Envision Route 7: Phase 4-2 Study Results

November 16, 2026





What is Envision Route 7?

Envision Route 7 aims to deliver:

- High-frequency, high-capacity bus service
- Context sensitive bus priority treatments
- Enhanced bus stops and boarding islands

Background:

- 14-mile project corridor in four jurisdictions with varied roadway and urban treatments
- Snapshot of Virginia and modern America – diversity of economic activity, people, religious institutions
- Previous studies established route and transit mode (bus)
- Roadway ownership is complicated
  - VDOT, Falls Church, Alexandria, Arlington



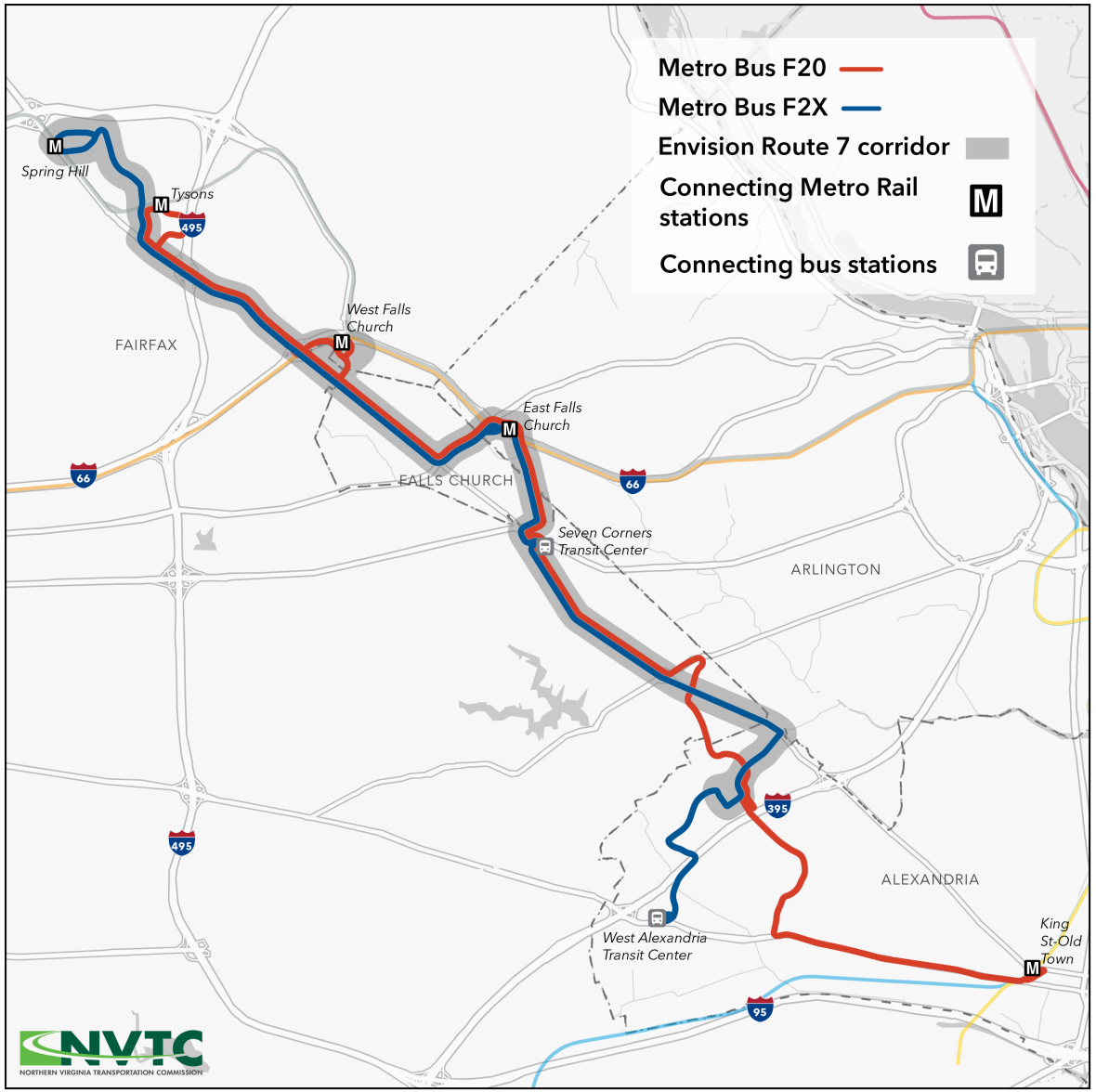
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Why Focus on Route 7?

Metrobus F20 is the highest ridership route in Virginia, but it regularly gets caught in traffic

The F20:

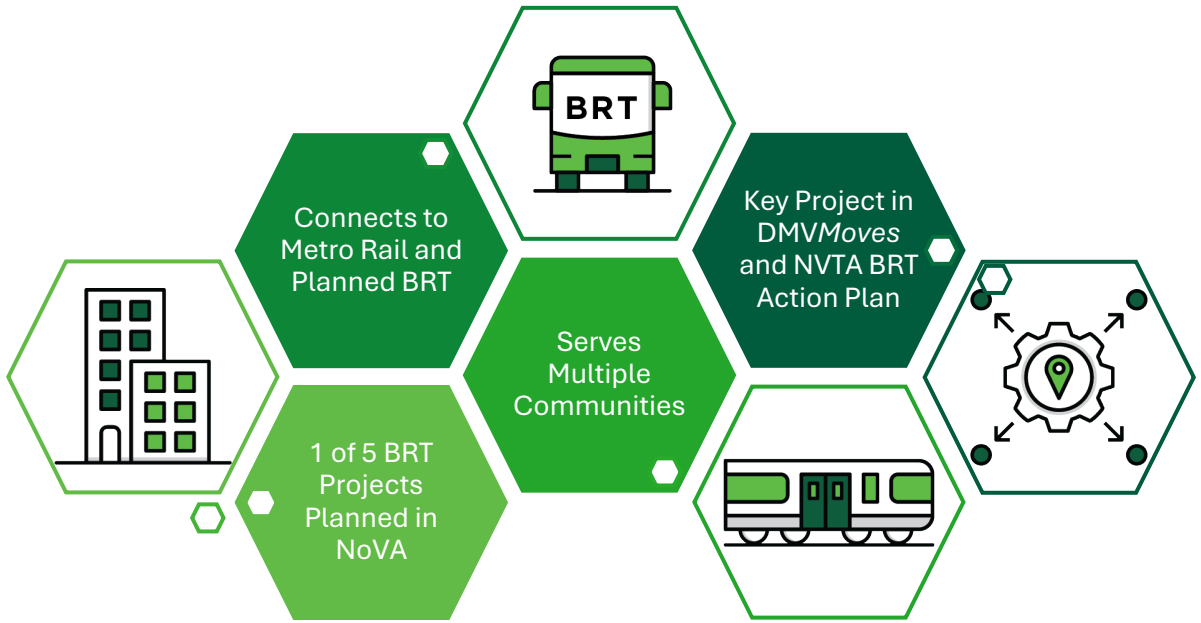
- Provides frequent service
  - Every 12-minutes (8 a.m. – 8 p.m.) and 30 minutes (evening)
- Has strong and growing ridership
  - 7,160 daily riders (September 2026)
  - Ridership is 65% **above** pre-pandemic levels
  - 9th highest ridership in the Metrobus system (highest in Virginia)

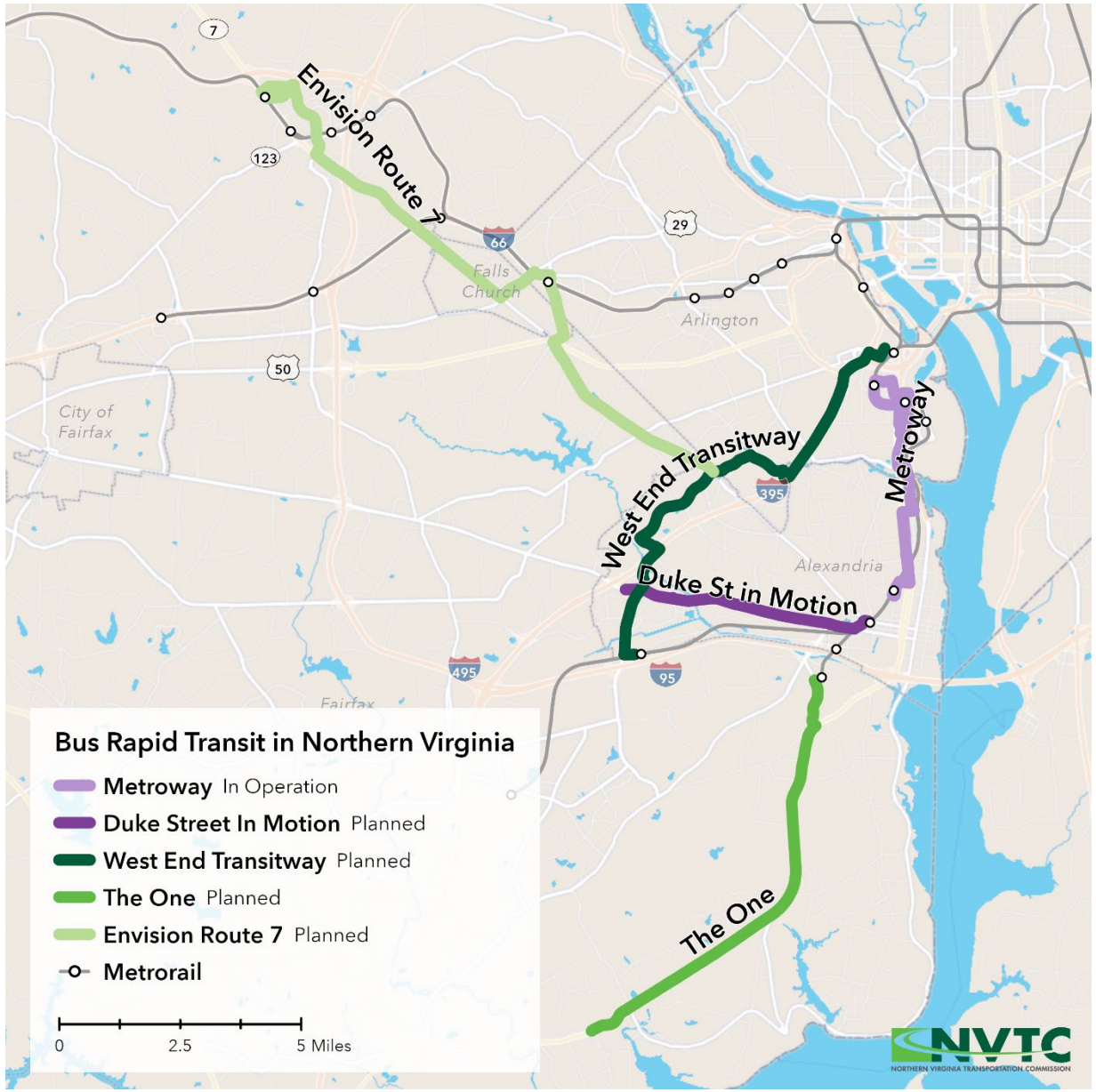


OUR REGIONAL PARTNERS

ARLINGTON VIRGINIA

Route 7 is Critical to NoVa's Transit Connectivity



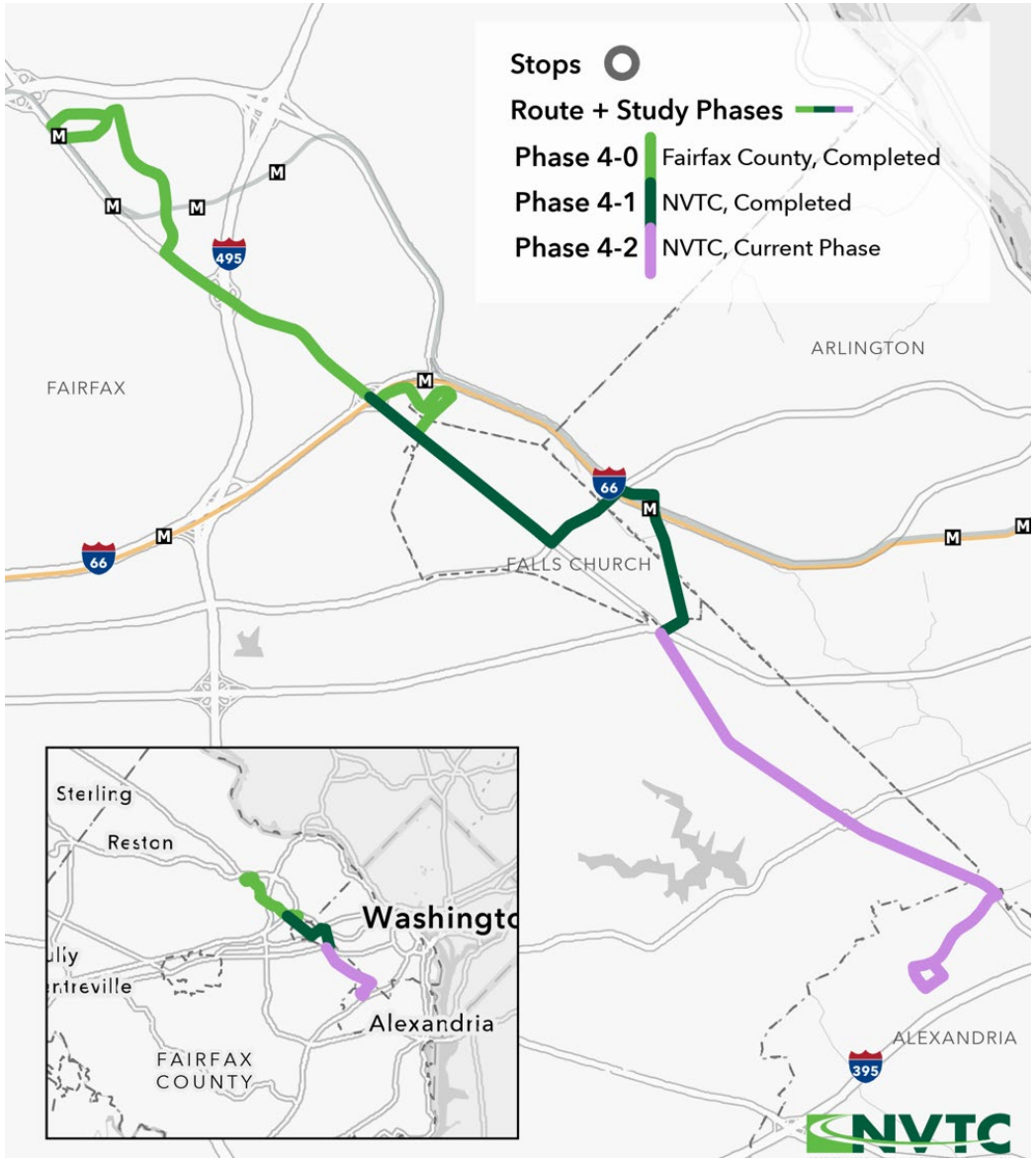


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Final Phase of Traffic Analysis is Complete

Route 7's configuration varies throughout the corridor, so transit solutions must be responsive to those conditions

- **Phase 4-0** – Spring Hill Metro Rail Station to Route 7/ I-66 Interchange
- **Phase 4-1** – Route 7/ I-66 Interchange through City of Falls Church to Seven Corners
- **Phase 4-2** – Seven Corners to Southern Towers/Mark Center



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Community Conversations

Community Outreach Timeline for Phase 4-2

Fall 2025
Building Understanding

Oct 1 to Nov 10, 2025

Open House, Pop-Up Events, Survey

- Materials translated into Spanish and Korean
- 34% of interactions were in Spanish
- 450 survey responses

Spring 2026
Sharing Concepts

May 13 to June 19, 2026

Open House, Pop-Up Events, Survey, Business Outreach

- Materials translated into Spanish, Amharic, Vietnamese
- 516 total interactions
  - 263 in Spanish
  - 214 in English
  - 35 in Vietnamese
  - 4 in Amharic

Fall/Winter 2026
Sharing Results

Oct 5 to Nov 16, 2026

Falls Church City Council
Oct 5, 2026
Elected Official Tour
Oct 28, 2026
Public Meeting
Nov 16, 2026

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What We Heard

Fall and Spring Outreach Takeaways

64%

satisfied/very satisfied with bus service



Why ride the bus?

- ⊕ Save Money
- ⊕ No Car
- ⊕ Save Time

Why *not* ride the bus?

- ⊗ Inconvenient
- ⊗ Infrequent

How people are using the bus

77% to get to and from work

40% to run errands and shop

How do we improve the bus?

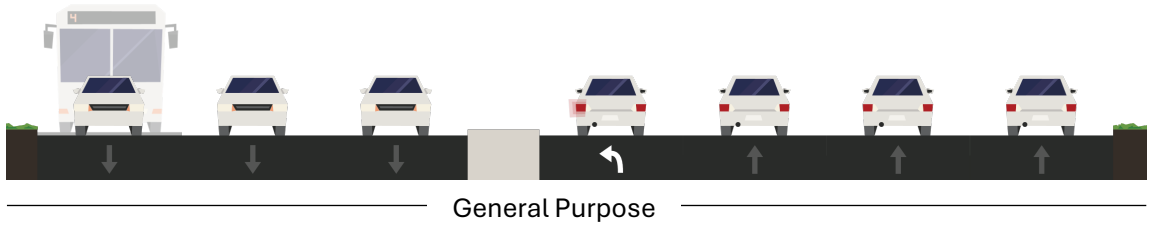
1. **Frequency**
2. **Bus Priority**
3. **Hours of Operation**

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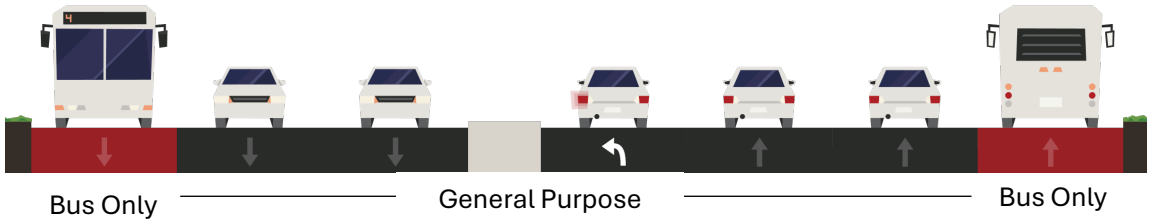
What Options Did We Study?

Three Scenarios in 2050 at PM Peak

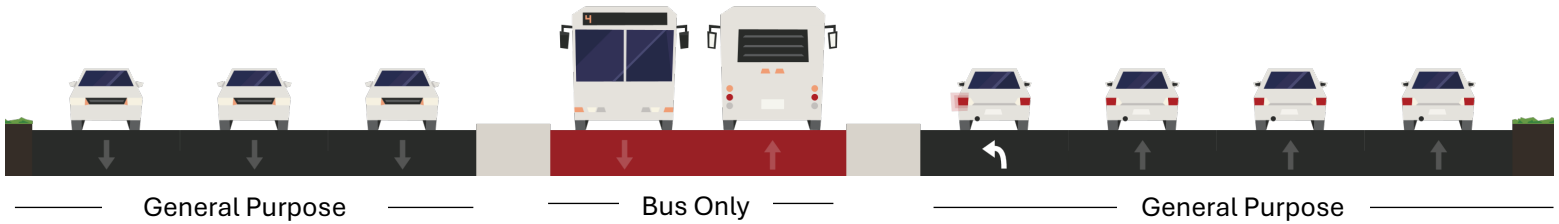
No Build



Curb-Running Bus Lanes



Center-Running Bus Lanes



All scenarios reflect funded transportation projects that are expected to be constructed in the corridor by 2050

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Study Parameters

This analysis focused on **traffic flow and delay** in the **PM peak only**



Comparing curb- and center-running bus lanes along the corridor.

Pedestrian and cyclist connections will require more in-depth roadway design.

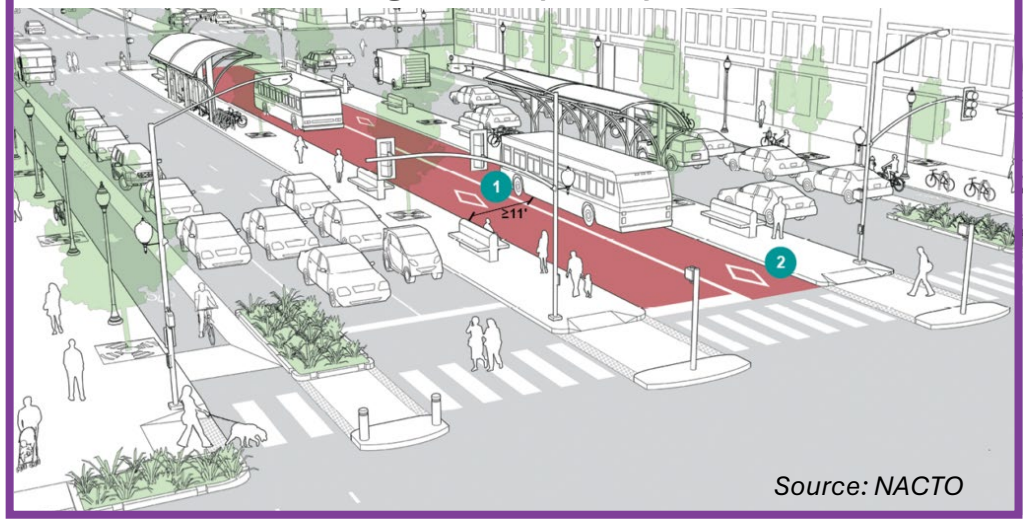
Two Bus Lane Alternatives

Both build alternatives maintain at least two general purpose (GP) lanes in each direction

- Bus lanes reduce delays due to traffic congestion and help raise the visibility of the high-quality, frequent service.
- Emergency vehicles can also use these lanes to improve response times.

Center-Running Bus Lanes

Maintains existing GP capacity



Source: NACTO

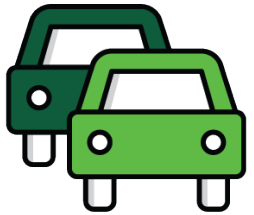
Curb-Running Bus Lanes

Repurposes travel lanes for bus lanes



Source: NACTO

Congestion is Expected to Worsen in 2050



Without any bus lanes:

Compared to today, traveling eastbound on the corridor in a car will take

11 minutes longer

Eastbound traffic encounters increased congestion due to I-395 spillback



Route 7 and Carlin Springs Rd

No Build - 2050

Transit has much **slower travel times** along the corridor in both directions compared to all vehicles

Travel Time at PM Peak

Between Castle Road and Beauregard Street

Eastbound

All Vehicle Travel Time: 25 min

Transit Travel Time: 32.5 min

Westbound

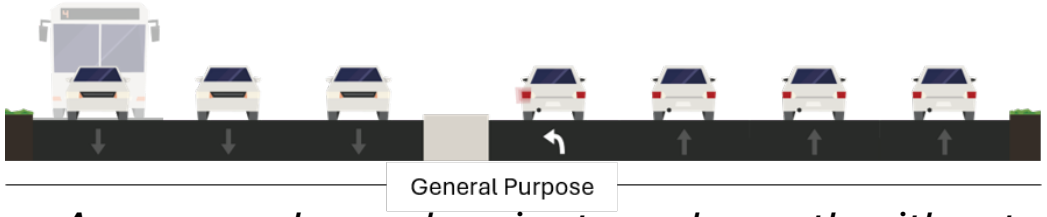
All Vehicle Travel Time: 12.75 min

Transit Travel Time: 17.5 min

3 **Failing Intersections at PM Peak**

80 second or more delay

- Seven Corners Intersection
- S Jefferson St
- S George Mason Dr



Assumes planned projects and growth without any Envision Route 7 bus improvements

Center-Running Bus Lanes

Key Takeaways

- **Transit moves faster** than general vehicles during PM peak
- This alternative maintains existing general-purpose lanes, **requiring road widening** throughout
- Bus is separated from general traffic by a median, making **lane enforcement easier**

4 **Failing Intersections at PM Peak**

80 second or more delay

- Seven Corners Intersection
- Carlin Springs Rd
- S Jefferson St
- S George Mason Dr

Compared to No Build

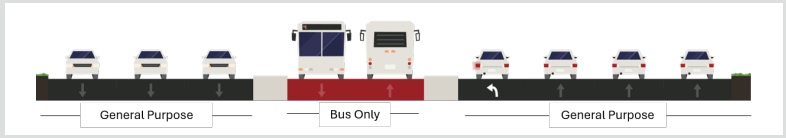
17.3 min

transit travel time savings EB

3.8 min

transit travel time savings WB

Castle Rd to Beauregard St



Two protected center-running dedicated transit lanes while maintaining existing general-purpose lanes.

Center-running **requires impacts to property**

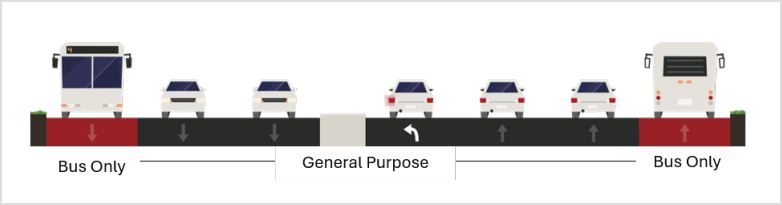


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Curb-Running Bus Lanes

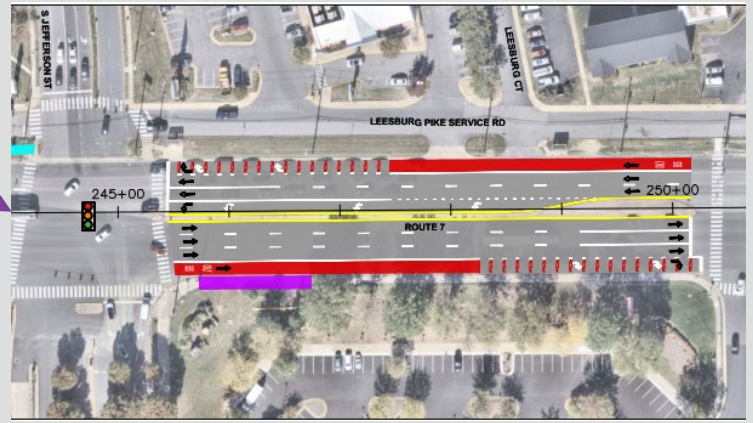
Key Takeaways

- Curb-running lanes **benefit a larger number of riders** along the corridor
- Travel time **savings for more than just BRT service**
- Corridor riders express a **preference for curb-running** design features
- **Minimizes roadway widening** by repurposing existing lanes south of Columbia Pike, with limited widening and property impacts north of Columbia Pike compared to the center-running scenario



Two unprotected curb-running transit lanes. Mixed traffic at intersections to allow for turning vehicles. Maintains two general-purpose lanes in each direction.

Curb-running can be run **within existing roadway width** south of Columbia Pike



2 **Failing Intersections at PM Peak**

80 second or more delay

- Seven Corners Intersection
- Castle Road

Compared to No Build

12.4 min

transit travel time savings EB

3.4 min

transit travel time savings WB

Castle Rd to Beauregard St

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Curb-Running has the least delays, shortest wait times

Summarizing the impacts to vehicles between the three scenarios

	No Build	Center-Running	Curb-Running
Weighted Average **Intersection Delay** per vehicle	41 seconds	38.5 seconds	33.6 seconds
Failing Intersections	3	4	2
Vehicle Travel Time *Castle Rd to Beauregard St*	32.5 min (EB) 12.75 (WB)	3.3 min savings (EB) 0.5 min increase (WB)	7.5 min savings (EB) 2.1 min increase (WB)

Even though the curb-running scenario has fewer general-purpose lanes, having a **consistent number of lanes helps organize traffic** to keep it moving smoothly

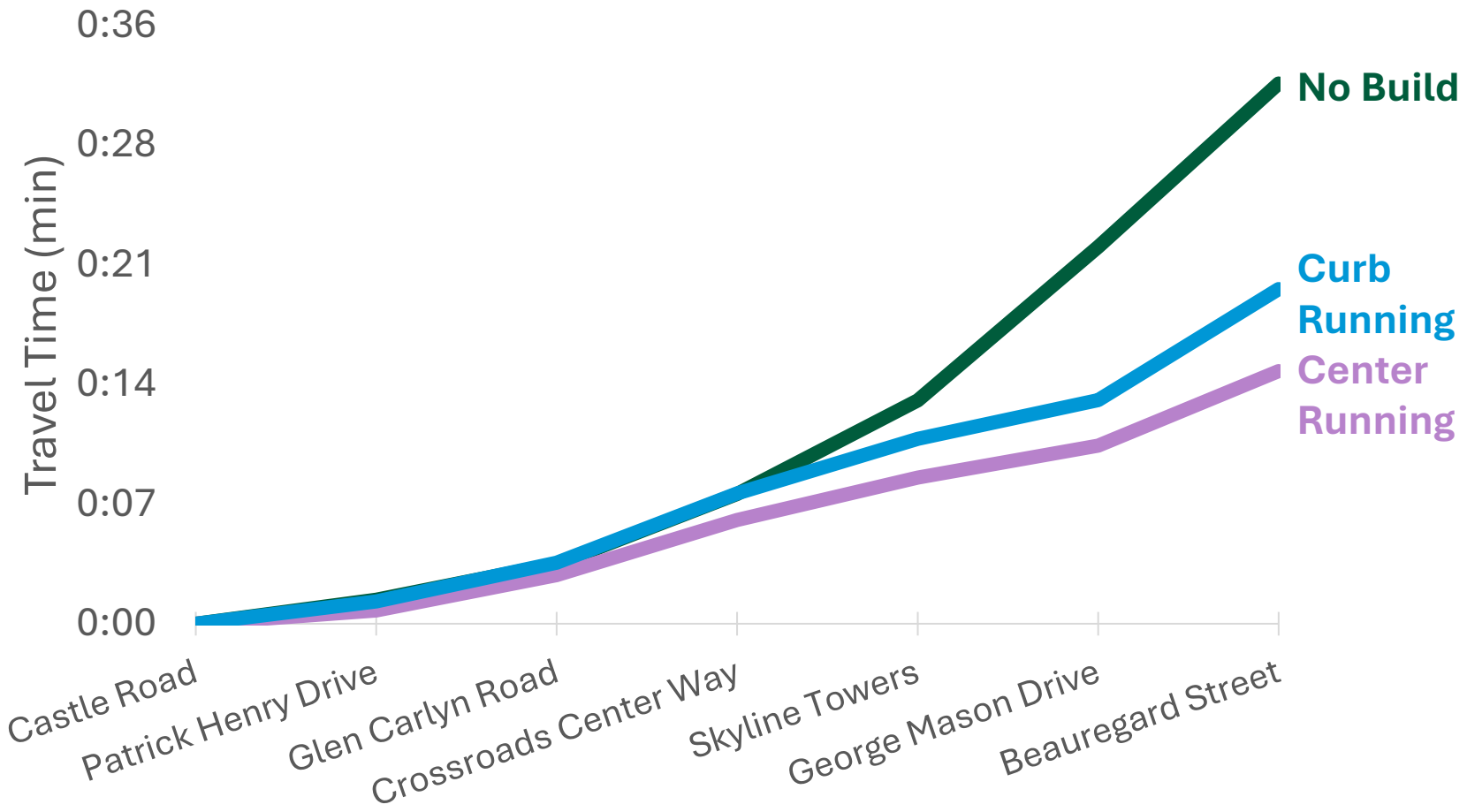
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Transit Travel Time – Eastbound PM Peak

Castle Rd to Beauregard St

Curb-Running Lanes
12 minutes savings

Center-Running Lanes
17 minutes savings



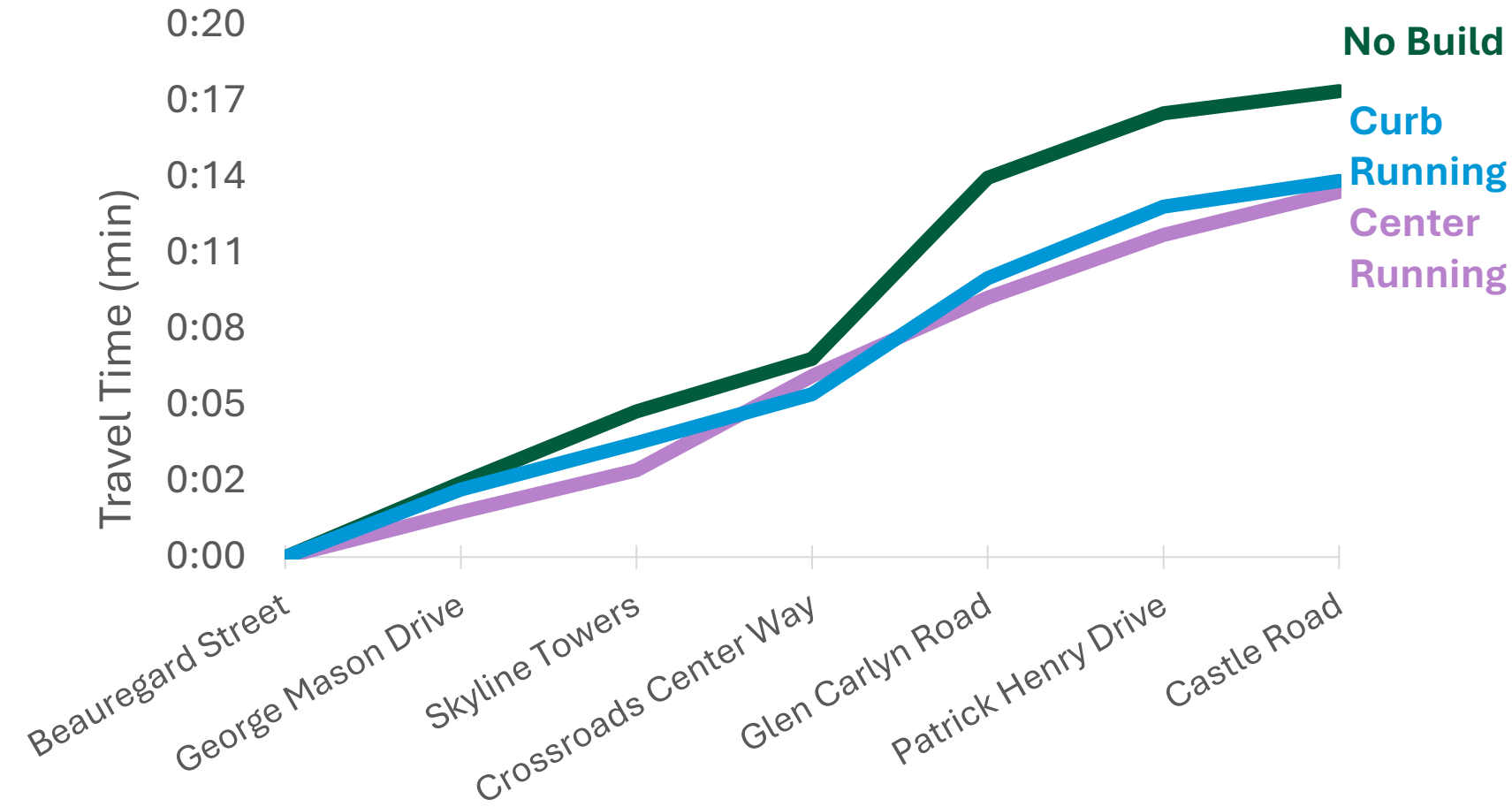
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Transit Travel Time – Westbound PM Peak

Beauregard St to Castle Rd

Curb-Running Lanes
3 minutes savings

Center-Running Lanes
4 minutes savings



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Person Throughput

CENTER RUNNING

ROUTE 7
(SEVEN CORNERS TO COLUMBIA PIKE)

8 ARTICULATED BUSES	**3,000** VEHICLES
240-480 PEOPLE	**3,600** PEOPLE
Number of buses and people in the dedicated bus lanes	Number of passenger vehicles and people in general purpose lanes

CURB RUNNING

Highest Bus Capacity to People Ratio

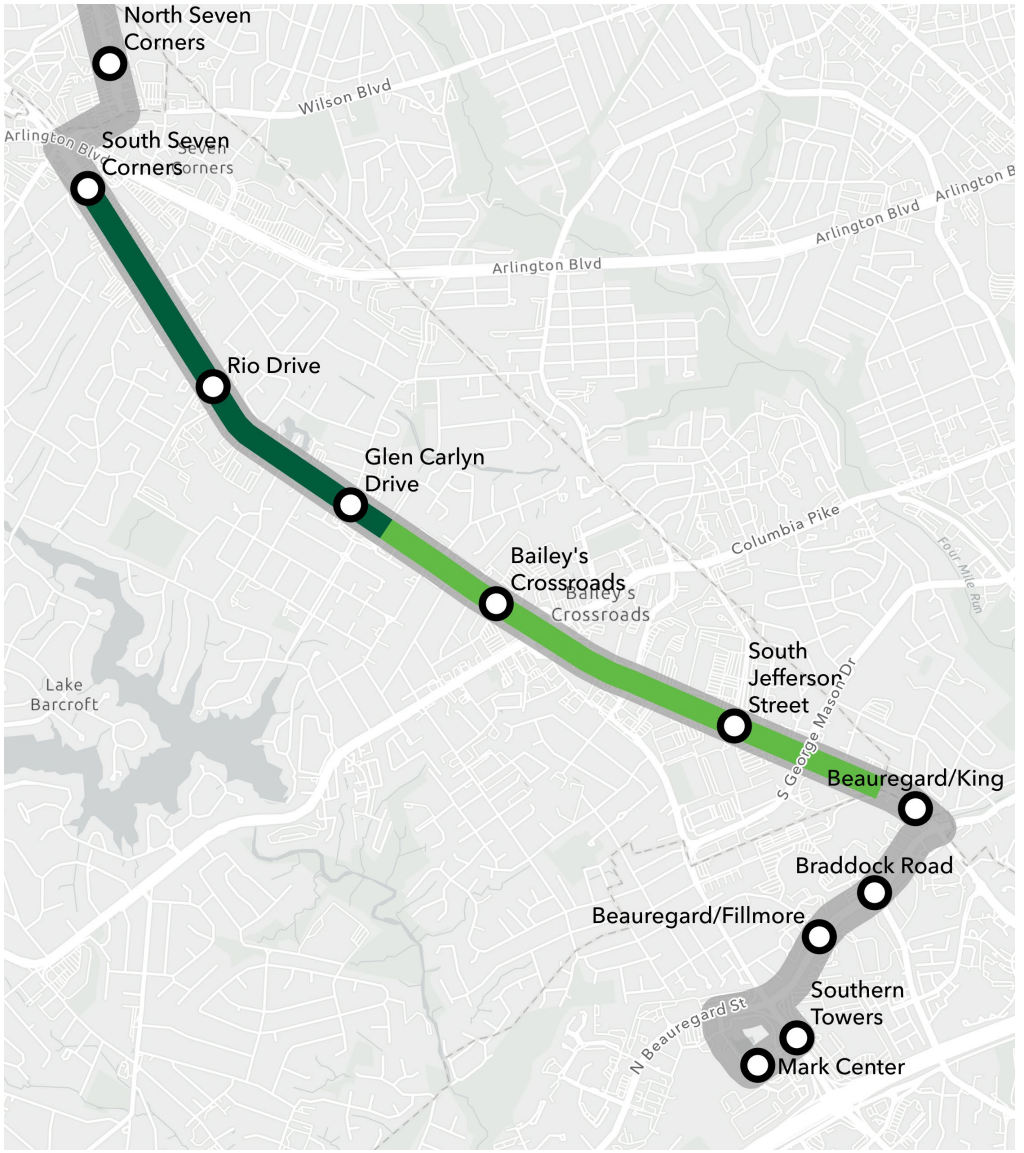
ROUTE 7
(SEVEN CORNERS TO COLUMBIA PIKE)

8 ARTICULATED BUSES **18** LOCAL BUSES (F20, A66, F26)	**2,700** VEHICLES
600-1,200 PEOPLE	**3,240** PEOPLE
Number of buses and people in the dedicated bus lanes	Number of passenger vehicles and people in general purpose lanes

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Different Designs May Work Best On Different Parts Of The Corridor

- **Two distinct segments** – with Culmore in the middle
  - From Seven Corners to Culmore, bus lanes would require the road to be **widened**
  - From Columbia Pike to Alexandria, Route 7 is already **wide enough** to handle curb bus lanes, **avoiding major impacts** to property owners
- All designs need further refinement to incorporate pedestrian and cyclist improvements, as well as access management solutions

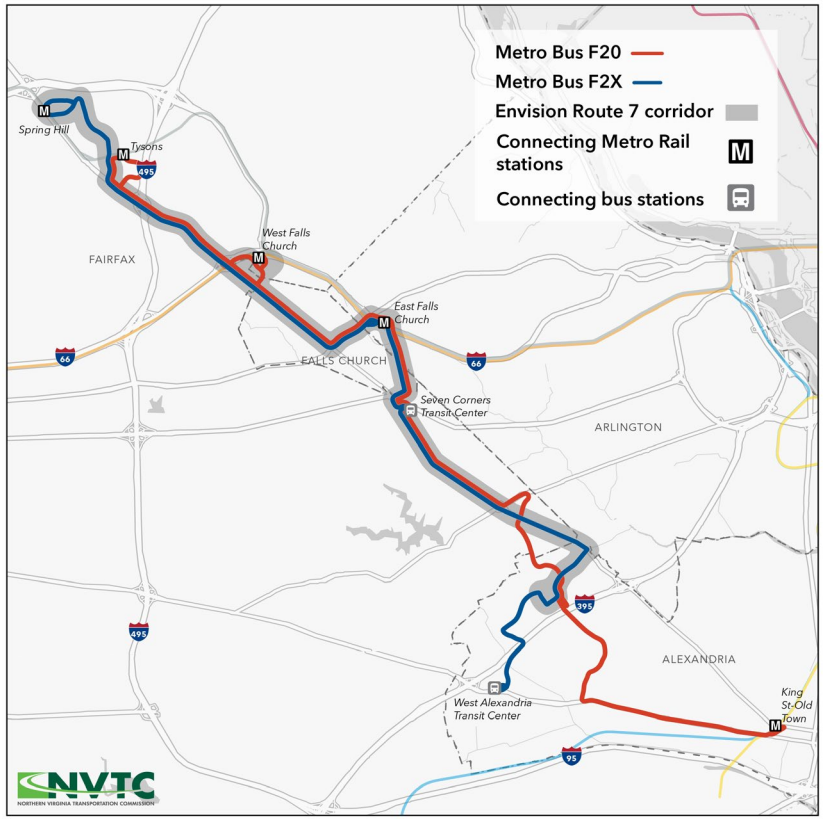


Coming Soon


F20
metrobus
LEN We keep your life moving.
Apply at AppleFCU.org
apple

Metro Bus F2X: New Service in December

Is it BRT?
Not yet! This new bus service is an important first step in creating a higher frequency corridor



What's the Difference?





★ **NEW** December 2026 ★

F20		F2X
Tysons <> King St	↑↓	Spring Hill <> West Alexandria Transit Center
Every 12 min during peak, every 30 min during off- peak		Every 15 min, peak only
22 hour/day service		5:30-10 a.m. and 3- 8:15 p.m.
All stops		Limited stop service

7-minute combined headways during peak hours

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This Winter

Present to Fairfax County Transportation Committee on December 1st

Build regional consensus on path forward

Identify short- and medium-term projects to advance program goals



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Thank you!



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Measures of Effectiveness

Metric	Description	Sources
Multimodal Person Throughput/Carrying Capacity	How many **people** are moving through the corridor?	Vissim, Travel Demand Model
Bus Reliability	How does the expected travel time differ end to end?	Vissim
Bus Travel Time	How much savings (and to how many people) do the dedicated lanes provide compared to no-build?	Vissim, Remix modeling
Intersection Delay	How is traffic flowing through the corridor for all vehicles?	Vissim
Simulated Intersection Approach Queue	Where are there backups at intersections and what are the impacts of those?	Vissim
Vehicle Diversion	Are vehicles diverting to other routes due to congestion?	Travel Demand Model, Vissim
Vehicular Travel Time	How is the introduction of dedicated lanes impacting general traffic flow?	Vissim
Implementation Feasibility	Which alternative could be implemented in a quicker and more cost-effective manner?	Qualitative Assessment, Previous Cost Estimates
Maintenance & Operations	Which alternative would better support enforcement, maintenance and local bus/emergency vehicle operations?	Qualitative Assessment

Evaluation Summary - Traffic

	No-Build	Build Alt 1 - Center-Running	Build Alt 2 - Curb-Running
Intersection Level of Service	22 out of 28 signalized intersections operate at LOS D or better	23 out of 30 signalized intersections operate at LOS D or better	24 out of 30 signalized intersections operate at LOS D or better
Intersection Weighted Average Intersection Delay	41.0 sec/veh	38.5 sec/veh	33.6 sec/veh
Intersection Weighted Average Intersection Delay (signalized intersections only)	46.0 sec/veh	47.2 sec/veh	41.4 sec/veh
Intersections with Failing LOS (Delay over 80 sec)	• S Jefferson Street • S George Mason Drive • E Broad Street/Route 7 at EB Arlington Service Road/Sleepy Hollow Road/Wilson Boulevard	• Carlin Springs Road • S Jefferson Street • S George Mason Drive • E Broad Street/Route 7 at EB Arlington Service Road/Sleepy Hollow Road/Wilson Boulevard	• Castle Road • E Broad Street/Route 7 at EB Arlington Service Road/Sleepy Hollow Road/Wilson Boulevard
Intersection Queues	**19 movements** have queues which exceed their respective storage lengths at **15 different intersections**	**19 movements** have queues which exceed their respective storage lengths at **12 different intersections**	**24 movements** have queues which exceed their respective storage lengths at **16 different intersections**

Evaluation Summary - Traffic

	No-Build	Build Alt 1 - Center-Running	Build Alt 2 - Curb-Running
GP Vehicle Travel Time	**End to end:** • Eastbound - 32.5 min • Westbound – 17.5 min **Route 7 (Castle Road to Beauregard Street):** • Eastbound – 25 min • Westbound – 12.75 min	**End to end:** • Eastbound – 3.3 min savings • Westbound – 0.6 min increase **Route 7 (Castle Road to Beauregard Street)** • Eastbound – 3.3 min savings • Westbound – 0.5 min increase	**End to end:** • Eastbound – 7.6 min savings • Westbound – 3.9 min increase **Route 7 (Castle Road to Beauregard Street)** • Eastbound – 7.5 min savings • Westbound – 3.1 min increase

Evaluation Summary - Transit

	No-Build	Build Alt 1 - Center-Running	Build Alt 2 - Curb-Running
BRT Travel Time (F2X)	**End to End:** • Eastbound – 48.5 min • Westbound – 32.5 min **Route 7 (Castle Road to Beauregard Street):** • Eastbound – 32.5 min • Westbound – 17.5 min	**End to end:** • Eastbound – 17.3 min savings • Westbound – 3.3 min savings **Route 7 (Castle Road to Beauregard Street):** • Eastbound – 17.3 min savings • Westbound – 3.8 min of savings	**End to end:** • Eastbound – 13.4 min savings • Westbound – 3.2 min savings **Route 7 (Castle Road to Beauregard Street):** • Eastbound – 12.4 min savings • Westbound – 3.4 min savings
Assumed Frequency (F20 + F2X)	12 min frequency	6-7 min combined frequency	
Transit Person Carrying Capacity (Seven Corners to Columbia Pike)	720 people on general purpose lanes	• 720 people on general purpose lanes • 480 people on dedicated bus lanes	• 0 people on general purpose lanes • 1,200 people on dedicated bus lanes

Evaluation Summary – Implementation & Maintenance

	No-Build	Build Alt 1 - Center-Running	Build Alt 2 - Curb-Running
Constructability	• N/A	More difficult to construct because more modifications to the roadway cross sections + widening	Easier to construct because it primarily repurposes existing lanes with limited widening
Ease of Maintenance	• Standard roadway maintenance including cleaning, repaving, and restriping	Addition and ongoing maintenance of medians and additional drainage infrastructure surrounding dedicated transit lanes	Addition and ongoing maintenance of red pavement, signage, and pavement markings