

US 29 North Corridor Advisory Committee Meeting #3

Montgomery County **RAPID TRANSIT**

US 29

East County Regional Services Center
Silver Spring, Maryland
May 28, 2015



Welcome

Topics to be discussed (times approximate):

- Project Update – 15 min
- Transit Ridership – 35 min
- Traffic Operations – 35 min
- Draft Purpose and Need Language – 10 min
- BRT Running Way Options – 35 min
- Future Meetings & Questions – 5 min

Note: Each topic will be followed by a question and answer session. Please hold questions and comments until the section presentation is complete.

Project Update: Corridor Planning Study

- Conducting a preliminary assessment of a range of conceptual improvements
- Developing recommendations to be used in subsequent phases (i.e., NEPA or MEPA)
- Utilizing the Planning and Environment Linkages (PEL) approach:
 - Consider environmental, community, and economic goals early in the transportation planning process
 - Use products developed during PEL to guide the subsequent environmental review process (i.e., NEPA or MEPA)
 - For more on PEL, go to:
<http://environment.fhwa.dot.gov/integ/index.asp>

Project Update:

Informational Open House Meetings

The Informational Open House meetings postponed, to:

- Allow time to better understand and address new project-related developments (e.g., New Hampshire Avenue BRT Study)
- Gain more input from the public as the US 29 study progresses
- Allow for greater coordination and input from the CAC Members
- Once new dates are identified, the public will be informed through a series of outreach efforts: “Save The Date” postcard, informational brochure, newspaper ads, project website, and coordination with local civic organizations.

Project Update:

New Hampshire Avenue (MD 650) Study

- On May 21, 2015 the County Council approved amendments to the Capital Improvements Program (CIP) that included funding for a study of the MD 650 BRT corridor.
- The BRT Team, SHA, MTA, and MCDOT is working on a scope of work, schedule, and budget to commence BRT corridor planning on MD 650.
- The scope will outline how the MD 650 study would interface with the US 29 corridor planning study.
- The team will share additional information on the status of the MD 650 study as it becomes available.

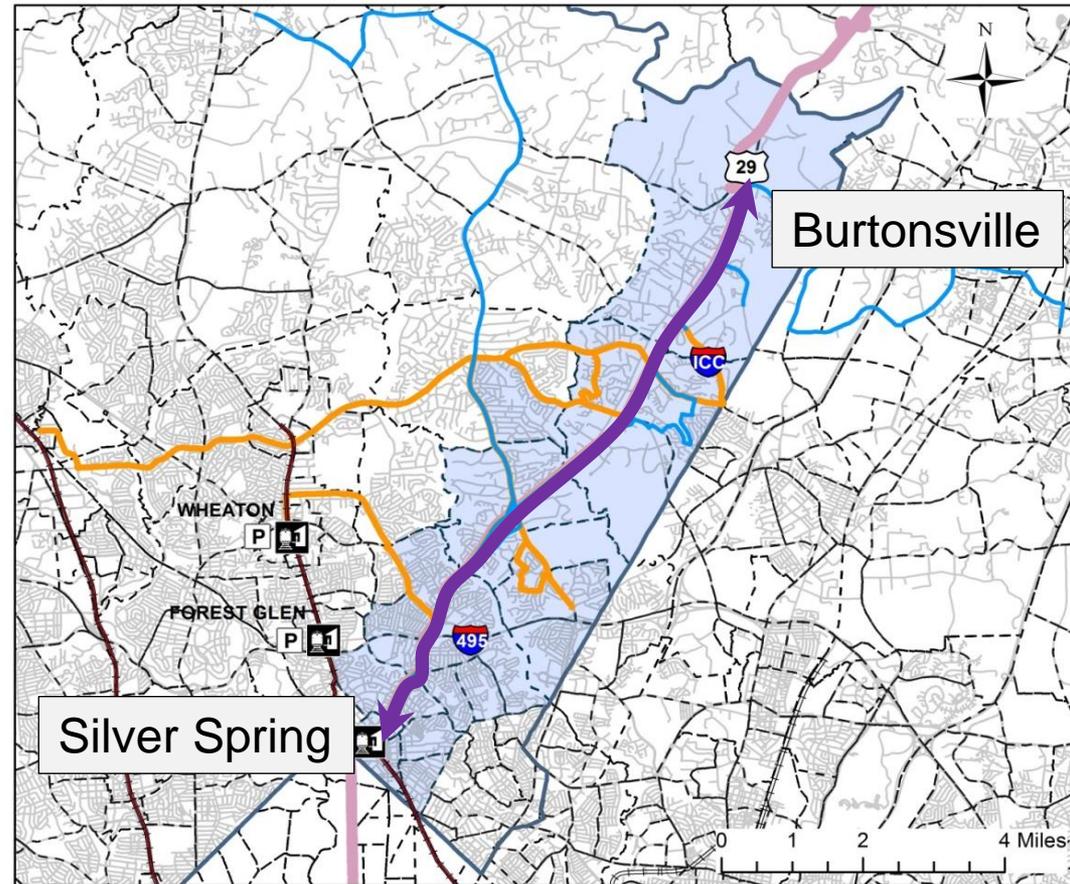
CAC Meeting #3 Agenda

Topics to be discussed:

- Project Update
- **Transit Ridership**
 - **Corridor Context**
 - **Travel and Transit Markets**
 - **Questions**
- Traffic Operations
- Draft Purpose and Need Language
- BRT Running Way Options
- Future Meetings & Questions

Existing and Future (2040) No-Build Regional Travel Demand

- Study Area Overview
- Traffic Analysis Zones
- TPB Traffic Analysis Zones
- Existing Transit Routes



US 29 BRT Corridor Planning Study

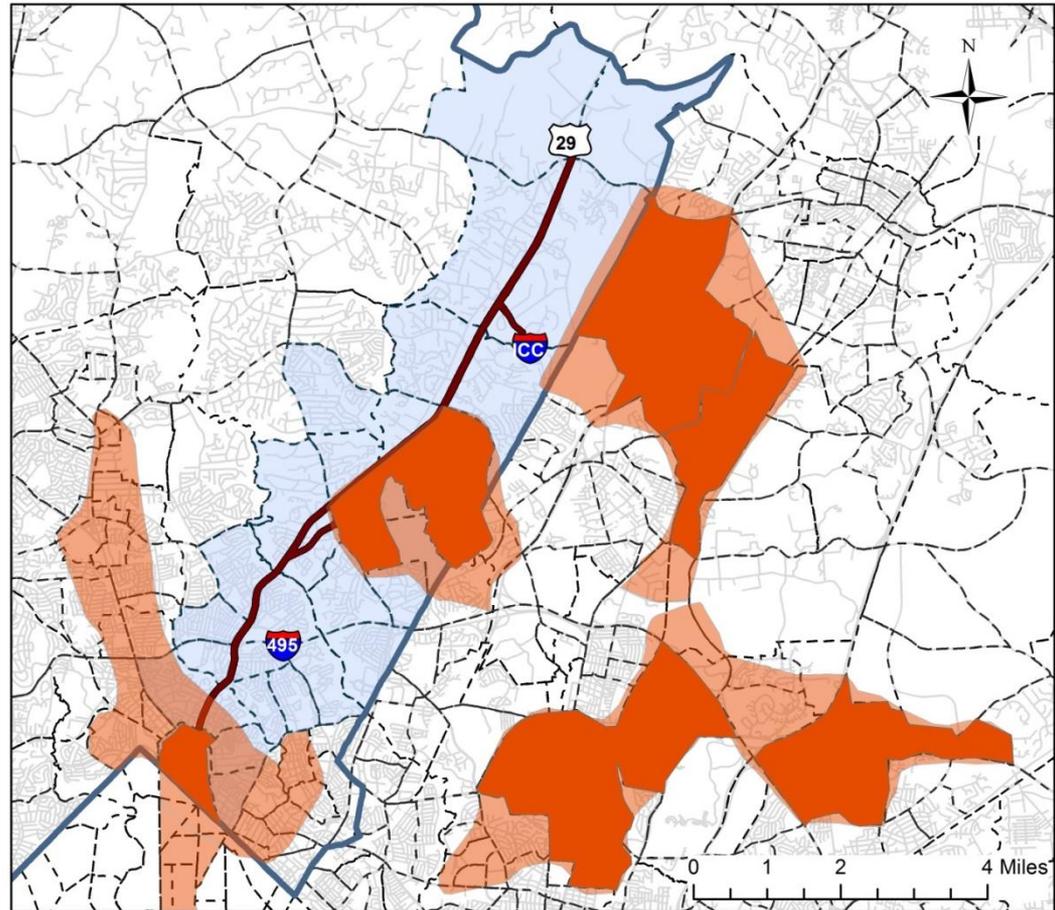
Features

- | | |
|--------------------------------------|----------------------------|
| Traffic Analysis Zones in Study Area | Metrorail Station |
| TPB Traffic Analysis Zones | Metrorail Park & Ride Lots |
| Montgomery County | Metrorail Line |
| All Roadways | Metro Bus Routes |
| | Ride On Bus Routes |
| | MTA Bus Routes |

Corridor Context

- **Regional Activity Centers and Clusters**
 - Silver Spring
 - White Oak
- **County Growth Visions**
- **Regional Priority Corridor**

Source: MWCOG, regional MPO travel demand model



Features

- Traffic Analysis Zones in Study Area
- TPB Traffic Analysis Zones
- Montgomery County
- Study Corridor
- All Roadways

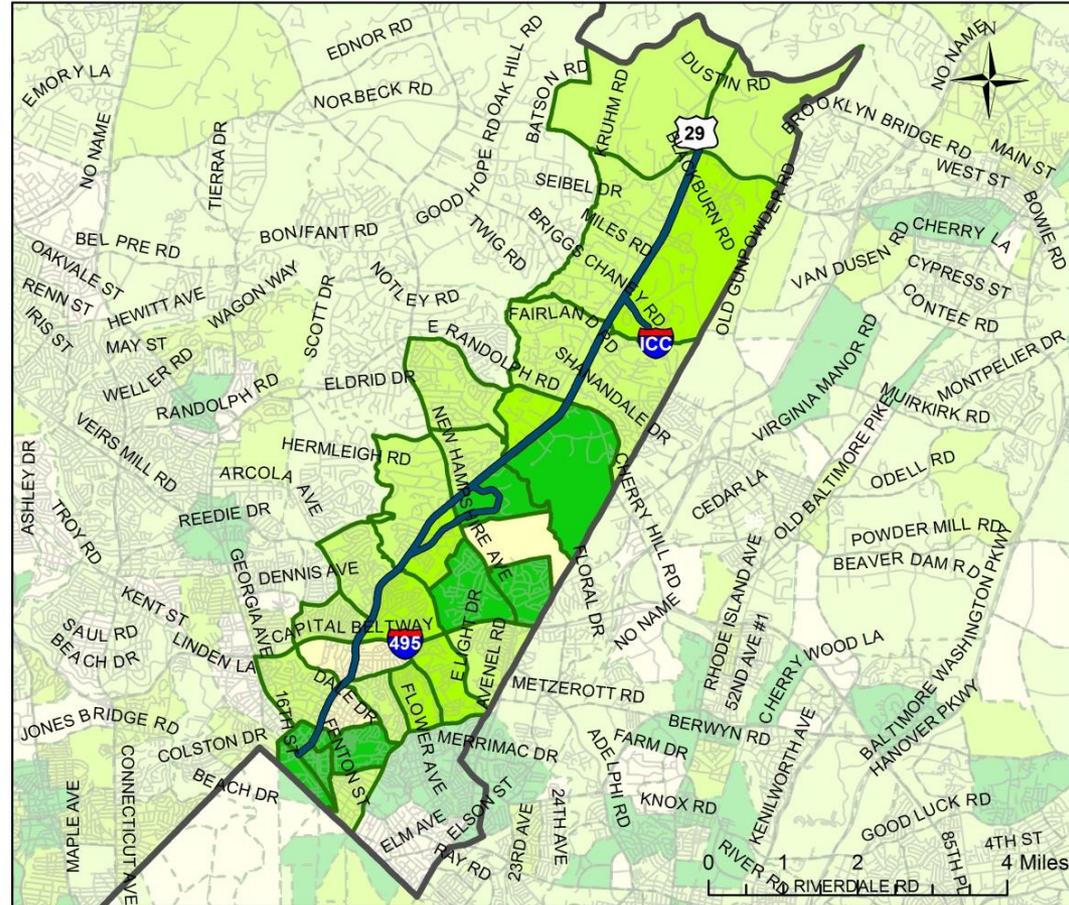
US 29 BRT Corridor Planning Study

- Activity Clusters
- Activity Centers

Corridor Context

- Household Growth 2014-2040
- 52,100 Households in 2014
- 61,000 Households in 2040
(17% increase)

Source: 2040 forecasts developed using MWCOG, regional MPO travel demand model



Features

Increase in Household Density (households/sq. mi.)

- No Change
- 1 - 100
- 101 - 500
- 501+

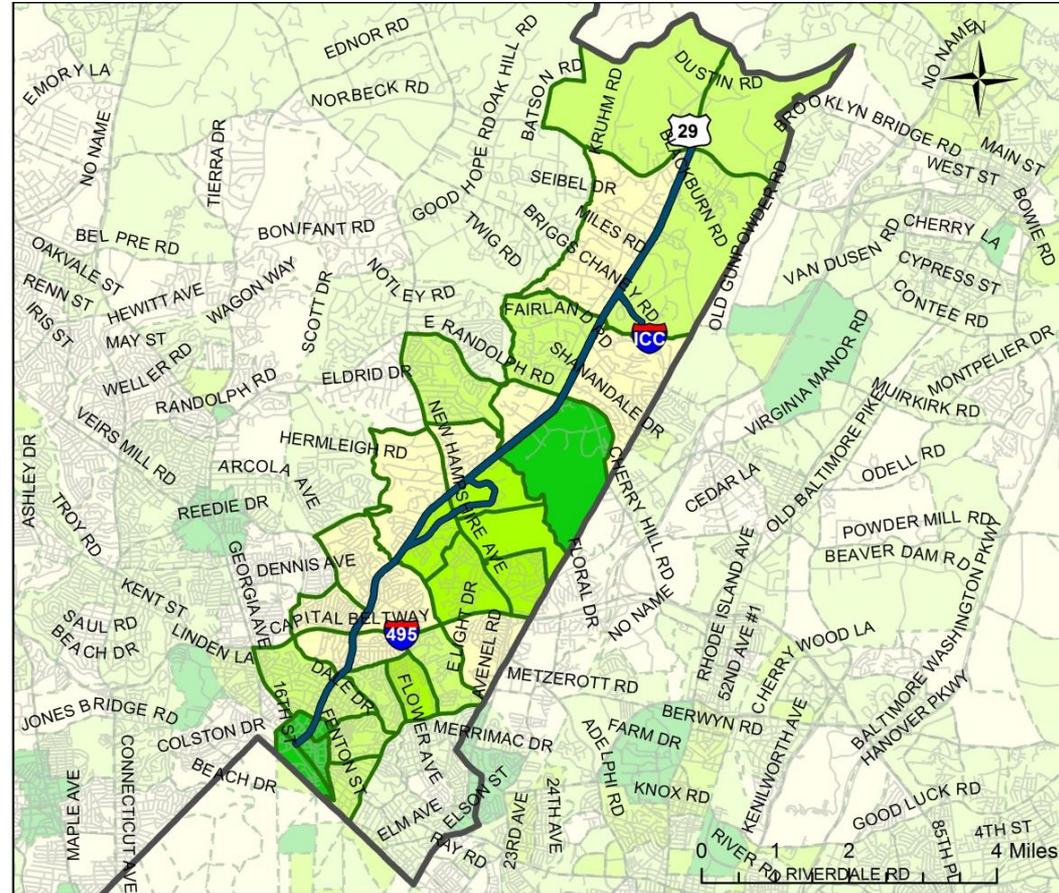
US 29 BRT Corridor Planning Study

- Montgomery County
- TPB Traffic Analysis Zones
- All Roadways
- Study Corridor

Corridor Context

- Employment Growth 2014-2040
- 2014 Employment 67,400
- 2040 Employment 120,000 (78% increase)

Source: 2040 forecasts developed using MWCOG, regional MPO travel demand model



Features

Increase in Employment Density (jobs/sq. mi.)

- No Change
- 1 - 1000
- 1001 - 5000
- 5001+

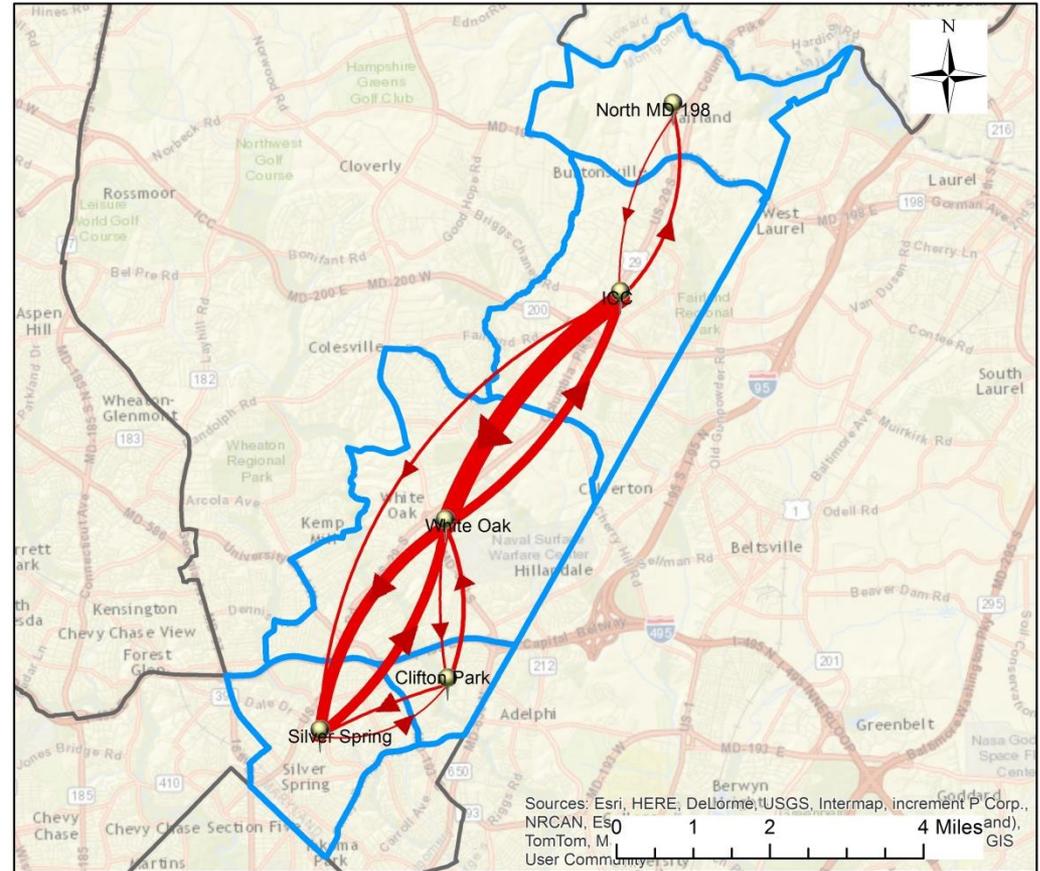
- Montgomery County
- TPB Traffic Analysis Zones
- All Roadways
- Study Corridor

US 29 BRT Corridor Planning Study

Travel Markets: Patterns and Growth

- 176,000 Intra-study-area trips (2040), which represents 40% of total trips
- 29% increase from 2014

Source: 2040 forecasts developed using MWCOG, regional MPO travel demand model



Features

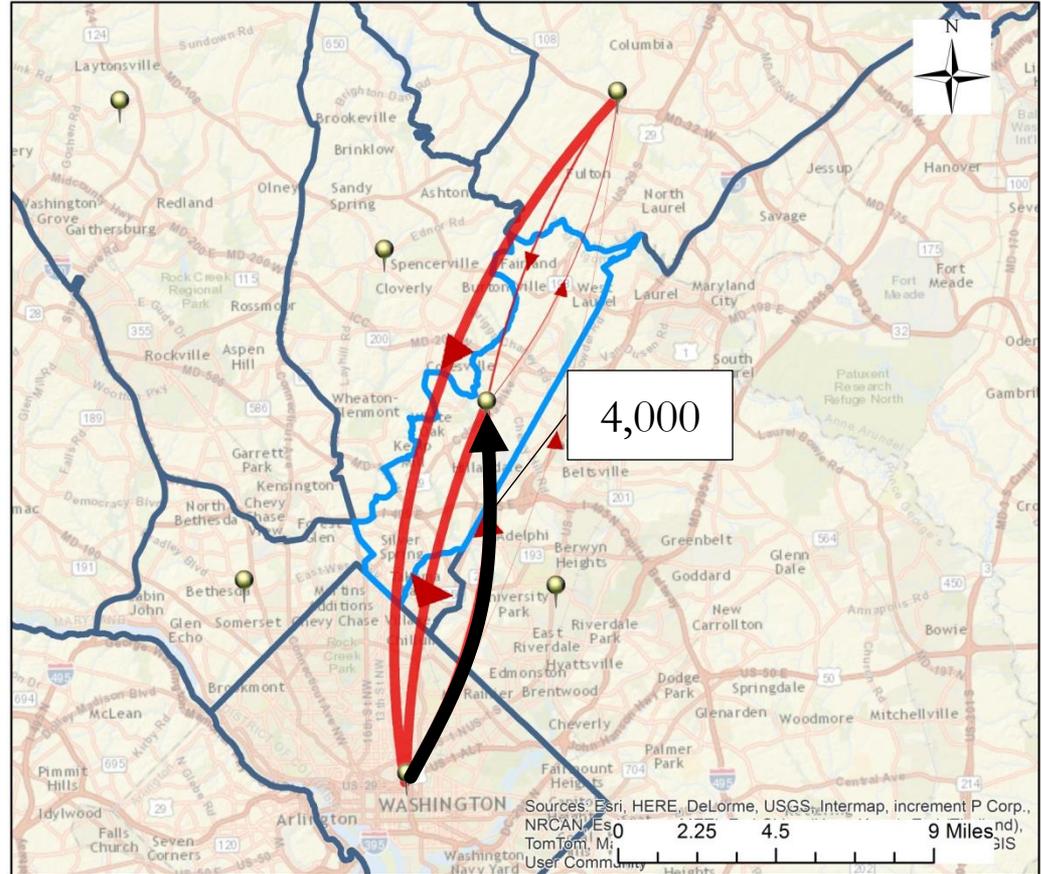
US 29 BRT Corridor Planning Study

- Study Area District
- TPB Region Districts

- District
- Daily Person Trip

Travel Markets: Patterns and Growth

- From DC to Study Area:
4,000 Trips IN 2010



Source: 2006-2010 CTPP

Features

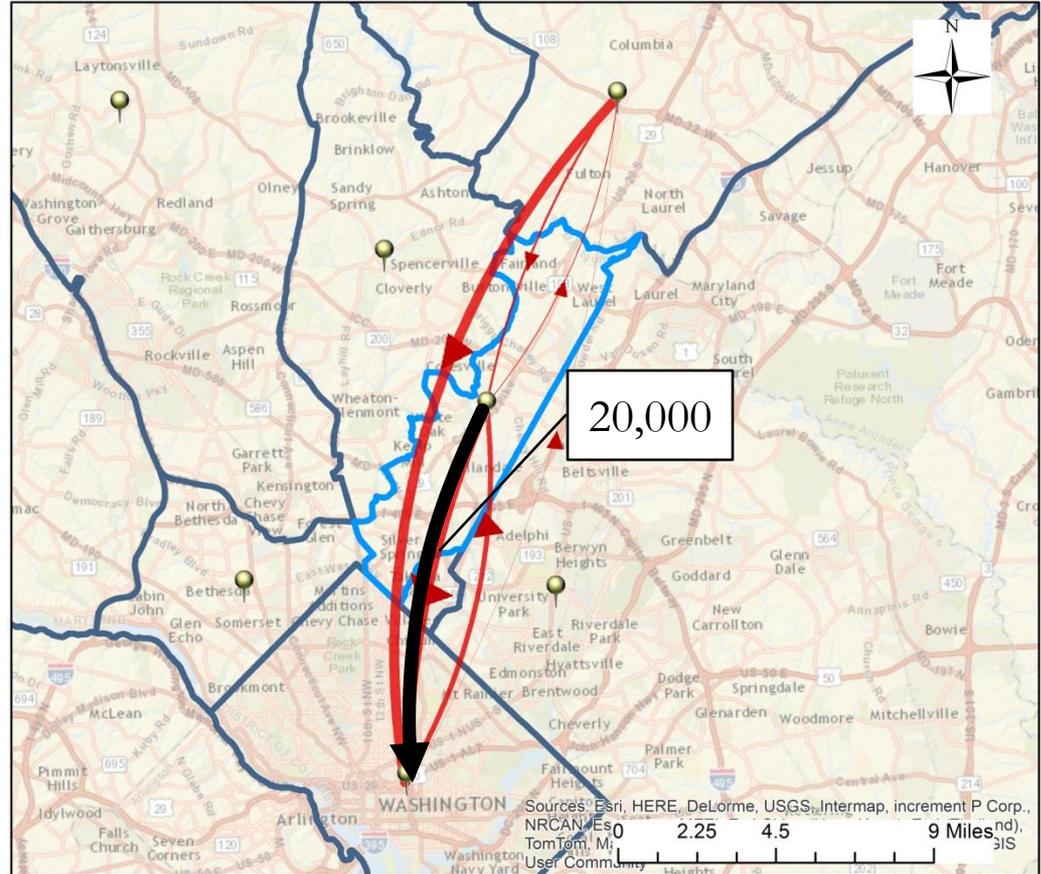
US 29 BRT Corridor Planning Study

- Study Area
- TPB Region District

- District
- Daily Person Trip

Travel Markets: Patterns and Growth

- From Study Area to DC: 20,000 commuter trips in 2010



Source: 2006-2010 CTPP

Features

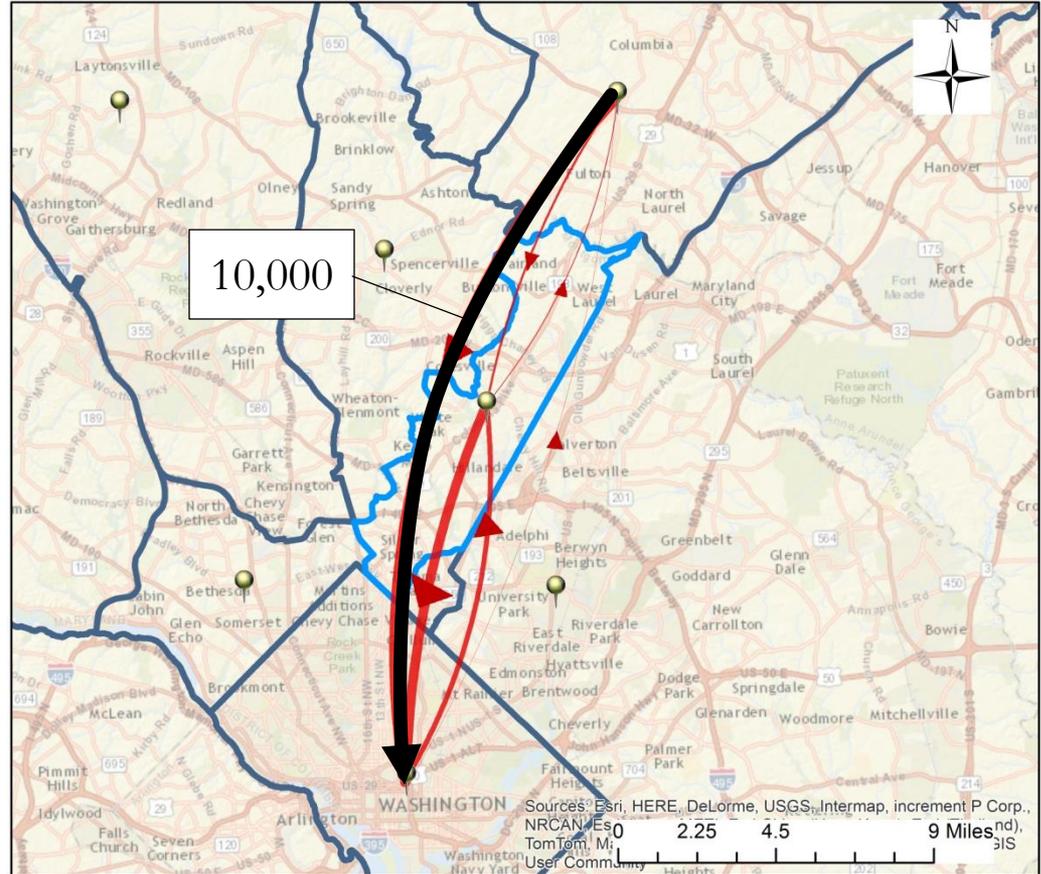
US 29 BRT Corridor Planning Study

- Study Area
- TPB Region District

- District
- Daily Person Trip

Travel Markets: Patterns and Growth

- Through trips between the North US 29 corridor and DC: 10,000 Trips



Source: 2006-2010 CTPP

Features

US 29 BRT Corridor Planning Study

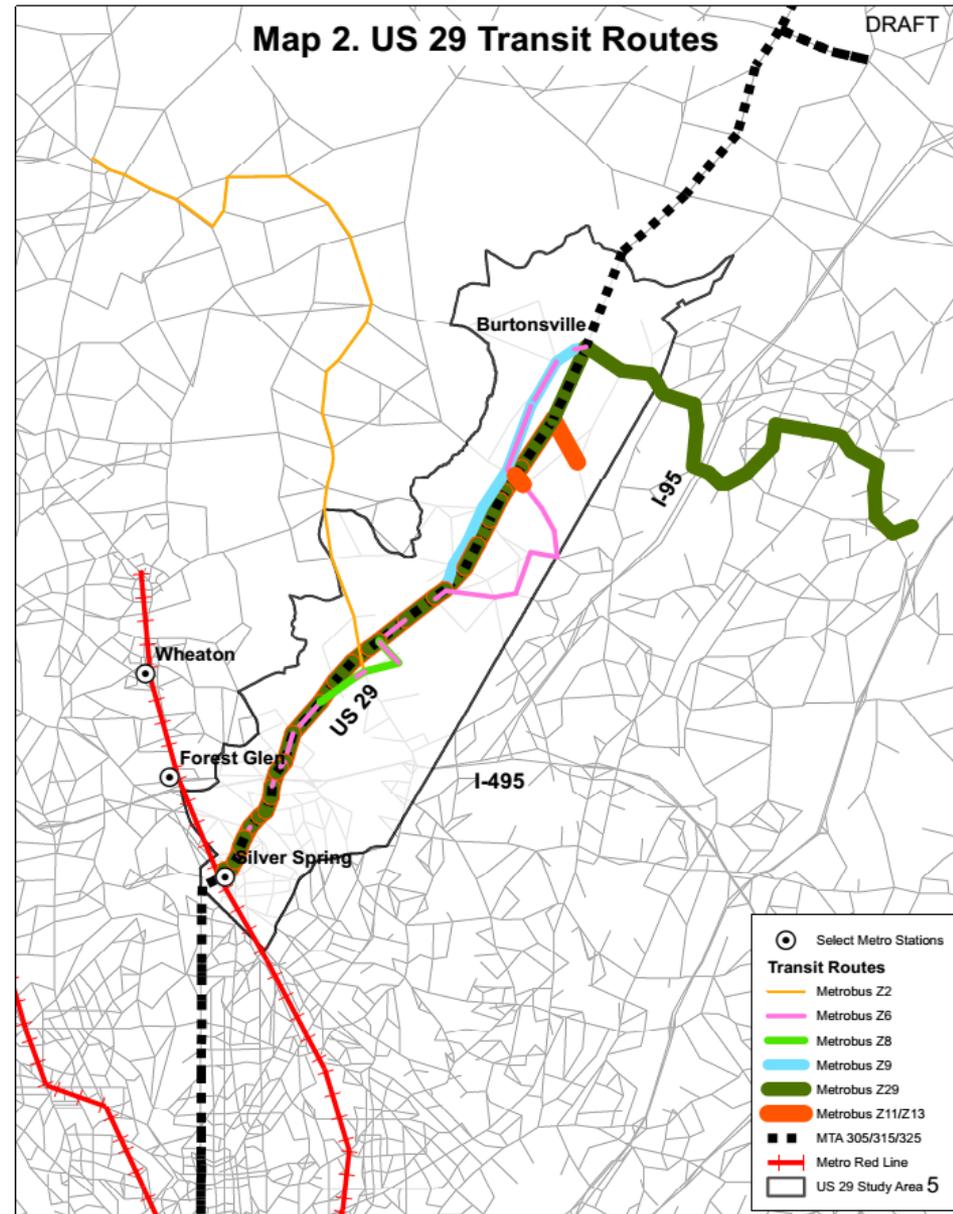
- Study Area
- TPB Region District

- District
- Daily Person Trip

Corridor Transit Market

- **Existing (2014) Metrorail Red Line Ridership: 19,900**
 - Silver Spring: 13,200
 - Forest Glen: 2,500
 - Wheaton: 4,200
- **Future (2040) Metrorail Ridership increases by 40%**
- **Existing (2014) Bus Ridership: 11,000**
 - Metrobus: 9,925
 - Ride On: 975
 - MTA: 350
- **Future (2040) Bus Ridership increases by 40%**

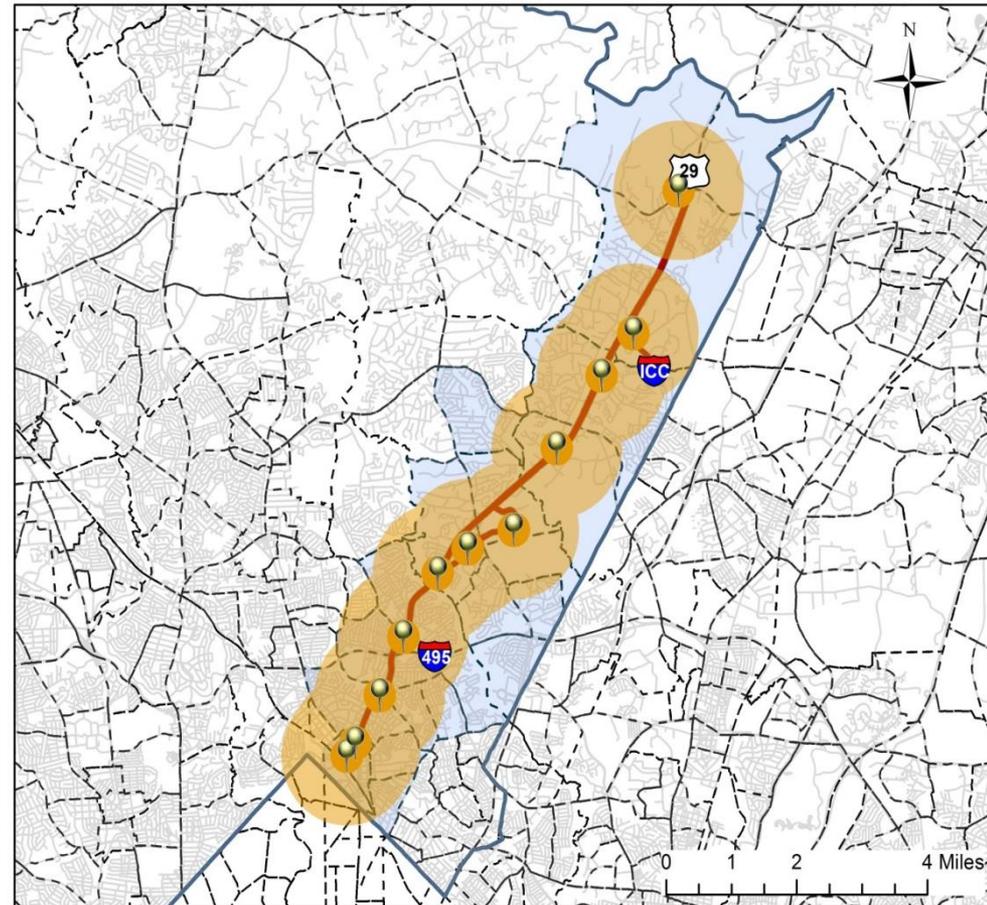
Source: 2040 forecasts developed using MWCOCG, regional MPO travel demand model



Proposed BRT Transit Market

- **Proposed BRT**
 - Burtonsville to Silver Spring
 - Approx. 12 miles
 - 11 stations
 - 3 Park & Ride Locations
- **Connectivity to Metrorail and Purple Line**
- **Accessibility to Proposed BRT Stations**

Source: 2040 forecasts developed using MWCOG, regional MPO travel demand model



Features

- Traffic Analysis Zones in Study Area
- TPB Traffic Analysis Zones
- Montgomery County
- Study Corridor
- All Roadways

US 29 BRT Corridor Planning Study

- BRT Stations
- 1/4 Mile Buffer
- 1 Mile Buffer

US 29 Regional Demand

Summary:

- Strong employment growth in regional activity centers
- Travel markets for intra-corridor, corridor to DC, and external to DC
- Strong existing transit market in the corridor
- Support for the County's growth visions and the regional transit priority

Questions: Travel & Transit Markets

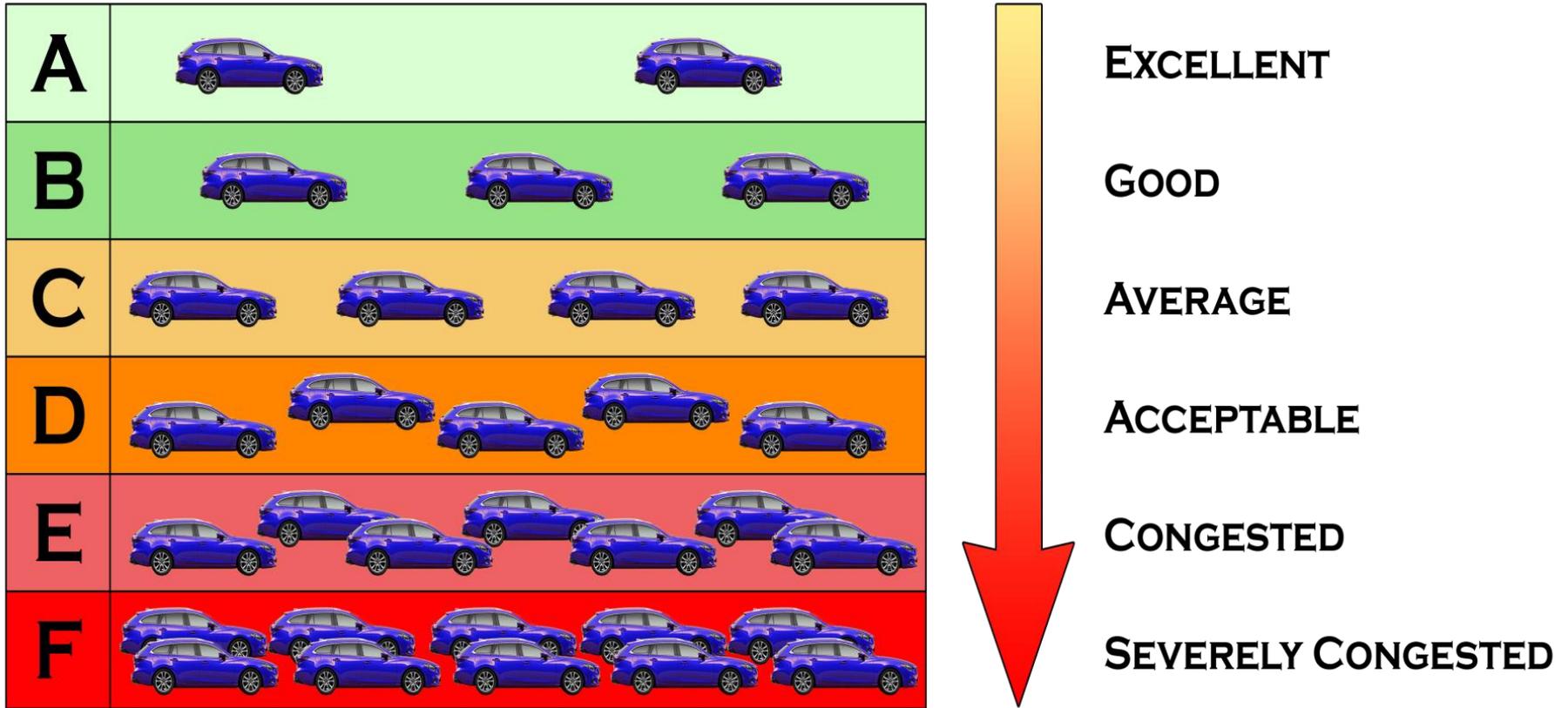


CAC Meeting #3 Agenda

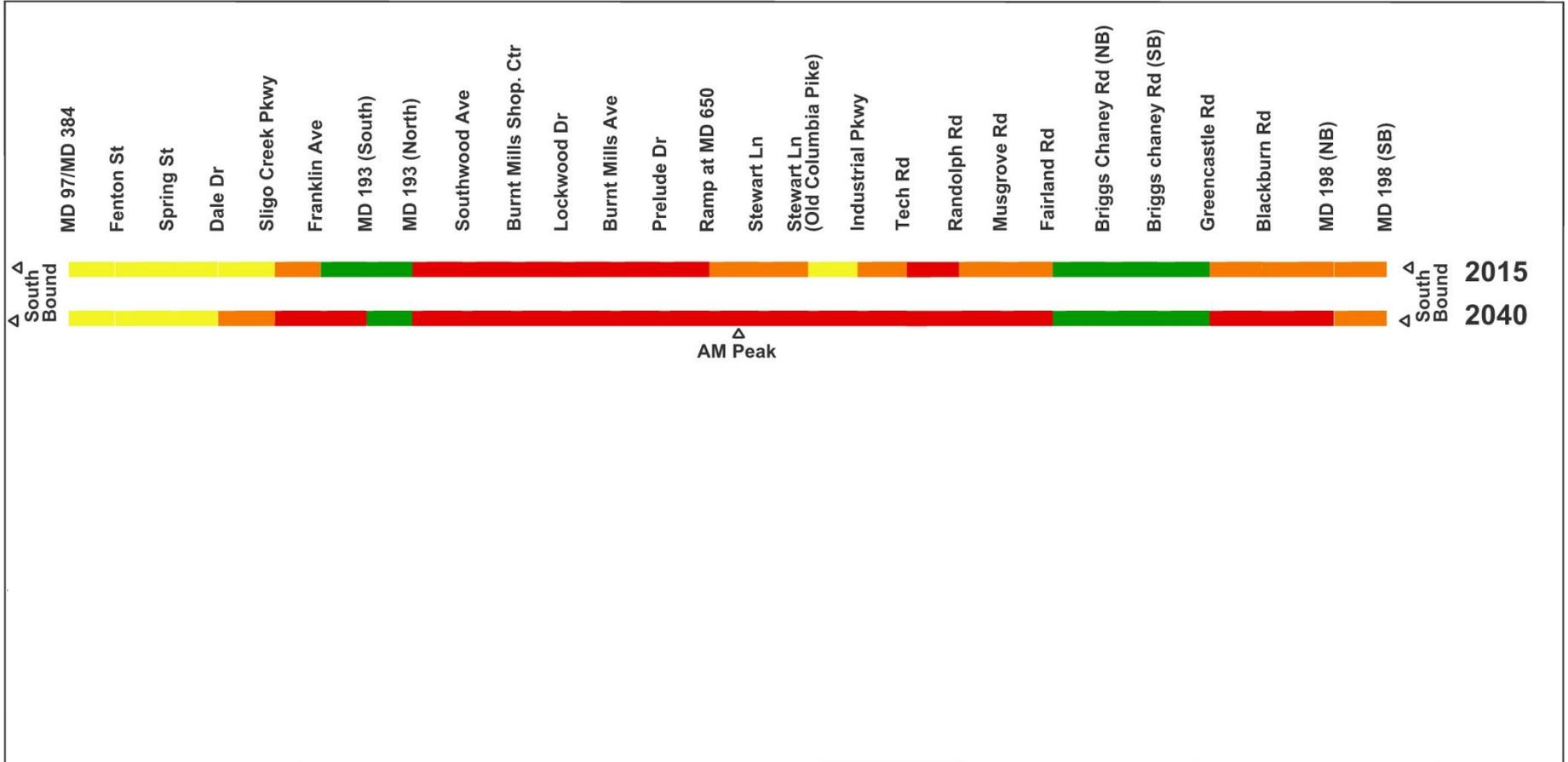
Topics to be discussed:

- Project Update
- Transit Ridership
- **Traffic Operations**
 - **Existing and Future No-Build Levels of Service**
 - **Vehicle Travel Time Changes**
 - **Crash History**
 - **Questions/Comments**
- Draft Purpose and Need Language
- BRT Running Way Options
- Future Meetings & Questions

Level of Service (LOS) Overview



2015 & 2040 No-Build Levels of Service



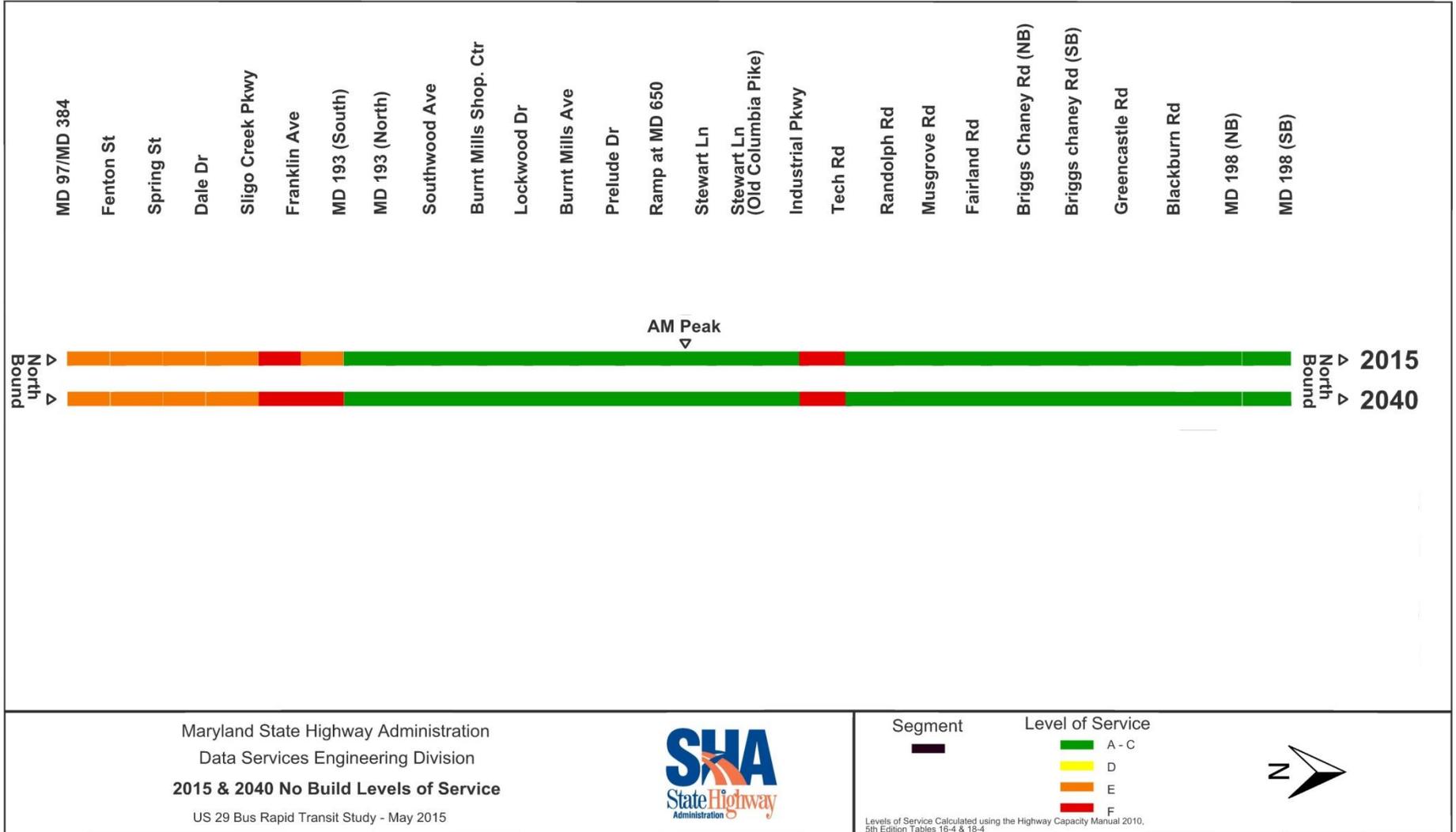
Maryland State Highway Administration
Data Services Engineering Division
2015 & 2040 No Build Levels of Service
US 29 Bus Rapid Transit Study - May 2015



Segment	Level of Service
	A - C
	D
	E
	F

Levels of Service Calculated using the Highway Capacity Manual 2010, 5th Edition Tables 16-4 & 18-4

2015 & 2040 No-Build Levels of Service



Maryland State Highway Administration
Data Services Engineering Division

2015 & 2040 No Build Levels of Service

US 29 Bus Rapid Transit Study - May 2015



2015 & 2040 No-Build Levels of Service



Maryland State Highway Administration
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2015 & 2040 No Build Levels of Service
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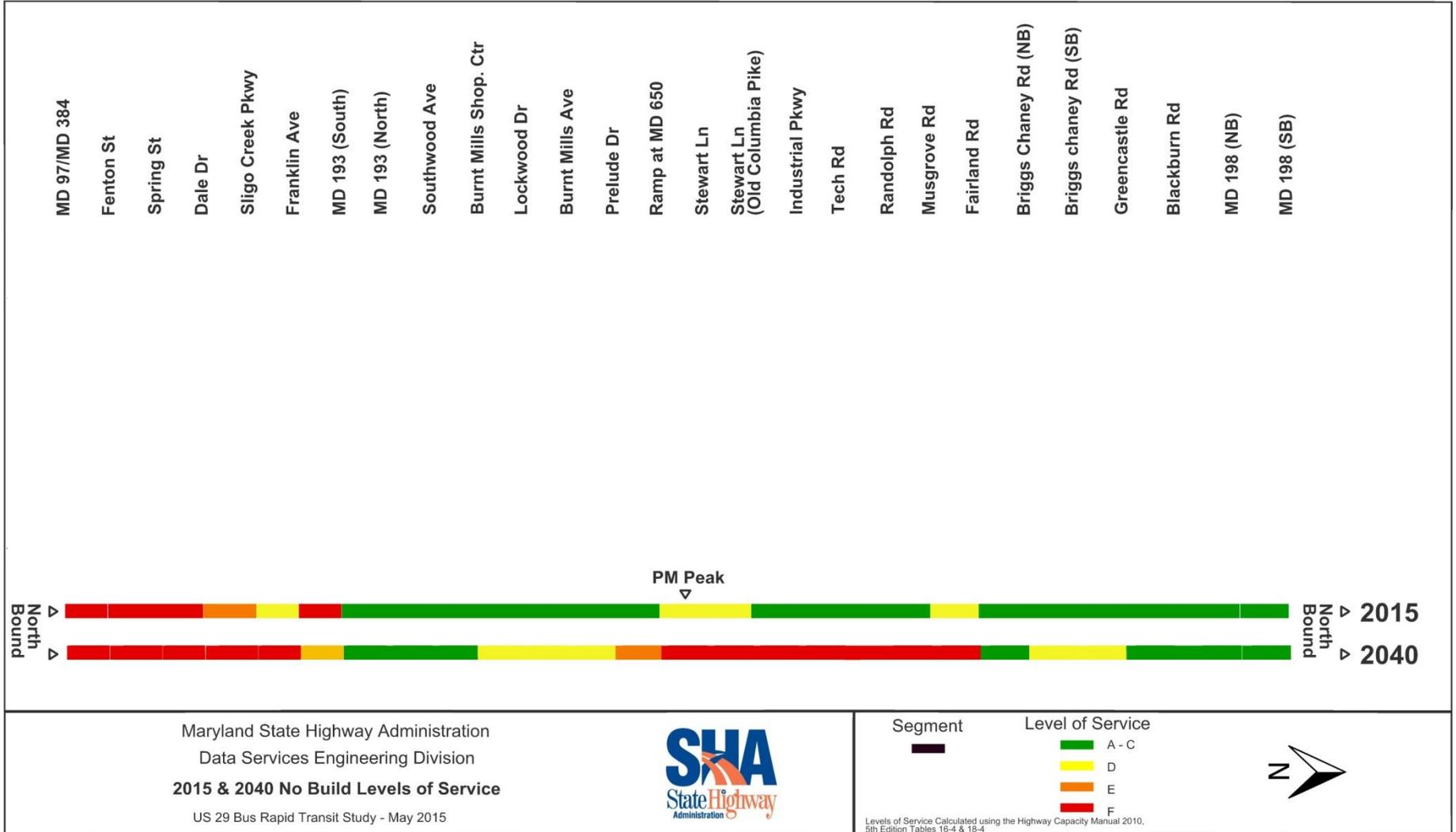


Segment	Level of Service
	A - C
	D
	E
	F

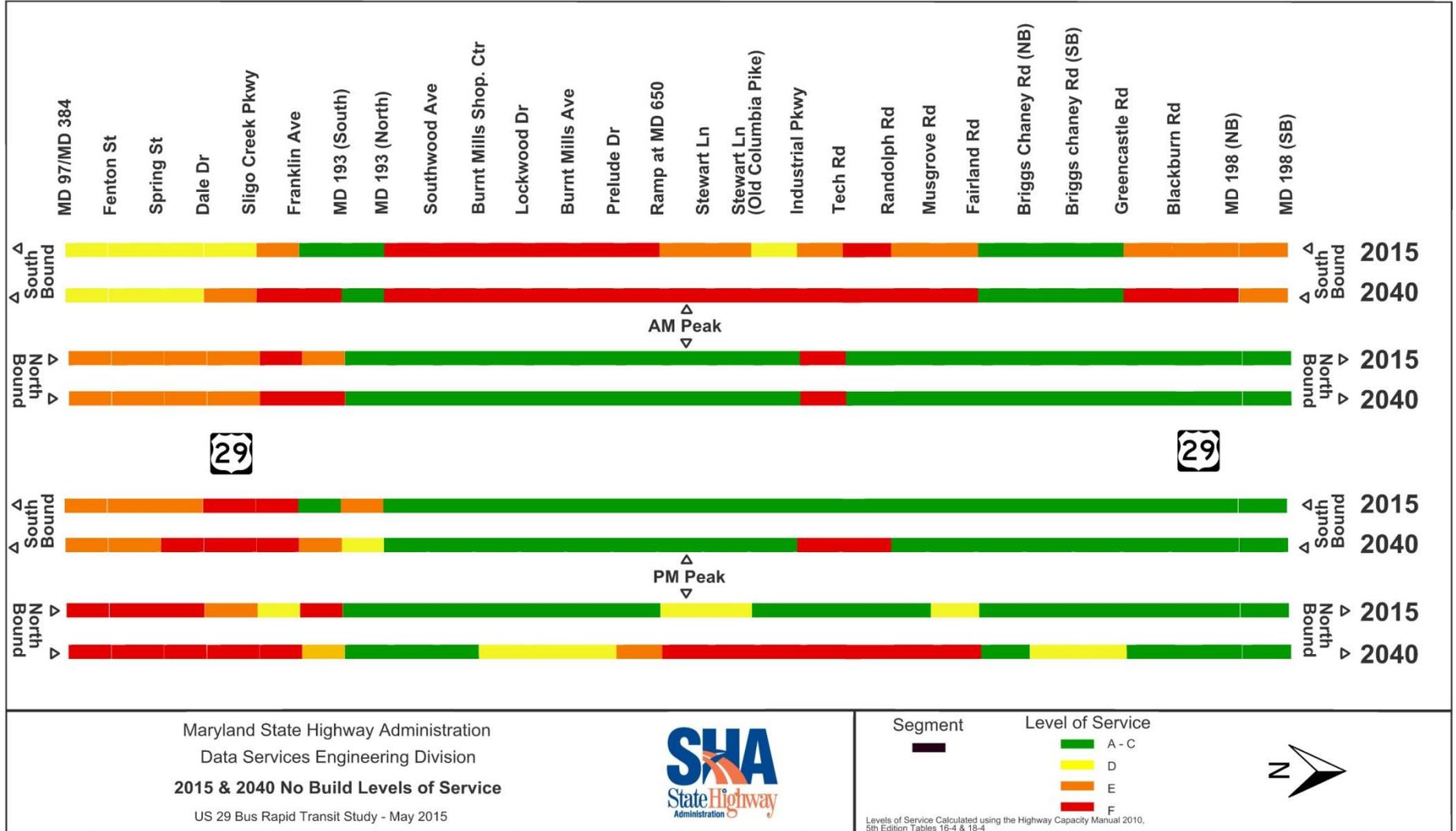


Levels of Service Calculated using the Highway Capacity Manual 2010, 5th Edition Tables 16-4 & 18-4

2015 & 2040 No-Build Levels of Service



2015 & 2040 No-Build Levels of Service



Vehicle Travel Time Changes

Total Network Wide Travel Times from MD 198 to MD 97						
	Southbound			Northbound		
	2015 Existing	2040 No Build	% change	2015 Existing	2040 No Build	% change
AM Cars & Trucks	34 min	44 min	-29%	21 min	21 min	0%
AM Buses*	34 min	44 min	-29%	25 min	25 min	0%
PM Cars & Trucks	23 min	25 min	-8%	25 min	37 min	-47%
PM Buses*	27 min	30 min	-11%	30 min	45 min	-51%

* This % change does not affect buses individually – it is a network wide bus miles traveled comparison

Red indicates delay increase

US 29 Crash History

Roadway Sections (North to South)	3-year Crash Rate per Mile	High Crash Types
MD 97 to Spring Street Includes portions of US 29 south of MD 97	200 High crash segment	Sideswipe, pedestrian, property damage, & parked vehicles
Spring Street to MD 193 (University Boulevard)	182	Rear end & Sideswipe
MD 193 (University Boulevard) to Lockwood Drive	117	Opposite Direction
Lockwood Drive to Stewart Lane	103	Injury, Left Turn & Night time
Stewart Lane to Musgrove Road	95	Injury, Left Turn, Angle, & Night Time
Musgrove Road to MD 198 (Sandy Spring Road)	64	Night Time

US 29 Existing and Future No-Build Traffic Operations

Summary:

- **53** intersections along US 29 and associated side streets modeled and analyzed
- Increase in regional growth leads to increased congestion throughout corridor
- Average speeds in the corridor are forecasted to reduce between **3%** and **50%** from 2015 to 2040, with some segments experiencing increased average speeds fluctuating between **2%** to **16%**
- Crash data for 2011 to 2013 show approximately **1,088** crashes occurred (this includes **3** fatal crashes and **24** pedestrian crashes) along US 29 in study limits
- Most Prevalent – Injury (41%), Property Damage (59%), Rear ends (42%), and Side Swipe (19%).

Questions: Traffic Operations



CAC Meeting #3 Agenda

Topics to be discussed:

- Project Update
- Transit Ridership
- Traffic Operations
- **Draft Purpose and Need Language**
 - **Purpose**
 - **Need**
- BRT Running Way Options
- Future Meetings & Questions

Draft Project Purpose Language

The purpose of this project is to provide a higher speed, higher frequency, all day transit service along the US 29 corridor between the Silver Spring Transit Center and the Burtonsville Park & Ride that will:

- Enhance transit connectivity along the corridor and within the regional system;
- Improve the ability for buses to move along the corridor (bus mobility) with improved operational efficiency and travel times;
- Address current and future bus ridership demands;
- Integrate service with rail and other transit services;
- Attract new riders who do not use existing services and provide improved service options for current transit riders;
- Look for opportunities to provide safe multi-modal access to transit;
- Continue previous Montgomery County studies which recommend Bus Rapid Transit along US 29;
- Improve transit access to major employment and activity centers;
- Support approved Master Planned growth (e.g., White Oak) generated from development within the study limits and the County; and
- Improve person throughput on the US 29 corridor.

Draft Project Need Language

Four specific needs for the project have been identified by the study team:

- ***System connectivity*** – A high-quality, continuous transit connection is needed from Silver Spring to Burtonsville that can support the surrounding mixed used development along the corridor.
- ***Mobility*** – Traffic congestion currently impedes bus and rider mobility and results in unpredictable bus service, longer travel times, and delayed schedules. Corridor-wide enhancements to address efficiency and reliability are needed to improve mobility for transit riders.
- ***Transit demand/attractiveness*** – Transit demand and ridership in the US 29 corridor continues to grow. A high-quality transit service is needed to maintain current transit riders and attract new riders.
- ***Livability*** – Transit improvements are needed throughout the US 29 corridor to create a transportation network that enhances choices for transportation users and promotes positive effects on the surrounding communities and residents' quality of life.

CAC Meeting #3 Agenda

Topics to be discussed:

- Project Update
- Transit Ridership
- Traffic Operations
- Draft Purpose and Need Language
- **BRT Running Way Options**
 - **Introduction**
 - **Overview of BRT Running Way Options**
 - **Questions**
- Future Meetings & Questions

BRT Running Way Options

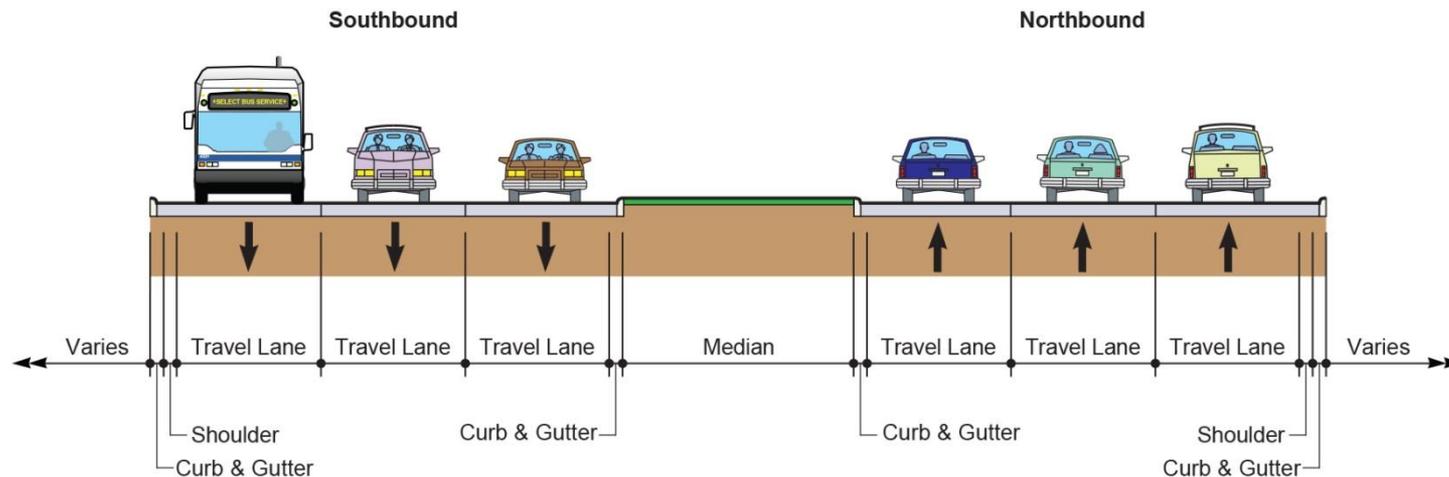
Introduction:

- Six BRT Running Way options have been identified for consideration
- The proposed six options can be mixed and matched along different segments of the corridor to best fit within the surrounding area
- Location and dimensions of proposed roadway elements will vary throughout the corridor
- The following typical sections represent the six options, illustrating the interaction between vehicles and the BRT, as they could generally be applied throughout the corridor
- **NOT EVERY OPTION IS APPROPRIATE FOR EVERY SEGMENT OF THE US 29 CORRIDOR**

BRT Running Way Options

Option 1 – BRT in Mixed Traffic

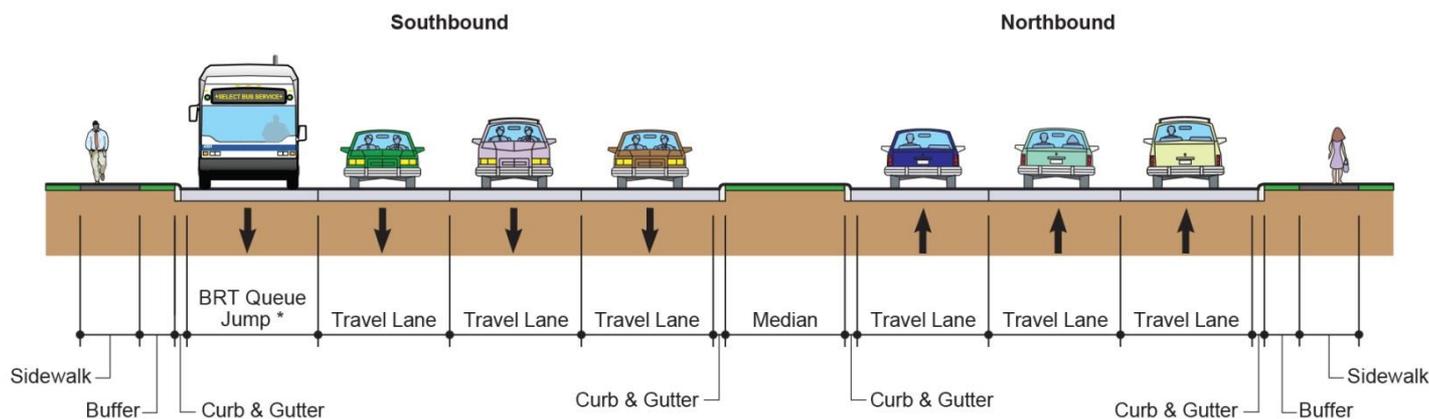
- Could include enhancements to existing WMATA, MTA, and Ride-On bus services via system operational improvements, and minor facility improvements such as transit signal priority.
- Could include considerations for enhanced transit service with limited stops.



BRT Running Way Options

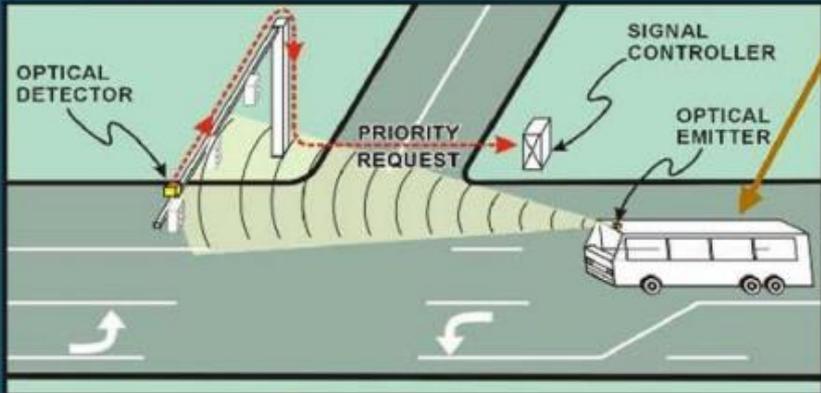
Option 2 – BRT Queue Jump Lanes

- Would include enhancements to existing WMATA, MTA, and Ride-On bus services via system operational improvements, and minor facility improvements such as transit signal priority and BRT queue jump lanes.
- Would include considerations for enhanced transit service with limited stops.



* Queue Jumps could be applied to both northbound and southbound directions.

BRT Running Way Options



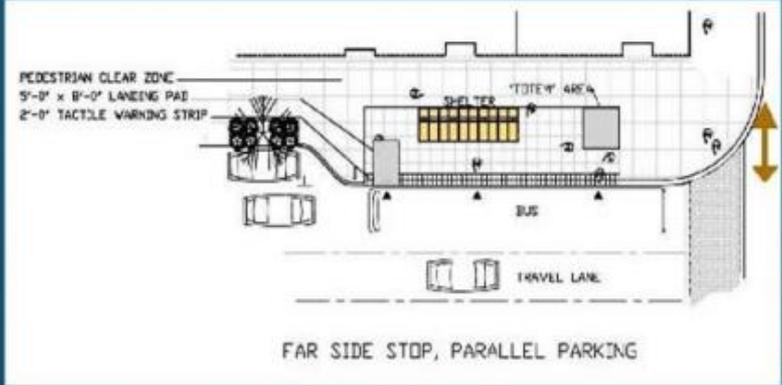
Transit signal priority

Approaching BRT vehicle may get a green light if it is behind schedule.

BRT uses special lane to bypass stopped cars.



Queue jump



Curb extension

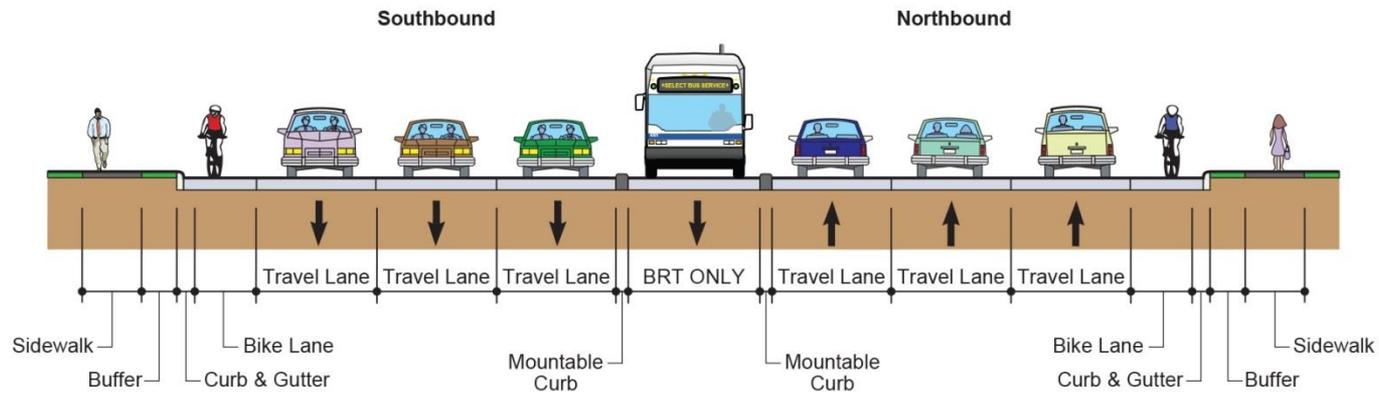
Widened sidewalk at BRT station means bus does not have to wait to merge back into travel lane to leave station.

BRT Running Way Options

Option 3 – One-Way, Reversible, Dedicated BRT Lane

- Would provide BRT service in addition to the existing local bus service.
- Peak direction BRT buses in the one-way reversible lane would stop at new BRT stations, while off-peak direction BRT buses will operate in mixed traffic and could use existing bus stops retrofitted for BRT.
- Directionality of the dedicated BRT lane would be determined by peak-hour demand.
- Reversible lanes could be implemented in median or curb lane via an additional lane.
- An existing general use travel lane could be repurposed to a lane exclusively dedicated for the use of buses.

Type A: Additional lane is included to accommodate the dedicated BRT lane

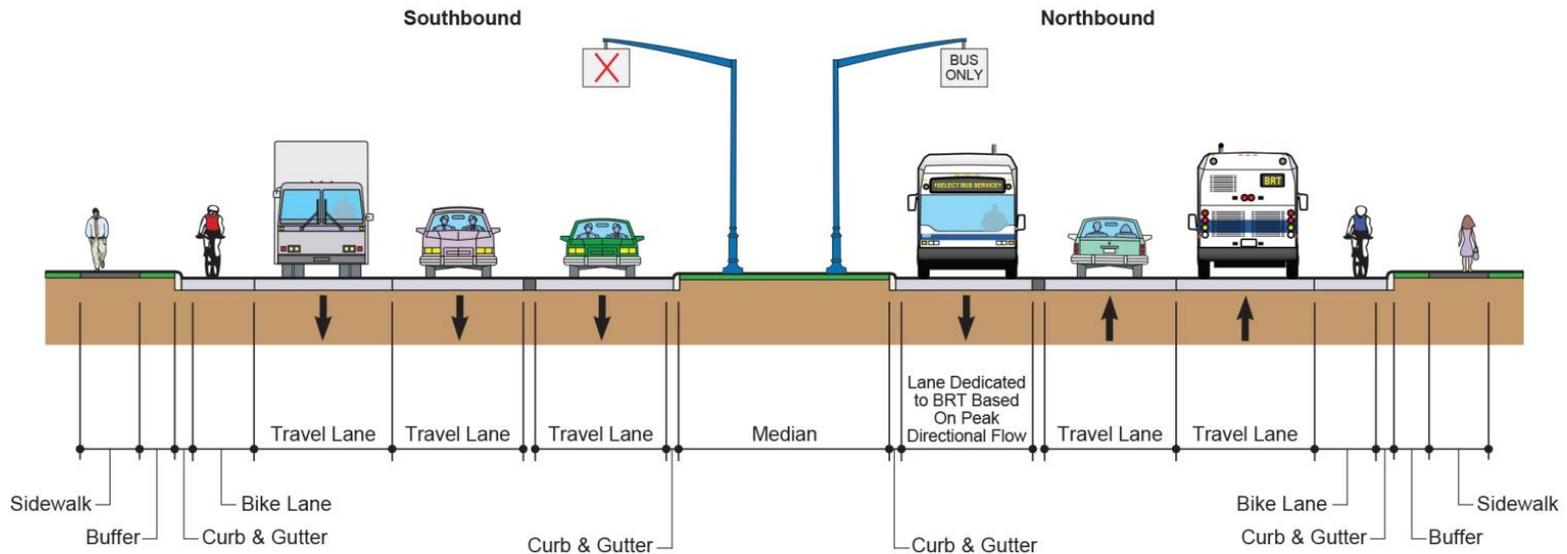


A.M. Peak Configuration Shown

BRT Running Way Options

Option 3 – One-Way, Reversible, Dedicated BRT Lane

Type B: Existing travel lane is repurposed to accommodate the dedicated BRT lane.



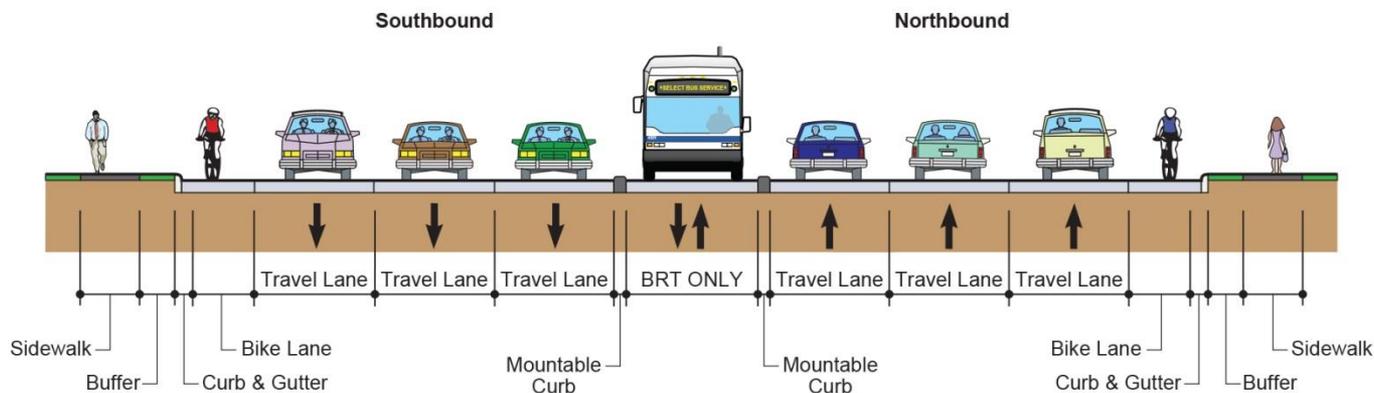
A.M. Peak Configuration Shown

BRT Running Way Options

Option 4 – Bi-Directional, Dedicated BRT Lane

- Would provide BRT service in addition to the existing local bus service.
- Buses in bi-directional lanes would stop at new BRT stations.
- In a bi-directional system BRT buses share a single lane that will have passing zones to maintain operation.
- Bi-directional lanes could be implemented in the median or curb lane via an additional lane or repurposing of an existing travel lane.

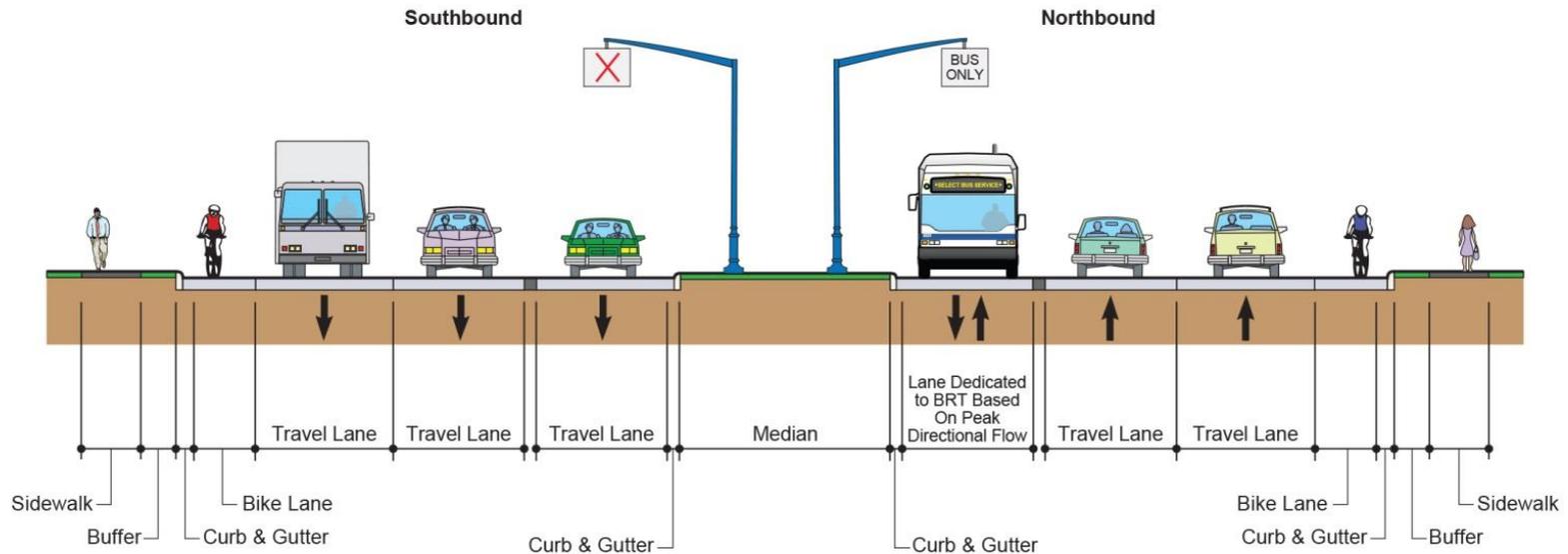
Type A: Additional lane is included to accommodate the dedicated BRT lane



BRT Running Way Options

Option 4 – Bi-Directional, Dedicated BRT Lane

Type B: Existing travel lane is repurposed to accommodate the dedicated BRT lane



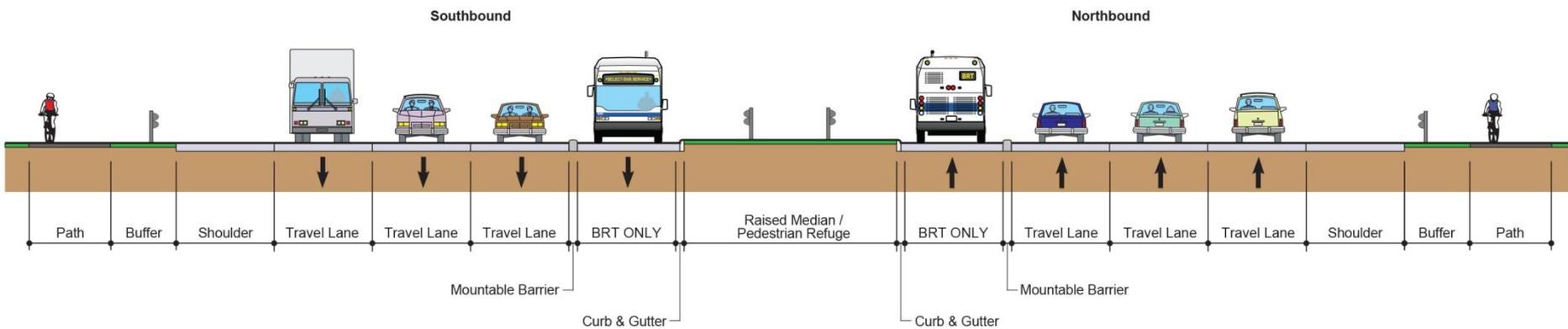
A.M. Peak Configuration Shown

BRT Running Way Options

Option 5 – Dedicated BRT Median Lanes

- Would provide BRT service in addition to the existing bus services.
- BRT would operate in dedicated lanes located in the median with new stations and implemented via additional lanes or repurposing of existing travel lane(s).

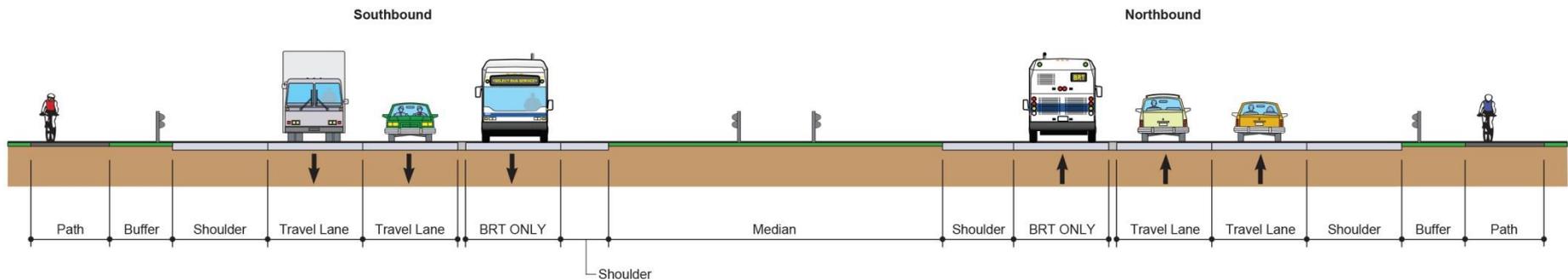
Type A: Additional lanes are included to accommodate the dedicated BRT lanes



BRT Running Way Options

Option 5 – Dedicated BRT Median Lanes

Type B: Existing travel lanes are repurposed to accommodate the dedicated BRT lanes

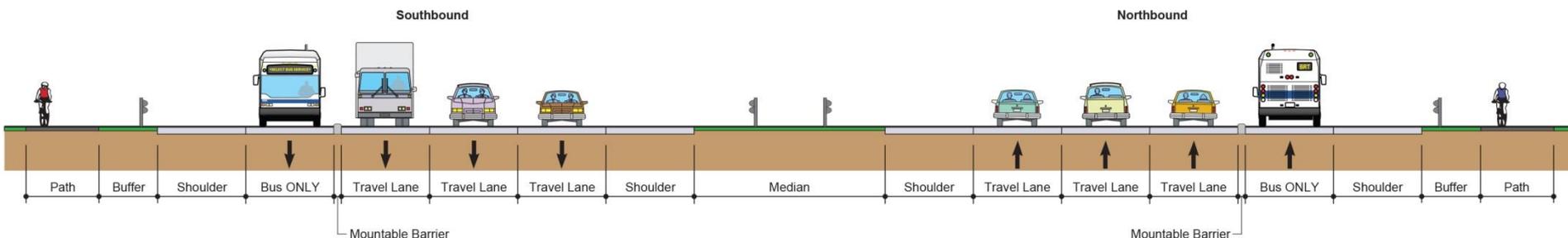


BRT Running Way Options

Option 6 – Dedicated BRT Curb Lanes

- Would provide BRT service in addition to the existing bus services.
- BRT would operate in dedicated lanes located curbside with new stations and implemented via additional lanes or repurposing of existing travel lane(s).
- The curbside lane could be shared with existing bus services, vehicles making right turns, and those merging to and from US 29.

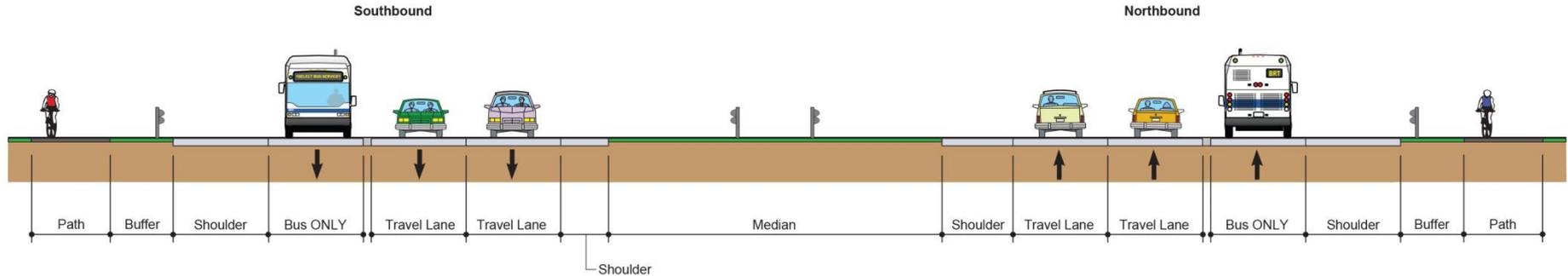
Type A: Additional lanes are included to accommodate the dedicated BRT lanes



BRT Running Way Options

Option 6 – Dedicated BRT Curb Lanes

Type B: Existing travel lanes are repurposed to accommodate the dedicated BRT lanes



BRT Running Way Options

Summary of Options

- Option 1: BRT in Mixed Traffic
- Option 2: BRT Queue Jump Lanes
- Option 3*: One-Way, Reversible, Dedicated BRT Lane
- Option 4*: Bi-Directional, Dedicated BRT Lane
- Option 5*: Dedicated BRT Median Lanes
- Option 6*: Dedicated BRT Curb Lanes

*Types Vary – Could be achieved through additional lanes or lane repurposing.

Questions: BRT Running Way Options



CAC Meeting #3 Agenda

Topics to be discussed:

- Project Update
- Transit Ridership
- Traffic Operations
- Draft Purpose and Need Language
- BRT Running Way Options
- **Future Meetings & Questions**

CAC Meeting Topics

Topics Covered:

- ✓ Existing Conditions
- ✓ Purpose and Need
- ✓ Regional Travel Demand
- ✓ Traffic & Ridership
 - Existing
 - Future No-Build
- ✓ Crash History
- ✓ Environmental Inventory

Upcoming Topics:

- Land Use & Development
- Build Traffic & Ridership Analyses
- Preliminary Concepts
 - Range of improvements
 - Station locations
 - Anticipated impacts
 - Costs

Other topics/issues you would like to discuss at future meetings?

Future Meetings

- Next CAC Meeting Dates: To Be Determined
- Informational Open House Meetings: Fall 2015

Questions & Comments



Adjournment