



Route 7 Bus Rapid Transit (BRT) Study

Board Transportation Committee
September 10, 2019

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Fairfax County Department of Transportation

Presentation Overview

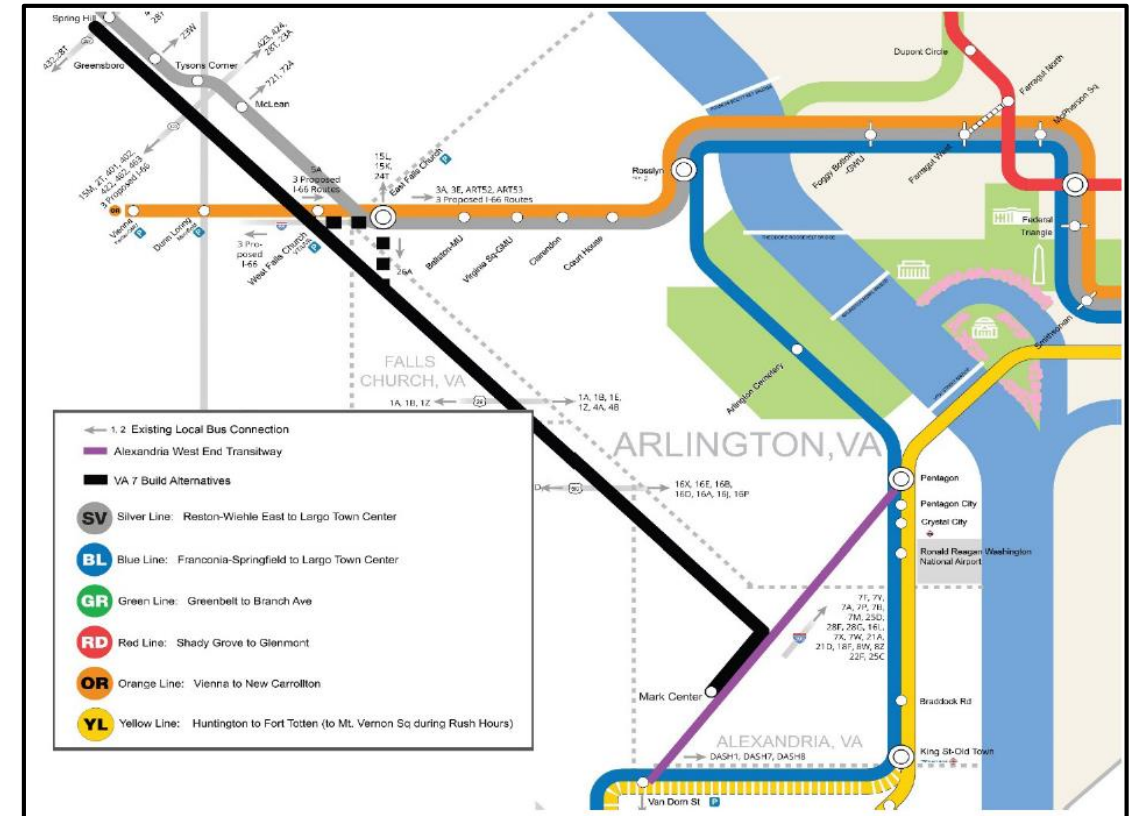
Route 7 Bus Rapid Transit (BRT) Study

- Project Background
- Study Status
- Alternatives Assessment
- Alternatives Evaluation
- Next Steps and Schedule
- Board Comments and Feedback

Project Background

Envision Route 7 Corridor Transit Study

- Conducted by Northern Virginia Transportation Commission (NVTC)
- Identified BRT as preferred alternative from Marc Center in Alexandria to Tysons in Phase II
- Recommended dedicated bus lanes within Tysons and provide multimodal solution
- Ongoing Phase III study to develop conceptual plans along the corridor

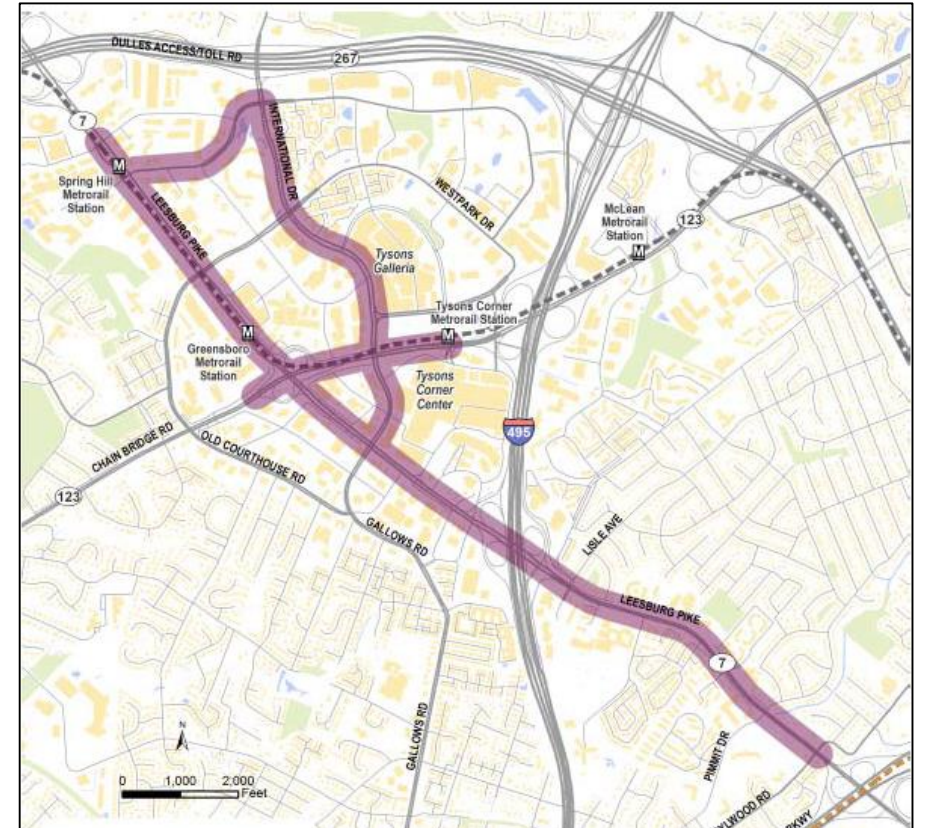


Northern Virginia Transit map with conceptual Route 7 BRT line

Project Background

Fairfax County Route 7 BRT Study

- Detailed study within Tysons (west of I-66)
- Determine the multimodal cross section within the study area
- Develop BRT alignment with terminal station location
- Determine the type of running way for BRT operation
- Identify BRT station locations



Spring Hill Metro Station to I-66 Interchange

Status of the Study

- Study initiated in October 2018
- Conducted qualitative and quantitative, non-model assessment of alternatives
 - Coordinated with VDOT and NVTC
 - Developed Measures of Effectiveness (MOEs)
 - Emphasized a multimodal environment
 - Captured the impacts of different options from both the perspective of transit and roadway users
- Commenced traffic analysis for existing and future conditions



Alternatives Assessment

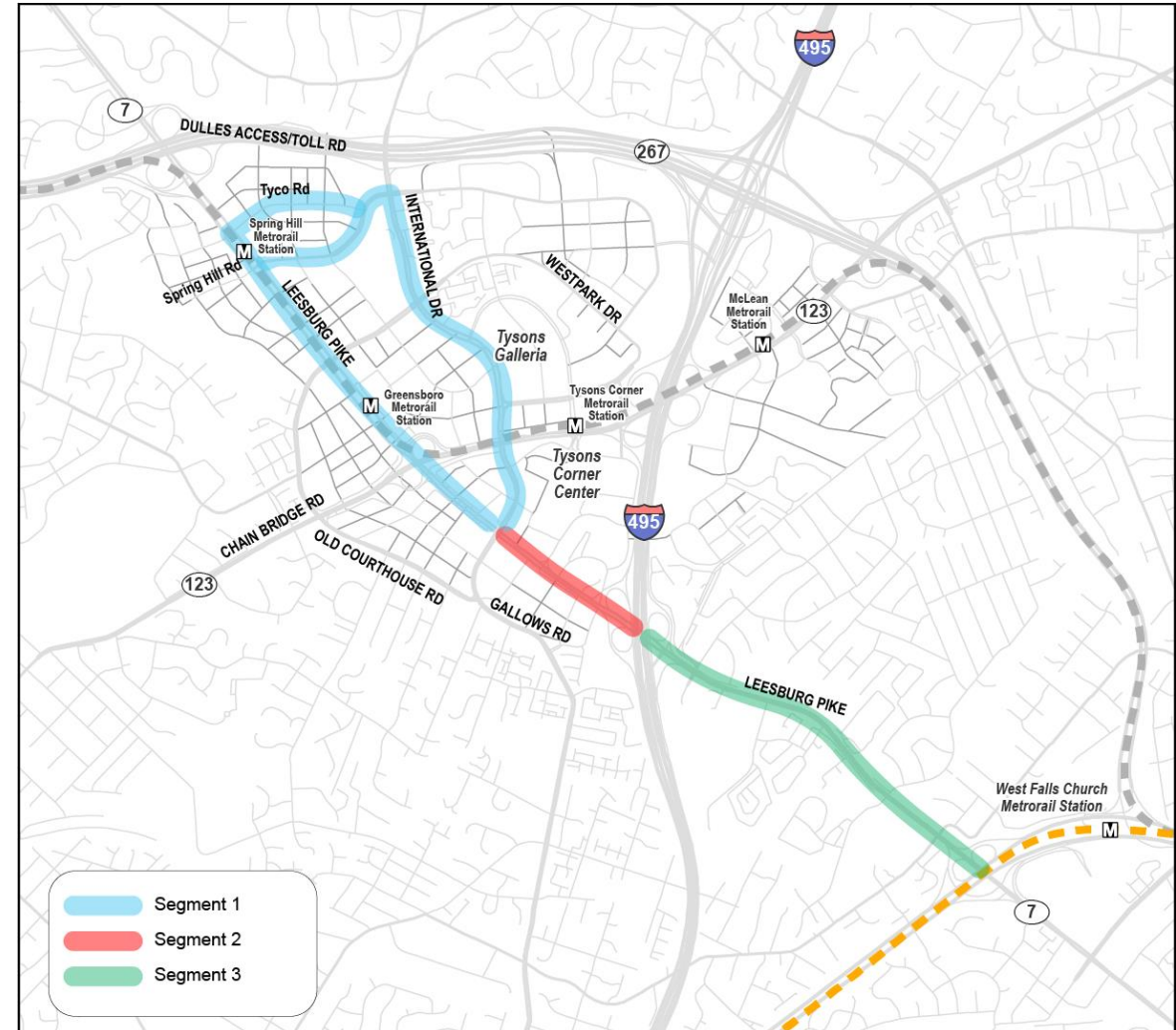
Measure of Effectiveness
Goal: Access and Mobility - Provide choices through accessible transit service
Objective: Serve population, employment, and activity centers with BRT
Population within ½ mile walking distance
Employment within ½ mile walking distance
Objective: Provide connections to larger transit network
Number of Metrorail Stations served
Goal: Transportation Network Performance - Ensure efficient movement of people and goods
Objective: Improve Transit Operations in Corridor
Percent of Corridor with dedicated BRT lanes
Percent of Corridor with BAT Lanes
Route Directness (minimal amount of turns)
Goal: Land Use/Economic Vitality – Support economic development and land use goals
Objective: Minimize impacts to private property
Approximate acreage of land required for right-of-way

Alternatives Assessment

Measure of Effectiveness
Goal: Meet the needs of all users – residents, workers, visitors, and disadvantaged populations
Objective: Serve areas with transit dependent populations
Number of transit dependent/transit inclined households and jobs within ½ mile of stations
Goal: Improve safety for all roadway users
Objective: Improve the pedestrian environment in the study corridor
Pedestrian Crossing Time at Key Intersections
Number of BRT - Mixed Traffic Conflict Points
Safety and comfort of biking environment in the corridor
Goal: Protect and Improve Environmental Resources
Objective: Minimize negative impacts to the natural environment
Qualitative environmental impacts to parklands, cultural resources, wetlands, woodlands, etc.
Goal: Make sustainable, cost effective investments in transit
Objective: Prove financial feasibility of BRT
Construction Difficulty (ROW acquisition, environmental impact, utilities relocation)

Alternatives Assessment

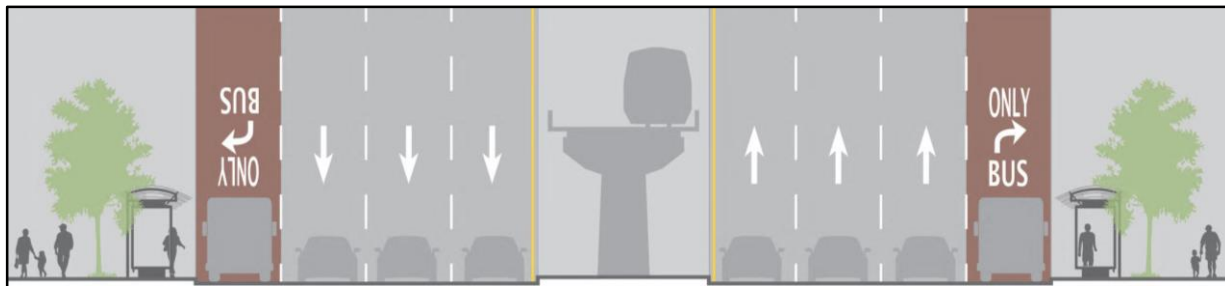
- Corridor alternatives separated by segment
 - Segment 1 – Spring Hill Metro Station to International Drive
 - 6 Preliminary Alternatives
 - 3 Alternatives Selected
 - Segments 2 – International Drive to I-495
 - 3 Preliminary Alternatives
 - 1 Alternative Selected
 - Segments 3 – I-495 – I-66
 - 3 Preliminary Alternatives
 - 1 Alternative Selected



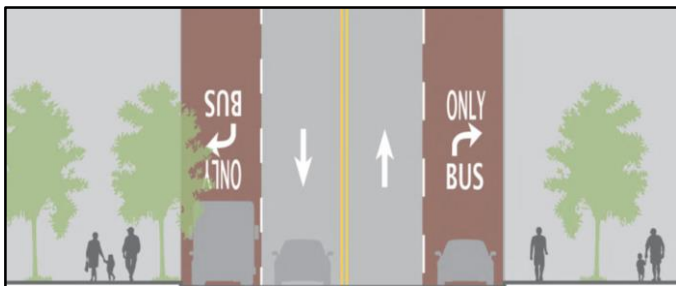
Segment 1 - Alternative 1

- Bus in BAT (Bus and Turn) Lanes on Route 7 to Spring Hill Metro Station
- Bus in BAT lane on Tyco Road
- Bus in mixed traffic on Spring Hill Road to terminating at West*Park Transit Station

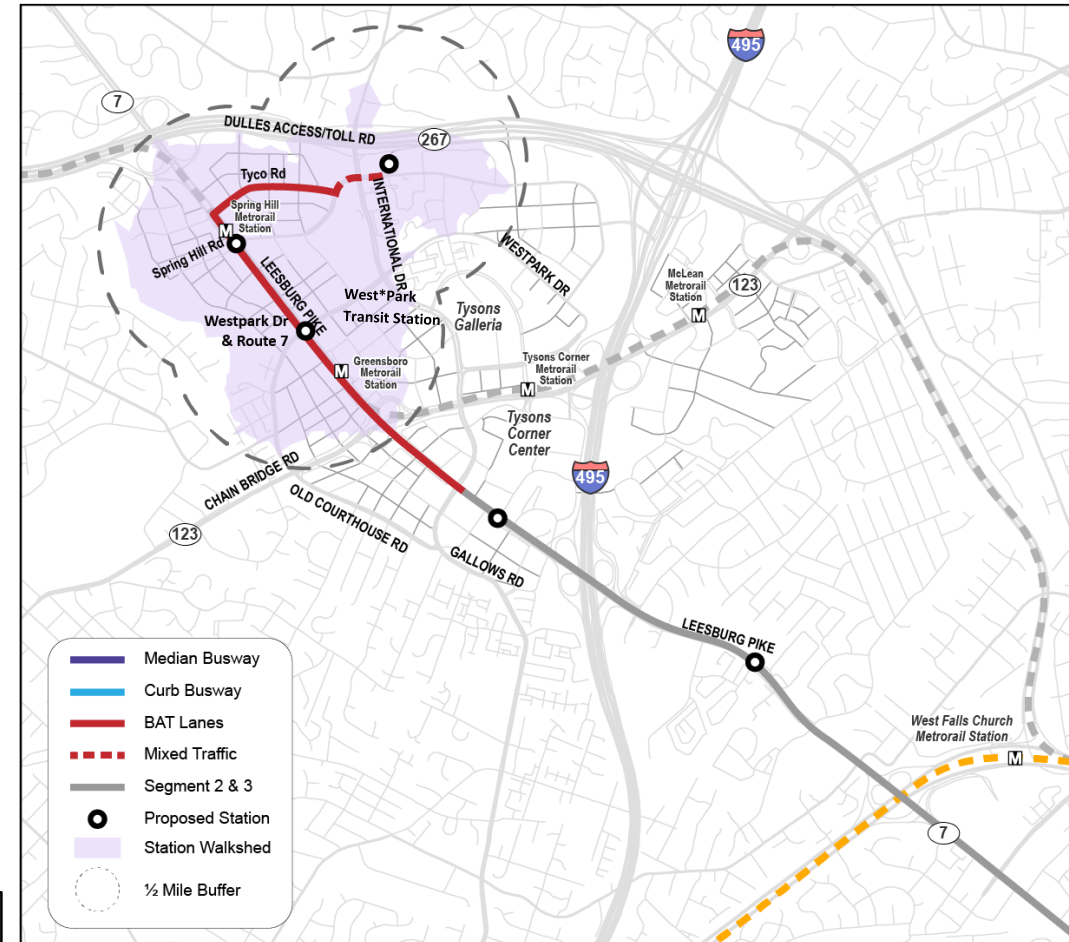
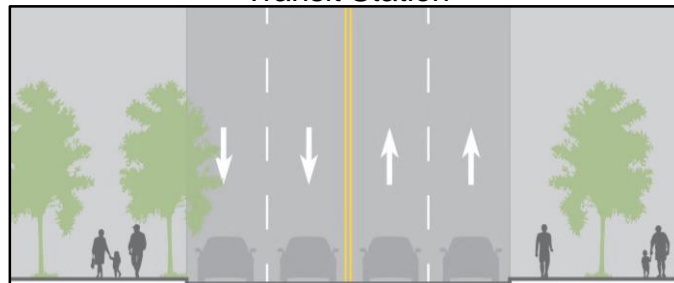
Route 7 from International Drive to Tyco Road



Tyco Road from Route 7 to Spring Hill Road



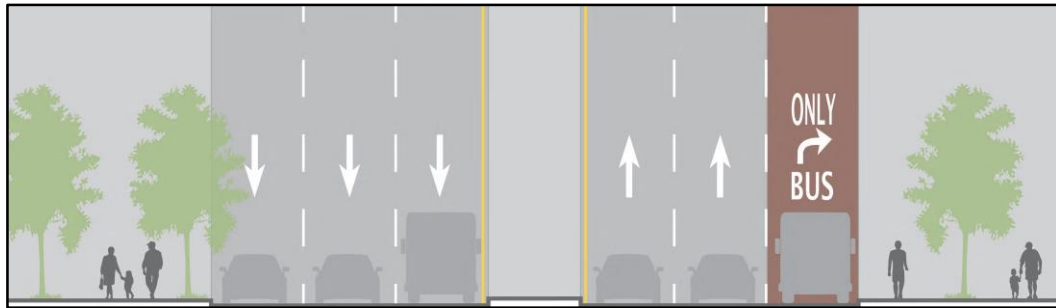
Spring Hill Road from Tyco Road to West*Park Transit Station



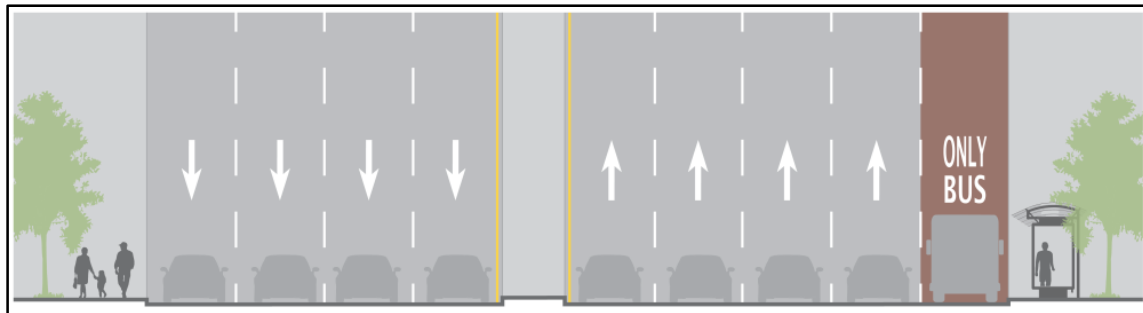
Segment 1 - Alternative 2

- Bus in BAT lane on International Drive from Route 7 to Route 123.
- Bus in designated curb busway on Route 123 towards Tysons Corner Center Metro Station.
- Bus in mixed traffic going from Tysons Corner Center Metro Station to Route 7

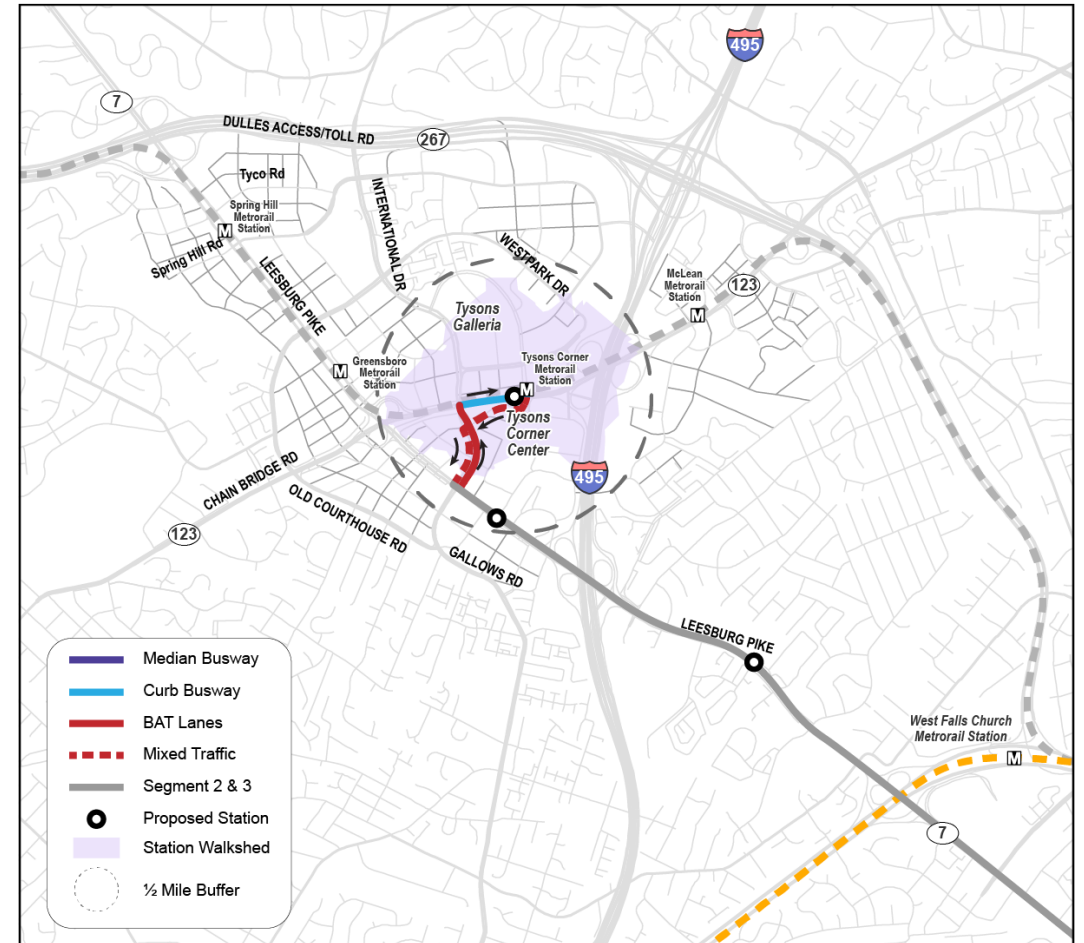
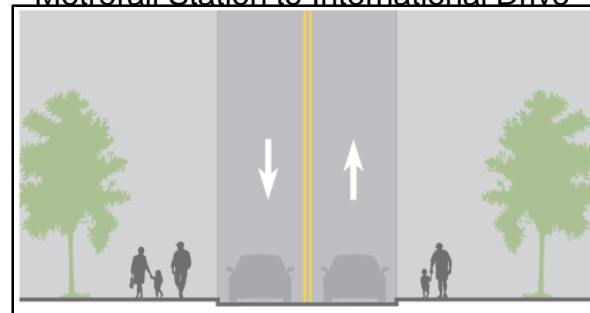
International Drive from Route 7 to Route 123



Route 123 from International Drive to Tysons One Place



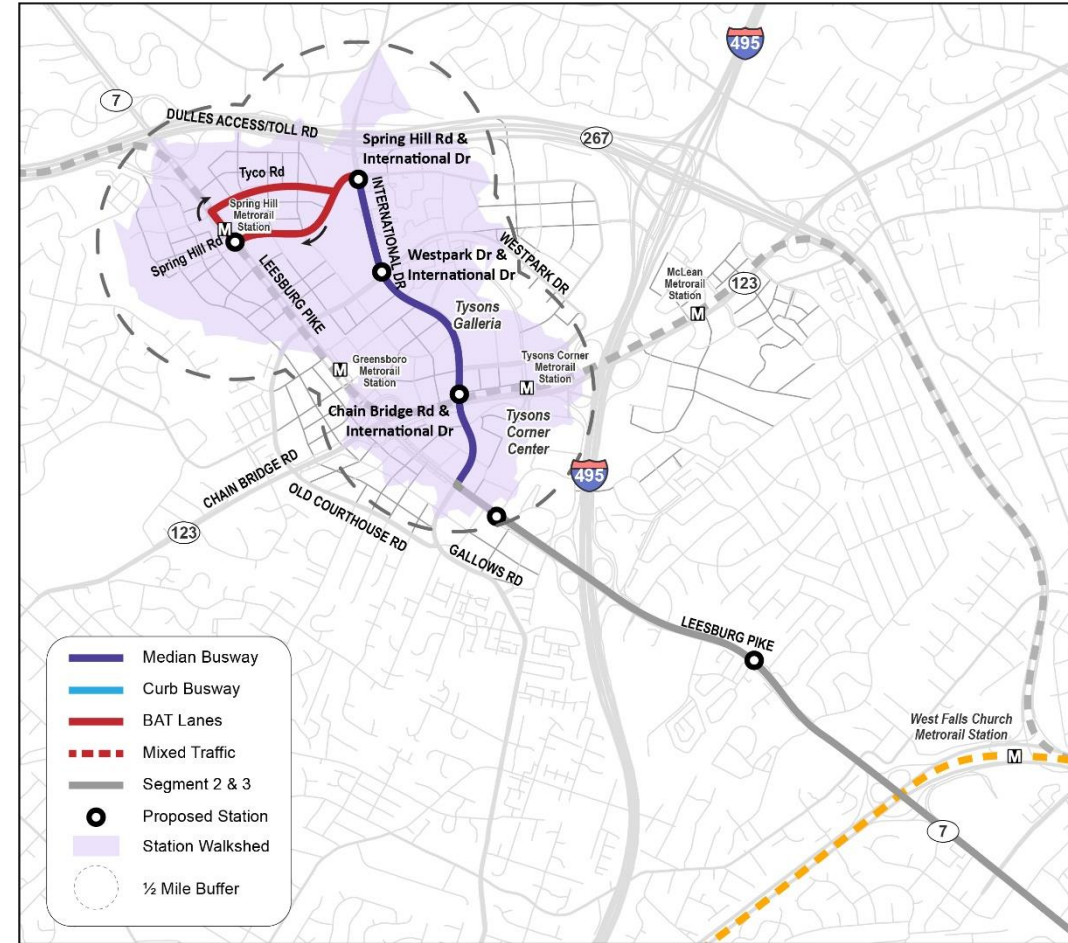
Tysons One Place from Tysons Corner Metro Station to International Drive



Segment 1 - Alternative 3

- Bus operating in designated median busway lanes on International Drive from Route 7 to Spring Hill Road
- Bus operating in BAT lanes on Spring Hill Road and Tyco Road

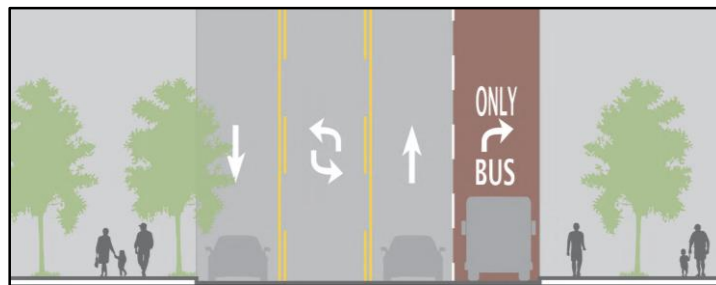
International Drive from Route 7 to Spring Hill Road



Spring Hill Road from International Drive to Route 7



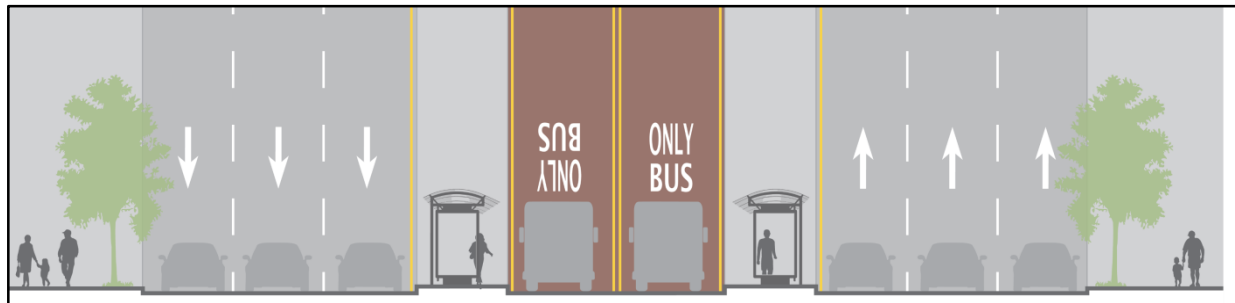
Tyco Road from Route 7 to Spring Hill Road



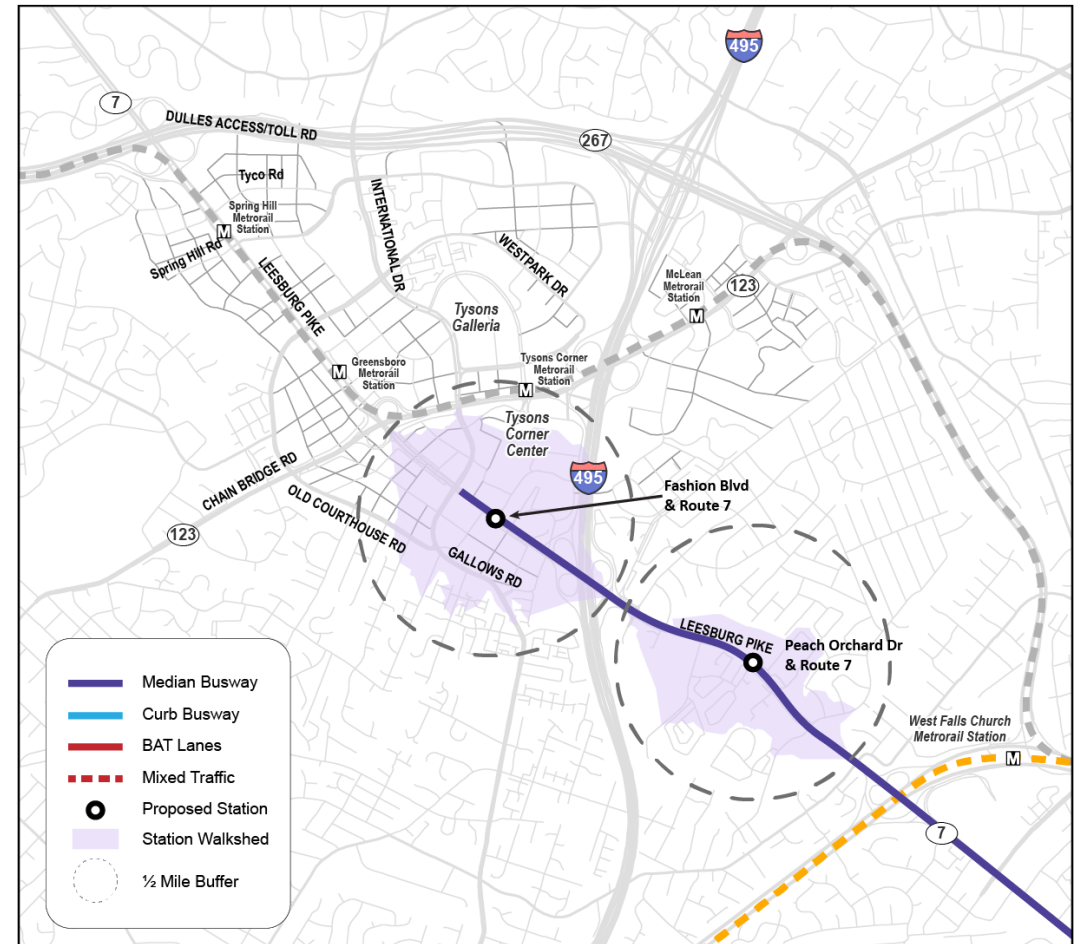
Segments 2 and 3 - Alternative 1

- Bus will operate in median busway on Route 7 from International Drive to I-66.
- Planned widening will be repurposed to BRT lanes

Route 7 from International Drive to I-495

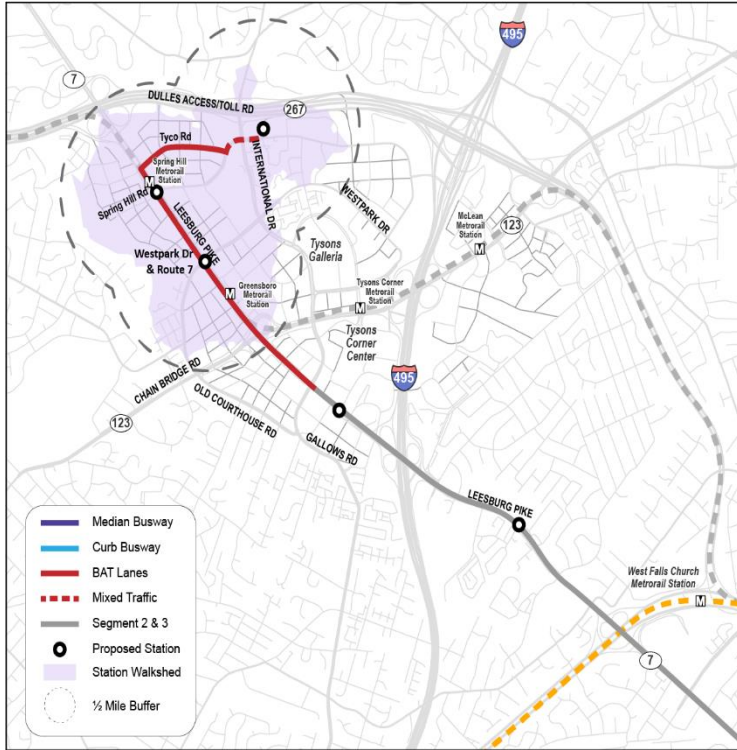


Route 7 from I-495 to I-66

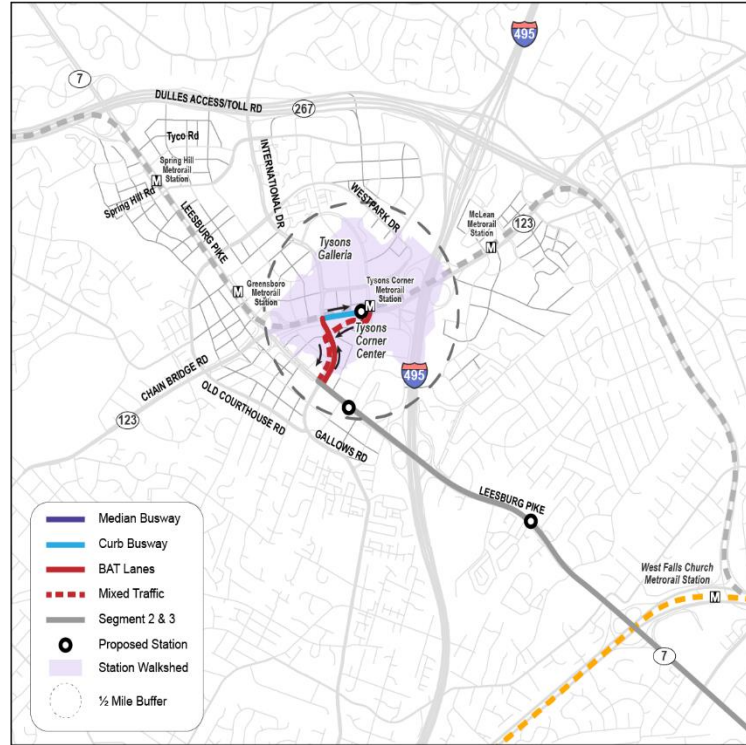


Alternatives Evaluation

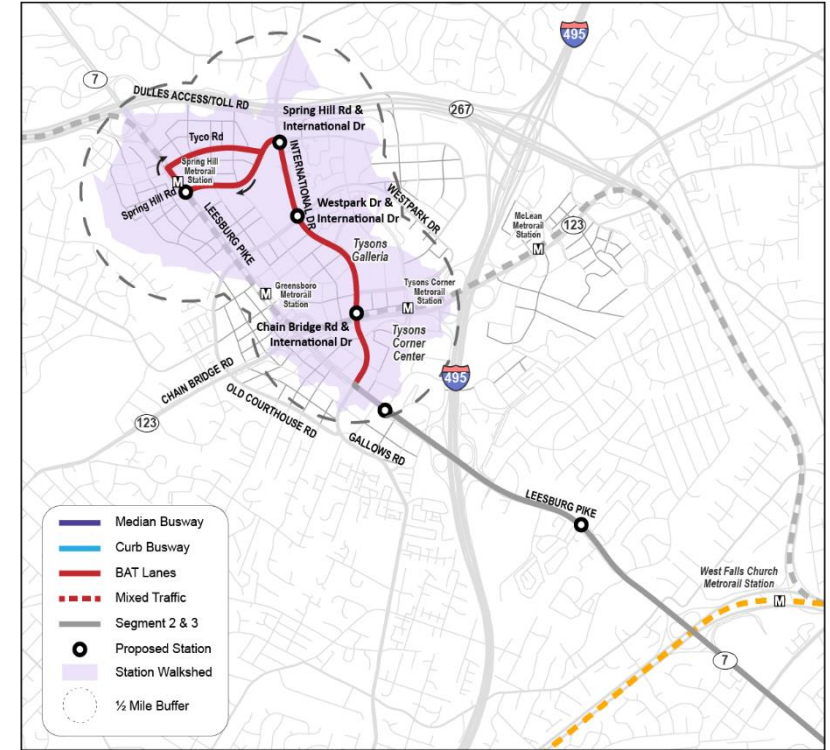
Segment 1 – Alt. 1



Segment 1 – Alt. 2



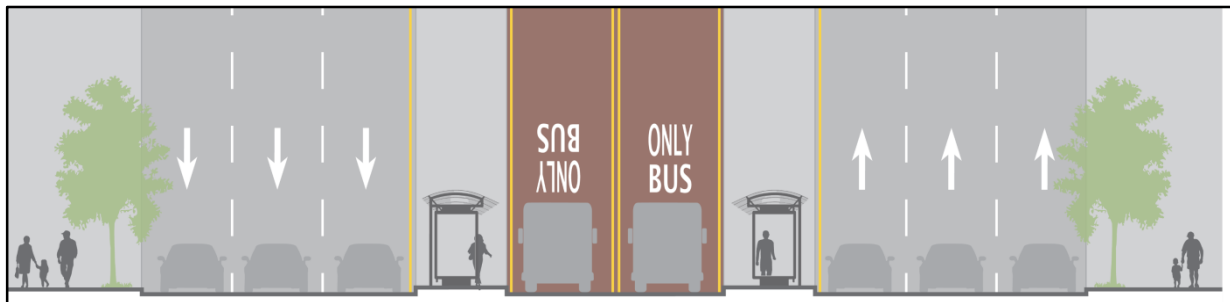
Segment 1 – Alt. 3



Route 7 from International Drive to I-495

Segment 2& 3 – Alt. 1

Route 7 from I-495 to I-66



Transition between alignments and cross-sections will be studied in greater detail in the Evaluation Phase 13

Next Steps & Schedule

- Alternatives evaluation with detailed traffic analysis – Late 2019
- Public Outreach – Late 2019/Early 2020
- Quantify the feedback
 - Develop preferred alternative for the entire corridor – Spring 2020
 - Present results – Spring 2020
- Recommended Alignment – Late 2019
- Documentation – Early Summer 2020

Next Steps & Schedule

Preliminary Route 7 BRT Project Timeline

- **Design and Environmental Review:** 36 – 42 months
- **Right-of-Way Acquisition:** 12 – 24 months
- **Utility Relocation:** 12 – 24 months
- **Construction:** 24 – 36 months

- **Some tasks can occur concurrently**
- **Actual schedule will be dependent on funding**



Questions?

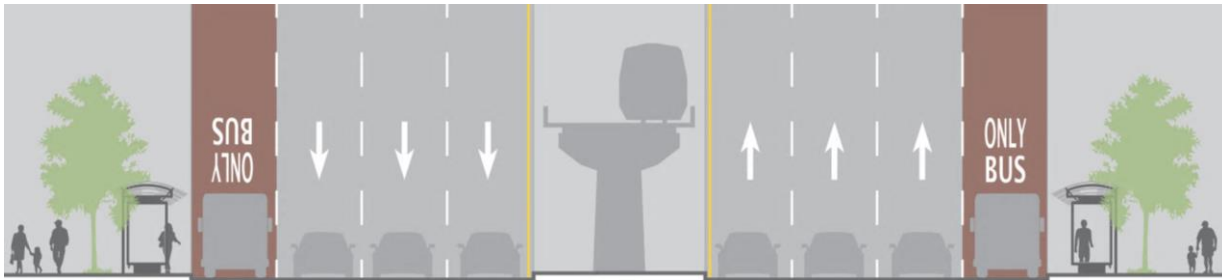
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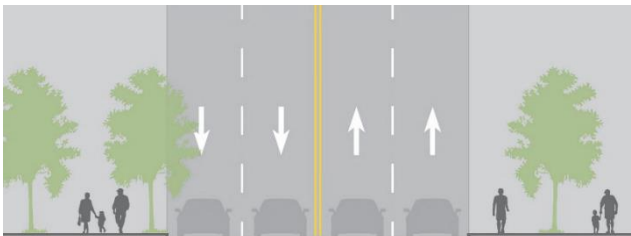
Alternative 1 - Segment 1

- Dedicated lane for BRT with curb busway on Route 7
- Non-revenue turnaround along Tyco Road and Spring Hill Road in mixed traffic

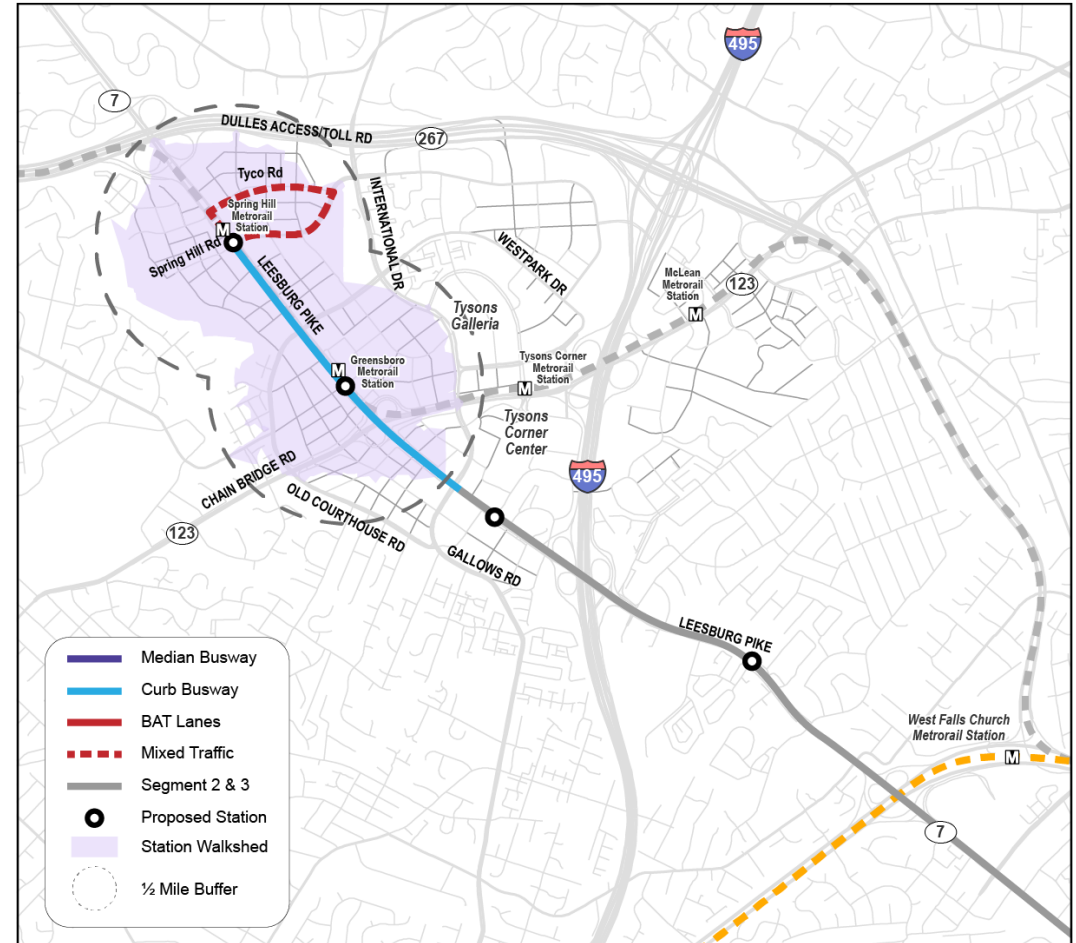
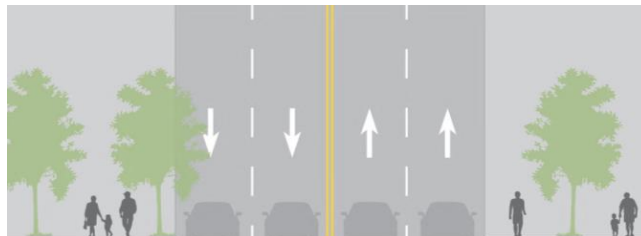
Route 7 from International Drive to Spring Hill Station terminus



Tyco Road from Route 7 to Spring Hill Road



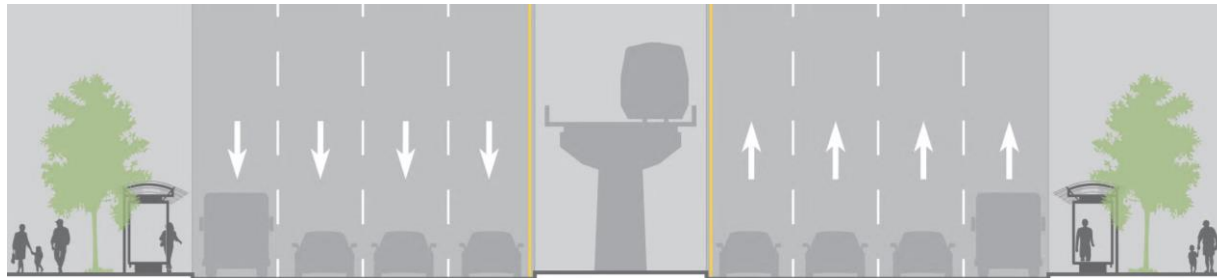
Spring Hill Road from Tyco Road to Route 7



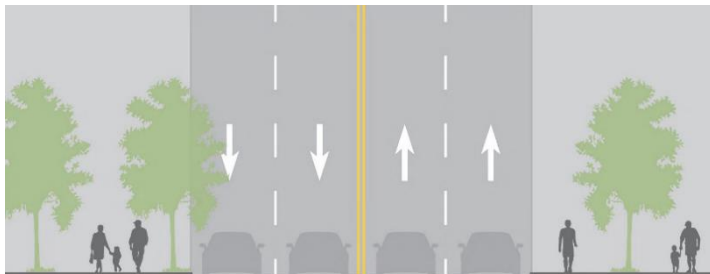
Alternative 2 - Segment 1

- BRT in mixed traffic on Route 7
- Non-revenue turnaround along Tyco Road and Spring Hill Road in mixed traffic

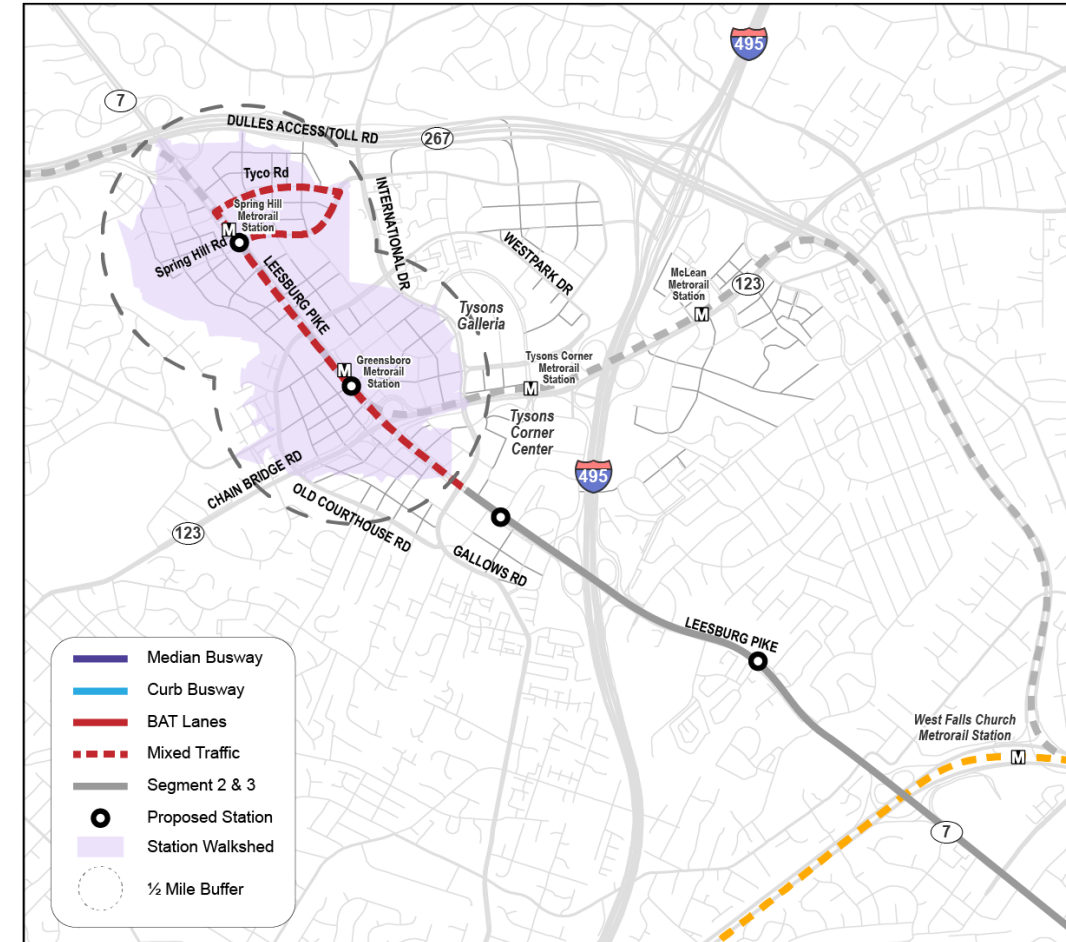
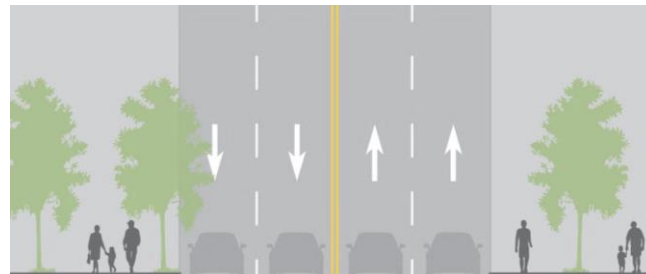
Route 7 from International Drive to Spring Hill Station terminus



Tyco Road from Route 7 to Spring Hill Road



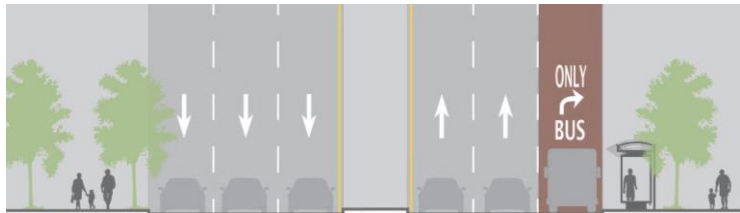
Spring Hill Road from Tyco Road to Route 7



Alternative 6 - Segment 1

- BRT operating in BAT lanes on International Drive
- BRT operating in BAT lane on Spring Hill Road
- BRT operating in designated curb busway lane on Boone Boulevard

International Drive from Route 7 to Spring Hill Road



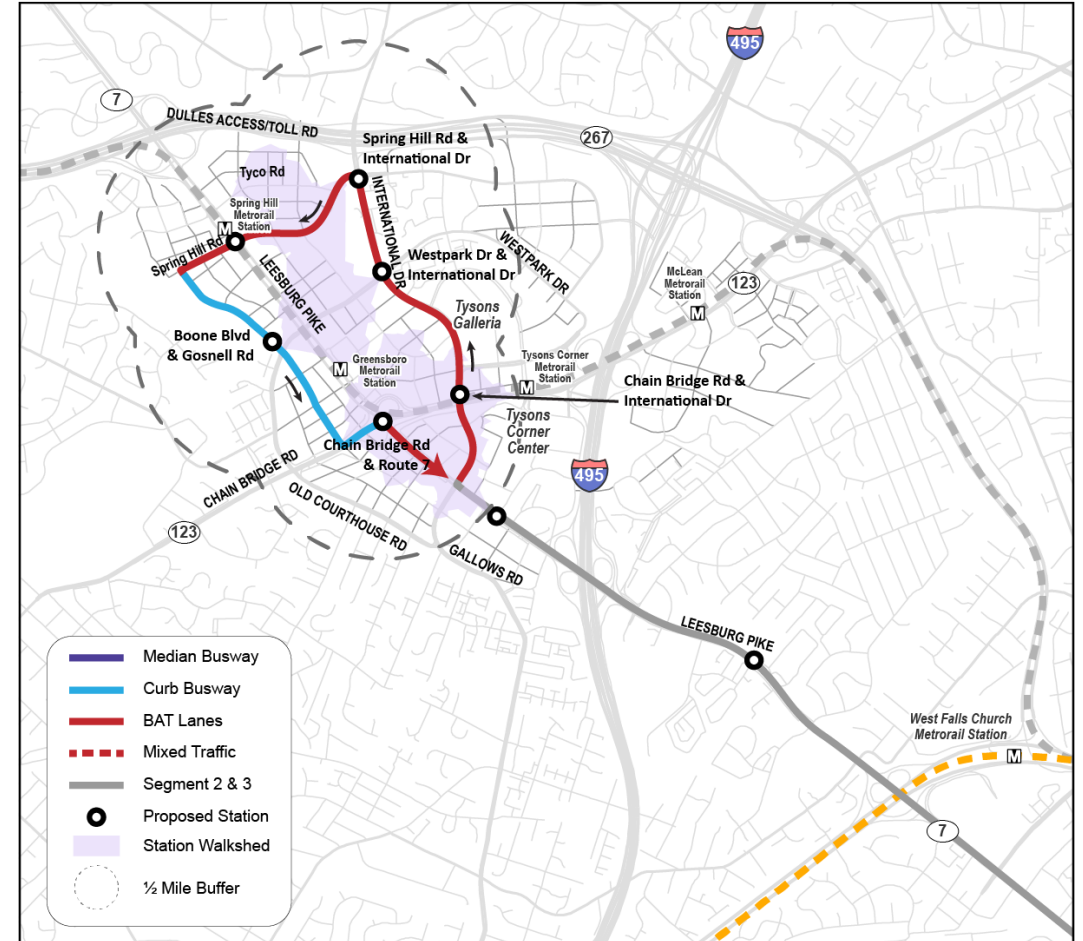
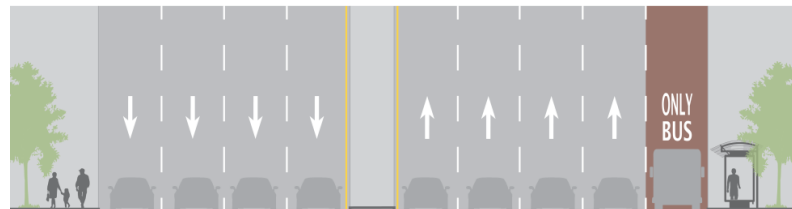
Spring Hill Road from International Drive to Boone Boulevard



Boone Boulevard from Spring Hill Road to Chain Bridge Road



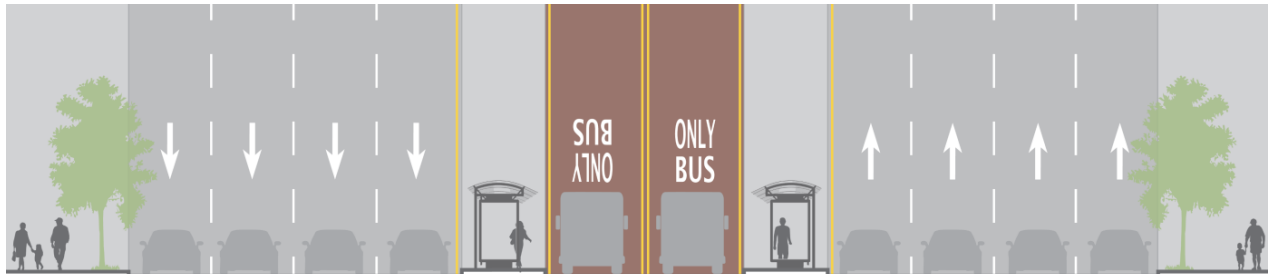
Chain Bridge Road from Boone Boulevard to Route 7



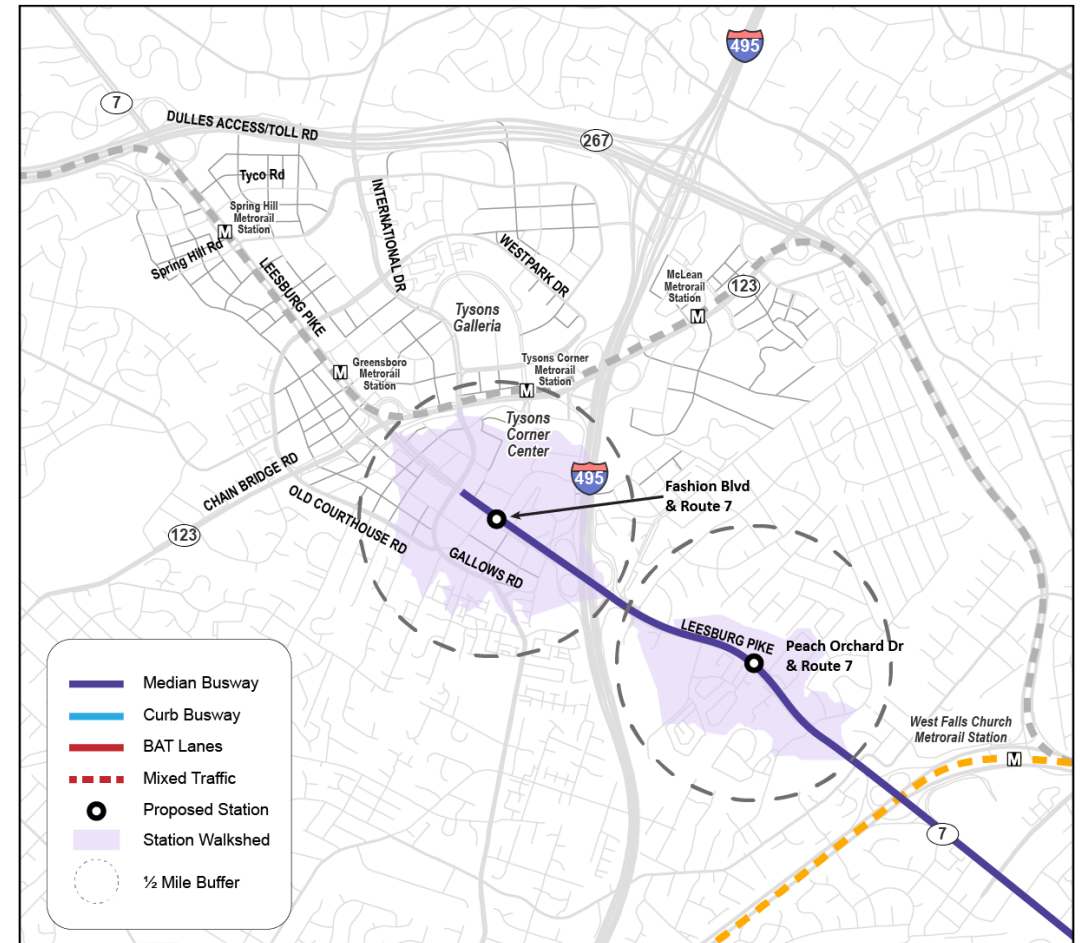
Alternative 8 - Segments 2 and 3

- BRT will operate in median busway on Route 7 from International Drive to I-66.
- Additional lane beyond planned widening will be required for BRT lane

Route 7 from International Drive to I-495



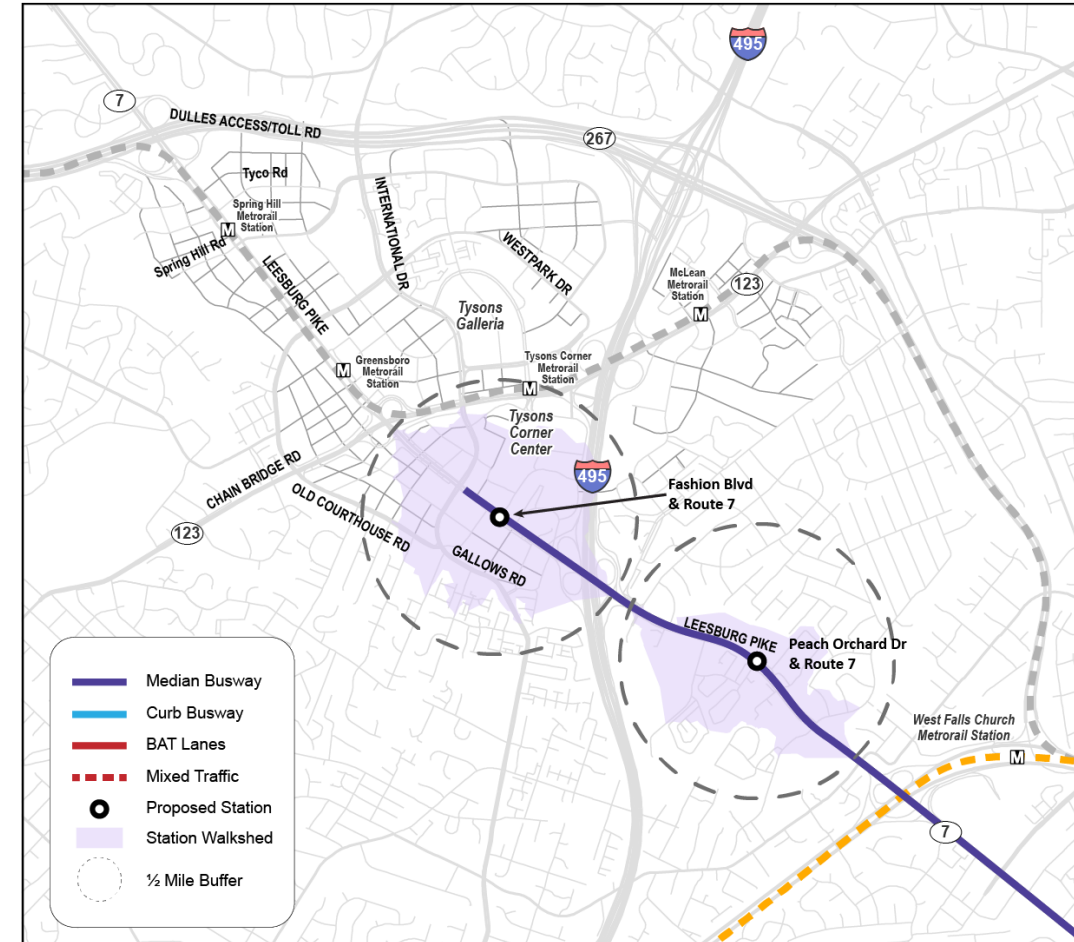
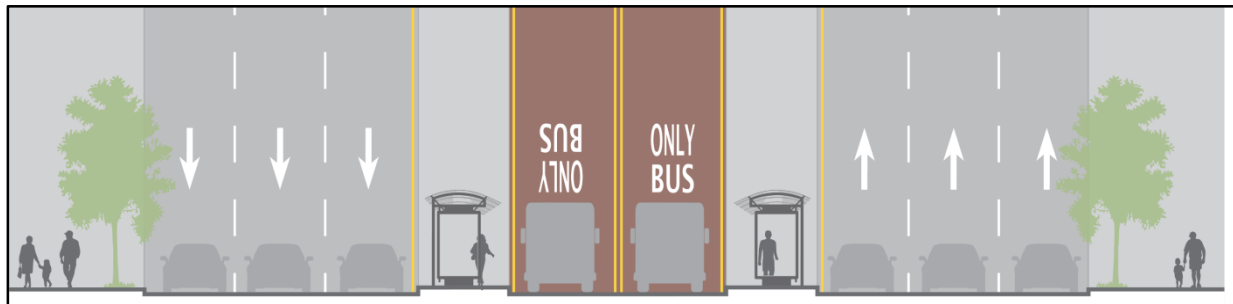
Route 7 from I-495 to I-66



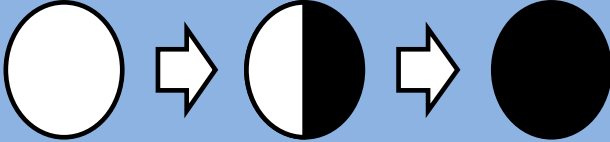
Alternative 9 - Segments 2 and 3

- BRT will operate in median busway on Route 7 between International Drive to I-66.
- Segment 2 - Planned widening will be repurposed to BRT lane
- Segment 3 - Additional lane beyond planned widening will be required for BRT lane


Route 7 from International Drive to I-66



ALTERNATIVES COMPARISON MATRIX

<p>Undesirable Performance</p> <p>Desirable Performance</p>  <p>Measure of Effectiveness</p>	Segment 1 Alternatives (Spring Hill Station to International Dr)						Segment 2/3 Alternatives (International Dr to I-66)		
	1	2	3	4	5	6	7	8	9
	Route 7 (curb busway)	Route 7 (mixed traffic)	Route 7 (BAT)	Tysons Corner Station Term.	Internatio nal Dr	Boone Boulevard Loop	Median Busway with planned widening	Median Busway with planned widening + 1	Median Busway with consistent c/s
Goal: Access and Mobility - Provide choices through accessible transit service									
Objective: Serve population, employment, and activity centers with BRT									
Population within ½ mile walking distance	●	●	●	○	●	●	N/A	N/A	N/A
Employment within ½ mile walking distance	●	●	●	○	●	○	N/A	N/A	N/A
Objective: Provide connections to larger transit network									
Number of Metrorail Stations served	●	●	●	●	●	●	○	○	○
Goal: Transportation Network Performance - Ensure efficient movement of people and goods									
Objective: Improve Transit Operations in Corridor									
Percent of Corridor with Dedicated BRT lanes	●	○	○	●	○	●	●	●	●
Percent of Corridor with BAT Lanes	○	○	●	●	●	●	○	○	○
Route Directness	●	●	●	●	●	●	●	●	●
Goal: Land Use/Economic Vitality – Support economic development and land use goals									
Objective: Minimize impacts to private property									
Qualitative assessment for ROW Needs for BRT Alignment	●	●	●	●	●	○	●	○	●

ALTERNATIVES COMPARISON MATRIX – CONTINUED

Desirable Performance  Measure of Effectiveness	Segment 1 Alternatives					Segment 2/3 Alternatives			
	1	2		4	5	6	7	8	9
	Route 7 (curb busway)	Route 7 (mixed traffic)	Route 7 (BAT)	Tysons Corner Station Term.	International Dr	Boone Boulevard Loop	Median Busway with planned widening	Median Busway with planned widening + 1	Median Busway with consistent c/s
Goal: Meet the needs of all users – residents, workers, visitors, and disadvantaged populations									
Objective: Serve areas with transit dependent populations and low-wage jobs									
Number of low-wage jobs within ½ mile of stations							N/A	N/A	N/A
Number of households with no vehicle within ½ mile of stations							N/A	N/A	N/A
Number of households below the poverty line within ½ mile of stations							N/A	N/A	N/A
Goal: Improve safety for all roadway users									
Objective: Improve the pedestrian environment in the study corridor									
Average Pedestrian Crossing Time at Intersections (Walking Speed = 3.5 feet/second)									
Percentage of "Uncomfortable" Intersection Crossings (59+ Seconds)									
Number of BRT - Mixed Traffic Conflict Points							N/A	N/A	N/A
Safety and comfort of biking environment in the corridor									
Goal: Protect and Improve Environmental Resources									
Objective: Improve the pedestrian environment in the study corridor									
Qualitative environmental impact potential									
Goal: Make sustainable, cost effective investments in transit									
Objective: Prove financial feasibility of BRT									
Construction Difficulty (Low, Medium, High)									