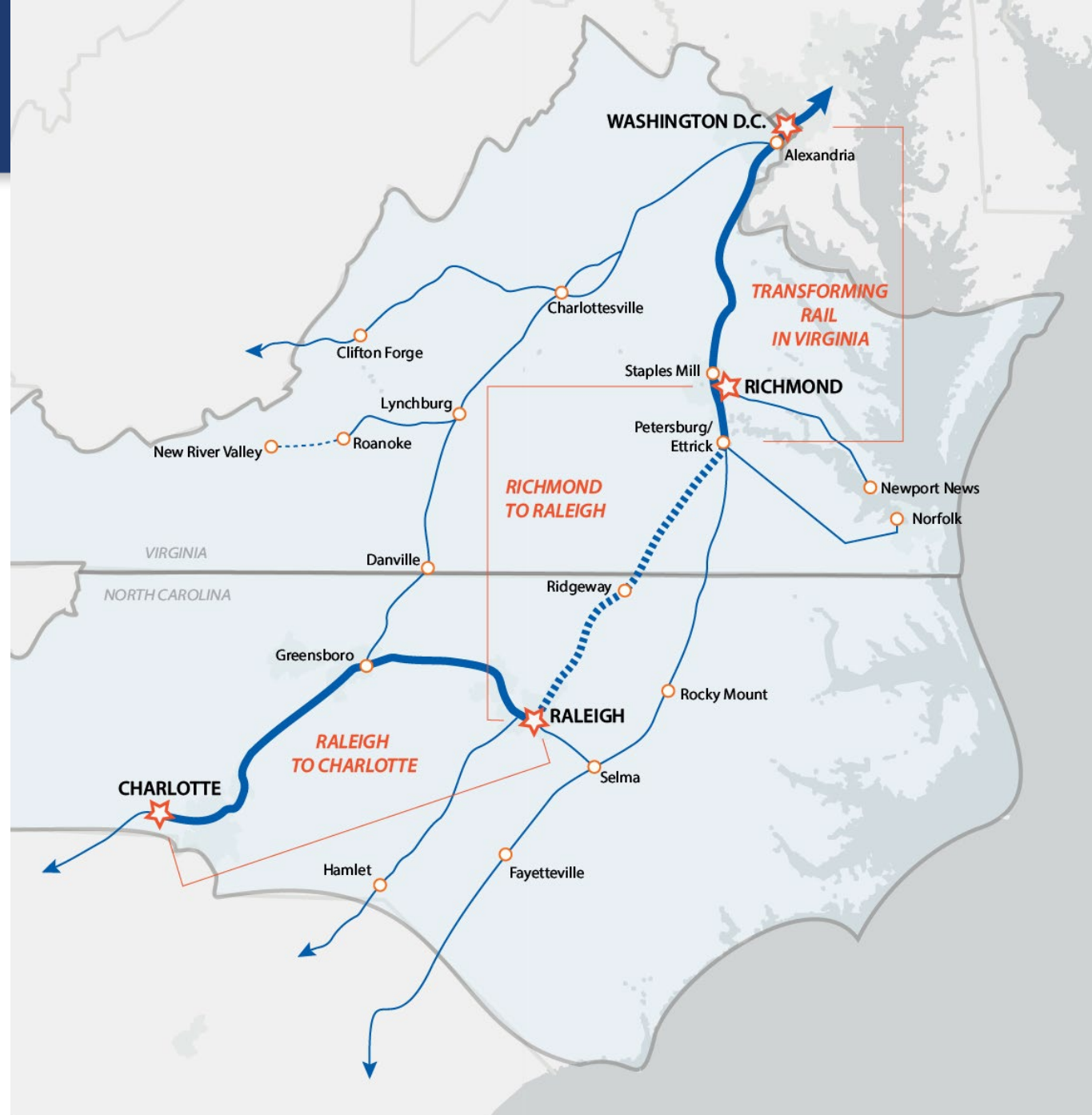
Virginia Supported Amtrak Ridership Setting Records

- In 2022, Virginia's state supported service set an all-time ridership record with 1,021,452 passengers, beating the previous high of 953,008 riders in 2019.

- 2023: 592,355 (January-June)
  2023: 848,841 (January-August)

- In August 2023, our state-supported ridership had its biggest month ever, with 130,998 riders.

State-Supported Ridership by Calendar Year

5
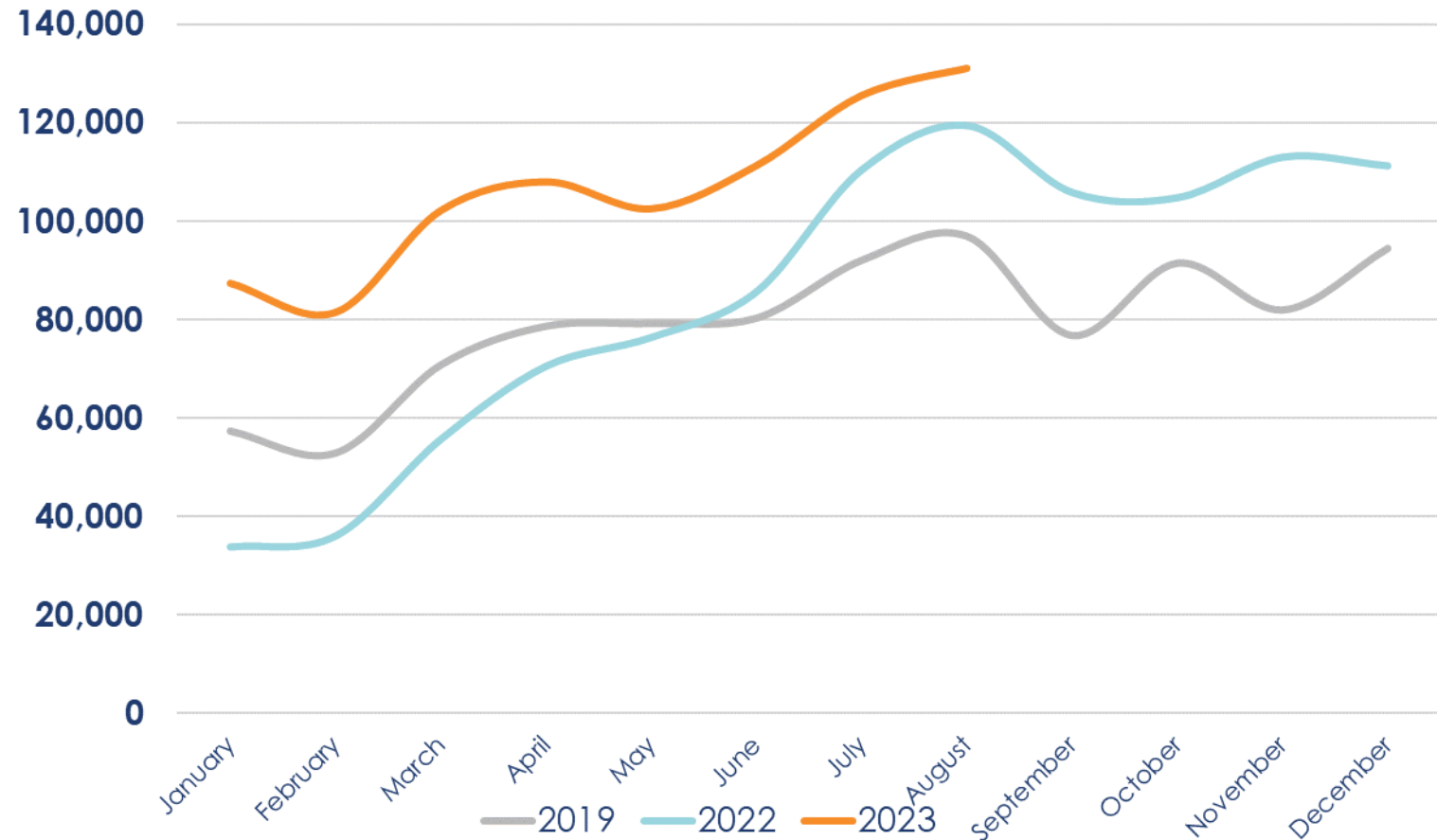
Future Service Expansion

Transforming Rail in Virginia: **Passenger Rail Service Expansion**

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

VA-Amtrak-CSX-VRE Partnership

Amtrak State Supported Service
- +3 New Trains (11 Trains in Service)
- +2 New Trains (8 Trains in Service)
- +1 New Train (6 Trains in Service)
- 5 Existing Trains
- **Total: 11**

VRE Fredericksburg Line *(subject to agreement by the VRE Operations Board)*
- +2 New Trains (14 Trains in Service)
- +3 New Trains (12 Trains in Service)
- +1 New Train (9 Trains in Service)
- 8 Existing Trains
- **Total: 14**

VRE Manassas Line *(subject to agreement by the VRE Operations Board; subject to agreement with Norfolk Southern)*
- +3 New Trains (12 Trains in Service)
- +1 New Train (9 Trains in Service)
- 8 Existing Trains
- **Total: 12**

VA-Norfolk Southern Partnership

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
- **Total: 2**

Infrastructure Improvements from DC to Quantico
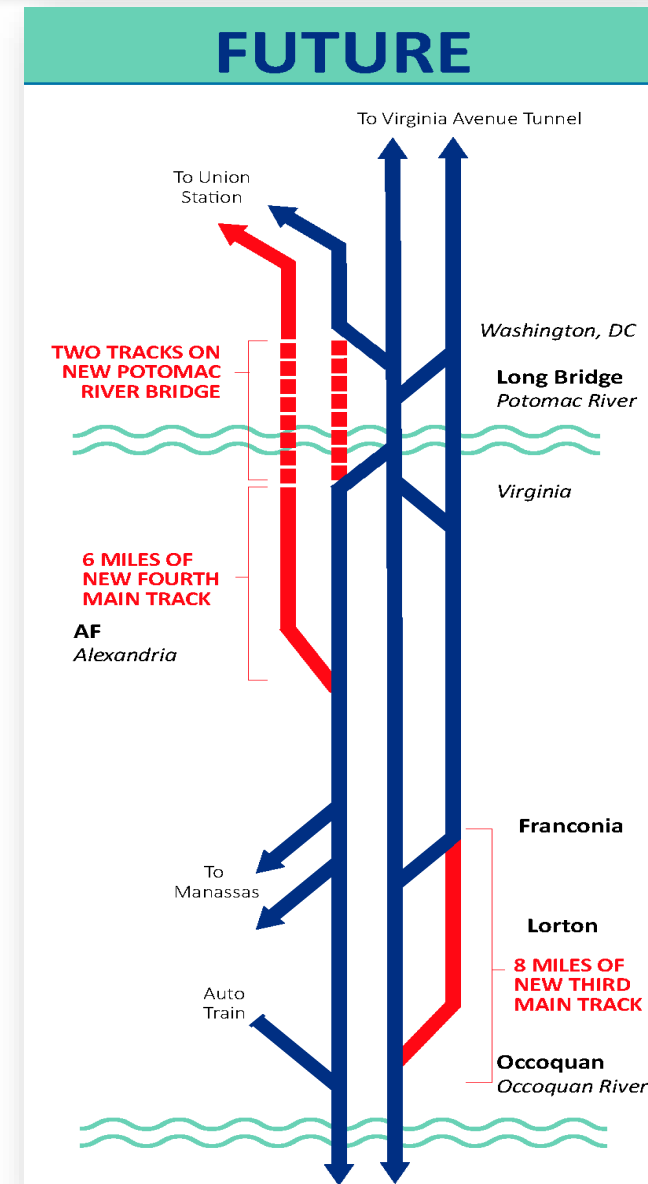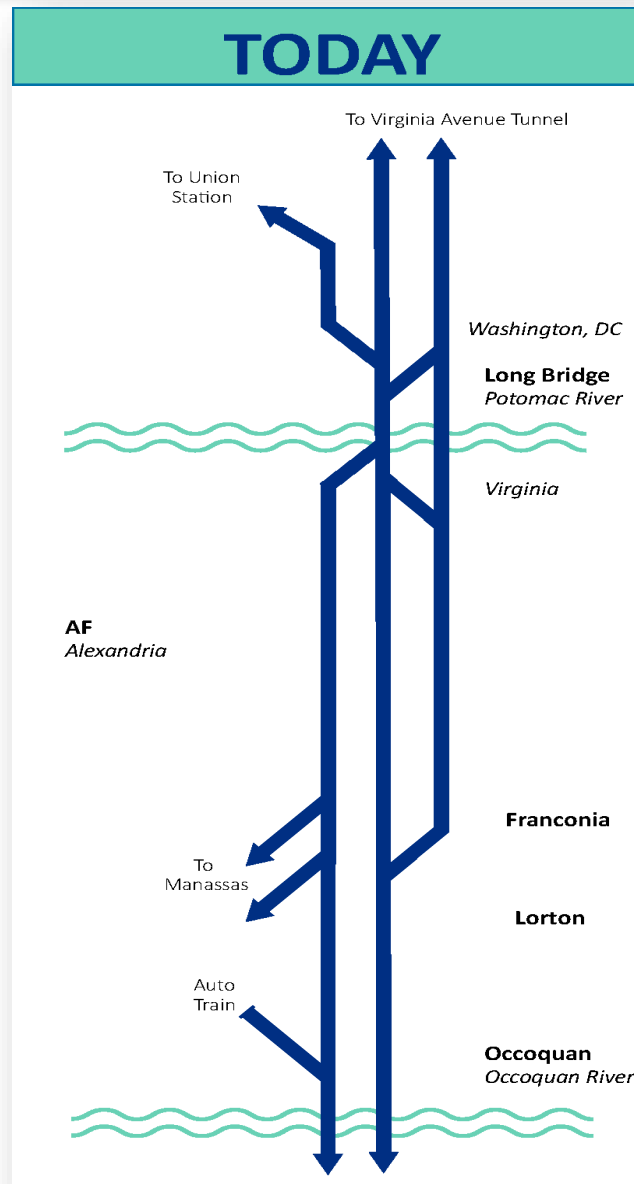
Phase I & **Phase II Projects** unlock new passenger rail service and set the stage for future service expansion.

After **Phase I**, three new VRE (including late night/weekend service) and two new Amtrak daily roundtrips will begin service.

After **Phase II**, two new VRE and three new Amtrak roundtrips will begin

PHASE 1 & 2 IMPROVEMENTS AND HIGHLIGHTS

RAIL CORRIDOR IMPROVEMENTS
Construct 37 Miles of New Track

1 PHASE 1
(Complete 2026) 23 miles of new track

2 PHASE 2
(Complete 2030) 14 miles of new track

RAILROAD RIGHT-OF-WAY (ROW) AND TRACK ACQUISITION
Purchase of 384 Miles of Railroad ROW and 223 Miles of Track

SEGMENT 1
Half of CSXT ROW between Washington, DC and Petersburg, VA (145 miles), and 44 miles of track

SEGMENT 2
All of CSXT ROW (abandoned rail line between Petersburg, VA and Ridgeway, NC [75 miles])

SEGMENT 3
Nearly all of CSXT ROW between Doswell, VA and Clifton Forge, VA (164 miles), and 179 miles of track

NETWORK MAP

PHASE 1 & 2 IMPROVEMENTS

L'Enfant Fourth Track and Station Improvements	2
Long Bridge Project	2
Alexandria Fourth Track	1
Franconia-Springfield Bypass	1
Franconia to Lorton Third Track	1
Neabsco Creek to Woodbridge Third Track (Siding D)	2
Aquia Creek Third Track South (Siding E)	2
Potomac Creek Third Track South (Siding A)	1
Crossroads Third Track (Siding F)	2
Woodford to Milford Third Track (Siding B)	1
Hanover Third Track (Siding C)	1

LEGEND

1 PHASE 1
2 PHASE 2
STATIONS

RF&P RAILROAD TRACKS
Existing
Projects

VIRGINIA PASSENGER RAIL AUTHORITY

Major Upcoming Milestones

	Budget	Bid Award	Projected Groundbreaking
Alexandria 4th Track RFP Release: January 2024	**$210 M**	**April 2024***	**May 2024**
Franconia Bypass RFP Release: August 4, 2023	**$405 M**	**November 2023**	**October 2024**
Long Bridge North Package RFQ Release: March 24, 2023 RFP Release: July 7, 2023	**$2.28 B** Total	**December 2023**	**October 2024**
Franconia to Lorton 3rd Track Bridge Package Timeline Pending	**$275 M**	**September 2024***	**October 2024**
Long Bridge South Package RFQ Release: June 30, 2023 RFP Release: Early February 2024	**$2.28 B** Total	**Fall 2024**	**April 2025**

* CSX Leading Procurement

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Long Bridge Project Overview

South Package

North Package

Focus Areas – *RO Interlocking to LE Interlocking*

1. RO interlocking to Mt. Vernon Trail
2. Potomac River Crossings
3. WMATA Tunnel Portal & I-395 Crossings
4. I-395 to Ohio Drive SW
5. Washington Channel to Maine Avenue
6. Maryland Avenue Overbuild to LE

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Long Bridge Project Work Progress

- Utility test pile work began first week in October

- Plat development for property needs

- Stakeholder coordination

- Permitting outreach

- Construction contract procurement
    - North package construction begins Fall 2024
    - South package construction begins in 2025

Alexandria Fourth Track

- Construct a new fourth track from Alexandria station to Rosslyn interlocking
- Close coordination with projects at Crystal City, Alexandria station and the replacement of rail bridges over King St and Commonwealth Ave
- Utility relocation – CSX project to relocate fiber duct bank begins November 2023
- Final design expected by end of 2023

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Crystal City Station

- Project includes design and construction of a new high-level platform for Amtrak at Crystal City

- Will be constructed on the southern end of the planned new VRE Crystal City island platform

- Amtrak and VPRA have jointly applied for $33.8 M grant on a $42.3 M project

- Proposed pedestrian connection from Crystal City station to Reagan National Airport

Proposed pedestrian bridge 'CC2DCA'

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Franconia-Springfield Bypass

- The Franconia-Springfield Bypass will be constructed south of the Franconia-Springfield WMATA & VRE station

- The Federal Railroad Administration awarded VPRA a grant of $100 M for the Franconia-Springfield Bypass. The funding was distributed from the Consolidated Rail Infrastructure and Safety Improvements (CRISI) program.

- The 0.9 mile bypass structure will allow passenger trains to:
  - Crossover to serve VRE stations on the west, north of Franconia and on the east, south of Franconia
  - Reduce conflicts between passenger and freight trains

TRV Phase II Projects

- Prerequisite for the entire DC to Charlotte Corridor (and beyond)

- Eliminates critical rail bottleneck between northeast and southeast

- Completion of new Long Bridge, L'Enfant Fourth Track, Sidings

- Creates 8-mile separation of freight and passenger via four-track corridor between DC and Alexandria

- Construction-ready projects that can put IIJA funding to work and deliver rail infrastructure and subsequent Amtrak, VRE, MARC **service**

- BCA guidance does not officially allow us to capture all future benefits of the capacity created by these projects

Visualization of Long Bridge project at the George Washington Memorial Parkway

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Thank you!

System Plan 2050 Vision

VRE will grow to serve the region as the transportation service of choice, creating meaningful connections and economic opportunities in a safe, sustainable, and equitable manner.

2050 System Plan Goals

1. Safety and Reliability

2. Market Growth and Financial Stability

3. Regional System Integration and Equitable Service

4. Sustainability and Resiliency

VRE

Transforming Rail in Virginia (TRV)

System Plan's 2030 service alternatives were developed to answer this critical question:

How does VRE leverage this <u>transformational</u> investment to best meet the needs of regional travelers and jurisdiction stakeholders?

…in 2030 and beyond to 2050

Travel Market Assessment
Geographic Travel Patterns

- VRE service provides the most travel time advantage for longer trips

- Most of long-distance trip making is originating in areas far from VRE stations

- Significant number of trips begin or end beyond VRE's termini

O-D pairs with the highest level of +25-mile trip demand

Weekday Peak	Saturday	Sunday
• Centreville – DC Core	• Centreville – DC Core	• Dulles Airport – DC Core
• Caroline County West of I-95 – Central Fredericksburg/South Stafford	• DC Core – Centreville	• DC Core – Centreville
• Potomac Mills – DC Core	• Dulles Airport – DC Core	• DC Core – Dulles Airport

Long-Distance Weekday AM Trips from/to VA by Origins
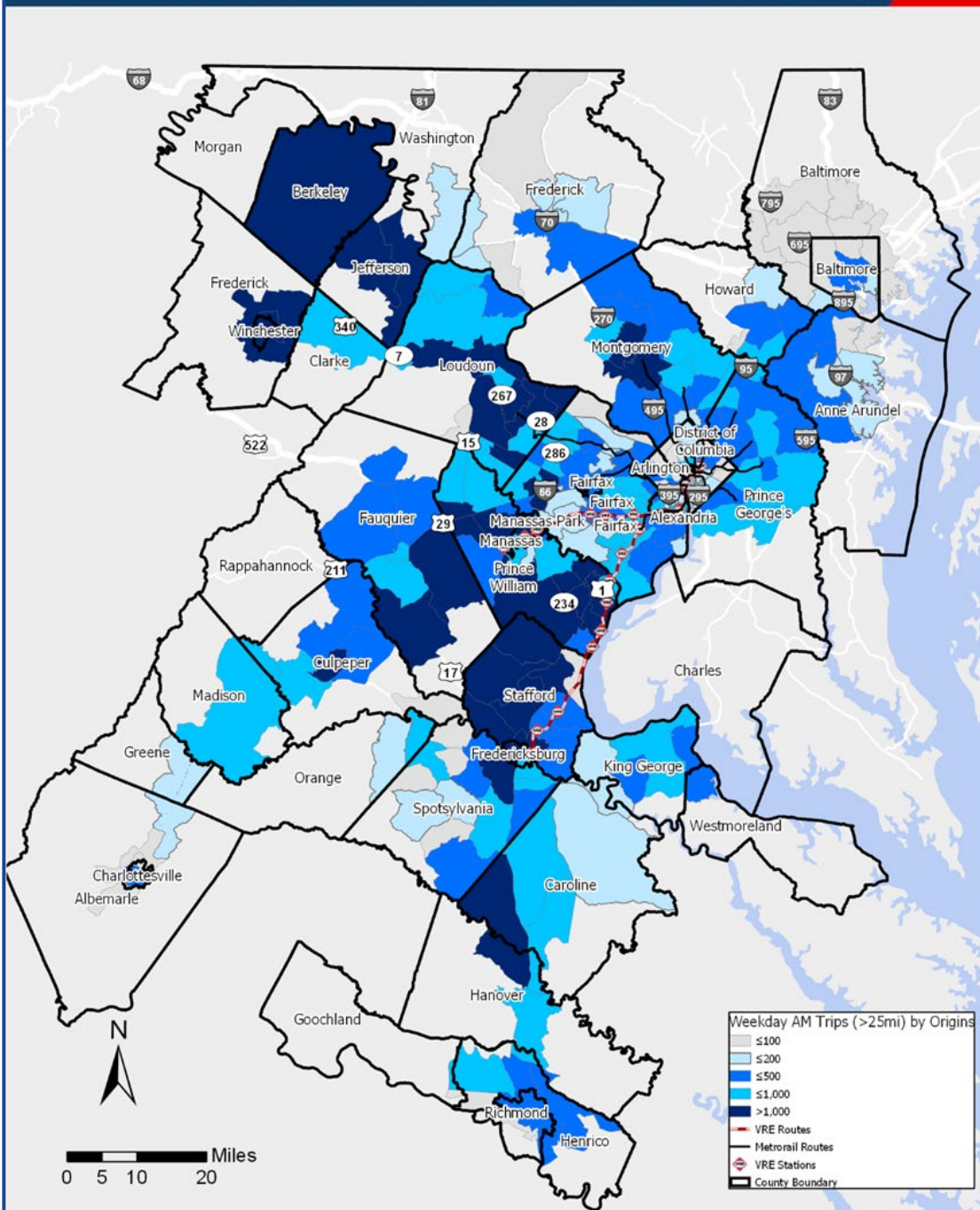
Long-Distance Weekend Daily Trips from/to VA by Origins
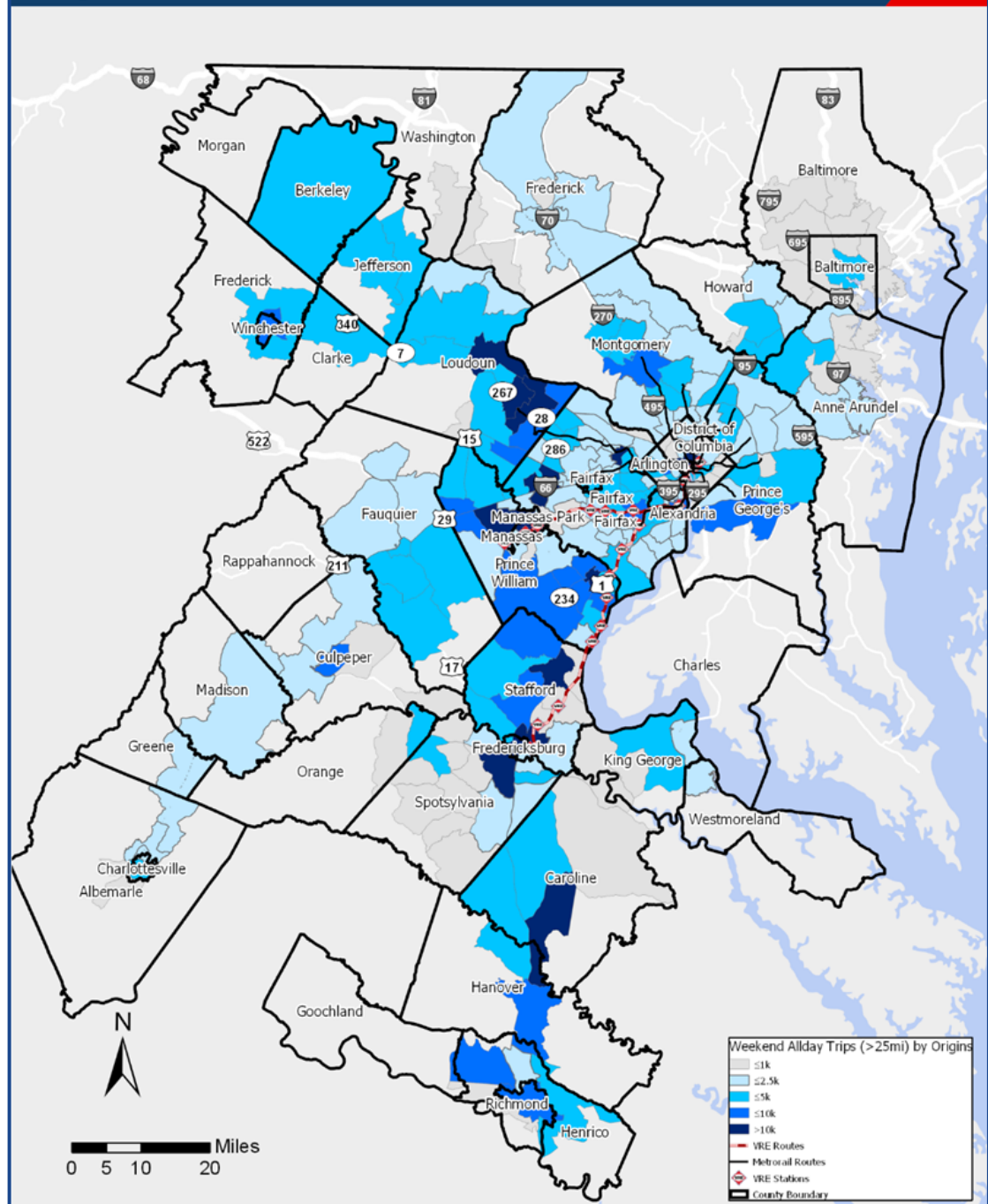
Origin Zone Name	Destination Zone Name	#Trips Daily
DC Core	Centreville	1,135
Central Culpeper	Warrenton	1,070
Dulles Airport	DC Core	1,063
Warrenton	Central Culpeper	1,042
DC Core	Potomac Mills	1,038
DC Core	SE Dulles Airport-Air and Space	984
DC Core	Dulles Airport	981
Centreville	DC Core	964
SE Dulles Airport-Air and Space	DC Core	930
Sterling	Gainesville	898
North Stafford	DC Core	845
Caroline County West of I-95	Central Fredericksburg-South Stafford	800
Central Fredericksburg-South Stafford	Caroline County West of I-95	784
Sterling	Mosaic District-Inova-NVCC	751
Lake Ridge	DC Core	747
DC Core	Lake Ridge	745
Potomac Mills	DC Core	698
DC Core	North Stafford	690
Rippon	DC Core	689
Central Manassas	Bealton	671

Top Long-Distance Trip ODs w/ One End in Current or Future VRE Service Area

Weekday Daily Trips

Demand from VRE Service Area to MD

Total daily travel to MARC Service Area from the VRE Service Area
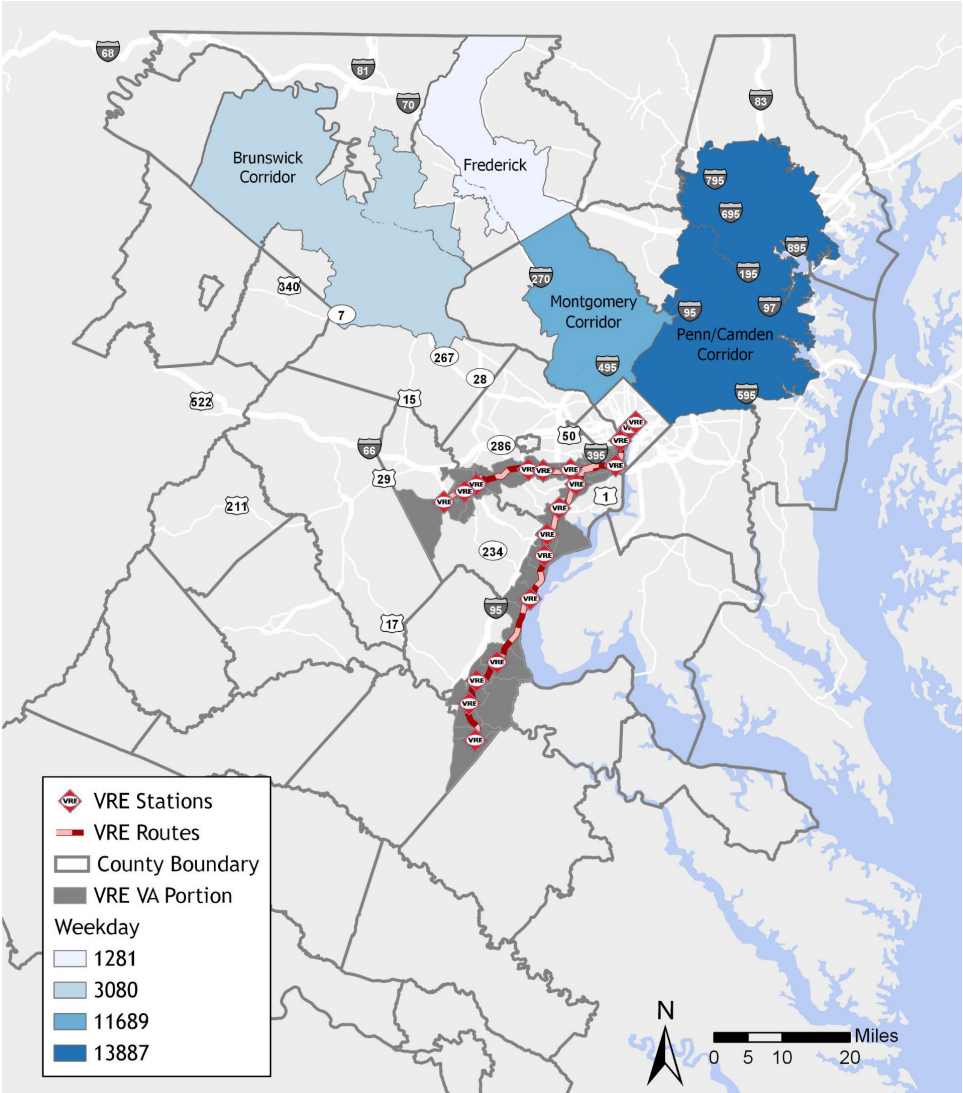
Destination Area	Weekday	Saturday	Sunday
Brunswick Corridor – WV and VA	3,080	3,747	3,402
Frederick	1,281	1,613	1,803
Brunswick Corridor - Montgomery County	11,689	12,177	12,199
Penn/Camden Corridor	13,887	16,644	15,534

Data Source: Streetlight Data

Demand to the VRE Service Area from Other Parts of VA
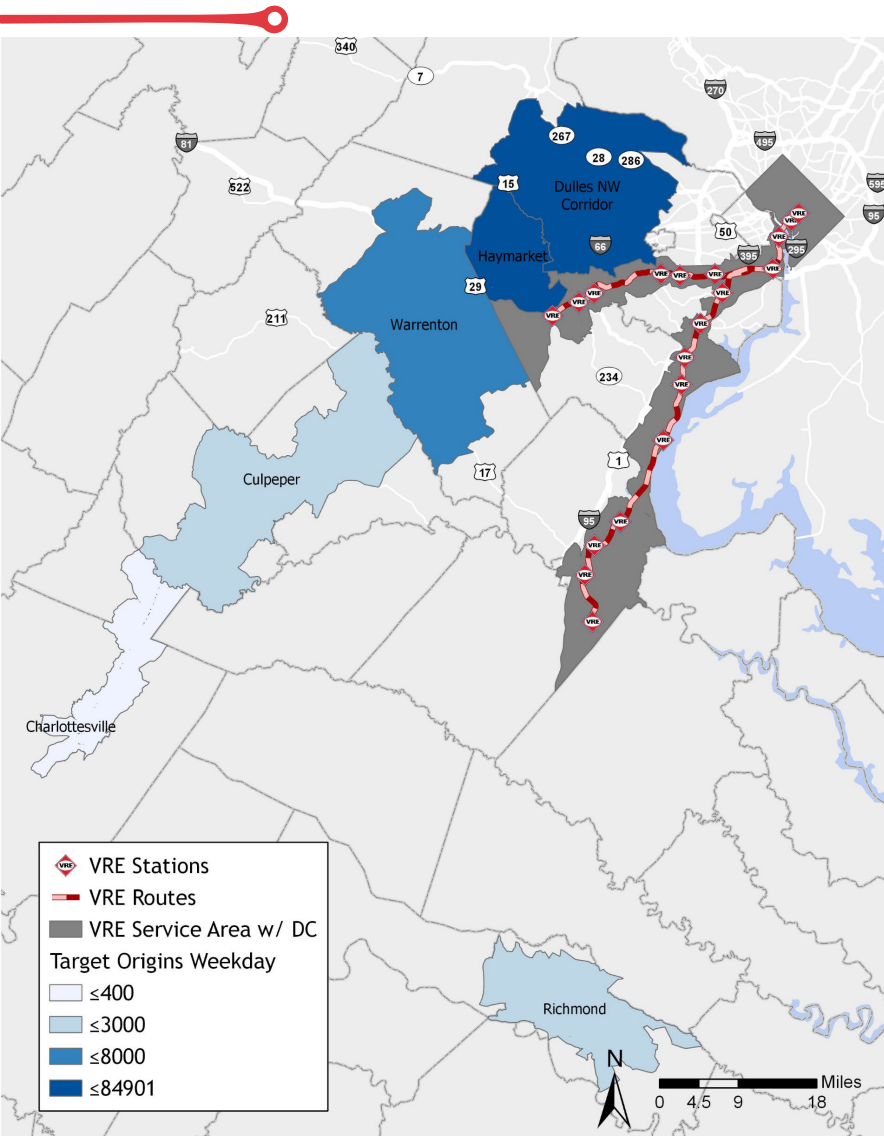
Total daily travel from outside VRE Service Area to VRE Service Area

Origin Area	Weekday	Saturday	Sunday
Richmond	2,688	4,637	4,558
Charlottesville	390	950	829
Dulles NW Corridor	84,901	94,198	80,349
Haymarket	55,265	50,558	43,058
Warrenton	7,090	6,846	5,727
Culpeper	2,078	2,440	1,907

We will continue to explore ways we could serve these markets through the 2050 service scenarios.

Data Source: Streetlight Data

Population Growth Projections

Population Growth 2019-2030 — Population Growth 2030-2050

■ Inner Fredericksburg Line   ■ Inner Manassas Line   ■ Outer Fredericksburg Line   ■ Outer Manassas Line
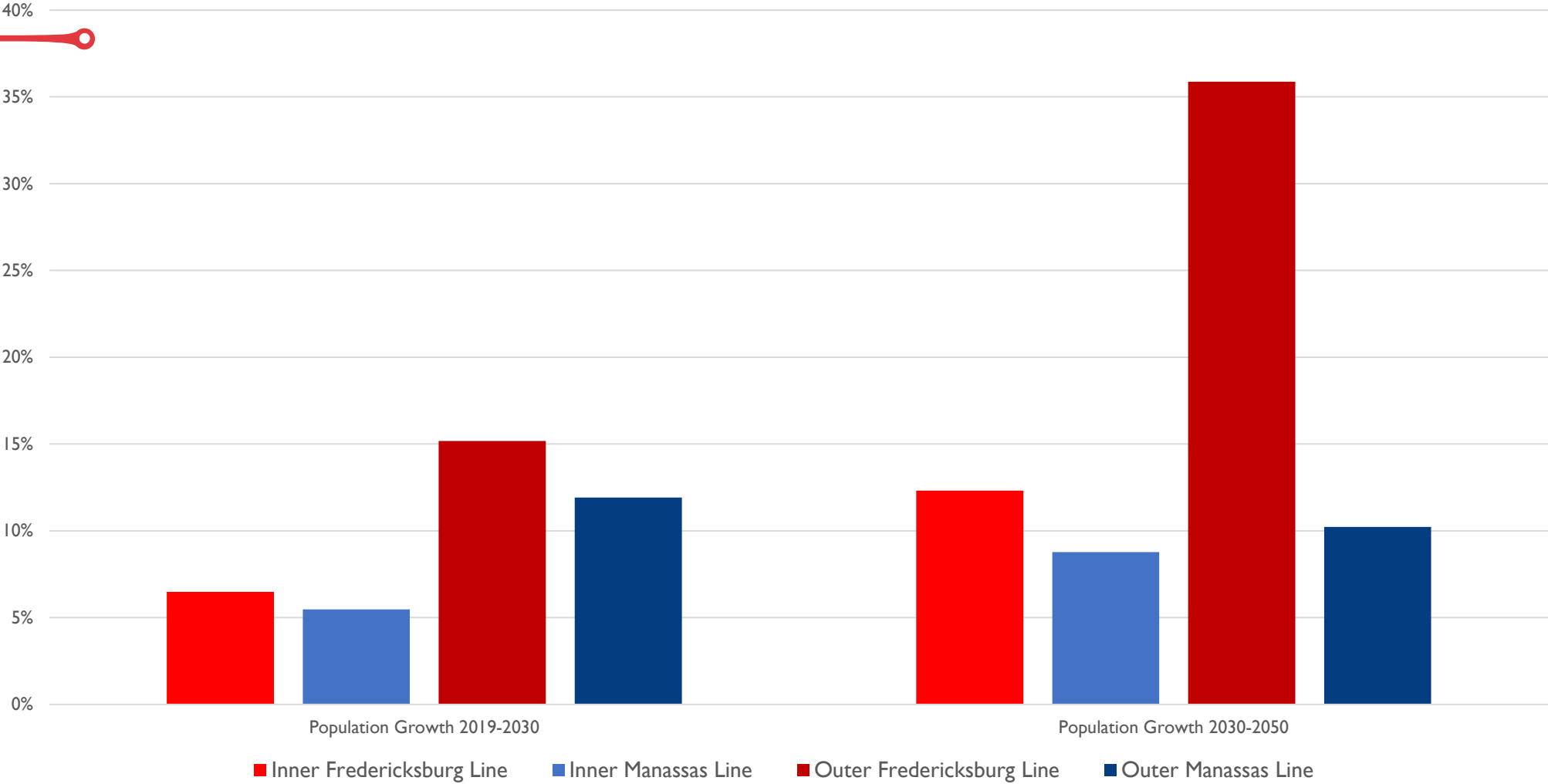
1: FBG Line Outer Stations: Spotsylvania, Fredericksburg, Leeland Road, Brooke, MSS Line Outer Stations: Broad Run, Manassas, Manassas Park
2: FBG Line Inner Stations: Quantico, Rippon, Woodbridge, Lorton, Franconia, MSS Line Inner Stations: Burke Centre, Rolling Rd., Backlick Rd.

2030 Ridership Forecast:
No Build (2023 Service)

2030 average daily ridership with no change to VRE service pattern
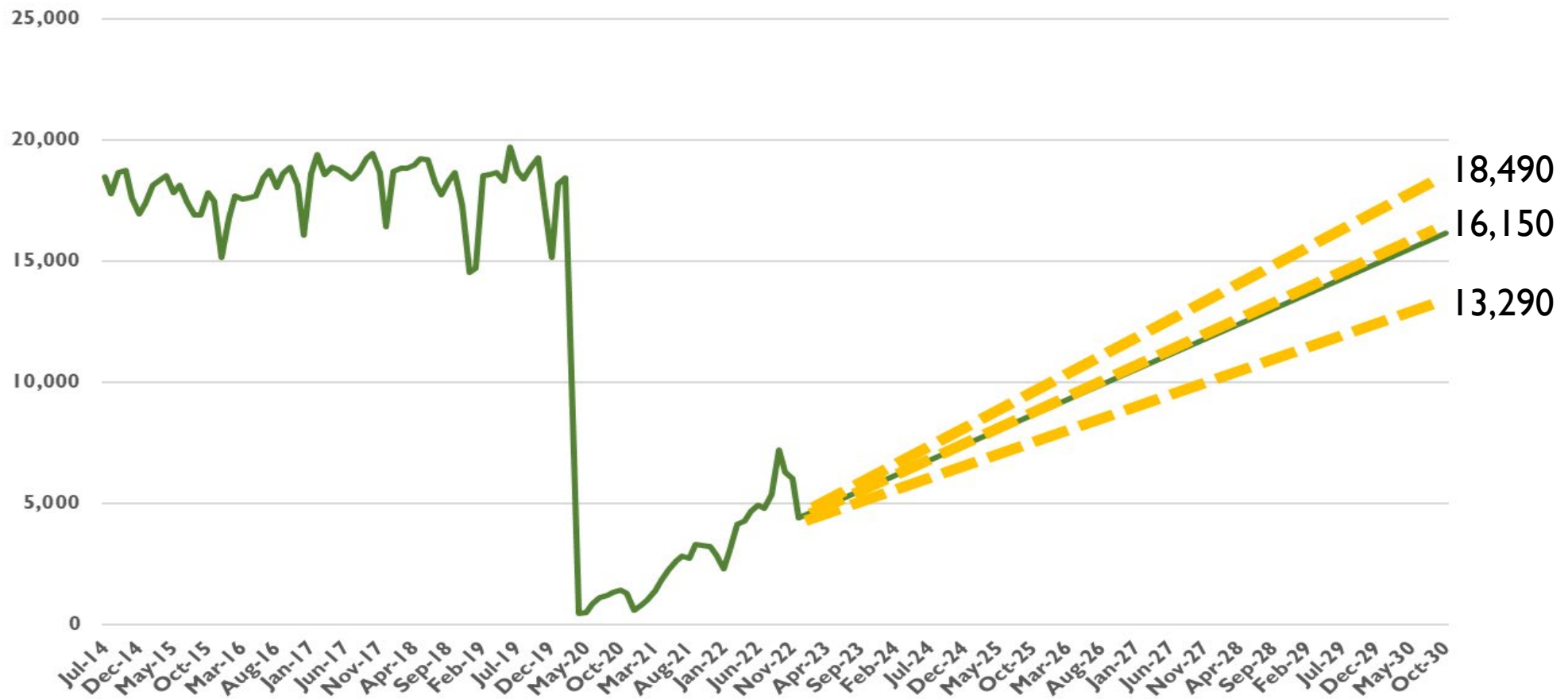
Service Scenario Development Process

22 Long List Service Scenarios

9 Refined Long List Service Scenarios

4 Short List 2050 Service Scenarios

4 Alternatives within 2030 Horizon

Definition
Scoping
Preliminary qualitative evaluation
(Consulted with VRE Operations Planning Work Group)

Fatal Flaw Analysis (Schedules Infrastructure, Fleet, etc.)

June 2023 Board Workshop

VRE

2030 Board-Recommended Alternative

WEEKDAYS

- Up to **26** daily trains (14 FBG/12 MSS)
- 2 Fredericksburg Line express trains
- 4 Manassas Line express trains
- Step-Up expanded to most Amtrak trains
- Feeder bus service connects to Express VRE trains at Fredericksburg and Manassas
- Timed transfers to/from MARC Penn Line

MARC Brunswick | Camden | Penn Timed Transfers

Washington, DC Union Station
L'Enfant

Potomac River / Long Bridge

Crystal City
Alexandria

AF Interlocking

MSS	Backlick Rd	Franconia
	Rolling Rd	Lorton
	Burke Centre	Woodbridge
	Manassas Park	Rippon
	Manassas	*Potomac Shores*
	Broad Run	Quantico

NS B line	*Prince William*	Brooke
	Fauquier	Leeland Rd
	Warren	Fredericksburg
	Frederick (VA)	Spotsylvania

NS Peidmont	*Fauquier*	*Caroline*
	Culpeper County	*Hanover*
	Culpeper Town	Ashland
	Charlottesville	Richmond Staples Mill
		Richmond Main Street

FBG
RF&P

2030 Board-Recommended Alternative
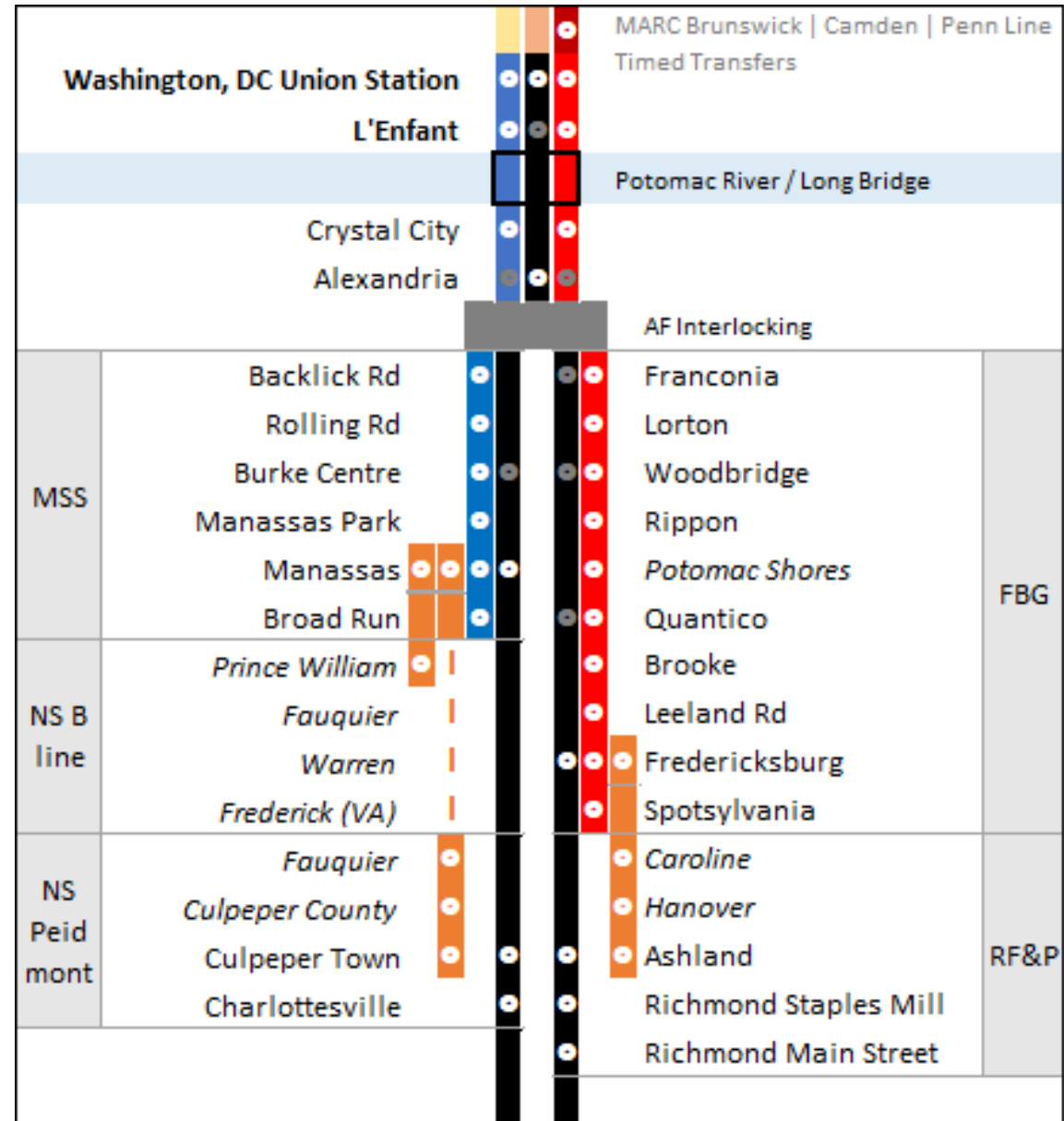
WEEKENDS

- Up to **13** daily trains (7 FBG/ 6 MSS)
- All-Local service
- Limited reverse flow
- Step-Up (or future ticketing agreement) allows weekend travel on most Amtrak trains)
- Flexibility for weekend feeder bus service
- MARC/Amtrak timed transfers at WAS where feasible

⭐ Board requested phase-in of weekend service

Saturday only **6** trains → Full weekend **13** trains

Services Added by 2030

	FY24	FY30 Base Weekend	FY30 Expanded Weekend	Percent Increase from Weekday FY24
Daily Trips by Fiscal Year				
Weekday Fredericksburg	16	28	28	75%
Weekday Manassas*	16	24	24	50%
Weekend Fredericksburg	0	6	14	N/A
Weekend Manassas*	0	6	12	N/A
Total	**32 M-F / 0 Sa-Su**	**52 M-F / 12 Sa-Su**	**52 M-F / 26 Sa-Su**	**62.5%**

*Expanded weekday and weekend Manassas Line service contingent upon agreement from Norfolk Southern.

2030 Operating Cost vs Projected Ridership

With Alternative C:
Weekday Service + 10 Round Trips
Weekend Service + 13 Round Trips

With Alternative A:
Weekend Service + 6 Round Trips
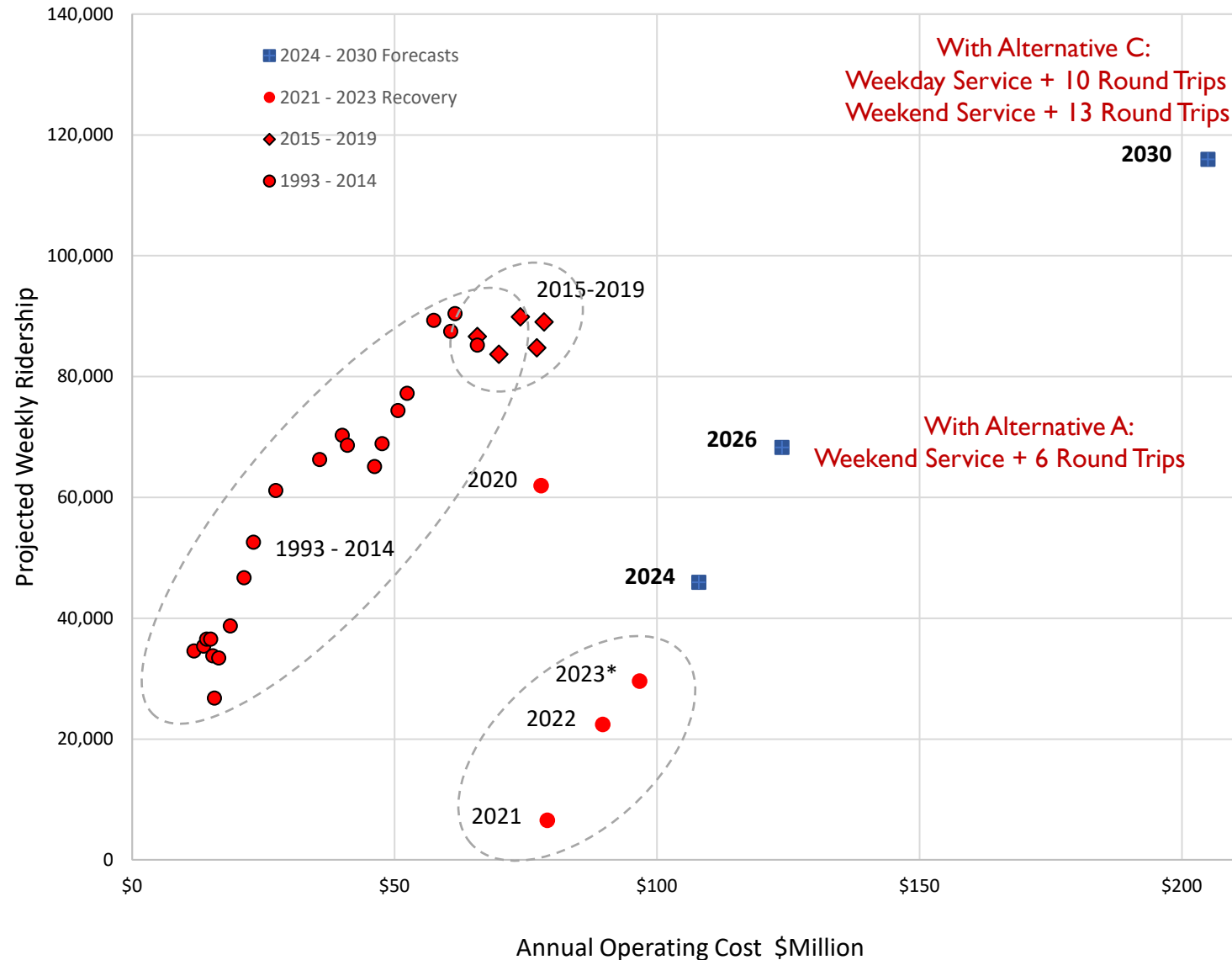
All historical data from National Transit Database (NTD) and VRE

2023 contains 3 months of data

Legend:
- 2024 - 2030 Forecasts
- 2021 - 2023 Recovery
- 2015 - 2019
- 1993 - 2014

Chart labels: 2030, 2026, 2024, 2020, 2023*, 2022, 2021, 2015-2019, 1993 - 2014

X-axis: Annual Operating Cost $Million ($0, $50, $100, $150, $200)
Y-axis: Projected Weekly Ridership (0, 20,000, 40,000, 60,000, 80,000, 100,000, 120,000, 140,000)

16

Revenue vs. Expenditure

Operating Revenues Versus Expenditures

Weekday Average Daily Ridership: 16,020 – 21,570 with expanded weekday and weekend service

Bar chart, y-axis labeled "M of YOE $" ranging from $- to $250.

	FY24	FY30
Revenue - Operating	$108	$172
Expenditure - Operating	$108	$205

■ Revenue - Operating   ■ Expenditure - Operating

Forecast FY30 Capital Funding Gap

Aggregate Amounts FY24 to FY30

Most of this gap is attributed to equipment storage yard improvements and rolling stock needed for the proposed 2030 service.

Millions of $ (YoE$)

$1,400
$1,200
$1,000
$800
$600
$400
$200
$-

$824 — Revenue - Capital

$1,250 — Expenditure - Capital

VRE
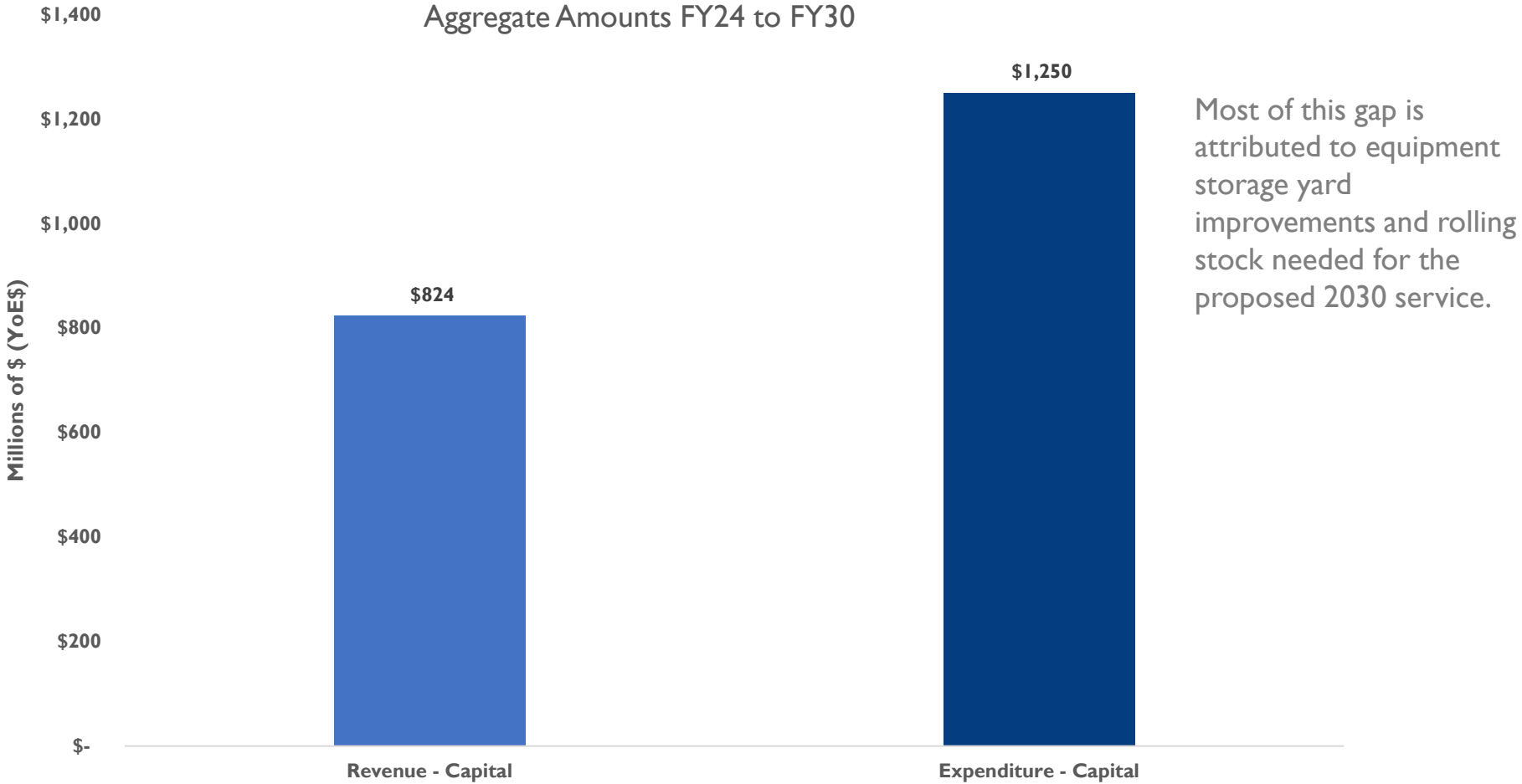
2030 Weekday Ridership Forecasts: Alt A vs No Build

Average Weekday Boardings

Low: 2030 NB 13,290 — 2030 Alt A 16,020
Medium: 2030 NB 16,150 — 2030 Alt A 19,040
High: 2030 NB 18,490 — 2030 Alt A 21,570

Legend: 2030 NB, 2030 Alt A

VRE
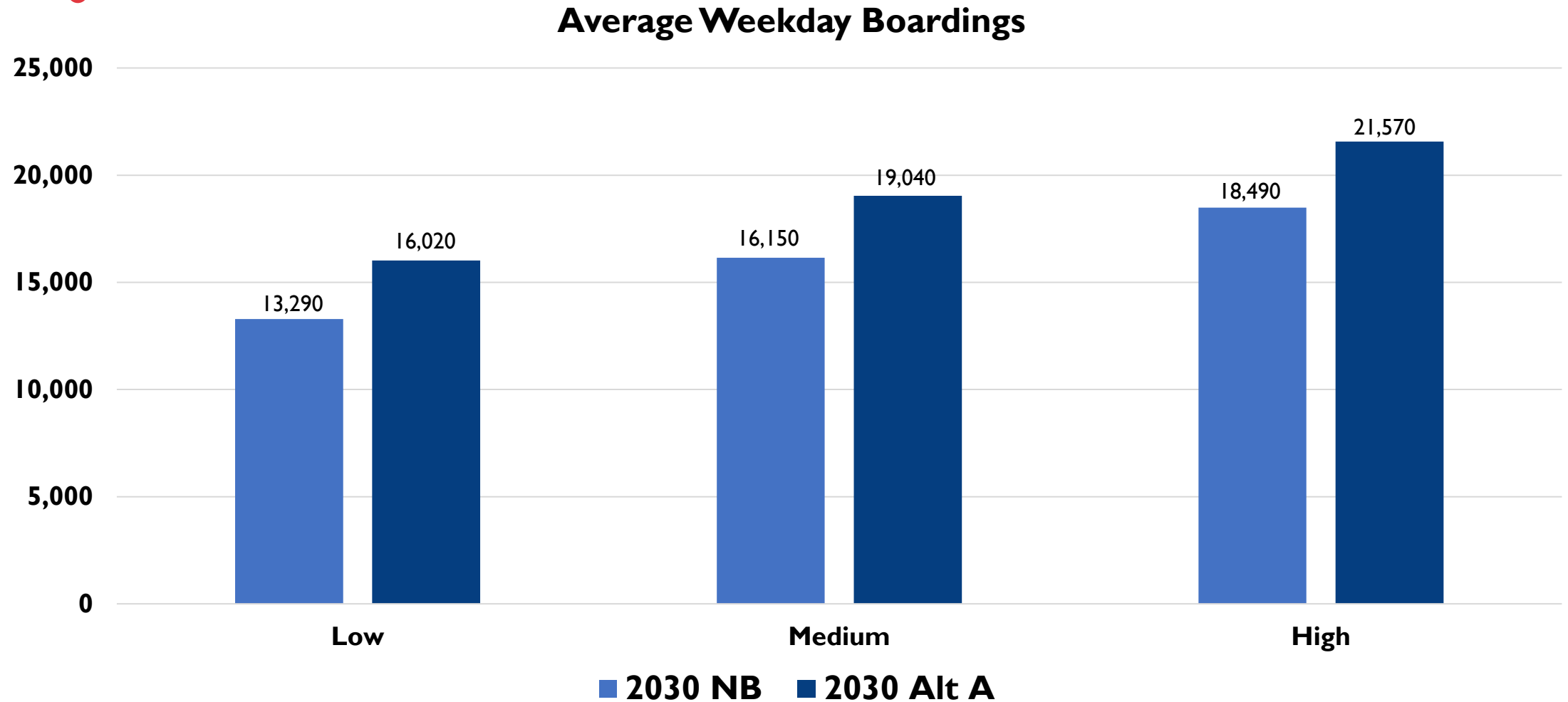
2030 Average Saturday Ridership Forecasts

Average Saturday Boardings

Saturday chart showing 2030 Average Saturday Boardings for Alt A & D, Alt B, and Alt C with Low, Medium, and High forecasts. Alt C values labeled: 3,391 (Low), 4,031 (Medium), 4,568 (High).
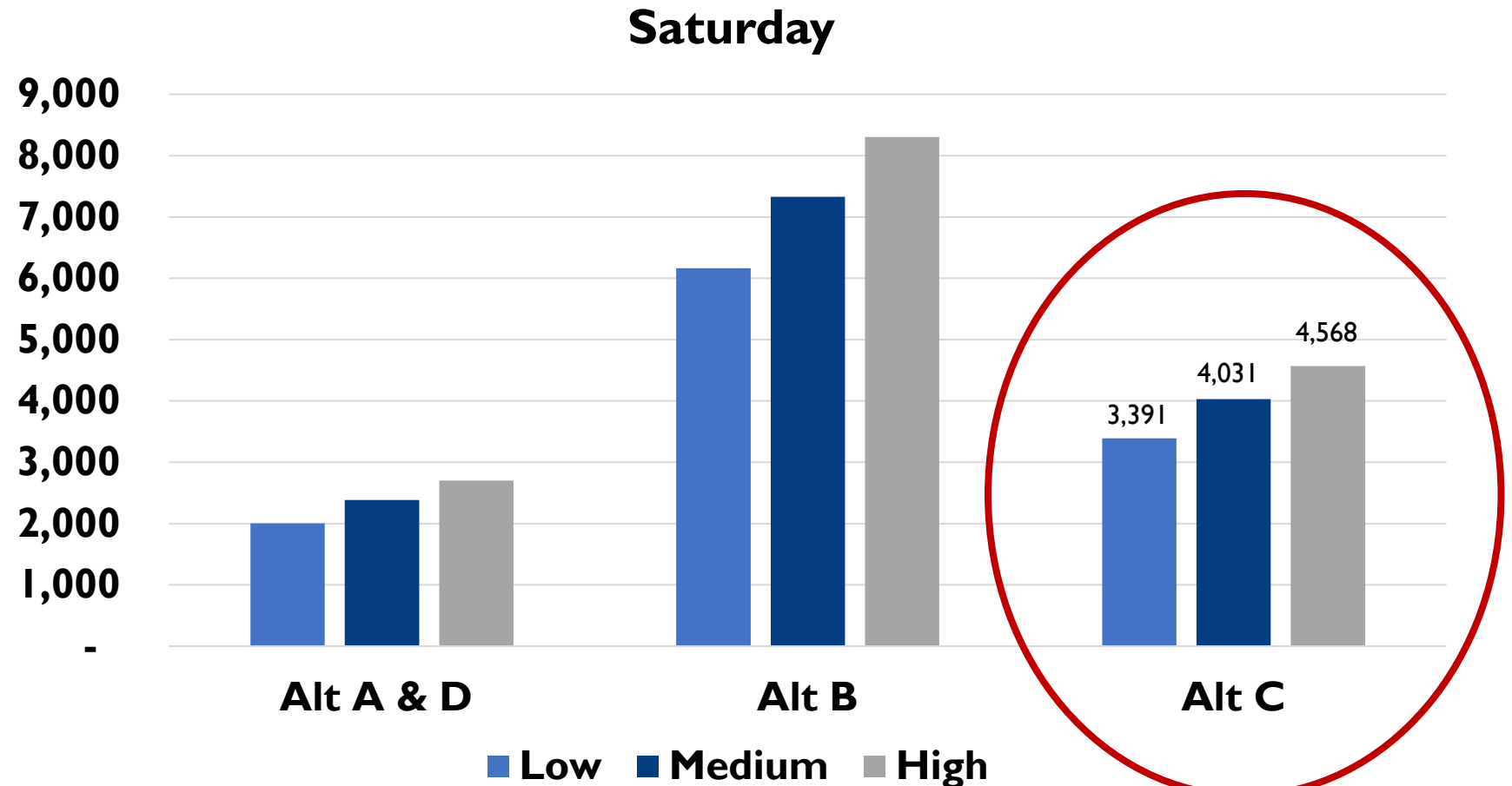
2030 Average Sunday Ridership Forecasts

Average Sunday Boardings

Sunday

	Alt A & D	Alt B	Alt C
			Low: 2,775, Medium: 3,298, High: 3,737

Legend: ■ Low ■ Medium ■ High
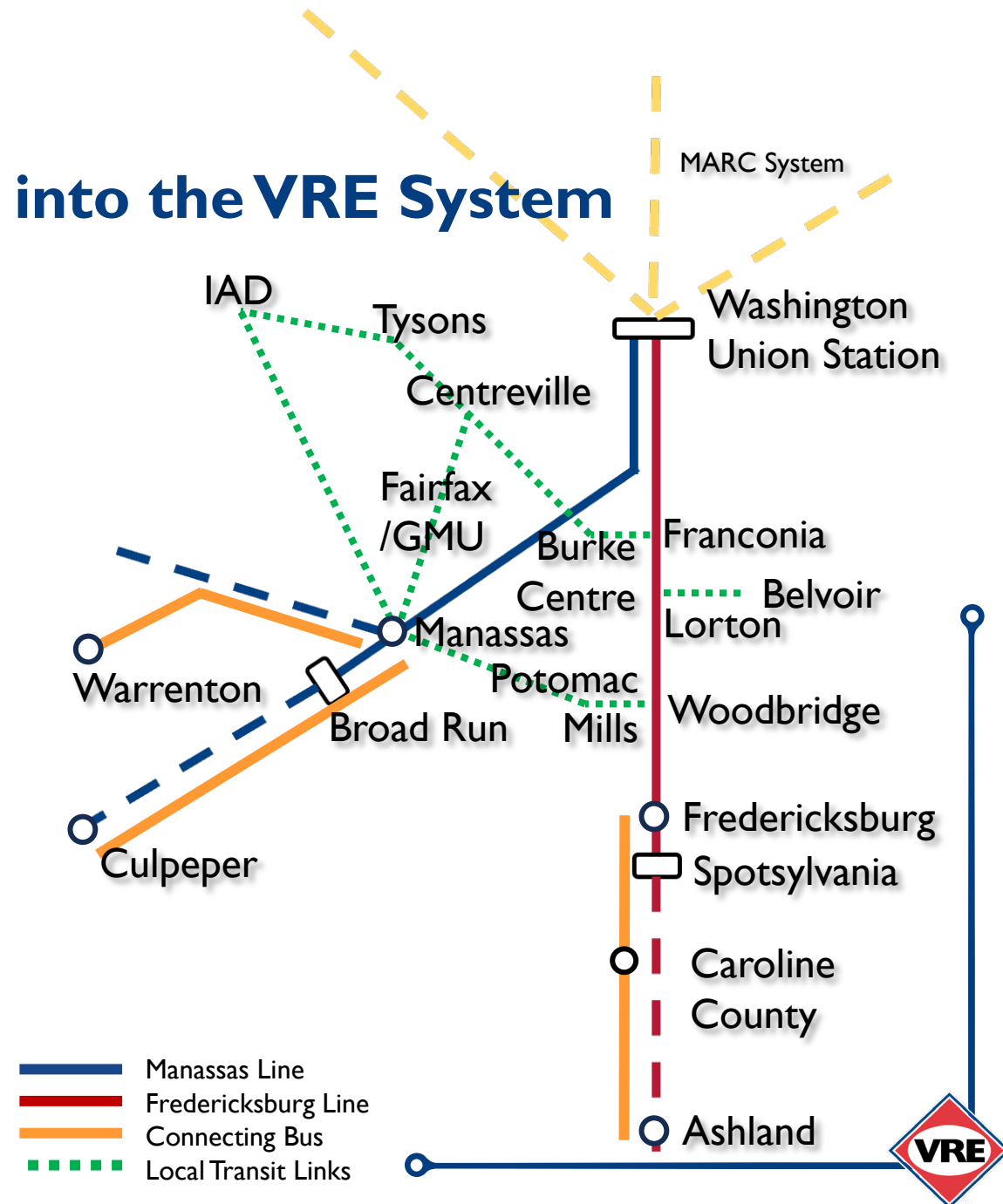
VRE
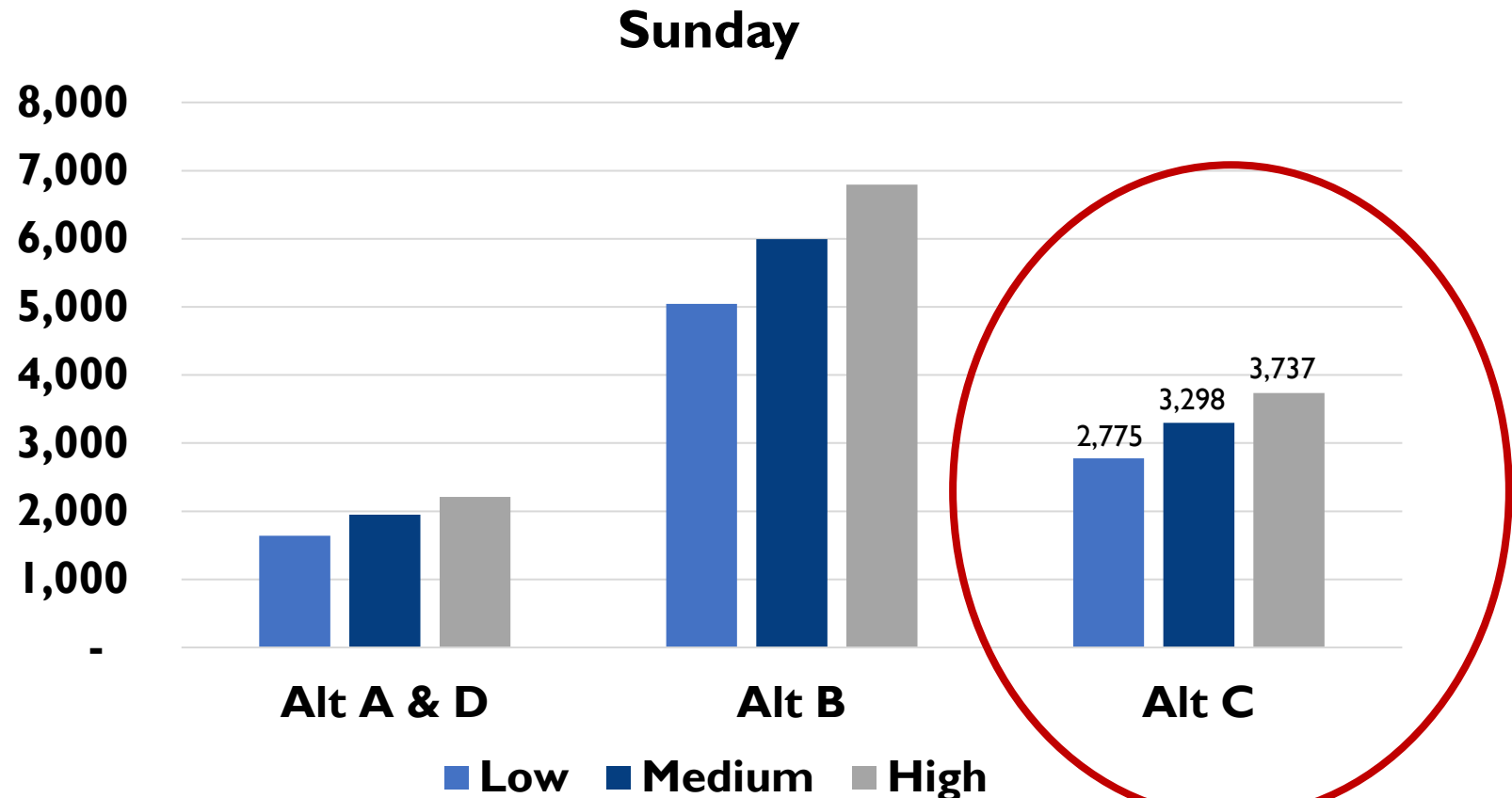
Connecting Bus and Rail
Bringing Long-Distance Commuters into the VRE System

- 2030 scenarios enable service expansion via connecting bus service

- Buses extend the reach of VRE and complement VRE express service, Amtrak VA trains, and Virginia Breeze service

- Transfer to/from MARC Penn Line accomplished through timed transfers and ticketing policies

MARC System

IAD
Tysons
Centreville
Fairfax /GMU
Burke Centre
Franconia
Belvoir
Lorton
Manassas
Potomac Mills
Woodbridge
Warrenton
Broad Run
Culpeper
Washington Union Station
Fredericksburg
Spotsylvania
Caroline County
Ashland

Manassas Line
Fredericksburg Line
Connecting Bus
Local Transit Links

Key Findings

1. VRE needs to secure additional dedicated operating funding streams
2. Raising fares and jurisdictional subsidy at historical levels is not a viable solution on its own to close the financial gap
3. Ridership growth between now and 2030 will look like VRE's first 20 years in operation, but with a higher cost structure
4. There are additional capital costs before 2030 that drive funding gap
   - Additional rolling stock
   - Expansion of tracks at Crossroads Yard
   - Potential mid-day storage needs
5. VRE does not expect significant increases in either State or Federal revenues by FY30

Looking Ahead

October 2023 VRE Operations Board Presentation:

- Refined operations and financial projections for Preferred 2030 Alt.
- More discussion on 2050 Scenario (incl. geographic expansion)
- Request to proceed to Phase III of System Plan

System Plan Phase III:

- Public pop-ups on 2050 System Vision Concepts—November 2023
- Prepare detailed capital needs assessment
- Detail needed jurisdiction/transit agency coordination through 2050
- Finalize preferred 2050 scenario and adopt Plan in March 2024

THANK YOU