



Metrobus Service Evaluation Study 2011 – Part 1

Final Report
November 2011



Study Purpose

- The primary study purpose is to identify the strategic needs for programs and facilities for each line being evaluated; review capacity, productivity, reliability, and quality of service indicators and recommend changes that will improve service delivery.*

Project Scope of Work

- *Transit Service Assessment*
 - Develop a Detailed Assessment and “Snapshot” of Each Line in the Study. Assessment Covered a Wide Range of Areas
 - Overall Service Characteristics, Ridership and Productivity, Boarding and Alightings, Passenger Loads, Bus Stop Spacing and Amenities, On-Time Performance, Driver and Planner Interviews
- *Traffic Operations Assessment*
 - Identify the Full Range of Traffic Issues on Each Line and Develop Recommendations for Improvements
 - Traffic Signals and other Traffic Control Devices
 - Lane Widths and Right of Way
 - Turns and Adequate Turning Radius

Project Scope of Work

- *Public Outreach*
 - Rider Survey to Gauge Service Issues and Needs
 - Six Public Meetings
 - Issues Identification
 - Feedback on Preliminary Recommendations
 - Results of Outreach Was a Key Input into the Study Process and Recommendations

Project Scope of Work

- *Recommendations*
 - Completed in Two Steps
 - Preliminary Recommendations – Relied on Inputs from all Previous Steps
 - Collaborative Effort with Project Management Team
 - Final – Incorporate All Team Comments
 - Recommendations Cover:
 - Service and Routing
 - Passenger Facilities
 - Traffic and Right-of-Way
 - Schedule and Run Time
 - Passenger Information

Lines Evaluated

- ***District of Columbia***
 - E2, 3, 4 – Military Road – Crosstown Line
 - E6 – Chevy Chase Line
- ***Maryland***
 - 87, 88 - Laurel Express Line
 - 89, 89M - Laurel Line
 - B30 Line – Greenbelt - BWI Thurgood Marshall Airport Express Line
- ***Virginia***
 - 7A, E, F, Y – Lincolnia – North Fairlington Line
 - 7B, C, D, H, P, W, X – Lincolnia – Park Center – Pentagon Line
- ***District of Columbia and Virginia***
 - 5A – D.C. – Dulles Line

Route Summaries

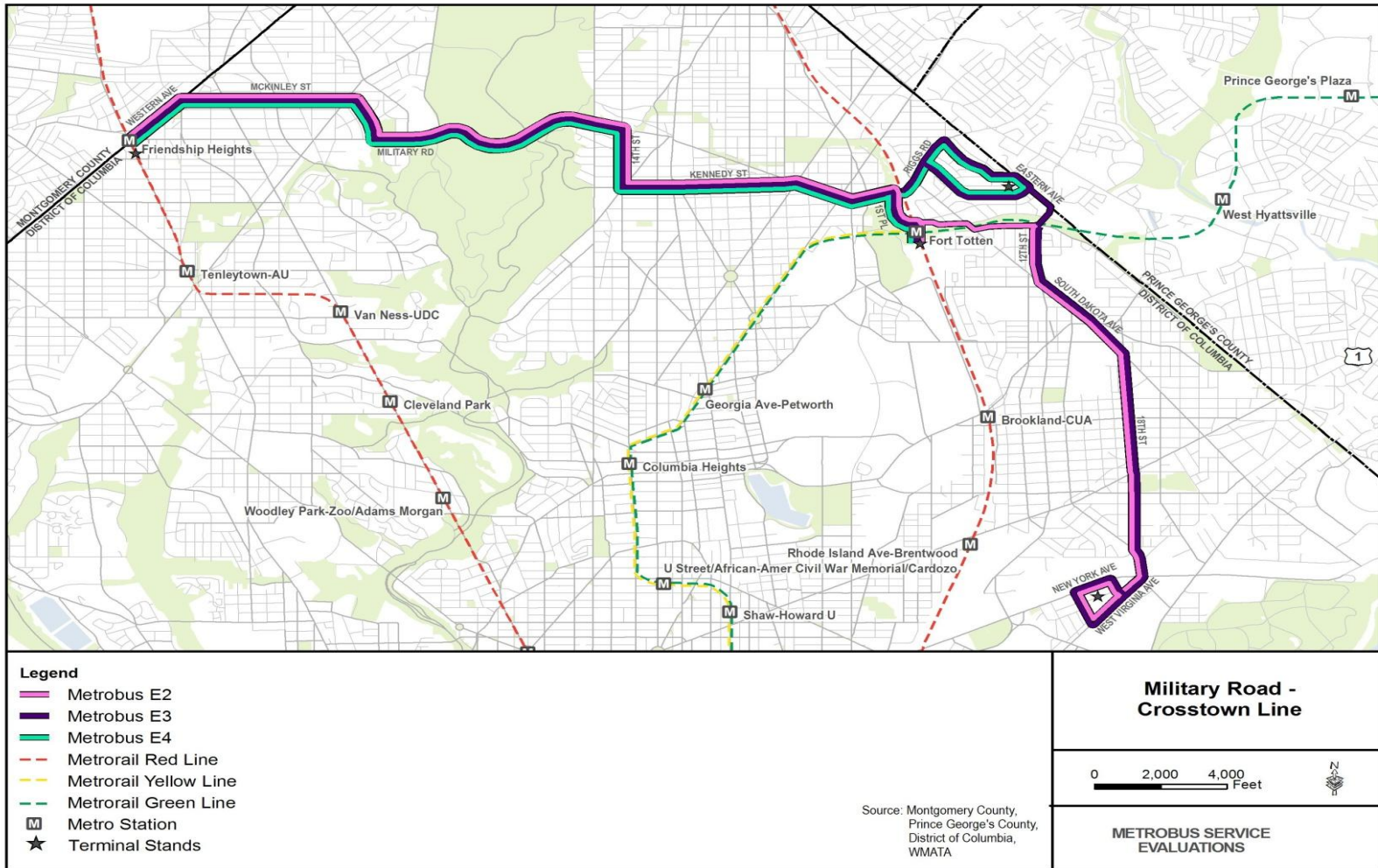
E2, 3, 4 – Military Road-Crosstown Line

- *Description:* An east-west crosstown service running across the northern edge of Washington DC between Friendship Heights and Ivy City and serving the Friendship Heights and Fort Totten Metrorail Stations
- *Service Characteristics*
 - Days of Service: Weekday, Saturday, Sunday
 - Weekday Hours of Service: 4:55 AM -1:12 AM
- *Weekday Ridership and Productivity**
 - Daily Weekday Ridership: 5,821 (rank:18)
 - Boardings Per Revenue Mile: 4.0 (rank: 48)
 - Cost Recovery: 38.11% (rank: 30)
 - Subsidy Per Passenger: \$1.69 (rank: 26)
 - Boardings Per Trip: 32.7 (rank: 45)

Source: September 2010 Weekday Productivity Report – Generated 1-8-2011

* Ridership and Productivity Rank: Out of 156 Lines in Total Metrobus System

E2, 3, 4 – Military Road-Crosstown Line Map



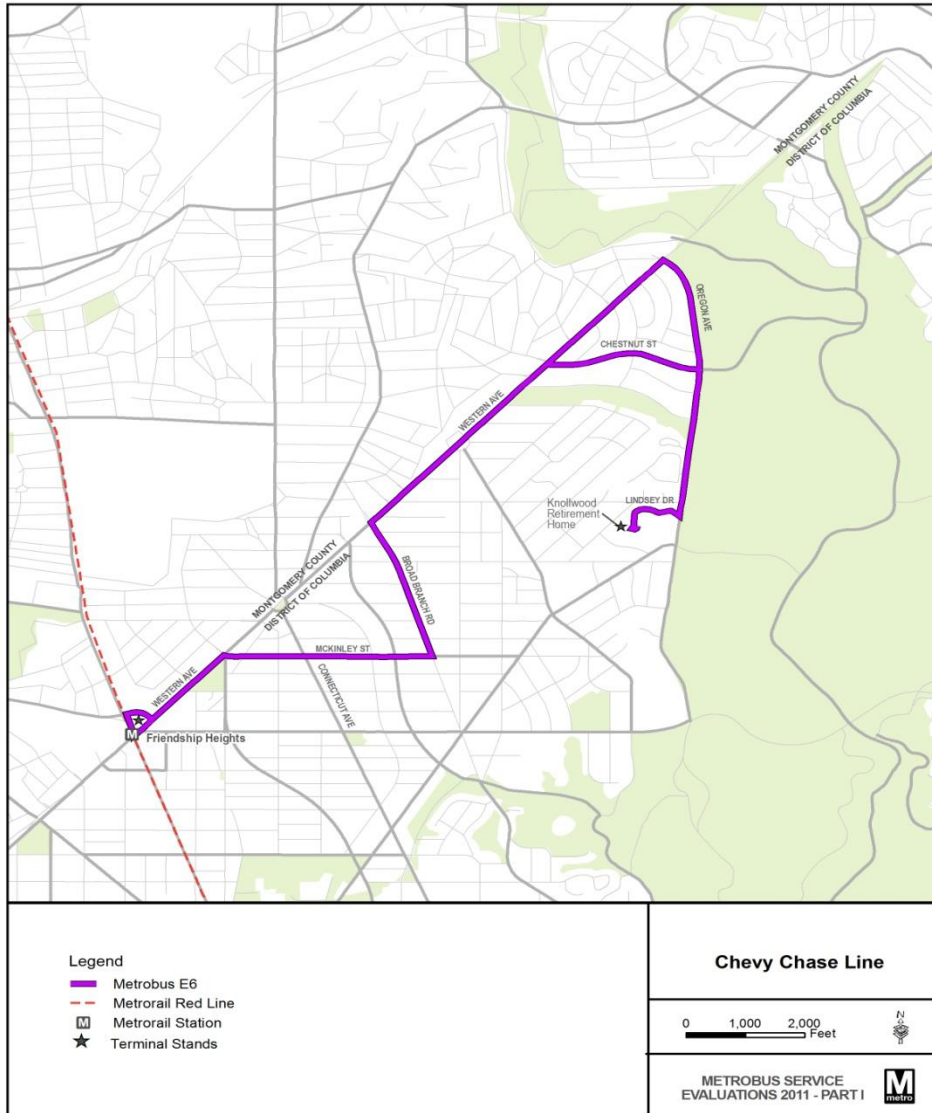
E6 – Chevy Chase Line

- *Description:* A local circulator route serving neighborhoods in the northwest corner of Washington DC, including Chevy Chase, Hawthorne, and the Knollwood Retirement Home
- *Service Characteristics*
 - Days of Service: Weekday Only
 - Weekday Hours of Service: 5:46 AM – 9:07 PM
- *Weekday Ridership and Productivity**
 - Daily Weekday Ridership: 390 (rank:143)
 - Boardings Per Revenue Mile: 1.5 (rank: 133)
 - Cost Recovery: 17.28% (rank: 145)
 - Subsidy Per Passenger: \$4.98 (rank: 141)
 - Boardings Per Trip: 5.7 (rank: 156)

Source: September 2010 Weekday Productivity Report – Generated 1-8-2011

* Ridership and Productivity Rank: Out of 156 Lines in Total Metrobus System

E6 – Chevy Chase Line Map



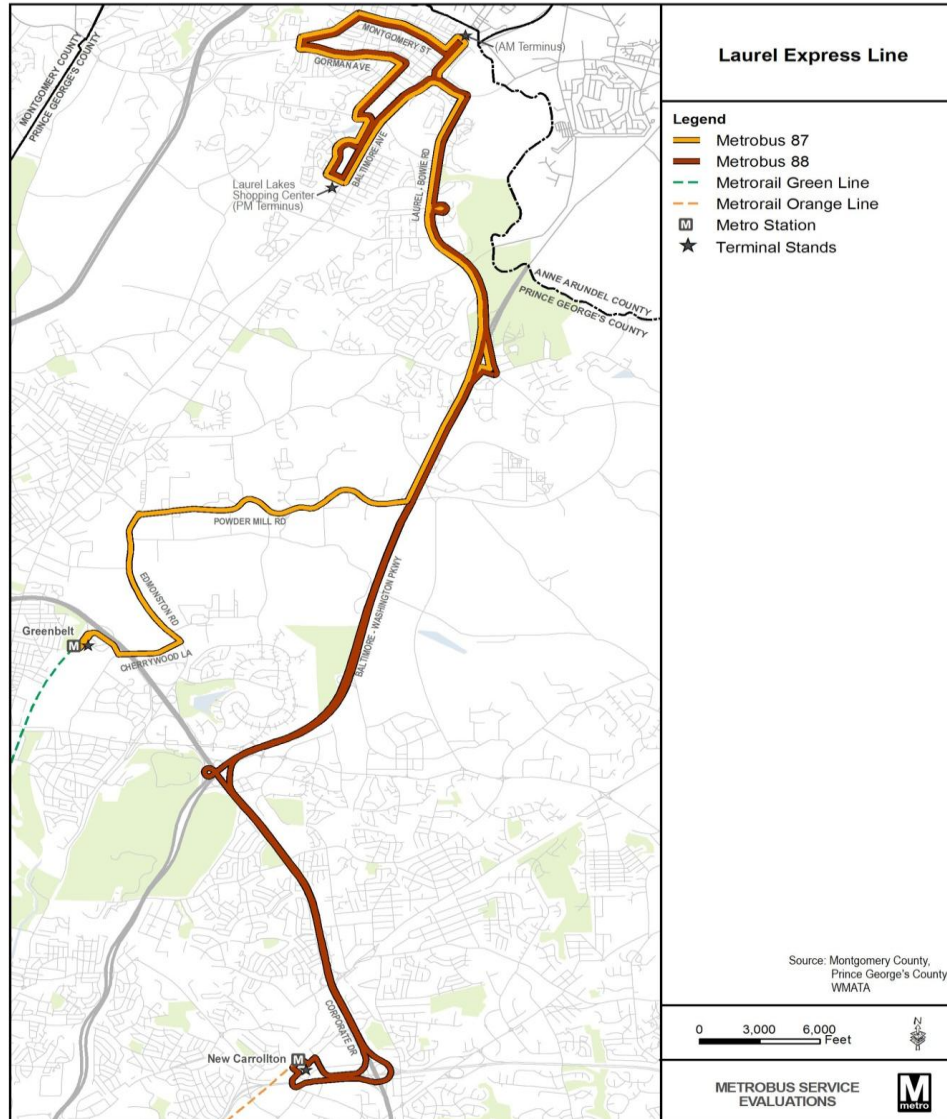
87, 88 – Laurel Express Line

- *Description:* The 87-88 Line is a peak period bi-directional express service providing connections between Laurel Maryland and the Greenbelt and New Carrollton Metrorail stations, in Prince George's County.
- *Service Characteristics*
 - Days of Service: Weekday Only
 - Weekday Hours of Service: 4:46 AM – 7:12 PM
- *Weekday Ridership and Productivity**
 - Daily Weekday Ridership: 789 (rank:114)
 - Boardings Per Revenue Mile: 1.4 (rank: 136)
 - Cost Recovery: 21.08% (rank: 126)
 - Subsidy Per Passenger: \$3.89 (rank: 122)
 - Boardings Per Trip: 21.9 (rank: 101)

Source: September 2010 Weekday Productivity Report – Generated 1-8-2011

* Ridership and Productivity Rank: Out of 156 Lines in Total Metrobus System

87, 88 – Laurel Express Line Map



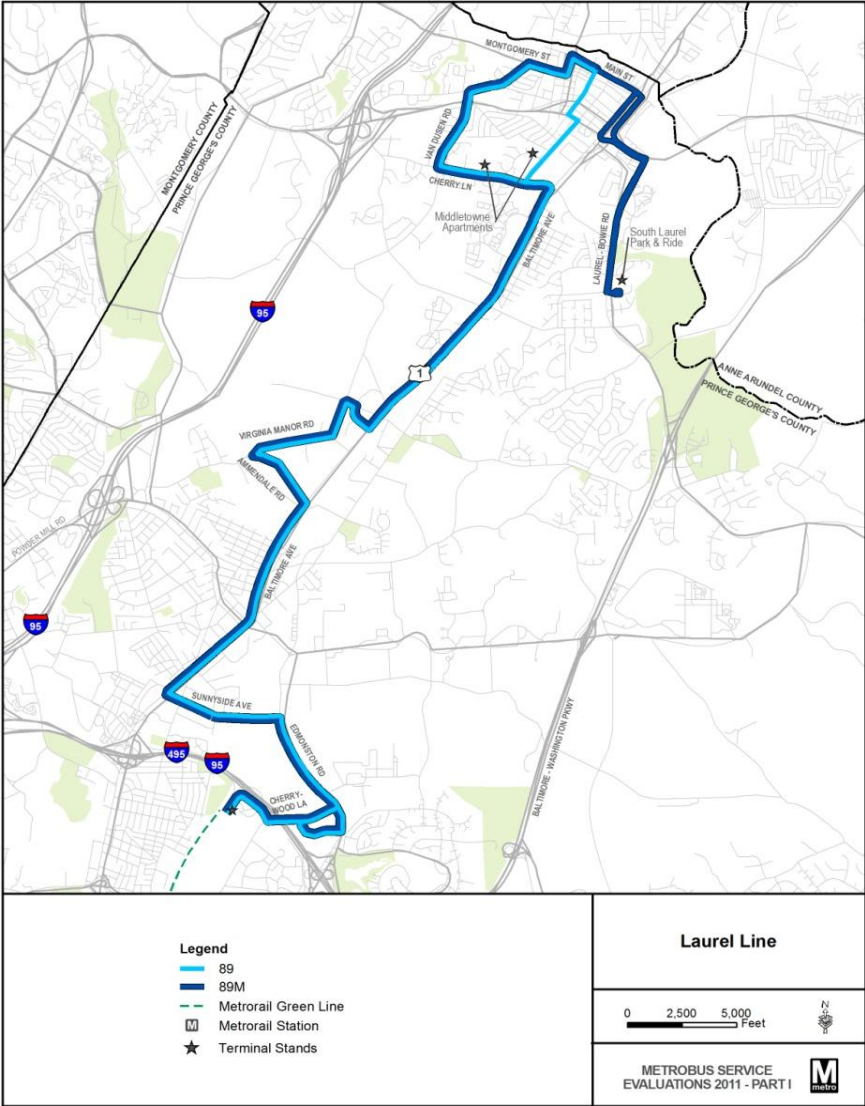
89, 89M – Laurel Line

- *Description:* The 89-89M Line is a radial line running north/south, primarily along U.S. 1 (Baltimore Avenue) between Laurel Maryland and the Greenbelt Metrorail Station in Prince George's County.
- *Service Characteristics*
 - Days of Service: Weekday Only
 - Weekday Hours of Service: 5:50 AM – 7:19 PM
- *Weekday Ridership and Productivity**
 - Daily Weekday Ridership: 852 (rank:110)
 - Boardings Per Revenue Mile: 1.9 (rank: 119)
 - Cost Recovery: 27.15% (rank: 86)
 - Subsidy Per Passenger: \$2.79 (rank: 81)
 - Boardings Per Trip: 25.8 (rank: 76)

Source: September 2010 Weekday Productivity Report – Generated 1-8-2011

* Ridership and Productivity Rank: Out of 156 Lines in Total Metrobus System

89, 89M Line – Laurel Line Map



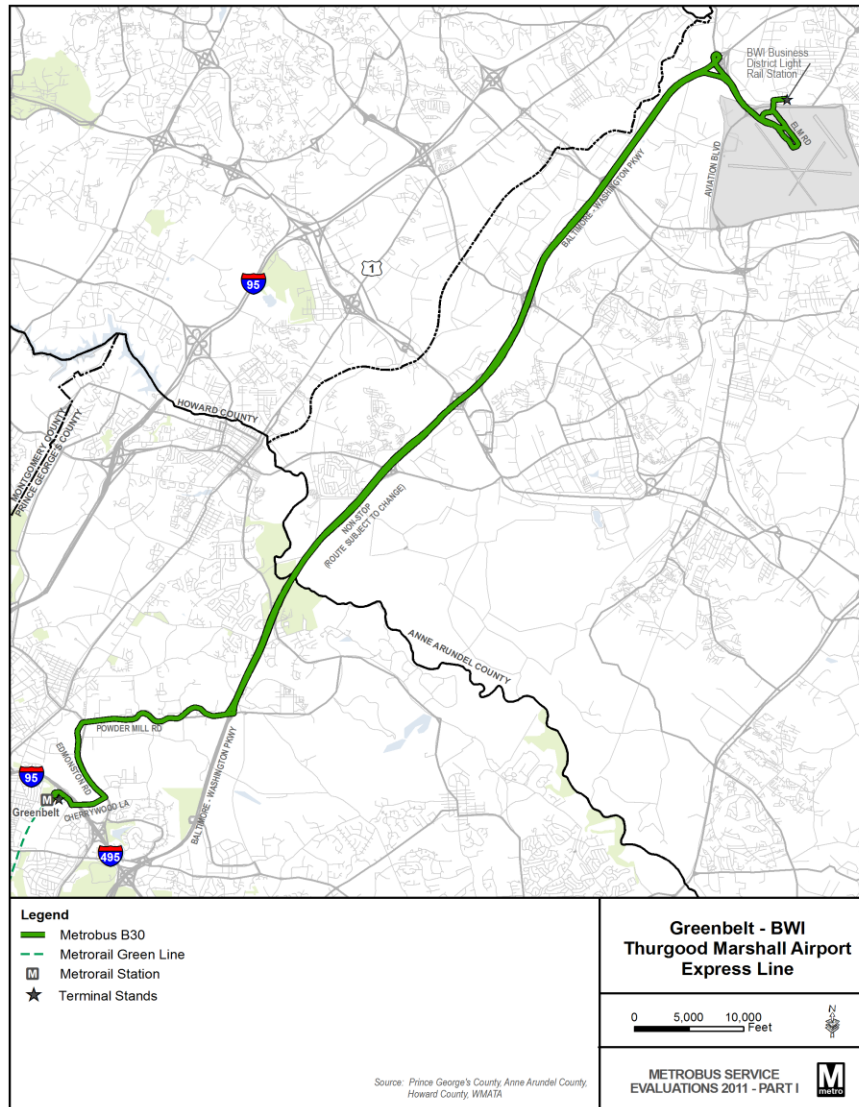
B30 – Greenbelt – BWI Thurgood Marshall Airport Line

- *Description:* The B30 Line is an express service running between the Greenbelt Metrorail Station and BWI Airport via the Baltimore-Washington Parkway.
- *Service Characteristics*
 - *Days of Service:* Weekdays, Saturday, Sunday
 - *Weekday Hours of Service:* 6:10 AM – 10:44 PM
- *Weekday Ridership and Productivity**
 - *Daily Weekday Ridership:* 785 (rank:115)
 - *Boardings Per Revenue Mile:* .66 (rank: 154)
 - *Cost Recovery:* 84.28% (rank: 2)
 - *Subsidy Per Passenger:* \$1.02 (rank: 4)
 - *Boardings Per Trip:* 15.7 (rank: 128)

Source: September 2010 Weekday Productivity Report – Generated 1-8-2011

* Ridership and Productivity Rank: Out of 156 Lines in Total Metrobus System

B30 – Greenbelt – BWI Thurgood Marshall Airport Line Map



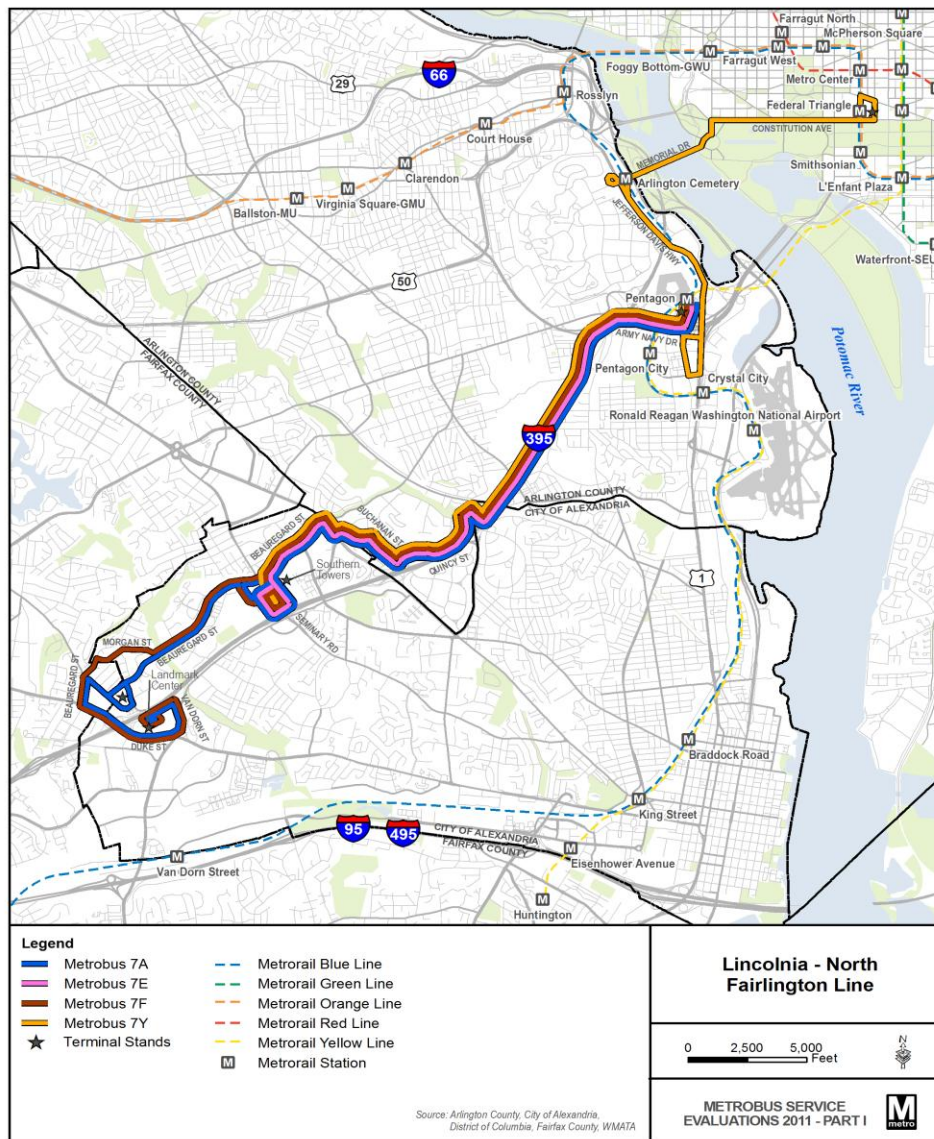
7A, E, F, Y – Lincolnia – North Fairlington Line

- **Description:** The 7A, E, F, Y Line is a radial line running north/south through Alexandria, Fairfax County, and Arlington County, predominantly via the Beauregard Street Corridor. The majority of trips on the line terminate at the Pentagon Metrorail Station, though the 7Y route runs into the District of Columbia. The Line is a companion line to the 7B, C, D, H, P, W, X Line, which also runs in the Beauregard corridor.
- **Service Characteristics**
 - **Days of Service:** Weekdays, Saturday, Sunday
 - **Weekday Hours of Service:** 4:45 AM – 3:30 AM (weekday service is predominantly off-peak)
Weekday peak period service in corridor is primarily provided by the 7B,C, D, H, P, W, X Line
- **Weekday Ridership and Productivity***
 - **Daily Weekday Ridership:** 4,646 (rank: 26)
 - **Boardings Per Revenue Mile:** 3.0 (rank: 75)
 - **Cost Recovery:** 32.92% (rank: 52)
 - **Subsidy Per Passenger:** \$2.12 (rank: 48)
 - **Boardings Per Trip:** 22.7 (rank: 96)

Source: September 2010 Weekday Productivity Report – Generated 1-8-2011

* Ridership and Productivity Rank: Out of 156 Lines in Total Metrobus System
Ridership and Productivity for 7A, E, F, Y the same as for the 7B, C, D, H, P, X – data from before line split

7A, E, F, Y – Lincolnia – North Fairlington Line Map



7B, C, D, H, P, W, X – Lincolnia – Park Center – Pentagon Line

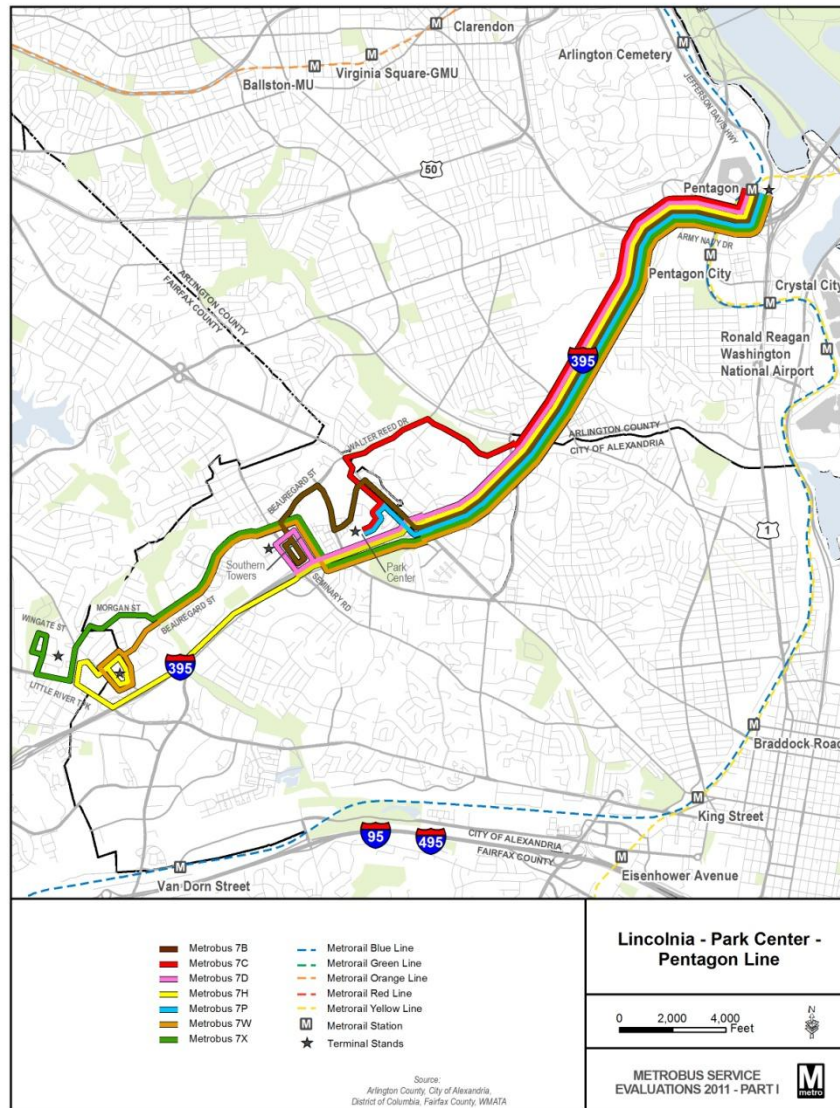
- **Description:** The 7B, C, D, H, P, W, X Line is a radial line running north/south through Alexandria, Fairfax County, and Arlington County, predominantly via the Beauregard Street corridor. All trips terminate at the Pentagon. The line is a companion line to the 7A, E, F, Y line, which also runs in the Beauregard corridor.
- **Service Characteristics**
 - **Days of Service:** Weekdays Only
 - **Weekday Hours of Service:** 6:05 AM – 7:05 PM (peak period service only)
Weekday off-peak service in corridor is provided by 7A, E, F, Y Line
- **Ridership and Productivity***
 - **Daily Weekday Ridership:** 4,646 (rank: 26)
 - **Boardings Per Revenue Mile:** 3.0 (rank: 75)
 - **Cost Recovery:** 32.92% (rank: 52)
 - **Subsidy Per Passenger:** \$2.12 (rank: 48)
 - **Boardings Per Trip:** 22.7 (rank: 96)

Source: September 2010 Weekday Productivity Report – Generated 1-8-2011

* Ridership and Productivity Rank: Out of 156 Lines in Total Metrobus System

Ridership and Productivity for 7A, E, F, Y the same as for the 7B, C, D, H, P, X – data from before line split

7B, C, D, H, P, W, X – Lincolnia – Park Center – Pentagon Line Map



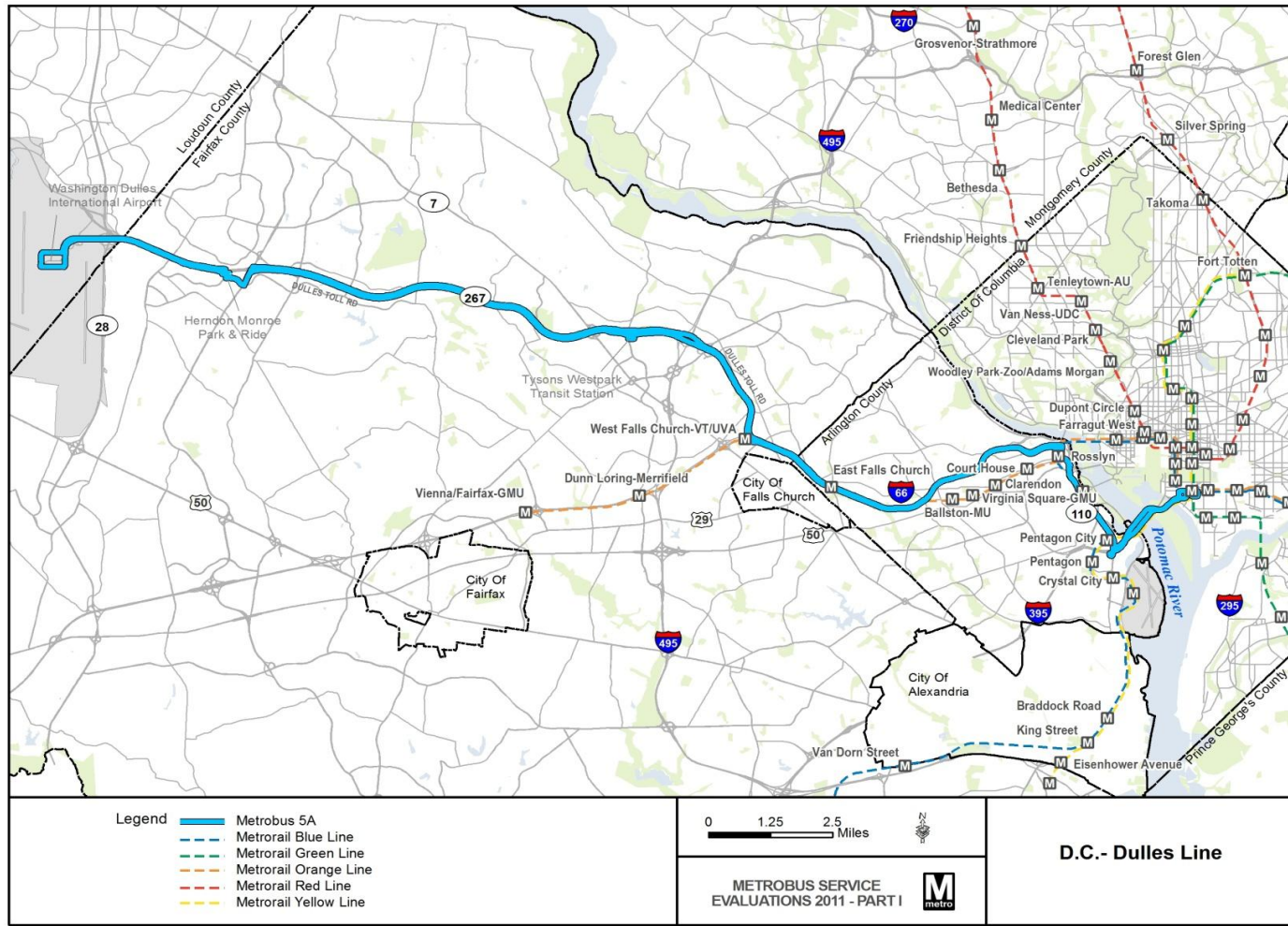
5A – D.C. – Dulles Line

- *Description:* The 5A line is an express service running between downtown Washington DC and Dulles Airport via I-66 and the Dulles International Airport Access Road.
- *Service Characteristics*
 - *Days of Service:* Weekdays, Saturday, Sunday
 - *Weekday Hours of Service:* 4:50 AM – 11:40 PM
- *Ridership and Productivity**
 - *Daily Weekday Ridership:* 1,503 (rank: 81)
 - *Boardings Per Revenue Mile:* .83 (rank: 152)
 - *Cost Recovery:* 105.89% (rank: 1)
 - *Subsidy Per Passenger:* \$-.30 (rank: 1)
 - *Boardings Per Trip:* 25.1 (rank: 79)

Source: September 2010 Weekday Productivity Report – Generated 1-8-2011

* Ridership and Productivity Rank: Out of 156 Lines in Total Metrobus System

5A – D.C. – Dulles Line Map



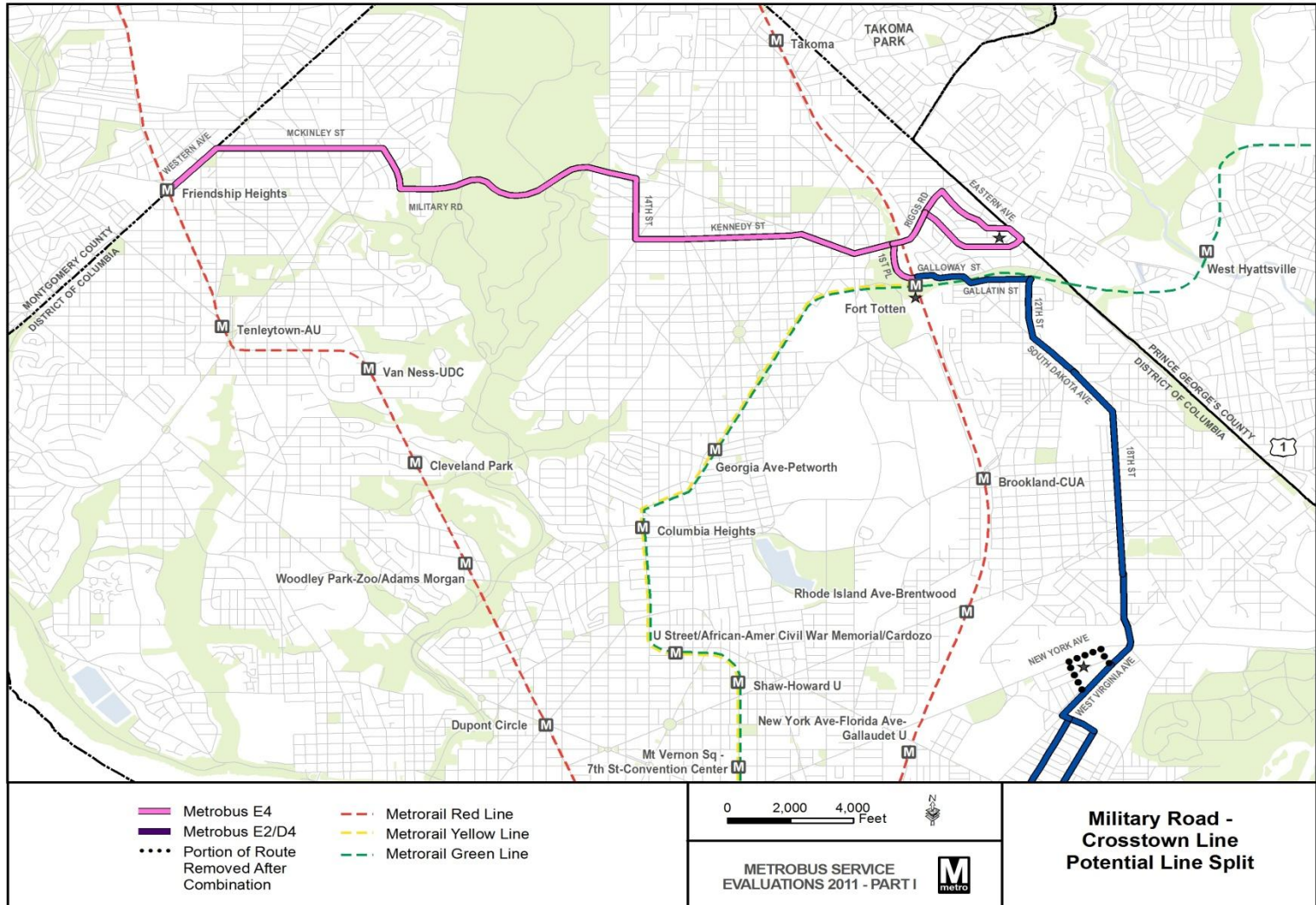
Summary of Recommendations By Line

E2, 3, 4 Line – Service Recommendations

E2, 3, 4 Line - Recommendation #1

- *Recommendation*
 - Spilt E2, 3, 4 Service at Fort Totten
 - Weekday and Weekend E4 service would run between Friendship Heights Metro Station, Fort Totten and Riggs Park (see map – next slide)
 - Weekday and Weekend E2 service would run between Fort Totten and Ivy City and would be combined with the current D4 service. The new E2/D4 would provide direct bus connections from the E2 service area to downtown Washington DC.
- *Recommendation Purpose*
 - Allow for even, clock-face headways west of Fort Totten, where 87% of boardings occur
 - Even distribution of loads – much more cost-effective use of capacity
 - Provide level of service on each portion of the line that is commensurate with ridership demand
 - Increase reliability by shortening line
- *Estimated Annual Operating Cost Associated with Change*
 - \$524,600

E2, 3, 4 Line Split Map



E2, 3, 4 Line – Service Recommendations

E2, 3, 4 Recommendation #2

- *Recommendation*
 - Convert some evening E2 trips to E3 trips in order to provide later service to Riggs Park (Saturday and Sunday evenings)
- *Recommendation Purpose*
 - Service to Riggs Park on Saturday and Sunday Evenings ends earlier than 10:00 PM
 - Hours of service guidelines used to evaluate service on all lines state that trips to an end terminal should not leave beginning terminal earlier than 10:00 PM on weekend evenings
 - Lack of later service inconveniences riders, especially riders who have no travel options other than transit
- *Estimated Annual Operating Cost Associated with Change*
 - No cost impact – additional run time will be addressed through slightly wider headways

Note: this recommendation would be implemented only if the line split (previous recommendation) does not occur

E2, 3, 4 Line – Service Recommendations

E2, 3, 4 Recommendation #3

- *Recommendation*

- Re-route E2 (or E2/D4) trips to serve proposed Walmart at Bladensburg Road and New York Avenue (when Walmart is constructed)
 - See maps on next slide

- *Recommendation Purpose*

- This minor re-route will provide direct access to the proposed Walmart, which will be a major destination for District of Columbia residents

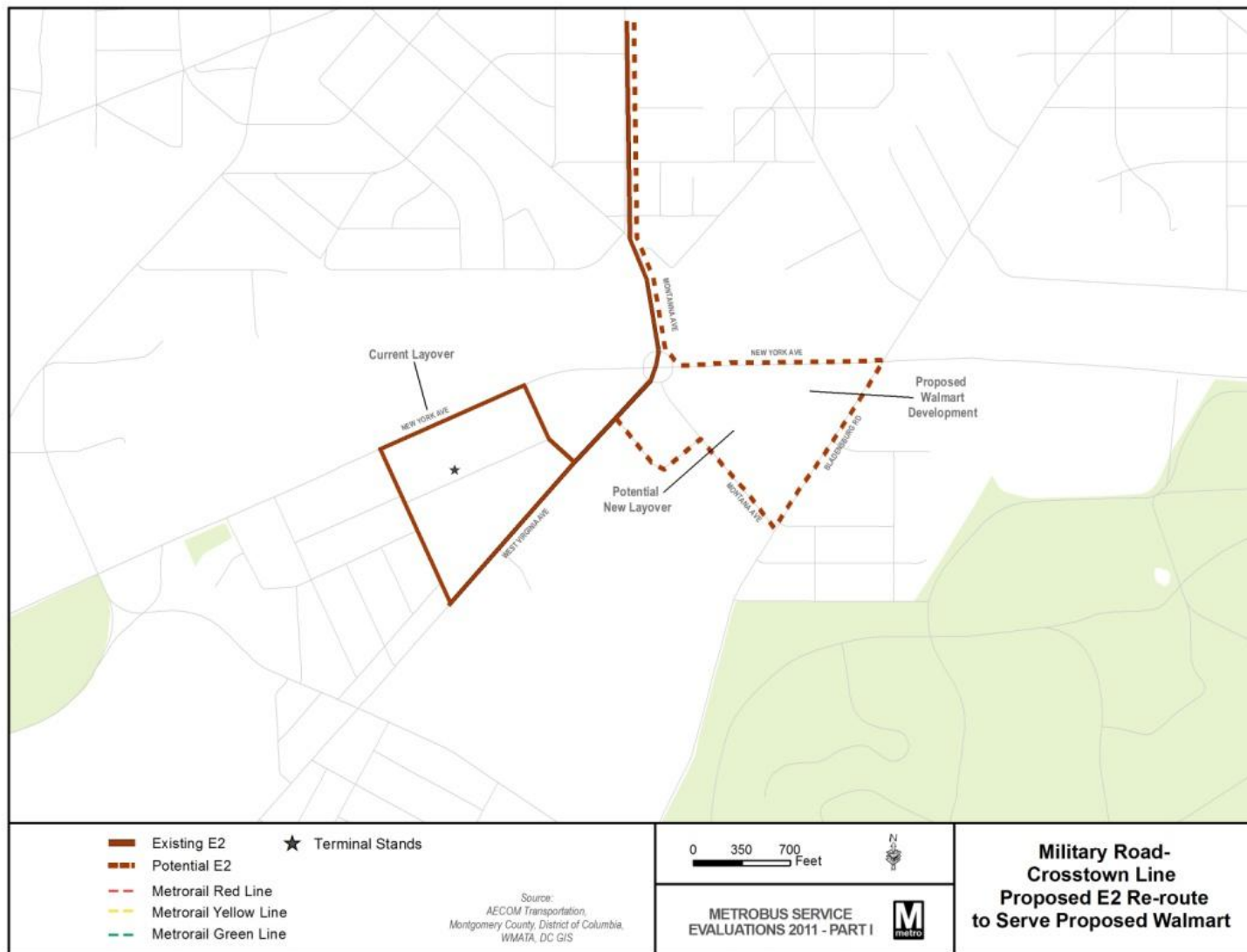
- *Estimated Annual Operating Cost Associated with Change*

- \$81,900 (if line split does not occur)

E2, E2/D4 Reroutes to Proposed Walmart

Proposed Routings

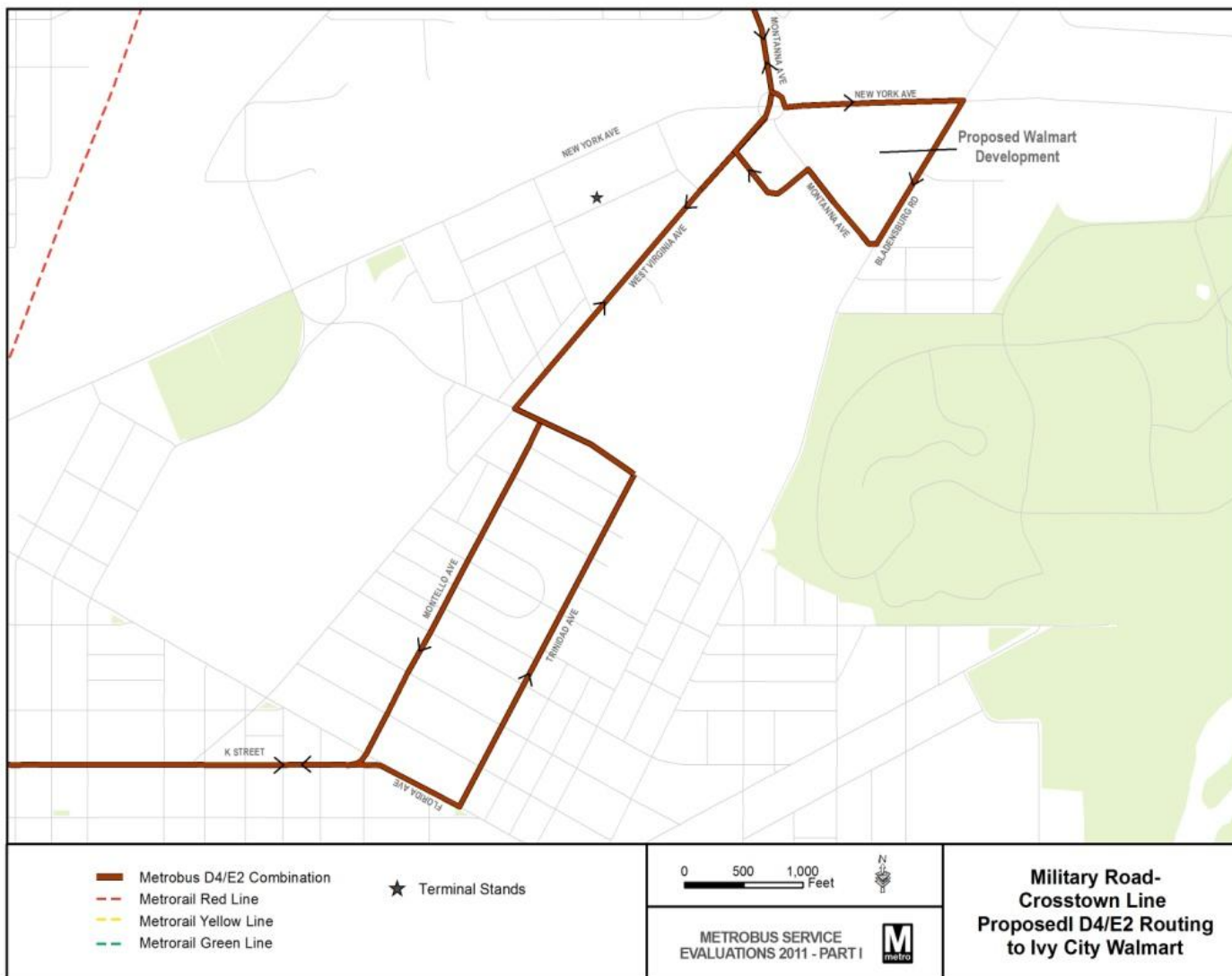
Routing if Combination with D4 Does Not Occur



E2, E2/D4 Reroutes to Proposed Walmart

Proposed Routings

Routing if Combination with D4 Does Occur



E2, 3, 4 Line - Service Recommendations

E2, 3, 4 Recommendation #4

- *Recommendation*

- Modify schedules to compensate for actual run times that exceed scheduled run times*
 - E2 Weekday AM Peak – add 5 minutes to round trip run time – widen headways from 15 to 16 minutes
 - E4 Weekday AM Peak – add 5 minutes to round trip run time – widen headways from 15 to 16 minutes
 - E2 Weekday – Mid-Day – add 10 minutes to round trip – widen headways from 32 to 35 minutes
 - E4 Weekday – Mid-Day – add 8 minutes to round trip run time – widen headways from 32 to 35 minutes
 - E2 Weekday – add 4 minutes to round trip run time – widen headways from 30 minutes to 31 minutes

* Widening headways would be done if resources are not available to add buses into service to provide the same level of service with longer run times. Cost of adding service included at end of recommendation discussion

E2, 3, 4 Line - Service Recommendations

E2, 3, 4 Recommendation #4 (continued)

- *Recommendation*
 - Modify schedules to compensate for actual run times that exceed scheduled run times*
 - E2 Saturday – AM Peak – add 7 minutes to round trip run time – widen headway from 40 to 44 minutes
 - E2 Saturday – Mid-Day – add 7 minutes to round trip run time – widen headway from 40 to 44 minutes
 - E2 Saturday – PM Peak – add 4 minutes to round trip run time – widen headway from 40 – 44 minutes
 - E2 Sunday – Mid-Day – add 8 minutes to round trip run time – widen headway from 40 to 45 minutes
 - E2 Sunday – PM peak – add 10 minutes to round trip run time – widen headway from 40 to 47 minutes

* Widening headways would be done if resources are not available to add buses into service to provide the same level of service with longer run times. Cost of adding service included at end of recommendation discussion

E2, 3, 4 Line - Service Recommendations

E2, 3, 4 Recommendation #4 (continued)

- *Recommendation Purpose*
 - Additional scheduled run time will improve trip reliability and passenger convenience
- *Estimated Annual Operating Cost Associated with Change*
 - \$582,000 (if service is added to maintain service levels with additional run time added – cost represents added service – alternative is widening headways – see previous slides)

E2, 3, 4 Line – Facility Recommendations

E2, 3, 4 Recommendation #5

- *Recommendation*
 - Consolidate Bus Stops - Potential Candidates Identified Based on Distance Between Stops Analysis and WMATA Distance Between Stops Guidelines
 - Listed Below by Direction

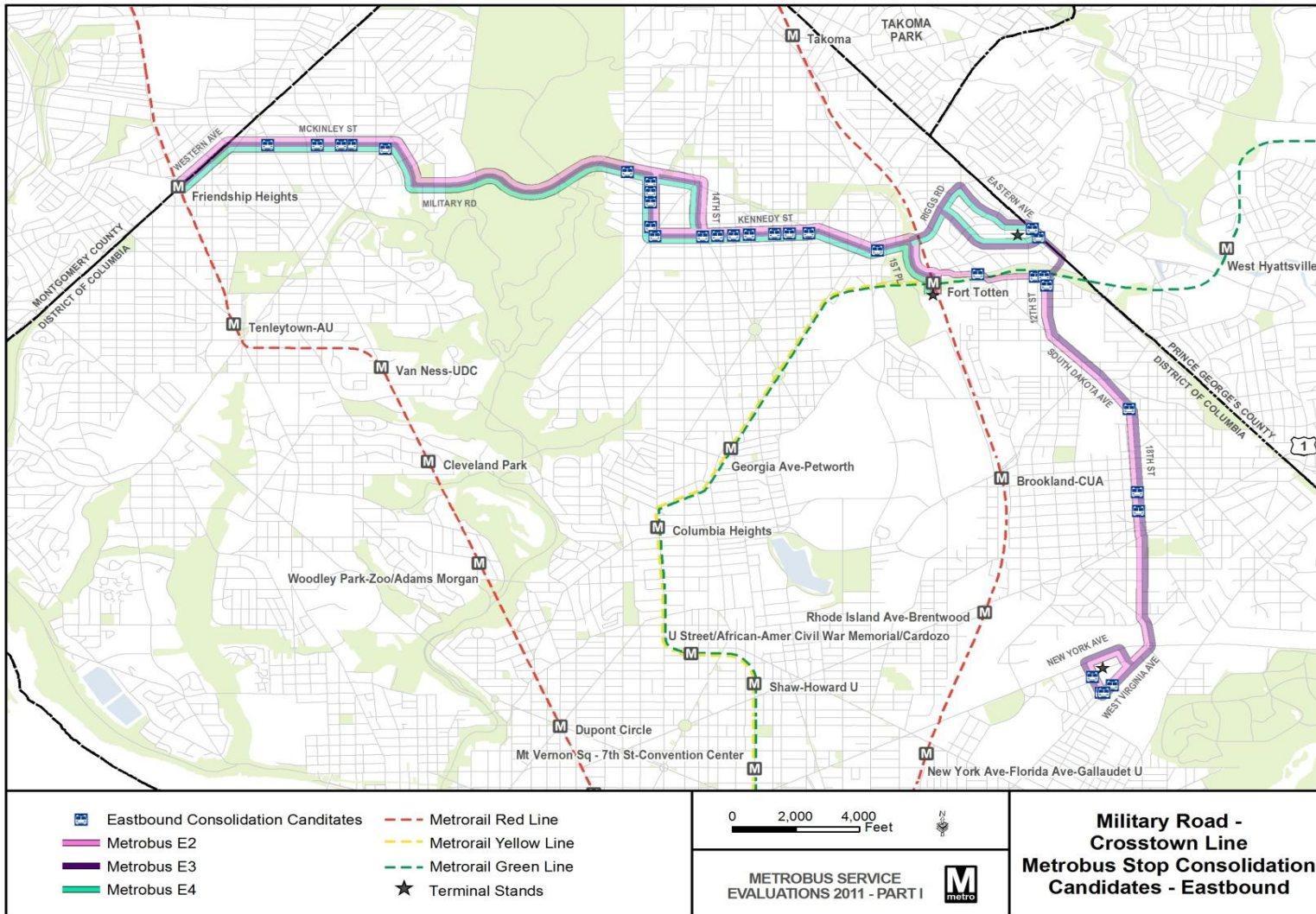
E2, 3, 4 Line – Facility Recommendations

Recommendation # 5 (cont.) - Eastbound Stop Consolidation Candidates

McKinley & Connecticut (NS)	Kennedy Street & Georgia Avenue	Gallatin & Sargent Road
McKinley & Nevada	Kennedy Street & 9th Street	Sargent Road & Farragut Place
McKinley & Broad Branch	Kennedy Street & 8th Street	South Dakota Avenue & 18th Street
McKinley & 33rd Street	Kennedy & 7th Street	18th Street & Lawrence Street
McKinley & 32nd Street	Kennedy & 5th Street	18th Street & Jackson Street
30th Place & Nebraska Avenue	Kennedy & 4th Street	West Virginia & 15th Street
Missouri & 16th Street (FS)	Kennedy & 3rd Street	West Virginia & Fenwick
14th Street & Missouri	Riggs Road & North Capitol Street	Fenwick & West Virginia
14th Street & Nicholson Street	Chillum & Eastern Avenue	Fenwick & Okie Street
14th Street & Montague	Eastern Avenue & Jamaica	Fenwick & New York Avenue
14th Street & Longfellow	Galloway & South Dakota	
Kennedy Street & 14th Street	Gallatin & 12th Street	

E2, 3, 4 Line – Facility Recommendations

Recommendation # 5 (cont.) - Eastbound Stop Consolidation Candidates



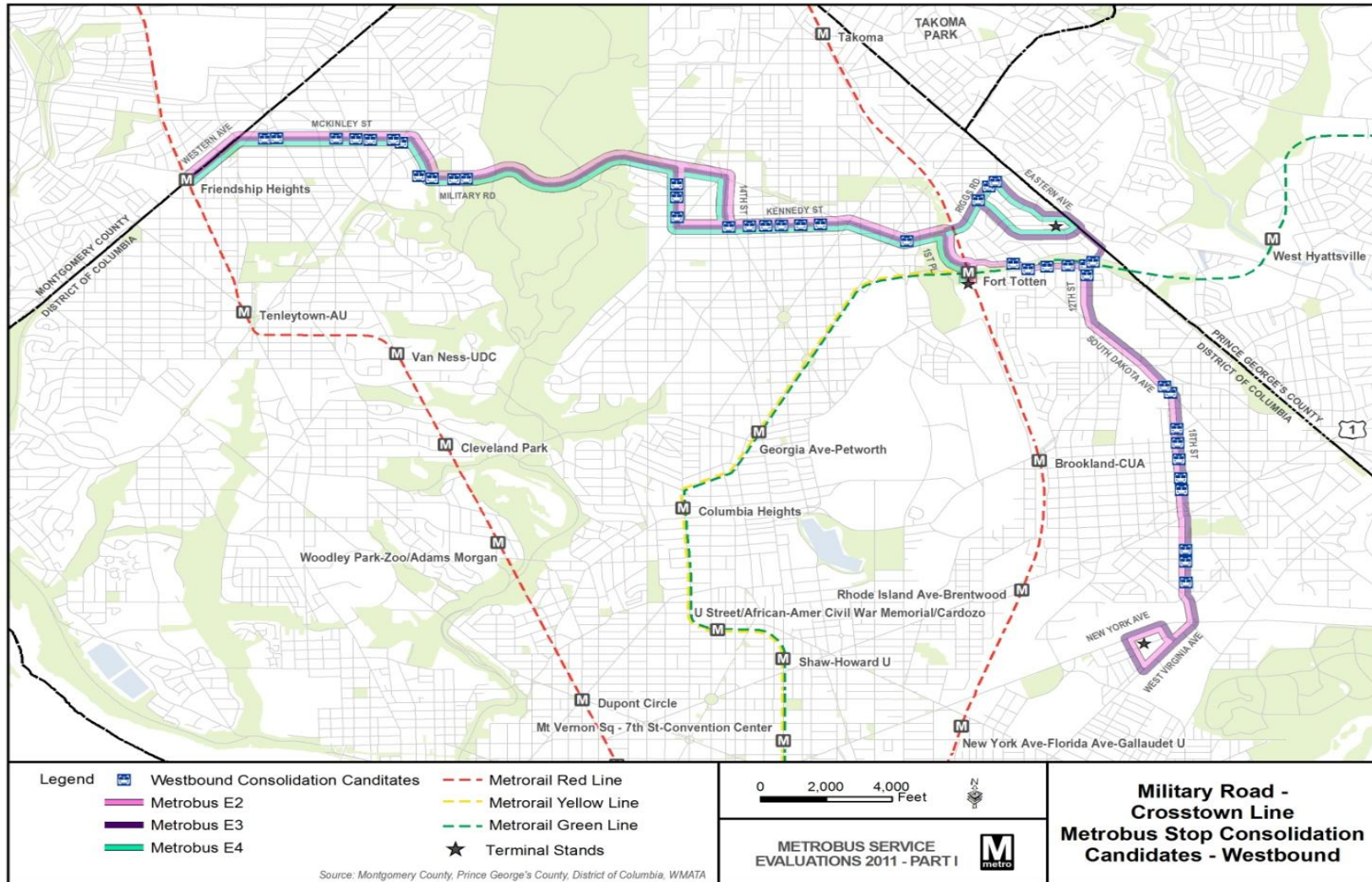
E2, 3, 4 Line – Facility Recommendations

Recommendation # 5 (cont.) – Westbound Stop Consolidation Candidates

18th Street & Bryant Street	Gallatin Street & 8th Street	14th Street & Nicholson
18th Street & Douglas Street	Gallatin Street & South Dakota	Military Road & 27th Street
18th Street & Evarts Street	Galloway Street & South Dakota	Military Road & 28th Street
18th Street & Jackson street	Riggs Road & Nicholson Street	Military Road & 30th Place
18th Street & Lawrence Street	Riggs Road & Chillum Place	30th Place & Military Road
18th Street & Monroe Street	Riggs Road and North Capitol	30th Place & Nebraska
18th Street & Otis Street	Kennedy Street & 4th Street	McKinley & 32nd Street
18th & Perry Street	Kennedy Street & 5th Street	McKinley & 33rd Street
South Dakota & 18th street	Kennedy Street & 7th Street	McKinley & Broad Branch
South Dakota & Taylor Street	Kennedy Street & 8th Street	McKinley & Nevada
Sargent Road & Farragut Place	Kennedy Street & 9th Street	McKinley & Connecticut (FS)
Sargent Road & Gallatin Street	Kennedy Street & Georgia Ave	McKinley & 39th Street
Gallatin Street & Sargent Road	14th Street & Longfellow	
Gallatin Street & 11th Street	14th Street & Montague	

E2, 3, 4 Line – Facility Recommendations

Recommendation # 5 (cont.) - Eastbound Stop Consolidation Candidates



E2, 3, 4 Line – Facility Recommendations

E2, 3, 4 Recommendation #5 (cont.)

- *Recommendation Purpose*
 - Stops that are too close together lead to slower trip times, which in turn lead to passenger inconvenience, reliability issues, and in certain cases, higher operating costs.
- *Estimated Capital Cost Associated with Change*
 - Costs cannot be calculated until specific stops to be consolidated are identified

E2, 3, 4 Line – Facility Recommendations

E2, 3, 4 Recommendation #6

- *Recommendation*
 - Improve amenities at bus stops (listed below)
 - Analysis identified candidates for additional amenities based on WMATA Bus Stop Amenity Hierarchy (see map following tables)
 - Stops and Amenities Proposed

Stop	Proposed Amenity
South Dakota Ave. & Michigan Ave. (WB)	Information Case
Sargent Rd. & Farragut Place (WB)	Information Case
Sargent Rd. & Gallatin Street (WB)	Information Case
14 th Street & Missouri Ave. (WB)	Information Case
14 th Street & Missouri Ave. (EB)	Information Case
14 th Street & Nicholson Street (EB)	Information Case

E2, 3, 4 Line – Facility Recommendations

E2, 3, 4 Recommendation #6 (cont.)

Stop	Proposed Amenity
South Dakota Ave. & Michigan Ave. (WB)	Information Case
Sargent Rd. & Farragut Place (WB)	Information Case
Sargent Rd. & Gallatin Street (WB)	Information Case
14 th Street & Missouri Ave. (WB)	Information Case
14 th Street & Missouri Ave. (EB)	Information Case
14 th Street & Nicholson Street (EB)	Information Case
Kennedy Street & 4 th Street (EB)	Information Case
Riggs Rd. & Rock Creek Park Church Rd. (EB)	Information Case
Gallatin Street & Sargent Road (EB)	Information Case
West Virginia Ave. & Montana Ave. (EB)	Information Case
West Virginia Ave. & 16 th Street (EB)	Information Case
Fenwick & Okie Street (EB)	Information Case

E2, 3, 4 Line – Facility Recommendations

E2, 3, 4 Recommendation #6 (cont.)

Stop	Proposed Amenities
18 th St. & Hamlin Street (WB)	Shelter with Bench
Eastern Ave. & Jamaica (WB)	Shelter with Bench, Trash Receptacle
Nicholson Street & 6 th Street (WB)	Trash Receptacles
Nicholson Street & Riggs Rd. (WB)	Shelter with Bench
First Place & Riggs Rd. (WB)	Trash Receptacles
Kennedy St. & 4 th St. (WB)	Shelter with Bench
Kennedy St. & 8 th St. (WB)	Shelter with Bench
Kennedy St. & 9 th St. (WB)	Shelter with Bench
Kennedy St. & Georgia Ave. (WB)	Shelter with Bench
14 th St. & Missouri Ave. (WB)	Shelter with Bench
30 th Place & Nebraska (WB)	Trash Receptacle
McKinley St. & Connecticut (WB)	Shelter with Bench

E2, 3, 4 Line – Facility Recommendations

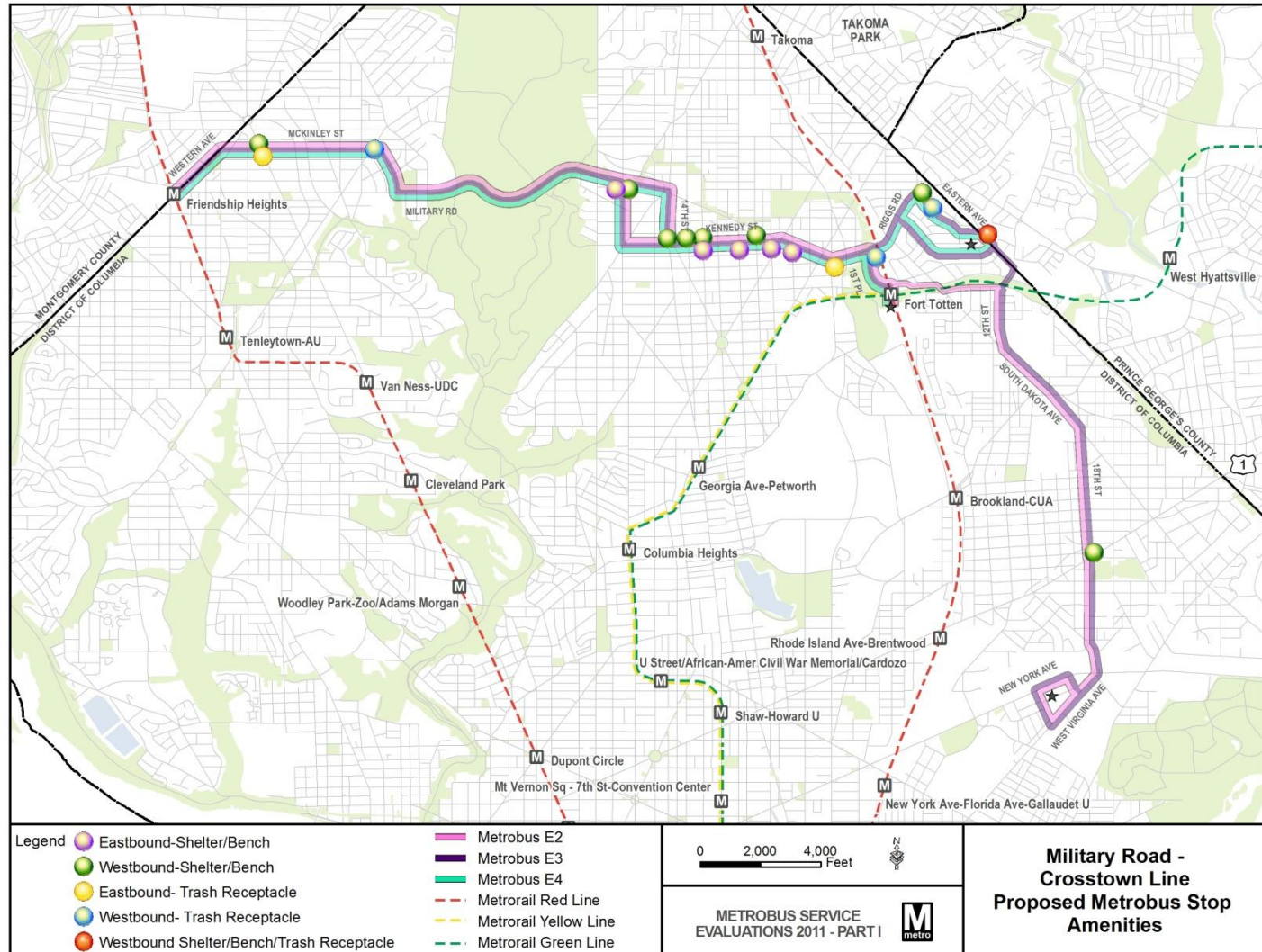
E2, 3, 4 Recommendation #6 (cont.)

Stop	Proposed Amenities
McKinley & Connecticut (FS) (EB)	Trash Receptacle
14 th St. & Missouri (EB)	Shelter with Bench
Kennedy St. & 8 th Street (EB)	Shelter with Bench
Kennedy St. & 5 th St. (EB)	Shelter with Bench
Kennedy St. & 3 rd St. (EB)	Shelter with Bench
Missouri & 2 nd (EB)	Shelter with Bench
Riggs Road & North Capitol (EB)	Trash Receptacle

E2, 3, 4 Line – Facility Recommendations

E2, 3, 4 Recommendation # 6 (cont.)

Proposed Amenities



E2, 3, 4 Line – Facility Recommendations

E2, 3, 4 Recommendation #6 (cont.)

- *Recommendation Purpose*
 - Stops are the gateway to the transit system for bus passengers. Installing amenities based on the guidance of the Bus Stop Guidelines improves the passenger experience and provides a positive image for the system
- *Estimated Capital Cost Associated with Change*
 - \$148,400 for full program of improvements

E2, 3, 4 Line Traffic Improvement Issues and Recommendations

E2, 3, 4 Recommendation #7

- *Recommendation*

- Implement multiple traffic related recommendations to improve E2, 3, 4 operations and reliability
- Issues and Recommendations (summary map follows descriptions)
 - The very narrow McKinley Street and the fact that parking is allowed on both sides of the street means only one vehicle can pass when two opposing vehicles are approaching each other. *Proposal is to restrict parking on one side of the street at all times of the day.*
 - Turning radius for traffic on westbound Military Road turning onto 30th Place is very tight, especially when a vehicle is present on the southbound approach of 30th Place. *Proposal is to improve turning radius through physical improvements to the intersection.*
 - The signal timing along Kennedy Street is not optimized, providing too much time for side streets relative to side street volumes. This creates delays for buses along Kennedy Street. *Proposal is to conduct turning movement/pedestrian counts and optimize cycle length/splits based on demand of all traffic movements (mainline and side streets) along Kennedy between 5th Street and 13th Streets.*
 - Poor signal coordination along Missouri Avenue between New Hampshire Avenue and North Capitol Street creates delays for buses in both directions. *Proposal is to evaluate signal coordination/progression between traffic signals at New Hampshire Avenue and North Capitol, along Missouri Avenue*

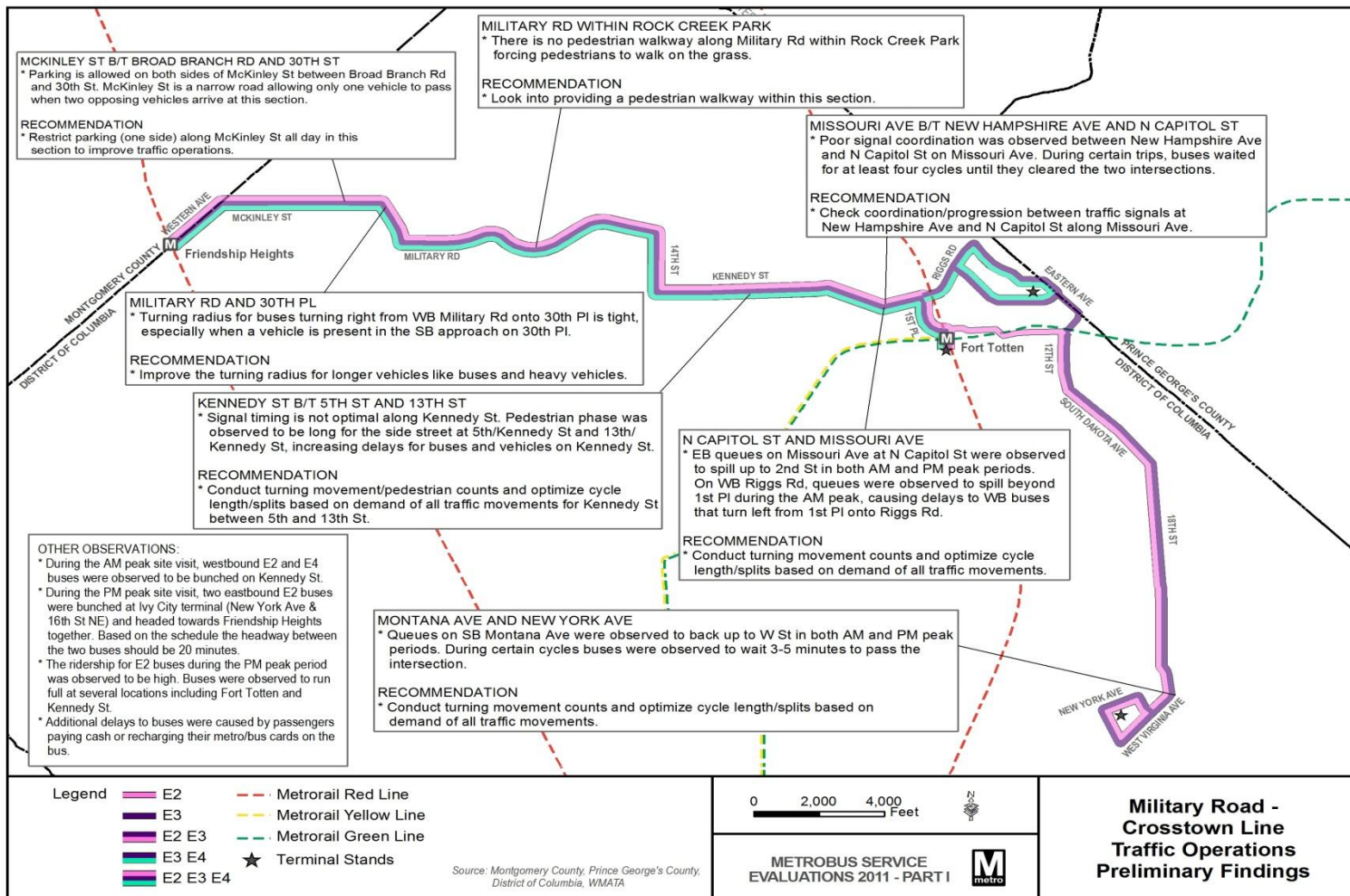
E2, 3, 4 Line Traffic Improvement Issues and Recommendations

E2, 3, 4 Recommendation # 7 (cont.)

- In addition to the poor signal progression outlined in the previous bullet, there are excessive queues in both directions at the intersection of Missouri Avenue and North Capitol Street. Queues were sufficiently long that they spilled back into the upstream intersection in both directions. *The proposal is to conduct turning movement counts and optimize cycle lengths/splits based on the demand of all traffic movements.*
- Queues on southbound Montana Avenue at New York Avenue were observed to back up to W Street in both the AM and PM peak, blocking buses trying to get through the intersection. *Proposal is to conduct turning movement counts and optimize cycle length/splits based on demand of traffic movements from each leg of the intersection.*
- Buses making the right turn from Gallatin Street to Sargent Road in the eastbound direction must swing wide through the intersection in order to get through the tight radius turn. *The proposal here is to move the stop bar back on northbound Sargent Road so that there is not a conflict between the eastbound bus and stopped northbound cars.*
- *Recommendation Purpose*
 - Poor traffic operations lead to slower trip times and service reliability issues, both major impediments to passenger convenience
- *Estimated Capital Cost Associated with Change*
 - Costs can be identified once proposed additional traffic analysis is completed

E2, 3, 4 Line – Traffic Improvement Issues and Recommendations

E2, 3, 4 Recommendation # 7 (cont.) – Traffic Issues and Recommendations Map



E6 Line – Facility Recommendations

E6 Recommendation # 1

- *Recommendation*

- Consolidate Bus Stops - Potential Candidates Identified Based on Distance Between Stops Analysis and WMATA Distance Between Stops Guidelines
 - Listed Below by Direction

Westbound Consolidation Candidates

Western & Beech	Broad Branch & Rittenhouse
Western & Aberfoyle	Broad Branch & Quesada
Western & Arcadia	McKinley & Nevada
Western & Tennyson	McKinley & Connecticut (fs)

E6 Line – Facility Recommendations

E6 Recommendation # 1 (cont.)

Eastbound Consolidation Candidates

McKinley & Connecticut (ns)	Western & Beech
McKinley & Connecticut (fs)	Western & Pinehurst
McKinley & Nevada	Western & 33 rd
Broad Branch & Oliver	Western & Greenvale
Broad Branch & Quesada	Western & 32 nd
Western & Tennyson	Oregon & Chestnut
Western & Arcadia	Oregon & Birch
Western & Aberfoyle	

E6 Line – Facility Recommendations

E6 Recommendation #1 (cont.)

- *Recommendation Purpose*
 - Stops that are too close together lead to slower trip times, which in turn lead to passenger inconvenience, reliability issues, and in certain cases, higher operating costs.
- *Estimated Capital Cost Associated with Change*
 - Costs cannot be calculated until specific stops to be consolidated are identified

E6 Line – Facility Recommendations

E6 Recommendation #2

- *Recommendation*

- Improve amenities at bus stops based on WMATA Bus Stop Guidelines
 - Analysis identified candidates for additional amenities based on WMATA Bus Stop Amenity Hierarchy

Stop	Proposed Amenity
Broad Branch & Quesada (EB)	Information Case
Oregon & Beech Street (EB)	Information Case
Knollwood Main Entrance (EB/WB)	Information Case
Knollwood & Greene Circle (EB/WB)	Information Case

E6 Line – Facility Recommendations

E6 Recommendation #2 (cont.)

Stop	Proposed Amenity
7000 Oregon (EB)	Sidewalk/Landing Pad
Oregon & Daniel (EB)	Sidewalk/Landing Pad
Oregon & Chestnut (EB)	Sidewalk/Landing Pad
Oregon & Birch (EB)	Sidewalk/Landing Pad
Oregon & Beech (EB)	Sidewalk/Landing Pad
Oregon & Unicorn (EB)	Sidewalk/Landing Pad
Chestnut & 32 nd (WB)	Sidewalk/Landing Pad
Chestnut & 33 rd (WB)	Sidewalk/Landing Pad
Western & Aberfoyle (WB)	Sidewalk/Landing Pad
Knollwood Retirement Home (EB/WB)	Trash Receptacle
Broad Branch & Western (WB)	Trash Receptacle

E6 Line – Facility Recommendations

E6 Recommendation #2 (cont.)

- *Recommendation Purpose*
 - Stops are the gateway to the transit system for bus passengers. Installing amenities based on the guidance of the Bus Stop Guidelines improves the passenger experience and provides a positive image for the system
- *Estimated Capital Cost Associated with Change*
 - \$16,300 for full program of improvements

87, 88 and 89, 89M Service Recommendations

87, 88, 89, 89M Recommendation #1

- *Recommendation*
 - Expand evening hours of service on the 87 Route and the 89 Routes, in both directions (short-term implementation – prior to long-term restructuring)
- *Recommendation Purpose*
 - Hours of Service Guidelines used to evaluate each line in the study state that the final trip of the evening on suburban radial routes should not leave prior to 8:00 PM
 - Final trips on both routes, in both directions, leave at least 45 minutes prior to 8:00 PM
 - Additional evening trips will improve passenger convenience and flexibility and will support use of transit for multiple trip purposes
- *Estimated Annual Operating Cost Associated with Change*
 - \$77,700

87, 88 and 89, 89M Service Recommendations

87, 88, 89, 89M Recommendation #2

- *Recommendation*
 - Improve 89 Route Headways to 30 Minutes in Peak Periods (short-term implementation – prior to long-term restructuring)
- *Recommendation Purpose*
 - Service Frequency Guidelines used to evaluate each line the study state that peak period service on suburban radial routes should not be greater than 30 minutes
 - Peak period headways vary between 41 and 51 minutes in the PM peak northbound direction (peak direction) and 35 and 65 minutes in the AM peak southbound direction (peak direction)
 - More frequent service improves passenger convenience and may attract additional ridership
- *Estimated Annual Operating Cost Associated with Change*
 - \$218,600

87, 88 and 89, 89M Service Recommendations

87, 88, 89, 89M Recommendation #3

- *Recommendation*
 - Implement Saturday and Sunday Service
- *Recommendation Purpose*
 - There is a significant service void in Laurel and on the Route 1 corridor north of the Washington Beltway. This recommendation would fill this transit void and provide greater trip options in the Route 1 corridor, especially for persons without automobiles.
- *Estimated Annual Operating Cost Associated with Change*
 - \$340,400

87, 88 and 89, 89M Service Recommendations

87, 88, 89, 89M Recommendation #4

- *Recommendation*

- Modify schedules to compensate for actual run times that exceed scheduled run times
 - 89M Service – Mid-Day – add 7 minutes to round trip run time - widen headways from 60 minutes to 63 minutes

- *Recommendation Purpose*

- Additional scheduled run time will improve trip reliability and passenger convenience

- *Estimated Annual Operating Cost Associated with Change*

- Additional bus not proposed to address additional run time requirement – issue would be addressed through marginally wider headway
 - No additional cost

87, 88 and 89, 89M Service Recommendations

87, 88, 89, 89M Recommendation #5

- *Recommendation*
 - Complete a Restructuring of the 87, 88 and 89, 89M Lines (longer term implementation)
 - Combine route into one single bi-directional route running between College Park Metrorail Station and the Greenbelt Metrorail Station (see map at end of this recommendation section)
 - Northbound and southbound 89, 89M trips would no longer enter Greenbelt Metro Station via Sunnyside Avenue.
 - » Trips would stay on Route 1 to College Park Metrorail Station
 - Northbound and southbound trips on 197 would enter Greenbelt Metro Station via local streets rather than the Baltimore-Washington Parkway (current 87 routing)
 - Local collector/distributor role in Laurel would be removed. Service in this area would be provided by Central Maryland Regional Transit (current provider in area)

87, 88 and 89, 89M Service Recommendations

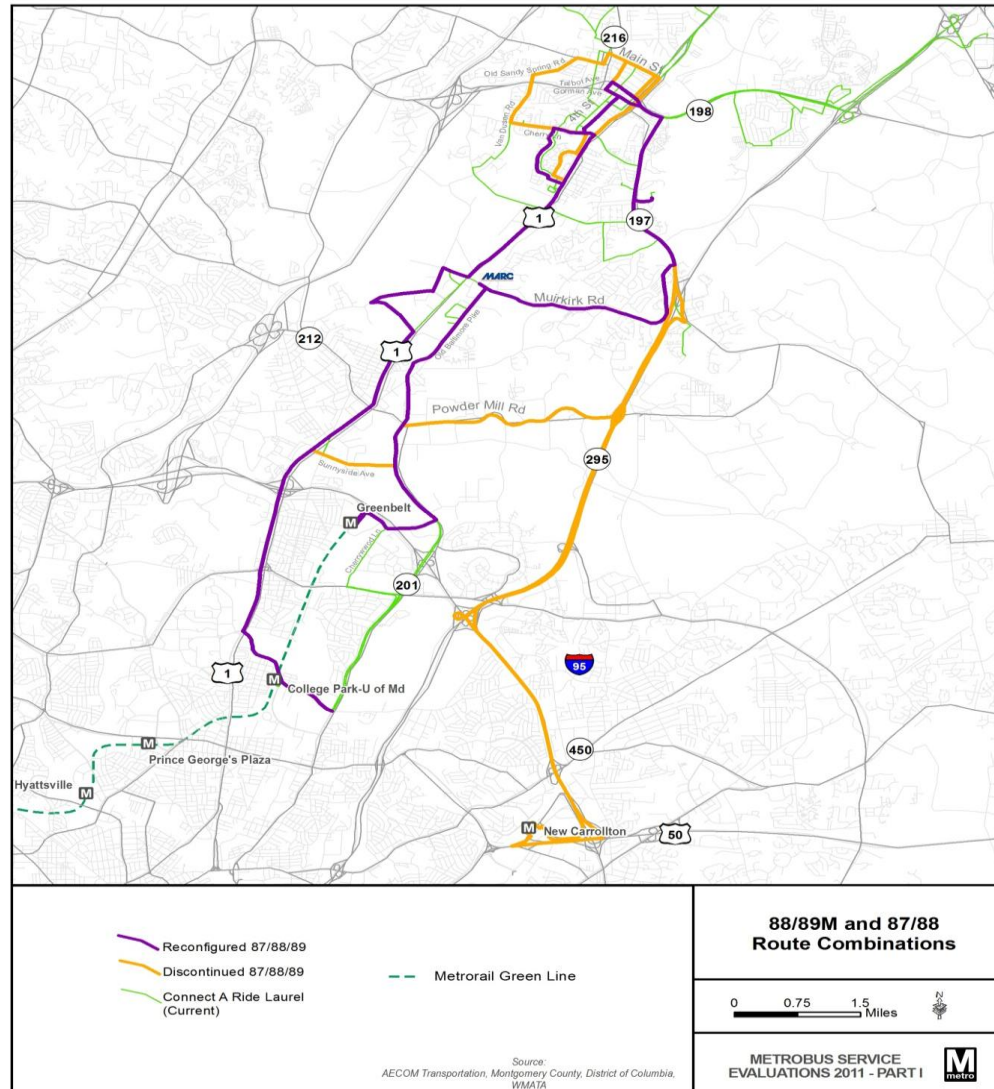
87, 88, 89, 89M Recommendation #5 (cont.)

- *Recommendation Purpose*
 - Provide stronger connections between Laurel and College Park
 - Strengthen lines to better provide line haul service along Route 1, the primary purpose of WMATA service
- *Estimated Annual Operating Cost Associated with Change*
 - \$483,100

Note: There was very strong public opposition to this proposal during the project public outreach. Public meeting participants have been assured that their concerns will be considered and addressed as implementation moves forward

87, 88 and 89, 89M Restructuring Map

87, 88, 89, 89M
Recommendation #5 (cont.)



87, 88 and 89, 89M Facility Recommendations

87, 88, 89, 89M Recommendation #6

- *Recommendation*

- Improve amenities at bus stops based on WMATA Bus Stop Guidelines
 - Analysis identified candidates for additional amenities based on WMATA Bus Stop Amenity Hierarchy
 - Amenities proposed:

Stop	Proposed Amenity
Sandy Spring Rd. & Montgomery St. (NB)	Bus Stop Flag
Cherry Lane & 4 th Street (SB)	Trash Receptacle
Route 197 & Route 198 (SB)	Trash Receptacle
Route 197 & Contee Road (SB)	Trash Receptacle

87, 88 and 89, 89M Facility Recommendations

87, 88, 89, 89M Recommendation #6 – cont. – Install Bus Stop ADA Pads – 89, 89M Line

Baltimore Avenue & Lincoln Avenue (NB)	Sandy Spring Road & Westview Terrace (SB)
Baltimore Avenue & Maryland National Memorial Park (NB)	Van Dusen Road & Laurel Oaks Lane
Baltimore Avenue & Contee Road (NB)	Baltimore Avenue & Maryland National Memorial Park (SB)
Baltimore Avenue & Cypress Street (NB)	Ammendale Road & Baltimore Avenue (SB)
Van Dusen Road & Erica Lane (NB and SB)	Baltimore Avenue & Garrett Avenue (SB)
Route 197 & Briarwood Drive (SB)	Baltimore Avenue & Powder Mill Road (SB)
#14333 Route 197 (SB)	Baltimore Avenue & Sellman Road (SB)
Route 197 & Cherry Lane (SB)	Baltimore Avenue & Rhode Island Avenue (SB)
Route 197 & Bowie Road (SB)	5320 Sunnyside Avenue (SB)
Route 197 & Greenview Drive (SB)	Ivy Lane & Kenilworth Avenue (SB)
Route 197 & Morris Drive (SB)	

87, 88 and 89, 89M Facility Recommendations

87, 88, 89, 89M Recommendation #6 – cont. – Install Bus Stop ADA Pads – 87, 88 Line

Building #161 – Powder Mill Road (NB)	Route 197 & Briarwood Drive (NB)	Powder Mill Road & Log Lodge Road (SB)
Powder Mill Road & Animal Husbandry Road (NB)	14333 Route 197 (NB)	Building #426 – Powder Mill Road (SB)
Powder Mill Road & Log Lodge Road (NB)	Route 197 & Cherry Lane (NB)	
Building #426 – Powder Mill Road (NB)	Route 197 & Route 198 (NB)	
Corporate Drive & New Carrollton Station (NB)	Route 197 & Greenview Drive (NB)	
Route 197 & Snowden Road (NB)	Route 197 & Morris Drive (NB)	
Route 197 & Mallard Drive (NB)	Sandy Spring Road & Montgomery Street (NB)	
Route 197 & Muirkirk Road (NB)	Sandy Spring Road & Westview Terrace (NB)	
Route 197 & Brock Bridge Road (NB)	Sandy Spring Road & Westview Terrace (SB)	
Route 197 & Contee Road (NB)	Building #161 – Powder Mill Road (SB)	
Route 197 & Snowhill Estates Lane (NB)	Powder Mill Road & Animal Husbandry Road (SB)	

87, 88 and 89, 89M Facility Recommendations

87, 88, 89, 89M Recommendation #6 (cont.)

- Additional Amenities Proposed
 - 186 information cases
 - 170 benches
- *Recommendation Purpose*
 - Stops are the gateway to the transit system for bus passengers. Installing amenities based on the guidance of the Bus Stop Guidelines improves the passenger experience and provides a positive image for the system
- *Estimated Capital Cost Associated with Change*
 - \$361,300 for full program of improvements

87, 88 and 89, 89M Traffic Issues and Recommendations

87, 88, 89, 89M Recommendation #7

- *Recommendation*

- Implement multiple traffic related recommendations to improve 87, 88, 89, 89M operations and reliability
- Issues and Recommendations (summary map follows descriptions)
 - The turn from Main Street to 7th Street in Laurel is cumbersome due to cars parked too close to the intersection. *Work with City of Laurel to evaluate potential to remove parking to make this turn easier.*
 - There is a bottleneck along U.S. Route 1 between Contee and Cypress Street. *This recommendation is to complete a detailed analysis of the signal timing along this portion of U.S. 1 to see if an optimization can occur that would benefit through movements along U.S. 1 (including buses).*
 - Bus Stop at Virginia Manor Road and Ritz Way – The location of this bus stop provides drivers only a short time to get across two lanes of traffic in order to make a left turn. *This recommendation is to evaluate the potential to move the bus stop further back to give drivers more time to get over to make the left turn.*

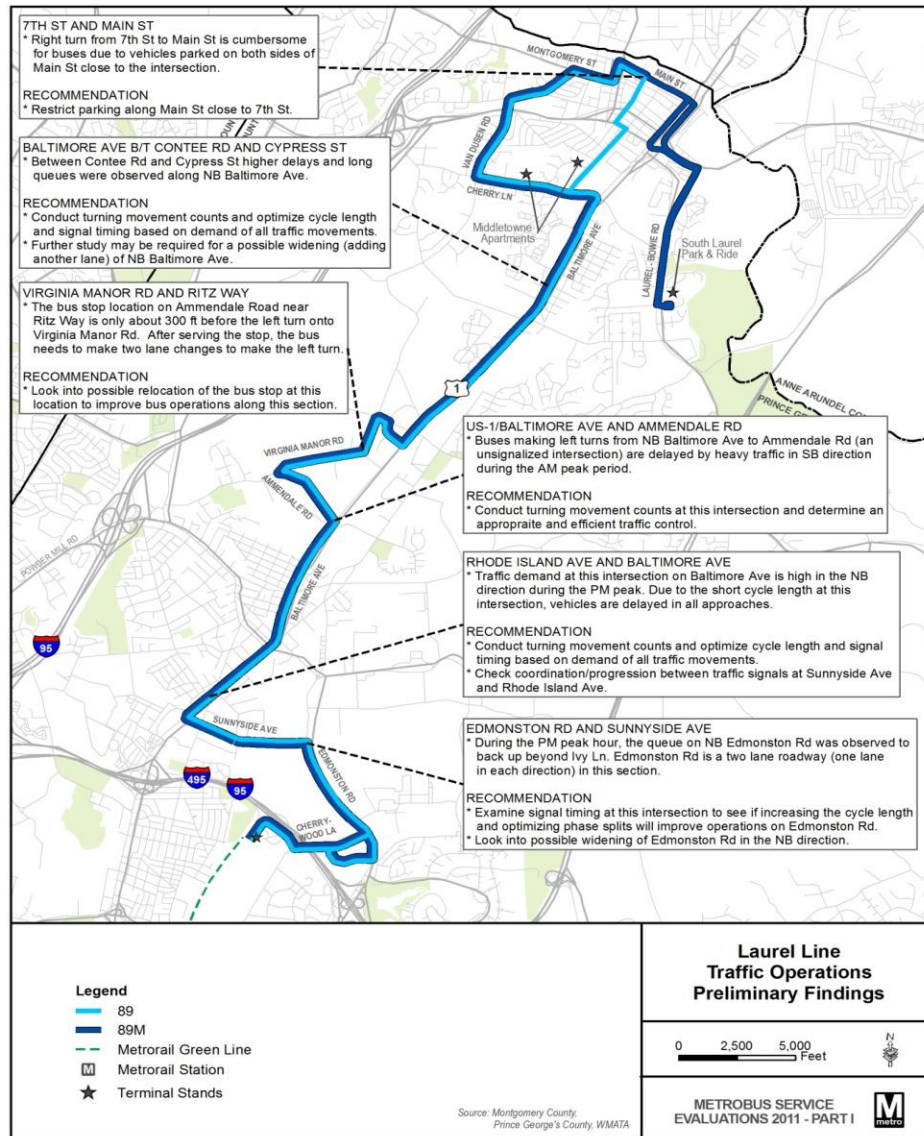
87, 88 and 89, 89M Traffic Issues and Recommendations

87, 88, 89, 89M Recommendation #7 (cont.)

- The left turn from northbound U.S. 1 onto Ammendale Road is not protected by a signal. Instead buses must get across southbound U.S. 1 during breaks in traffic, something that can be very difficult in the AM peak when there are heavy southbound movements. *This recommendation is to complete a warrant analysis to evaluate the feasibility of adding a left turn signal at this point.*
- The traffic signal at Rhode Island Avenue and U.S. 1 has a short cycle length that requires northbound traffic, including buses, to sit through multiple cycles, resulting in delays. *This recommendation is to conduct an optimization study of the signal to see if improvements can be made. This would include evaluating coordination between signals at Sunnyside and Rhode Island to determine if better synchronization can be achieved.*
- The queue on northbound Edmonston Avenue in the PM peak at the intersection with Sunnyside Avenue queues back to Ivy Lane. *The first recommendation is to evaluate the feasibility of increasing the cycle length and optimizing the splits between the legs of the intersection. The second recommendation is to look into the feasibility of widening Edmonston Avenue in the northbound direction.*
- *Recommendation Purpose*
 - Poor traffic operations lead to slower trip times and service reliability issues, both major impediments to passenger convenience
- *Estimated Capital Cost Associated with Change*
 - Costs can be identified once proposed additional traffic analysis is completed

87, 88 and 89, 89M – Traffic Issues and Recommendations

87, 88, 89, 89M Recommendation #7 (cont.)



B30 Line – Service Recommendations

B30 Recommendation #1

- *Recommendation*
 - Add an additional morning northbound trip on Saturday and Sunday
- *Recommendation Purpose*
 - The additional morning trip would result in greater convenience for riders using the B30 to get to BWI Airport, especially those with early flights
 - The additional trip would also allow B30 service to meet the first outbound Green Line train on Saturday and Sunday morning
 - First outbound Green Line train arrives at Greenbelt at 7:47 AM
 - First B30 trip would be at 8:00 AM
- *Estimated Annual Operating Cost Associated with Change*
 - \$9,600

B30 Line – Service Recommendations

B30 Recommendation #2

- *Recommendation*
 - Improve headways from 40 minutes to 30 minutes
 - Short Term – Improved headways during weekday peak periods only
 - Long Term – Improved headways during all days and times of service
- *Recommendation Purpose*
 - This change in headways would improve passenger convenience by providing more trips per day and thus more travel choices.
 - This change would also result in the B30 meeting service frequency guidelines
- *Estimated Annual Operating Cost Associated with Change*
 - Peak Period Only - \$2.0 million
 - All Days and Hours - \$2.4 million

Note: this recommendation relates to passenger convenience only; additional capacity to meet passenger demand is not required – no consistent crowding issues exist on the Line

B30 Line – Service Recommendations

B30 Recommendation #3

- *Recommendation*

- Evaluate feasibility of formalizing schedule for additional trips at holiday time
 - Currently additional capacity at holiday time is provided by assigning the strategic bus, which is assigned to support all routes in northern Prince George's County, to the B30
 - Utilization on the B30 at holiday time means the strategic bus is not available to address issues on other lines

- *Recommendation Purpose*

- This change would provide supplemental holiday service through a formal supplemental schedule as opposed to the informal process utilized today
 - Ensures needed capacity is provided on the B30 Line
 - Ensures that the strategic bus is available to address issues on lines other the B30.

- *Estimated Annual Operating Cost Associated with Change*

- Actual service structure not yet developed – no cost estimate completed

B30 Line – Operational Recommendations

B30 Recommendation #4

- *Recommendation*

- Develop Formal Process for Strategic Re-Routes to I-95 when Baltimore-Washington Parkway is Congested
 - Takes advantage of parallel route to avoid congestion – no riders would be impacted
 - This would involve a formal process for tracking congestion and communicating re-route to drivers via the Operations Control Center

- *Recommendation Purpose*

- This change would allow B30 buses to avoid congestion on the Baltimore Washington Parkway by using the parallel I-95, thus speeding trip times, increasing reliability and improving passenger convenience

- *Estimated Annual Operating Cost Associated with Change*

- No cost

B30 Line – Passenger Information Recommendations

B30 Recommendation # 5

- *Recommendation*
 - Add additional avenues to communicate fare and schedule information
 - Fare cost and exact fare requirement would be added to public timetable and timetables on the WMATA web site
 - Fare cost and exact fare requirement and simpler to read schedule information would be installed at the Greenbelt Metro Station (would replicate what is currently installed at the BWI Airport stops)
- *Recommendation Purpose*
 - Improved passenger convenience, especially for riders from out-of-town who are not familiar with fare or exact fare requirement
 - This information is not currently on the timetable
- *Estimated Capital Cost Associated with this Change*
 - \$400

B30 Line – Passenger Amenity Recommendations

B30 Recommendation #6

- *Recommendation*
 - Evaluate Feasibility of Adding SmarTrip Machines at B30 BWI Airport Stops
 - Analysis would include engineering feasibility and cost analysis
- *Recommendation Purpose*
 - Drivers identified lack of understanding of fare and exact fare requirement as a major issue. Installation of SmarTrip machines would help address this issue
 - Machines would allow purchase of cards and adding value to existing cards
 - Focus of this step – determine whether machines can be installed and would it be cost-effective
- *Estimated Capital Cost Associated with this Change*
 - Feasibility analysis will identify cost

5A Line - Service Recommendations

5A Recommendation #1

- *Recommendation*
 - Add trips in the weekday AM and PM peak periods
- *Recommendation Purpose*
 - Analysis of passenger loads show significant crowding issues on the 5A Line
 - Most significant issues are on eastbound trips in the AM peak and on westbound trips in the PM peak
 - Any standing load on these trips is an issue given that 5A trips are high-speed and long distance
- *Estimated Annual Operating Cost Associated with Change*
 - \$669,000

5A Line - Service Recommendations

5A Recommendation # 2

- *Recommendation*
 - Eliminate Weekday Off-Peak and Weekend Service to Tysons West*Park Stop (weekday peak period trips do not serve stop)
- *Recommendation Purpose*
 - The Tysons West*Park stop has very few daily boardings (fewer than 20 per day)
 - Diverting off of the Dulles Toll Road to serve the station is an inconvenience to through riders
 - Eliminating diversion would improve passenger experience
- *Estimated Annual Operating Cost Associated with Change*
 - \$81,500 (savings)

5A Line - Service Recommendations

5A Recommendation #3

- *Recommendation*
 - Modify Schedules to Compensate for Actual Run Times that Exceed Scheduled Run Times
 - Saturday AM Peak – add 7 minutes to round trip run time – widen headways from 60 to 64 minutes
 - Saturday PM Peak – add 6 minutes to round trip run time – widen headways from 60 to 63 minutes
 - Sunday AM Peak – add 8 minutes to round trip run time – widen headways from 60 to 64 minutes
- *Recommendation Purpose*
 - Additional scheduled run time will improve trip reliability and passenger convenience
- *Estimated Annual Operating Cost Associated with Change*
 - Additional bus not proposed to address additional run time requirement – issue would be addressed through marginally wider headway
 - no additional cost

5A Line – Operational Recommendations

5A Recommendation #4

- *Recommendation*

- Allow Drivers to Utilize Alternative Eastbound Routing to Access Rosslyn Stop

- Drivers noted that they often are caught in backups on eastbound I-66 from drivers exiting to access Key Bridge into Georgetown

- This would allow drivers the discretion to exit I-66 farther west at Lee Highway to avoid backup farther east
 - Drivers would communicate with Operations Control Center regarding congestion levels and location of congestion

- *Recommendation Purpose*

- Faster trip times, increased reliability, and passenger convenience

- *Estimated Annual Operating Cost Associated with Change*

- No cost

5A Line – Passenger Information Recommendations

5A Recommendation #5

- *Recommendation*

- Add additional avenues to communicate fare and schedule information
 - Fare cost and exact fare requirement added to public timetable and timetables on WMATA web site
 - Fare cost and exact fare requirement and simpler to read schedule information at all 5A stops outside Dulles Airport (would replicate what is currently installed at the Dulles Terminal stop)

- *Recommendation Purpose*

- Improved passenger convenience, especially for riders from out-of-town who are not familiar with fare or exact fare requirement
 - This information is not currently on the timetable

- *Estimated Capital Cost Associated with this Change*

- \$2,800

5A Line – Passenger Amenity Recommendations

5A Recommendation #6

- *Recommendation*
 - Evaluate Feasibility of Adding SmarTrip Machines at 5A Stops
 - Analysis would include engineering feasibility and cost analysis
- *Recommendation Purpose*
 - Drivers identified lack of understanding of fare and exact fare requirement as a major issue. Installation of SmarTrip machines would help address this issue
 - Machines would allow for the purchase of new cards and the adding of value to existing cards
 - Focus of this step – determine whether machines can be installed and would it be cost-effective
- *Estimated Capital Cost Associated with this Change*
 - Feasibility analysis will identify cost

7 Lines – Service Recommendations

7 Lines Recommendation #1

- *Recommendation*
 - Add two additional outbound 7Y trips to Southern Towers in the evening
 - Last trip running all the way to Southern Towers leaves downtown DC at 6:13 PM
 - Last trip (terminates at Pentagon) leaves downtown at 6:54 PM
- *Recommendation Purpose*
 - Hours of Service Guidelines used to evaluate each line in the study state that the final trip of the evening should leave prior to 8:00 PM
 - Additional evening trips will improve passenger convenience and flexibility
- *Estimated Annual Operating Cost Associated with Change*
 - \$66,600

7 Lines – Service Recommendations

7 Lines Recommendation #2

- *Recommendation*
 - Provide Mid-Day Service Along Walter Reed Drive
 - Currently, 7C service along Walter Reed is peak period, peak direction only
 - Proposed Metrobus service if Arlington Transit does not provide service with ART 75 Route
- *Recommendation Purpose*
 - Provide all day service to a relatively high demand corridor that warrants some minimal amount of mid-day service
- *Estimated Annual Operating Cost Associated with Change*
 - \$165,700

7 Lines – Service Recommendations

7 Lines Recommendation #3

- *Recommendation*
 - Re-route additional trips (existing service) onto North Hampton Drive to provide higher level of service
 - Divert select 7Y trips along North Hampton to provide more frequent service in the North Hampton corridor
- *Recommendation Purpose*
 - Provide higher level of service to this high density, mixed use portion of the 7 Line service area.
- *Estimated Annual Operating Cost Associated with Change*
 - No cost – utilize existing service

7 Lines – Passenger Information Recommendations

7 Lines Recommendation #4

- *Recommendation*
 - Consolidate route names to make timetables less confusing
 - Routes proposed for name consolidation
 - 7P and 7C
 - 7B and 7D
 - 7H and 7W
- *Recommendation Purpose*
 - Provide easier to understand service structure and simpler to use timetables
- *Estimated Annual Operating Cost Associated with Change*
 - No cost

7 Lines – Service Recommendations

7 Lines Recommendation #5

- *Recommendation*

- Modify schedules to compensate for actual run times that exceed schedule run times
 - 7A weekday mid-day – add 5 minutes to round trip run time – widen headways from 60 to 65 minutes
 - 7A Saturday mid-day – add 4 minutes to round trip run time – widen headways from 66 minutes to 70 minutes
 - 7A Saturday PM Peak – add 12 minutes to round trip run time – widen headways from 66 minutes to 73 minutes
 - 7A Saturday evening – add 6 minutes to round trip run time – widen headways from 60 to 63 minutes
 - 7A Sunday mid-day – add 9 minutes to round trip run time – widen headways from 45 to 54 minutes
 - 7A Sunday PM Peak – add 11 minutes to round trip run time – widen headways from 45 minutes to 56 minutes
 - 7A Sunday evening – add 8 minutes to round trip run time – widen headways from 45 minutes to 53 minutes
 - 7F weekday mid-day – add 4 minutes to round trip time – widen headways from 60 to 64 minutes
 - 7F weekday evening – add 8 minutes to round trip run time – widen headways from 60 to 68 minutes
 - 7F Saturday PM Peak – add 5 minutes to round trip run time – widen headways from 66 minutes to 71 minutes
 - 7F Saturday evening – add 8 minutes to round trip run time – widen headways from 66 minutes to 74 minutes

7 Lines – Service Recommendations

7 Lines Recommendation #5 (cont.)

- *Recommendation Purpose*
 - Additional scheduled run time will improve trip reliability and passenger convenience
- *Estimated Annual Operating Cost Associated with Change*
 - Additional bus not proposed to address additional run time requirement – issue would be addressed through wider headways
 - no additional cost

7 Lines – Service Recommendations

- *Long-Term Issues*
 - *Alexandria is evaluating implementation of premium limited stop service in the Van Dorn Street/Beauregard Street Corridor as Part of its “High Capacity Transitway Corridor Feasibility Study”*
 - *Limited stop service would run in the Beauregard Street corridor along side 7 Line Service*
 - *7 Line service will have to be adjusted once limited stop service begins*
 - *Potential impacts of 7 Line adjustment were evaluated in Service Evaluation Study – No additional recommendations made until closer to limited stop implementation*

7 Lines Facility Recommendations

7 Lines Recommendation #6

- *Recommendation*
 - Consolidate Bus Stops - Potential Candidates Identified Based on Distance Between Stops Analysis and WMATA Distance Between Stops Guidelines
 - Listed Below by Direction (maps shown after tables)

7A, E, F, Y Northbound Stop Consolidation Candidates

Lincolnia & Breckenridge	King Street & Beauregard
Southern Towers - Sherwood	King Street & 28th Street
Southern Towers - Stratford	28th Street & King Street
Southern Towers - Sherwood	4509 S. 31st Street
Southern Towers - Berkeley	4421 S. 31st Street

7 Lines Facility Recommendations

7 Lines Recommendation #6 (cont.)

7A, E, F, Y Southbound Stop Consolidation Candidates

S. 31st & Randolph	Southern Towers - Stratford
4510 S. 31 st	Southern Towers - Sherwood
31st & Abingdon	Southern Towers - Berkeley
Buchanan & 30th	

7 Lines Facility Recommendations

7 Lines Recommendation #6 (cont.)

7B, C, D, H, P, W, X Northbound Stop Consolidation Candidates

Southland & Frenchman's	Southern Towers – Sherwood*
Southland & King Louis	Southern Towers – Berkeley*
Lincolnia & Breckenridge*	S. Walter Reed & King
Beauregard & Lincolnia (FS)	S. Walter Reed & Dinwiddie
Lincolnia & Beauregard	Arlington Mill & S. Walter Reed
N Chambliss & Morgan	Arlington Mill & Wingate Apts.
Southern Towers – Sherwood*	S. Columbus & 28th St.

*Also identified under 7A, E, F, Y Candidates

7 Lines Facility Recommendations

7 Lines Recommendation #6 (cont.)

7B, C, D, H, P, W, X Southbound Stop Consolidation Candidates

S. 28th & King	Southern Towers – Berkeley*
S. Walter Reed & Wakefield	Nottingham & Seminary
2519 S. Walter Reed	1900 Beauregard
King St. & 30th St.	N. Chambliss & Kling
Southern Towers - Stratford *	Southland & King Louis
Southern Towers – Sherwood*	Southland & Frenchman's

*Also identified under 7A, E, F, Y Candidates

7 Lines Facility Recommendations

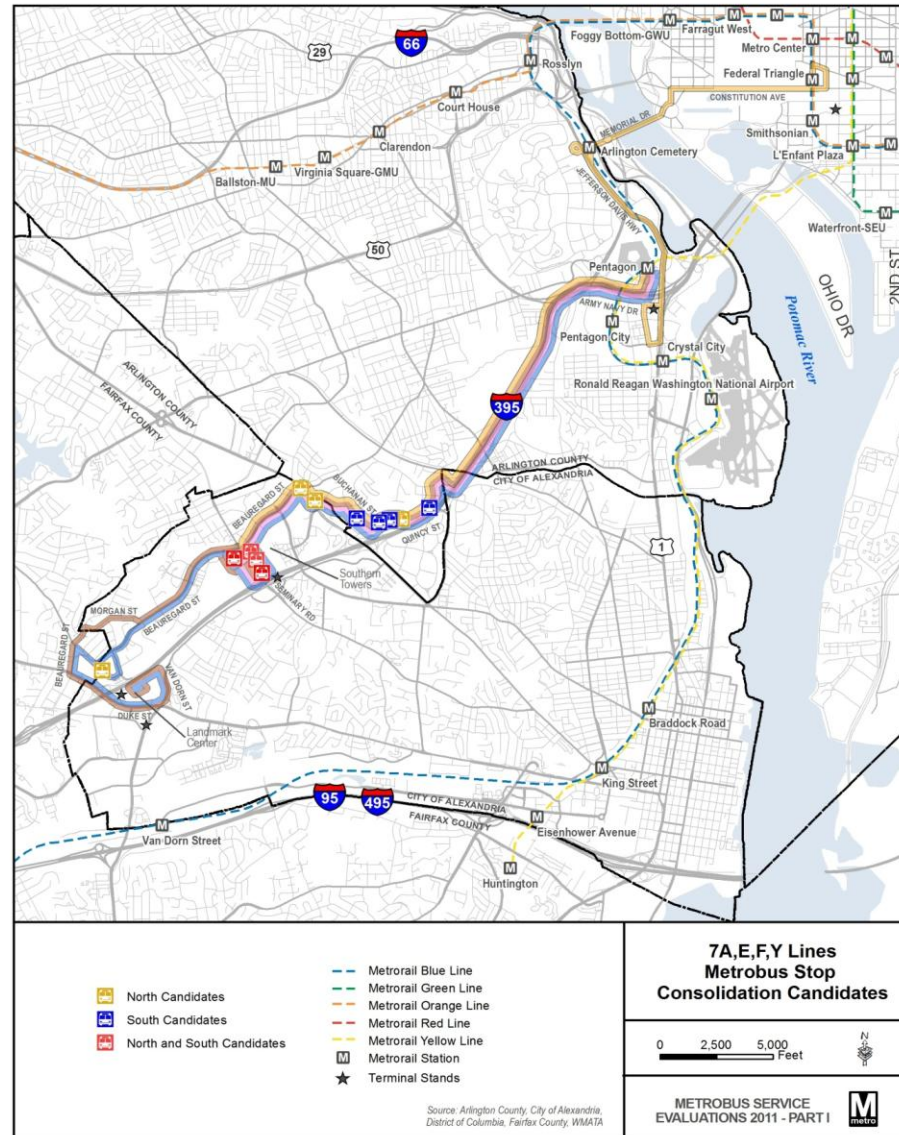
7 Lines Recommendation #6 (cont.)

- *Recommendation Purpose*
 - Stops that are too close together lead to slower trip times, which in turn lead to passenger inconvenience, reliability issues, and in certain cases, higher operating costs.
- *Estimated Capital Cost Associated with Change*
 - Costs cannot be calculated until specific stops to be consolidated are identified

7 Lines Facility Recommendations

7 Lines Recommendation #6 (cont.)

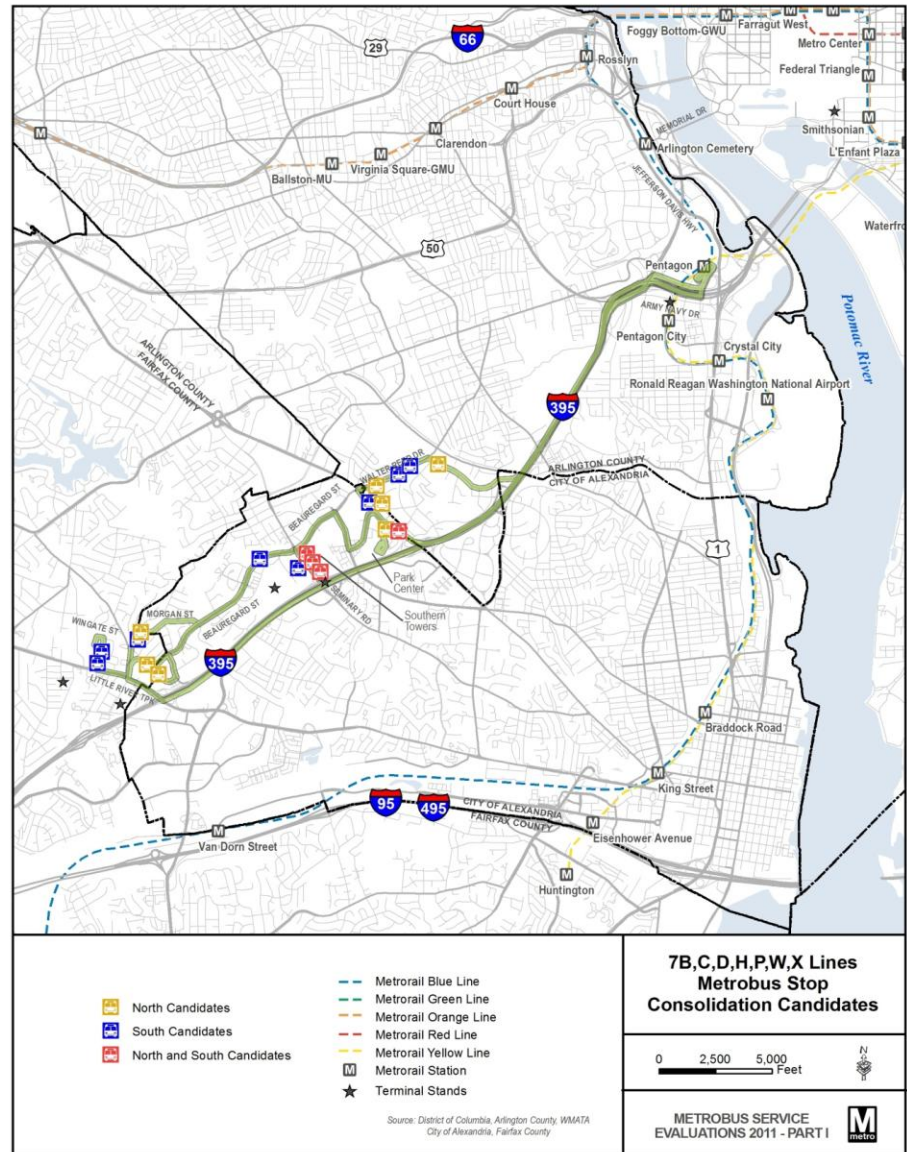
7A, E, F, Y Stop
Consolidation Candidates



7 Lines Facility Recommendations

7 Lines Recommendation #6 (cont.)

7B, C, D, H, P, W, X Stop Consolidation Candidates



7 Lines Facility Recommendations

7 Lines Recommendation #7

- *Recommendation*
 - Improve amenities at bus stops based on WMATA Bus Stop Guidelines
 - Analysis identified candidates for additional amenities based on WMATA Bus Stop Amenity Hierarchy
 - Amenities proposed:

Stop	Proposed Amenity	Line
31 st & Randolph (NB)	Bus Stop Flag, Landing Pad	7A, E, F, Y
31 st & Randolph (SB)	Bus Stop Flag, Landing Pad	7A, E, F, Y
King & Beauregard (SB)	Landing Pad	7A, E, F, Y
2519 Walter Reed (NB)	Landing Pad	7B, C, D, H, P, W, X
Constitution & 19 th (SB)	Trash Receptacle	7A, E, F, Y
Constitution & 20 th (SB)	Trash Receptacle	7A, E, F, Y
Constitution between 21 st & Bacon (SB)	Trash Receptacle	7A, E, F, Y

7 Lines Facility Recommendations

7 Lines Recommendation #7 (cont.)

Stop	Proposed Amenity	Line
S. 28 th & King Street (SB)	Trash Receptacle	7A, E, F, Y
Beauregard & Lincolnia (NB)	Trash Receptacle	7A, E, F, Y
Beauregard & King Street (NB)	Trash Receptacle	7A, E, F, Y
S. Columbus & 28 th St. (NB)	Trash Receptacle	7A, E, F, Y
4509 S. 31 st Street (NB)	Trash Receptacle	7A, E, F, Y
4421 S. 31 st Street (NB)	Trash Receptacle	7A, E, F, Y
4702 Braddock Road (NB)	Trash Receptacle	7B, C, D, H, P, W, X
North Hampton & Hunton (NB)	Trash Receptacle	7B, C, D, H, P, W, X
Park Center Dr & Ford (NB)	Trash Receptacle	7B, C, D, H, P, W, X
Park Center & King (NB)	Trash Receptacle	7B, C, D, H, P, W, X
S. Walter Reed & Wakefield (NB)	Trash Receptacle	7B, C, D, H, P, W, X

7 Lines Facility Recommendations

7 Lines Recommendation #7 (cont.)

Stop	Proposed Amenity	Line
Lincolnia & Quantrell	Shelter	7A, E, F, Y
Beauregard & Sanger (NB)	Shelter	7A, E, F, Y
Southern Towers – Stratford (NB/SB)	Shelter	Both
Southern Towers – Sherwood (NB/SB)	Shelter	Both
Southern Towers – Berkeley (NB/SB)	Shelter	Both
S. 28 th St. & King (NB)	Shelter	7B, C, D, H, P, W, X

7 Lines Facility Recommendations

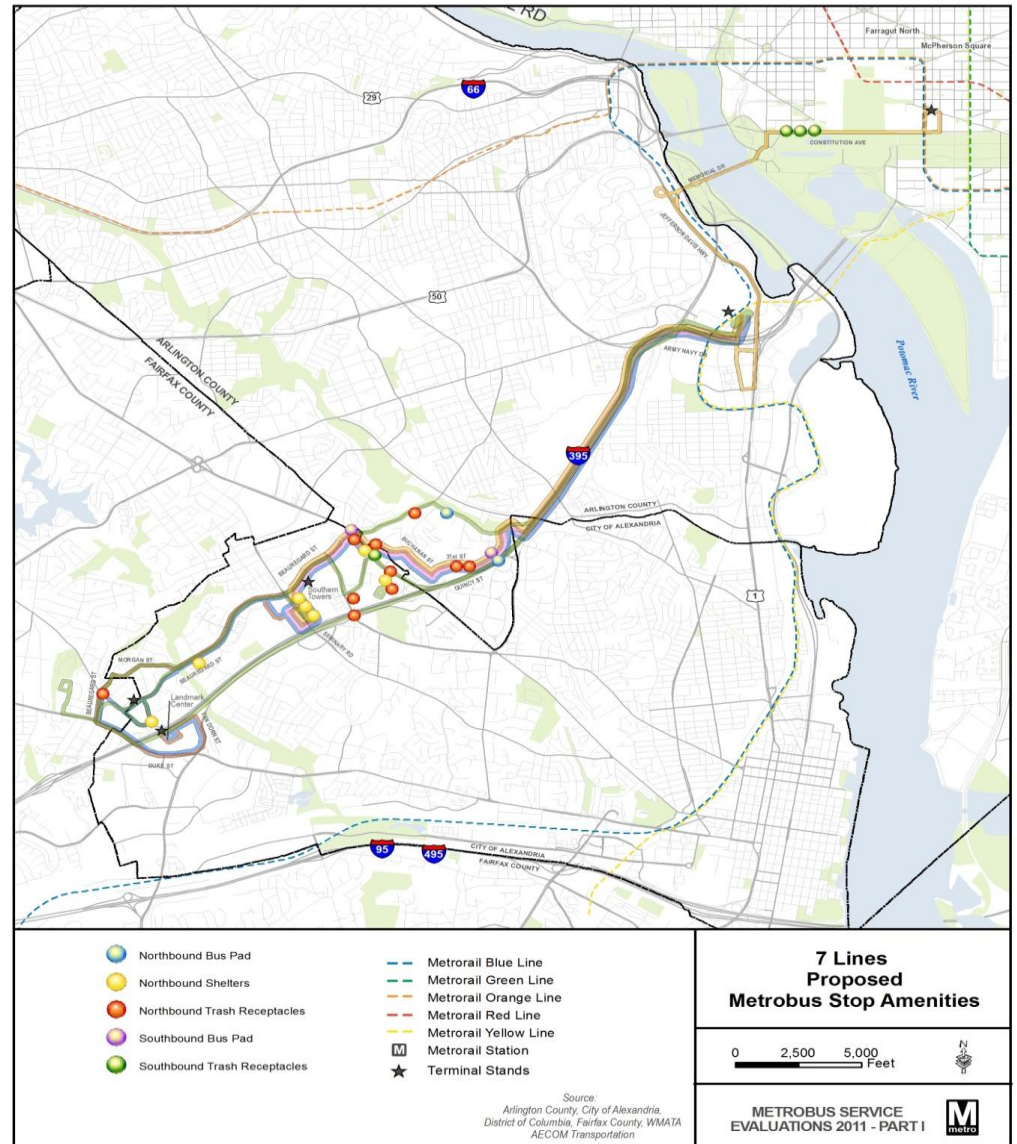
7 Lines Recommendation #7 (cont.)

- In addition to amenities in previous slides, 105 information cases are proposed at stops currently without them (both lines)
- *Recommendation Purpose*
 - Stops are the gateway to the transit system for bus passengers. Installing amenities based on the guidance of the Bus Stop Guidelines improves the passenger experience and provides a positive image for the system
- *Estimated Capital Cost Associated with Change*
 - \$111,200 for full program of improvements

7 Lines Facility Recommendations

7 Lines Recommendation #7 (cont.)

7 Lines Amenity Proposals (both lines)



7 Lines Traffic Issues and Recommendations

7 Lines Recommendation #8

- *Recommendation*

- Implement multiple traffic related recommendations to improve 7 Lines operations and reliability
- Issues and Recommendations (summary map follows descriptions)
 - Little River Turnpike and Beaugard Street - This intersection is congested in the PM Peak, with queues on westbound Route 236 backed up all the way to I-395. *It is recommended that additional analysis be completed to determine if the signal controlling the intersection is optimized. It is also proposed that signal coordination for Beaugard Street movements between Chambliss and Little River Turnpike be improved.*
 - Chambliss Street & Beaugard – This intersection is congested in the PM peak. The green time for the southbound move on Beaugard is very short. *It is recommended that additional analysis be completed to determine if the signal controlling this intersection is optimized, especially in the PM peak.*
 - Sanger & Beaugard – The southbound left turn volume from Beaugard onto Sanger is very high in the PM peak. *Two recommendations are proposed. The first relates to conducting analysis to optimize the signal and the second is to evaluate providing additional storage for the left turn, in order to remove traffic from through lanes.*
 - Southern Towers exit to Mark Center Drive – The left turn from the Southern Towers internal roadway onto the southbound approach to the intersection of Mark Center Drive and Seminary Road is very tight. *The recommendation is to evaluate a possible re-alignment of the roadway within Southern Towers to improve the turning radius. This may be done as part of larger potential transit center at Southern Towers.*

7 Lines Traffic Issues and Recommendations

7 Lines Recommendation #8 (cont.) – Traffic Issues and Recommendations

- 31st & Buchanan – The right turn from southbound 31st Street to Buchanan Street is very tight, especially when a vehicle is present on eastbound Buchanan Street. *The recommendation is to move the stop bar for eastbound Buchanan Street traffic farther west in order to provide a wider turning radius for buses.*
- 28th Street and King – The right turn from southbound 28th Street onto King Street is tight, especially when there is an eastbound vehicle at the intersection. *The recommendation would be to make physical improvements to widen the turning radius to better accommodate buses.*
- Eads Street & Rotary Road – All buses leaving the Pentagon Station must pass through this intersection, which is controlled by a four-way stop. This traffic control configuration often leads to excessive congestion. *The recommendation here is to assess the potential of adding a traffic signal at this intersection. Transit Signal Priority should also be considered if a signal is installed.*
- Beauregard Street between Armistead and Morgan – Signal progression along Beauregard in this section is poor, leading to long vehicle queues in the northbound direction. *The recommendation is to complete the analysis to improve signal coordination along this section of Beauregard.*
- Mark Center Drive and Seminary Road – In the PM peak westbound queues on Seminary back up to the I-395 entrance rotary, blocking buses accessing Southern Towers from I-395. *The recommendation is to complete an analysis of improving the intersection geometry as well as signal timing improvements.*
- I-395 HOV ramp to Eads Street – This ramp is consistently backed up in the AM Peak. *The recommendation is to evaluate improvements at the intersection, including signal improvements.*

7 Lines Traffic Issues and Recommendations

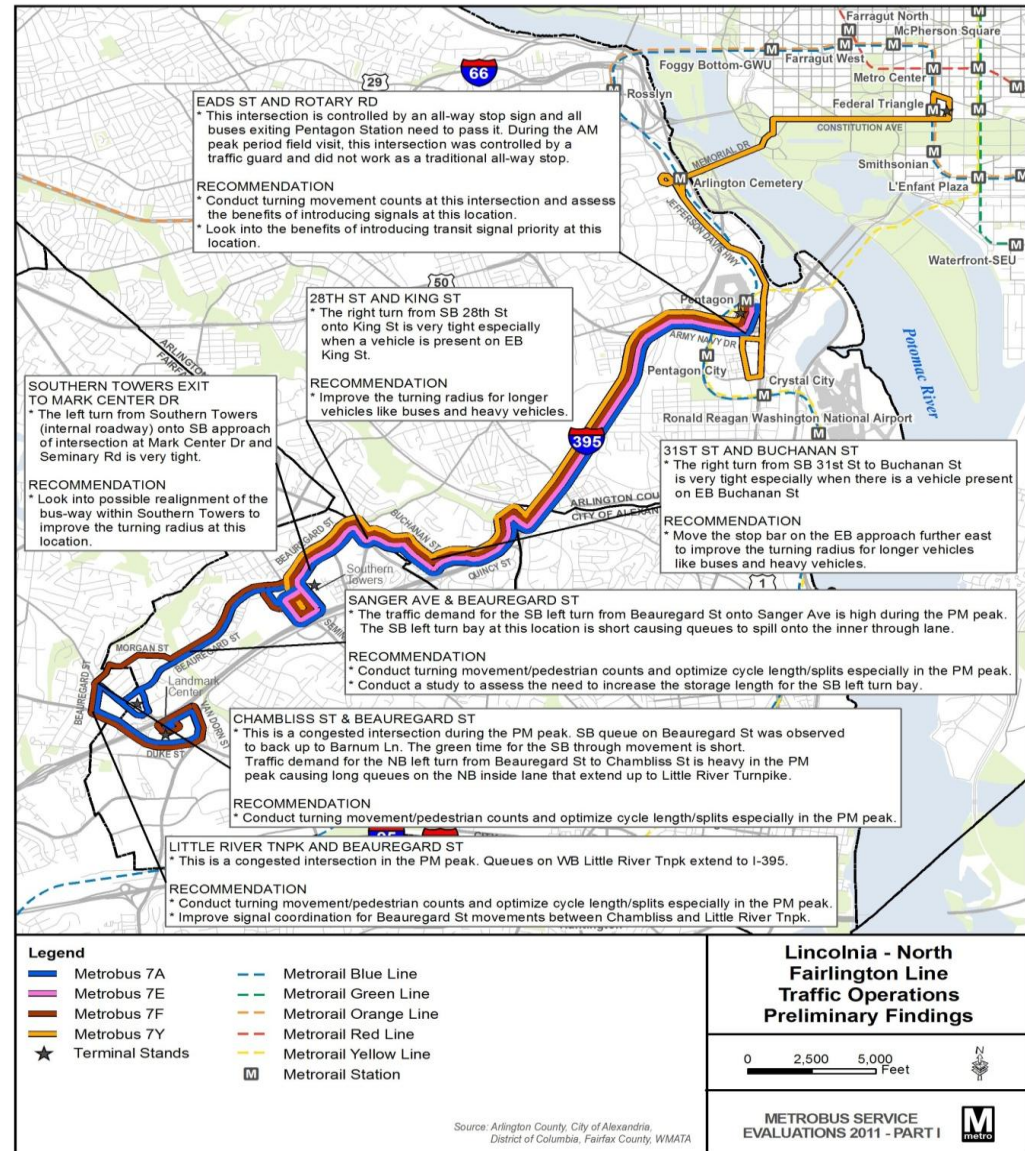
7 Lines Recommendation #8 (cont.)

- *Recommendation Purpose*
 - Poor traffic operations lead to slower trip times and service reliability issues, both major impediments to passenger convenience
- *Estimated Capital Cost Associated with Change*
 - Costs can be identified once proposed additional traffic analysis is completed

7 Lines – Traffic Issues and Recommendations

7 Lines Recommendation #8 (cont.)

7A, E, F, Y Traffic Issues and Recommendations



7 Lines – Traffic Issues and Recommendations

7 Lines Recommendation #8 (cont.)

7B, C, D, H, P, W, X Traffic Issues and Recommendations

