

# Metrobus Service Evaluation Study

## Martin Luther King Jr. Highway Line, Routes A11, A12

# Final Report

February 2014



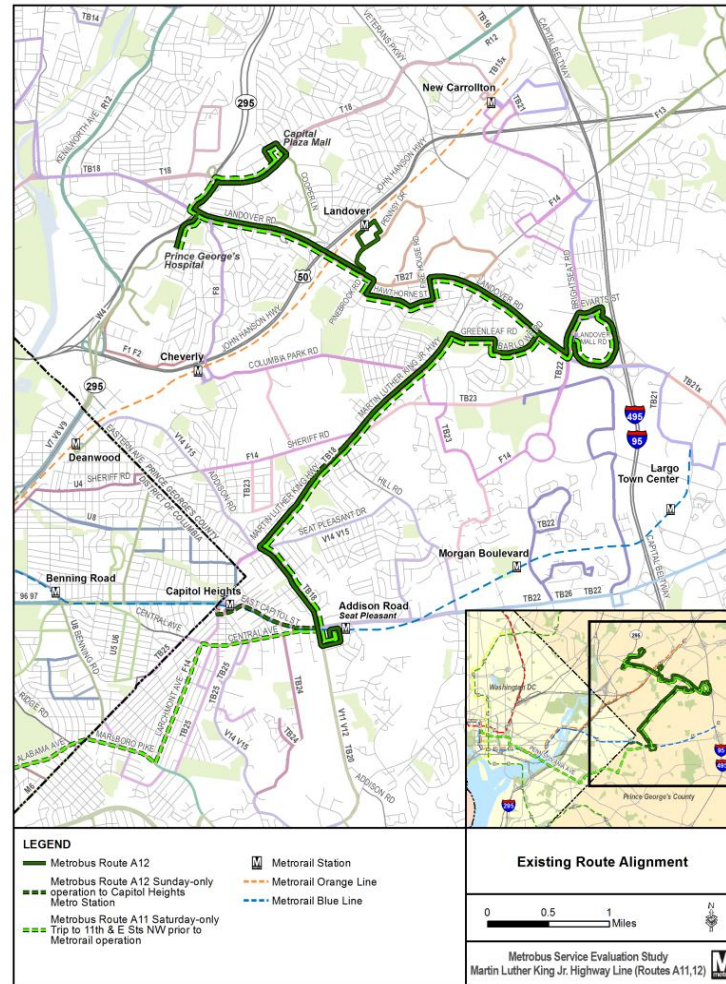
Metrobus Service Evaluation Study: Routes A11-A12, MLK Jr. Highway Line

# Study Purpose

The primary study purpose is to review capacity, productivity, and quality of service indicators, identify the need for customer facilities, and prepare recommendations to improve service delivery for the Martin Luther King Jr. Highway Line (A11, A12).



# Existing A11/A12 Line Route Map



Metrobus Service Evaluation Study: Routes A11-A12, MLK Jr. Highway Line

# Project Scope of Work

- *Transit Service Assessment*
  - Develop a detailed assessment and “snapshot” of the Martin Luther King Jr. Highway Line
    - Overall service characteristics, ridership and productivity, boardings and alightings, passenger loads, bus stop spacing, on-time performance, driver and planner interviews
    - Results contained in Technical Memorandum #1
- *Traffic Operations Assessment*
  - Identify the full range of traffic issues on the Martin Luther King Jr. Highway Line
    - Traffic signals and other traffic control devices
    - Lane widths and right-of-way
    - Turns and adequate turning radius
    - Results contained in Technical Memorandum #2



# Project Scope of Work

- *Public Involvement*
  - Rider survey to gauge issues and needs
  - Focus group, two public meetings, and bus stop “pop up” meetings
    - Issues identification
    - Feedback on preliminary recommendations
  - Public input was a key factor in the study process and recommendations
  - Results contained in Technical Memorandum #3



# Project Scope of Work

- *Recommendations*

- Two steps:

- Preliminary recommendations – relied on inputs from all previous steps
- Final – incorporate project team comments

Recommendations are contained in Technical Memorandum #4

- Improvements covered by recommendations:

- Frequency
- Reliability
- Route structure
- Service to former Landover Mall
- Bus stop distances and amenities
- Traffic operations



# A11/A12 Line Summary

- *Line Description*

- The Martin Luther King Jr. Highway Line is comprised of Metrobus Routes A11 and A12 operating primarily in Prince George's County, with a Saturday morning only extension into the District of Columbia.
- The line is an urban route operating between Capital Plaza in Landover and the Addison Road Metrorail station in Seat Pleasant via Prince Georges Hospital and the former Landover Mall.
- On Sundays, the southern terminal of the route is extended to the Capital Heights Metrorail station.
- The A12 primarily operates along Annapolis Rd., Landover Rd., Martin Luther King Jr. Highway, and Addison Road.



# A11/A12 Line Summary

- *Service Characteristics – Span of Service*
  - Days and hours of service (completion of first trip to start of last trip)

	Arrival Time of First Southbound Trip	Departure Time of Last Southbound Trip	Arrival Time of First Northbound Trip	Departure Time of Last Northbound Trip
Weekdays	5:31 AM	12:32 AM	5:44 AM	12:39 AM
Saturday	6:29 AM	11:15 PM	6:56 AM	11:18 PM
Sunday	6:59 AM	11:10 PM	7:59 AM	10:10 PM





# A11/A12 Line Summary

- *Service Characteristics – Service Frequency*
  - How often buses run

Time Period	Weekday	Saturday	Sunday
Early AM	30	40	60
AM Peak	20	40	60
Midday	30	40	60
PM Peak	20	40	60
Late Evening	30	60	60



# A11/A12 Line Summary

- Ridership*

Route	Day of Week	Average Daily Ridership					Daily Ridership Standard (boardings/day)	Meets Standard
		2008	2009	2010	2011	2012		
A11	Saturday	129	86	138	87	97	>296	No
A12	Weekday	3,210	2,964	2,842	3,010	2,936	>385	Yes
	Saturday	1,886	1,631	1,668	1,621	1,638	>296	Yes
	Sunday	1,337	1,125	1,128	1,174	1,162	>220	Yes

- Boardings per Revenue Mile*

Route	Day of Week	Boardings per Revenue Mile	Boardings per Revenue Mile Standard	Meets Standard
A11	Saturday	2.90	>1.02	Yes
A12	Weekday	2.33	>1.02	Yes
	Saturday	2.61	>1.02	Yes
	Sunday	2.72	>0.94	Yes

Source: WMATA Productivity Report, May 2013



# A11/A12 Line Summary

- Cost Recovery*

Route	Day of Week	Cost Recovery	Minimum Cost Recovery Standard from Fares	Meets Standard
A11	Saturday	38.15%	>14.49%	Yes
A12	Weekday	24.86%	>14.96%	Yes
	Saturday	27.77%	>14.49%	Yes
	Sunday	34.30%	>13.40%	Yes

- Subsidy per Passenger*

Route	Day of Week	Subsidy per Passenger	Subsidy per Passenger Standard	Meets Standard
A11	Saturday	\$2.10	<\$5.96	Yes
A12	Weekday	\$3.13	<\$5.90	Yes
	Saturday	\$2.73	<\$5.96	Yes
	Sunday	\$2.09	<\$6.44	Yes

Source: WMATA Productivity Report, May 2013



# Study Findings

- **Service Hours**
  - All schedules meet WMATA criteria.
- **Frequency**
  - A12 does not meet frequency guidelines during weekday peak periods and on weekends. A11 operates only one trip per week.
- **Reliability**
  - Running time and reliability are not major issues on the A11/A12 Line.
- **Amenities**
  - Multiple bus stops on the A11/A12 Line are too close together and lack basic amenities as outlined in WMATA's Bus Stop Guidelines.
- **Traffic**
  - Route alignment around the old Landmark Mall parking lot adds four to five minutes and forces the bus to drive over poorly kept roadways.
  - Buses experienced difficulty navigating across two lanes of traffic in less than 200 yards on Brightseat Road to enter old Landmark Mall.
  - Some transit stops were difficult for the bus to access due to on-street parking including those on Greenleaf Road and Hawthorne Street.
  - Buses experienced difficulty navigating the Martin Luther King Jr. Highway and Greenleaf Road intersection due to intersection design and stop bar locations for opposing traffic.



# Service Recommendations

## Recommendation #1 – Adjust Running Time.

- 10 weekday trips, 11 Saturday trips, and 1 Sunday trip on the two routes were identified as having actual run times at least five minutes greater than scheduled run times.
- Recommendation is twofold:
  - WMATA Schedules Department to verify the potential run time issues identified in this study
  - Address verified run time issues through schedule adjustments

**Estimated annual cost of adjusting schedule: \$45,680**



# Service Recommendations

## Recommendation #2 – Add trips to increase service frequency on the A12 Route to meet WMATA service guidelines during peak periods and weekends.

Adding trips will have an extra benefit of improving on-time performance since additional trips will result in lower passenger-per-trip numbers and resulting in decreased bus stop dwell time. Adding the number of trips in the table below will allow A11/A12 Line frequencies to improve from current headways to every 15 minutes in peak periods and every 30 minutes at all other times.

Variation	Direction	Weekday		Saturday	Sunday
		AM Peak	PM Peak		
A12	Southbound	3	4	10	16
A12	Northbound	2	2	10	14
Total		5	6	20	30

Estimated annual cost of increasing frequency of service : \$635,436, which will result in a ridership increase of 34,454 (3.81% of current riders) people per year



# Service Recommendations

## Recommendation #3 – Eliminate A11 service

Route A11 is a one-trip per week variation, operating only in the southbound direction that operates as an extension of Route A12 into Downtown Washington. This early morning trip operates before Metrorail service begins on Saturday mornings. This route allows passengers who would normally take Metrorail to make connections that are not available while Blue Line service is not operating. This proposal is to eliminate Route A11 as a separate route and operate the current A11 trip as a revised A12 trip. This trip would be extended to Capitol Heights Metrorail Station where connections are available to Metrobus Route 96, which provides service into Downtown Washington.

**Estimated annual cost savings for eliminating Route A11: \$6,460, resulting in an annual decrease of 812 (0.09% of current riders) people**

Based on 14 passengers per Saturday that use A11 within the District of Columbia, the cost savings is **\$7.95** per year per passenger.



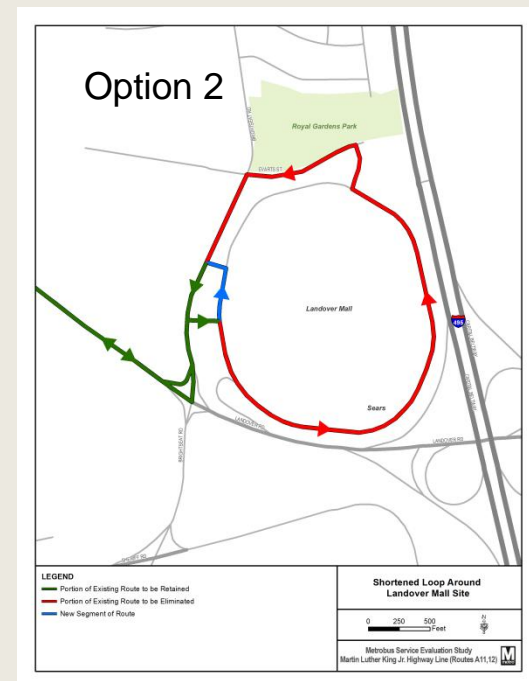
# Service Recommendations

## Recommendation #4 – Modify or eliminate service to the Former Landover Mall site

Landover Mall was closed in 2002, and Sears will be closing in March 2014. Currently, buses still serve Sears and circulate the entire Mall ring road, which is time consuming and serves very few passengers. The key generators served in the vicinity are Sears and apartments along Brightseat Road, including the recently closed Glenarden Apartments.

Two options exist for the recommendation to modify Route A11/A12 and reduce the travel time associated with serving the former Landover Mall.

1. Option 1 – The first option would be to not serve the Landover Mall site at all, which can be done regardless of any route restructuring or extension alternative. Northbound buses would turn left from northbound Barlowe Road onto westbound Landover Road and Southbound buses would turn right from eastbound Landover Road onto southbound Barlowe Road completely bypassing the Landover Mall area
2. Option 2 – The second option would shrink the mall loop so buses do not circle the entire mall site, which will eliminate service to the bus stop at Sears. This option is preferred as it maintains service to high ridership bus stops along Brightseat Road.



**Estimated annual cost savings for eliminating service to Landover Mall: \$401,140**

**Estimated annual cost savings for modifying Landover Mall loop: \$218,804**





# Service Recommendations

## **Recommendation #5 – Extend service to Capitol Heights Metrorail Station at all times**

Currently, A12 operates to the Capitol Heights Metrorail Station only on Sundays. In order to provide consistent service along Route A12 and increase the number of connections available to A12 passengers, all A12 trips could be extended to Capitol Heights Metrorail Station on all days. Service to Capitol Heights would operate via Central Avenue.

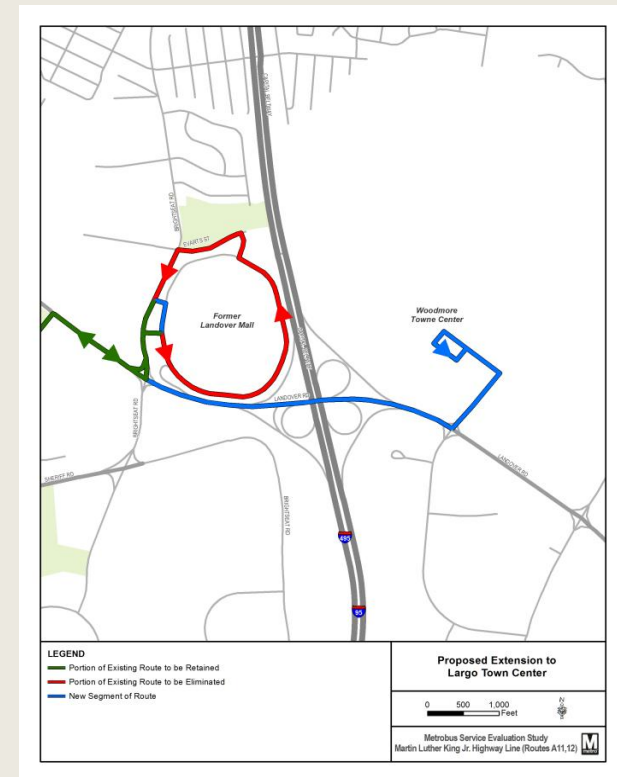
**Estimated annual cost of extending all service to Capitol Heights Metrorail Station: \$357,567 with an annual ridership increase of 65,228 (7.22% of existing riders) passengers per year**



# Service Recommendations

## Recommendation #6 – Route Extension to Woodmore Towne Centre

Woodmore Towne Center is an emerging retail area that currently does not have Metrobus service. Route A12 could be modified to serve Woodmore Towne Center. This extension would add travel time to the current A12 route.



**Estimated annual cost for extending service to Woodmore Towne Centre: \$729,345 with an estimated annual ridership increase of 135,870 (15.03% of existing riders) passengers**

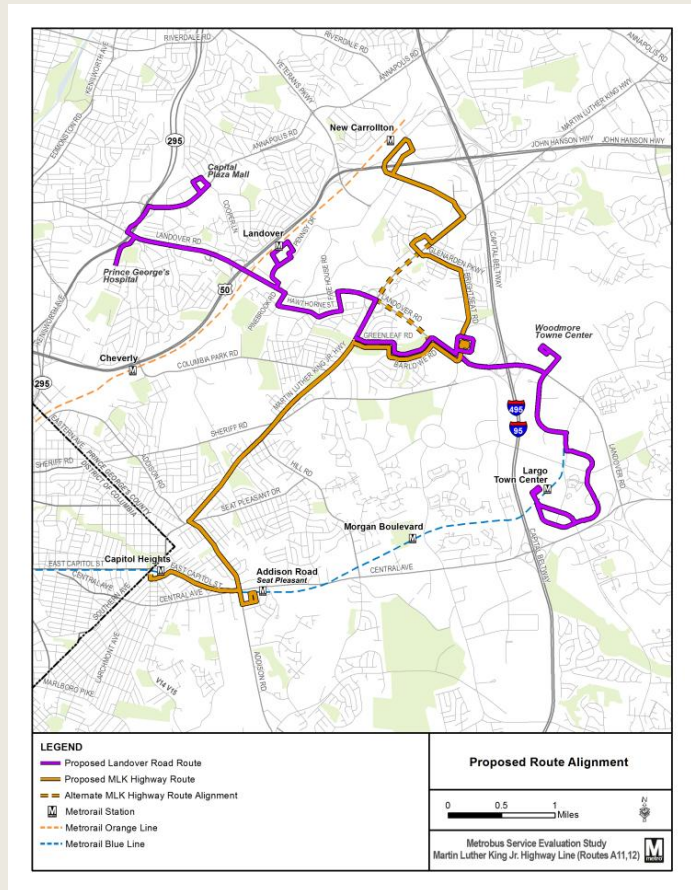


# Service Recommendations

## Recommendation #7a – Route Restructuring

- Converts Martin Luther King Jr. Highway Line into two lines:
  - Martin Luther King Jr. Highway Line between New Carrollton Metrorail Station and Capitol Heights Metrorail Station
  - Landover Road Line between Capital Plaza and Largo Town Center.
  - Service operating every 15 minutes during peak periods and 30 minutes during off-peak periods which is based on current Metrobus guidelines
- Both lines would serve the former Landover Mall and the Palmer Park neighborhood.
- 452 riders per day, who travel between the Martin Luther King Jr. Highway segment of the route and the Landover Road segment of the route will be forced to transfer, which represents 15.40% of weekday riders

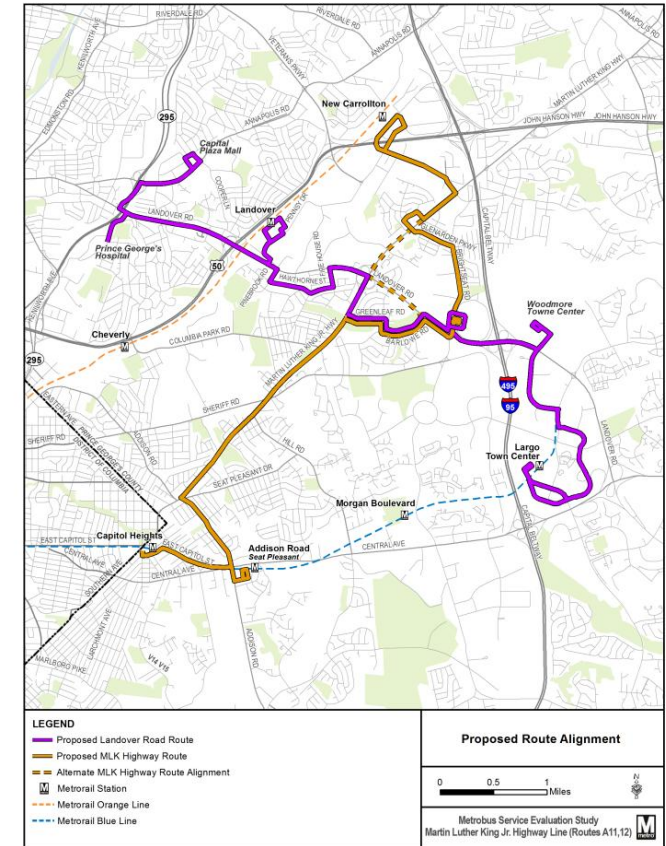
**Estimated annual additional cost for restructured service: \$2,983,461 with an estimated annual ridership increase of 372,952 (41.26% of existing riders) passengers**



# Service Recommendations

## Recommendation #7a – Route Restructuring: Martin Luther King Jr. Highway Line

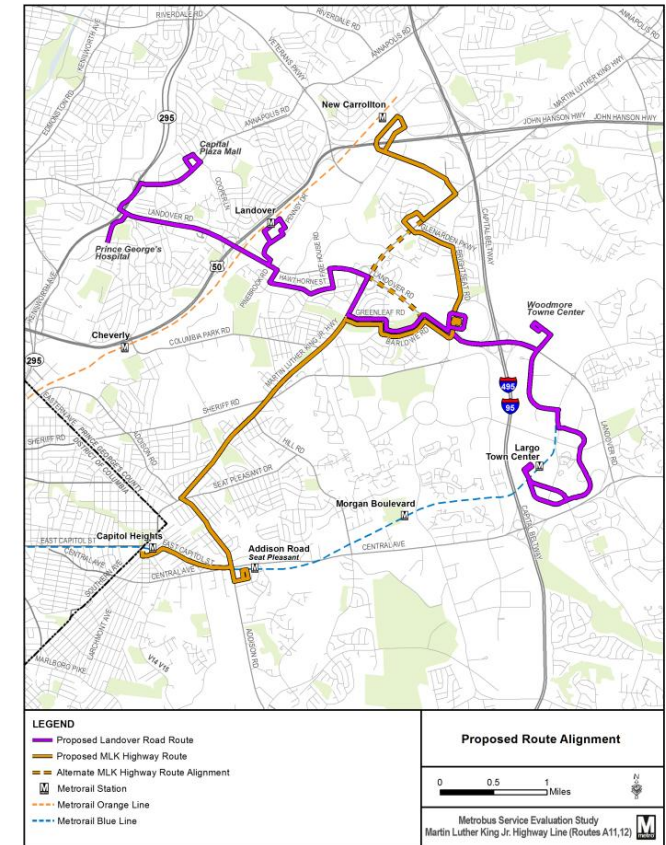
- Route would combine Martin Luther King Jr. Highway service with northern portion of Route F14. The line would operate via Pennsy Drive, Corporate Drive, Garden City Drive, Ardwick-Ardmore Road, Martin Luther King Jr. Highway, Johnson Avenue, Hayes Street, Glenarden Parkway, Brightseat Road, Landover Road, Barlowe Road, Mathew Henson Avenue, Greenleaf Road, Addison Road, Yost Place, and East Capitol Street
- Routing to New Carrollton would operate via the current routing of Metrobus F14 between the former Landover Mall and New Carrollton Metro Station which will provide F14 customers Sunday service.



# Service Recommendations

## Recommendation #7a – Route Restructuring: Landover Road Line

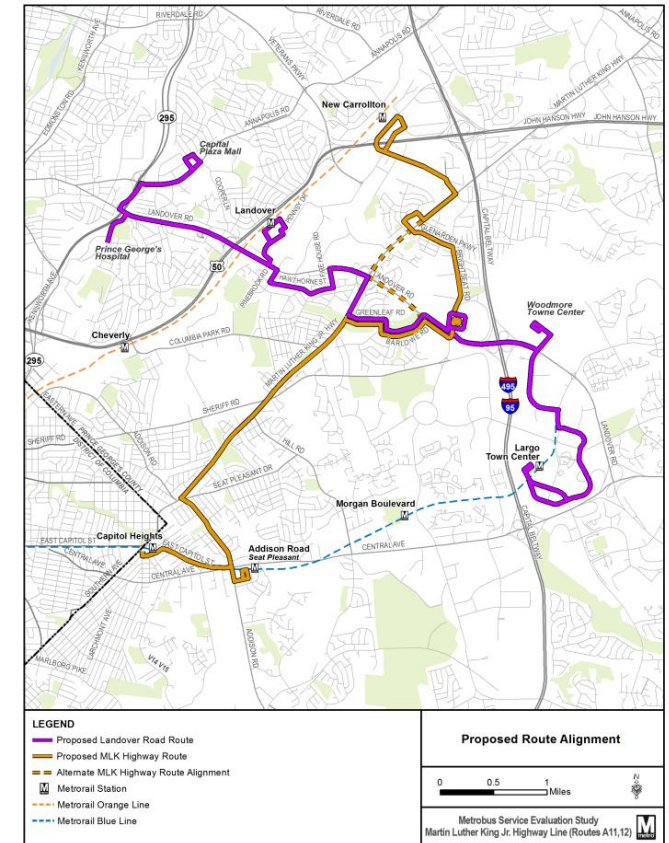
- A new line serving the Landover Road segments of the current A12 with and extension to Largo Town Center via Woodmore Towne Centre. The Landover Road Line that would operate between Capital Plaza and Largo Town Center via Cooper Lane, Webster Avenue, 66<sup>th</sup> Avenue, Annapolis Road, Baltimore-Washington Parkway, Hospital Drive, Landover Road, Old Landover Road, Pennsy Drive, Pinebrook Avenue, Hawthorne Street, Fire Hour Road, Martin Luther King Jr. Highway, Greenleaf Road, Mathew Henson Avenue, Barlowe Road, Brightseat Road, Landover Road, Saint Joseph's Drive, McHugh Drive, McCormick Drive, Lottsford Road, Arena Drive, Largo Center Drive and Largo Drive W.
- Besides providing new 7 day a week Metrobus service to Woodmore Towne Centre, this line would also provide a connection between the current Prince George's Hospital Center complex in Cheverly and the planned regional hospital complex at Largo Town Center.



# Service Recommendations

## Recommendation #7b – Route Restructuring

- Same route alignments as described in Recommendation 7a
- Scheduled headway (time between buses) is based on current A11/A12 schedule
  - 20 minute headway during weekday peak periods
  - 30 minute headway during off-peak periods and weekends



**Estimated annual additional cost for restructured service: \$1,446,979 with an increase in annual ridership of 310,731 (34.38% of existing riders)**



# Bus Stop Recommendations

## Recommendation #8: Begin the Bus Stop Consolidation Process

Consolidating bus stops results in improved passenger convenience, shorter trip times and better service reliability.

Recommendation - Begin bus stop consolidation process following WMATA procedures – potential consolidation candidates have been identified based on distance-between-stops guidelines .

Estimated Capital Costs Associated with change costs cannot be calculated until specific stops to be consolidated are determined.

Southbound Candidate Stop	Daily ons	Daily offs
Landover Rd (Rt 202) + Cheverly Terr Apts	12	2
Landover Rd (Rt 202) + Pinebrook Ave	2	17
Pinebrook Ave + Landover Rd	13	43
Hawthorne St + Pinebrook Ave	20	55
Brightseat Rd + Maple Ridge Apts #2400	8	11
Barlowe Rd + Allendale Dr	6	4
Barlowe Rd + Ray Leonard Rd	6	5
Greenleaf Rd + Matthew Henson Ave	27	5
Greenleaf Rd + Romney Ct	5	3
Greenleaf Rd + Normandy Rd	19	3
Greenleaf Rd + Muncy Rd	5	0
M L King Hwy + Greenleaf Rd	1	0
MI King Jr Hwy + Columbia Ave	60	32
M L King Hwy (Rt 704) + Booker Dr	10	1
Addison Rd + Dry Log St	4	1
Addison Rd + Crown St	1	1
Addison Rd + Baltic St	1	1

Northbound Candidate Stop	Daily ons	Daily offs
Addison Rd + Crown St	1	2
Addison Rd + Dry Log St	4	3
M L King Hwy (Rt 704) + Addison Rd	39	11
M L King Hwy (Rt 704) + 65th Ave	0	0
M L King Hwy (Rt 704) + Booker Dr	1	10
MI King Jr Hwy + Columbia Ave	0	0
M L King Hwy (704) + Ryderwood Ct	1	1
Greenleaf Rd + Romney Ct	4	1
Greenleaf Rd + Matthew Henson Ave	8	11
Matthew Henson Ave + Barlowe Rd	4	26
Barlowe Rd + Palmer Park Rd	36	31
Barlowe Rd + Ray Leonard Rd	7	2
Barlowe Rd + Allendale Dr	8	5
Brightseat Rd + Maple Ridge Apts #2400	14	8
Hawthorne St + Pinebrook Ave	100	16
66th Ave + Webster St	0	0



# Bus Stop Recommendations

## Recommendation #9: Improve Bus Stop Amenities

- Improving bus stop amenities will increase rider comfort, safety and convenience.
- All basic stops should have a basic set of passenger amenities including a bus stop flag, an accessible sidewalk and a landing pad.
- Amenities that should be installed based on the level of passenger boarding activity at a stop include an information case, a trash receptacle, and a shelter and bench.





# Bus Stop Recommendations

## Recommendation #9: Improve Bus Stop Amenities

- **Estimated Capital Cost Associated to improve Bus Stop Amenities - \$54,500**

Unit	Quantity	Cost per Unit	Total Cost
Bus Shelter and Bench	1	\$10,000	\$10,000
Bus Stop Flag	1	\$100	\$100
Information Case (Immediate Installation)	3	\$200	\$600
Information Case (Future Installation)	19	\$200	\$3,800
Bus Stop Landing Pad	20	\$1,500	\$30,000
Trash Receptacle	10	\$1,000	\$10,000
<b>Total</b>			<b>\$54,500</b>



# Bus Stop Recommendations

## Recommendation #9: Install or Repair Bus Stop Amenities

### 9.1 – Stops Requiring a Landing Pad (P)

Stop	Direction	Boardings & Alightings
Brightseat Rd & Maple Ridge Apts #S225	Southbound	157
Hawthorne St & Kent Town Dr	Southbound	58
Hawthorne St & Firehouse Rd	Southbound	45
Annapolis Rd & 62nd Ave	Southbound	26
Hawthorne St & Kent Village Dr	Southbound	22
Landover Rd & Matthew Henson Ave	Southbound	21
Hawthorne St & #6819	Southbound	21
MLK Hwy & Carrington Ave	Southbound	10
Firehouse Rd & East Lombard St	Northbound	76
Brightseat Rd & Maple Ridge Apts #S240	Northbound	41
MLK Hwy & King Shopping Center	Northbound	34
Annapolis Rd & 62nd Ave	Northbound	26
Addison Rd & Adel St	Northbound	23
Hawthorne St & #6819	Northbound	17
Landover Rd & #6490	Northbound	16
MLK Hwy & Roosevelt Ave	Northbound	6
Greenleaf Rd & Romney Ct	Northbound	5
MLK Hwy & Ryderwood Ct	Northbound	2
Barlowe Rd & Landover Rd	Northbound	1
Landover Mall & Sears	Southbound & Northbound	21

### 9.2 - Stops Requiring a Sidewalk (S)

Stop	Direction	Boardings
Annapolis Rd & 62nd Ave	Southbound	23
MLK Hwy & Carrington Ave	Southbound	9
Landover Rd & Matthew Henson Ave	Southbound	7
Barlowe Rd & Landover Rd	Northbound	1
Annapolis Rd & 62nd Ave	Northbound	0
Landover Mall & Sears	Southbound/Northbound	9



# Bus Stop Recommendations

## Recommendation #9: Install or Repair Bus Stop Amenities

### 9.3 – Stops Requiring an Information Case

Short Term	Direction	Boardings
Landover Rd & Kilmer St	Southbound	66
Cooper La & Annapolis Rd	Southbound	64
MLK Hwy & Columbia Park Rd	Southbound	60
Long Term	Direction	Boardings
P G Hospital Rdwy & Landover Rd	Both	118
Penny Dr & Landover Station	Both	48
Barlowe Rd & Matthew Henson Ave	Southbound	48
MLK Hwy & Glen Willows Dr	Southbound	44
Brightseat Rd & Everts St	Southbound	29
Greenleaf Rd & Matthew Henson Ave	Southbound	27
MLK Hwy & 65th Ave	Southbound	26
Brightseat Rd & Maple Ridge Apts #S240	Southbound	22
Pg Hospital Rdwy & Health Center	Southbound	21
Hawthorne St & Pinebrook Ave	Southbound	20
Hawthorne St & Firehouse Rd	Southbound	20
Barlowe Rd & Palmer Park Rd	Northbound	36
Addison Rd & Seat Pleasant Dr	Northbound	33
Cooper La & Annapolis Rd	Northbound	31
MLK Hwy & Belle Haven Dr	Northbound	29
Brightseat Rd & Everts St	Northbound	29
Landover Rd & Kilmer St	Northbound	25
Brightseat Rd & Maple Ridge Apts #S240	Northbound	22
Pg Hospital Rdwy & Health Center	Northbound	21



# Bus Stop Recommendations

## Recommendation #9: Install or Repair Bus Stop Amenities

### 9.4 – Stops Requiring a Trash Receptacle

Stop	Direction	Boardings
Pennsy Dr & Landover Station	Southbound/Northbound	48
P G Hospital Rdwy & Landover Rd	Southbound/Northbound	40
Firehouse Rd & Landover Rd	Southbound	39
P G Hospital Rdwy & Landover Rd	Southbound	38
Brightseat Rd & Evarts St	Southbound	29
Greenleaf Rd & Matthew Henson Ave	Southbound	27
MLK Hwy & Addison Rd	Northbound	39
Addison Rd & Seat Pleasant Dr	Northbound	33
MLK Hwy & Belle Haven Dr	Northbound	29
Brightseat Rd & Evarts St	Northbound	29

### 9.5 – Stops Requiring a Shelter/Bench

Stop	Direction	Boardings
MLK Hwy & Columbia Park Rd	Southbound	60

### 9.6 – Stops Requiring a Bus Stop Flag

Stop	Boardings
MLK Hwy & 65th Ave	0



# Traffic Improvement Recommendations

## Recommendation #10: Work with Local Agencies to Make Traffic-related Improvements

1. Field visits and driver interviews identified locations where long signal cycles result in bus delays. The following location is identified for additional intersection analysis to determine if more efficient signal cycles can improve bus run times.
  - Signal timing and phasing – Landover Road and Old Landover Road
2. Field visits and driver interviews identified locations where the A11, A12 Line move through un-signalized intersections, which often result in significant bus delays. The following location is identified for additional intersection analysis to determine if signal-protected movements at these intersection is feasible.
  - Unsignalized movements – Brightseat Road between Landover Road and Landover Mall entrance

It is proposed to conduct additional intersection analysis, turning movement/pedestrian counts and optimize cycle length/splits based on traffic demand in order to potentially provide additional green for bus movements, if feasible.



# Traffic Improvement Recommendations

## Recommendation #10: Work with Local Agencies to Make Traffic-related Improvements

### 3. Transit Stop Location and Parking Restrictions

- Greenleaf Road between Martin Luther King Jr. Highway and Matthew Henson Avenue – The transit stops located along both sides of Greenleaf Road are inhibited by on-street parking on both sides of the road. This was observed during AM and PM peak periods.
- Hawthorne Street between Fire House Road and Pinebrook Avenue– The transit stops located along both sides of Hawthorne Street are inhibited by on-street parking on both sides of the road. This was observed during AM and PM peak periods.
- Martin Luther King Jr. Highway and Addison Road – The southbound bus stop required buses to cross three lanes of traffic to make the left onto Addison Road which is very difficult during peak periods.
- Prince George's Hospital Health Department Stop – This bus stop is located on a steep hill and is located close to the main Hospital bus stop. While it is not listed as a candidate stop for elimination based on stop spacing guidelines, this stop should be further examined to see if this is a safe bus stop for both buses and passengers.

- It is recommended that Metro work with local jurisdictions to determine methods to address these bus stop issues. Possible solutions include removing, relocating or consolidating bus stops, removing parking to ensure buses have adequate space to enter and exit bus stops, or ensuring that existing bus stop zones are enforced.



# Traffic Improvement Recommendations

## Recommendation #10: Work with Local Agencies to Make Traffic-related Improvements

### 4. Intersection conflicts

- Martin Luther King Jr. Highway and Greenleaf Road - Buses traveling northbound during AM and PM peak periods had difficulty making the right turn from MLK Highway to Greenleaf Road due to westbound vehicles ignoring the stop bar and waiting too close to the intersection.
- It is recommended that Metro work with the local jurisdiction to explore if the stop bar can be moved back to allow buses to turn from Martin Luther King Jr. Highway onto Greenleaf Road. It is also recommended that Metro work with the local jurisdiction to ensure that there is proper enforcement of vehicles encroaching on the intersection

### 5. Roadway conditions

- Old Landmark Mall – The roadway around Old Landover Mall and on Evarts Street is in very poor condition, which forces buses to reduce speeds around the Mall.
- One recommendation is to shorten the loop around Landover Mall, thereby reducing the amount of circulation on this private road that is in poor condition. The poor condition of the roadway is a justification that supports this recommendation.



# Traffic Improvement Recommendations

Coordinate with local jurisdictions to address traffic issues by:

- Conducting additional intersection analysis, turning movement/pedestrian counts and optimize cycle length/splits based on traffic demand in order to potentially provide additional green for bus movements, if feasible.
- Possible solutions to bus stop issues include removing, relocating or consolidating bus stops, removing parking to ensure buses have adequate space to enter and exit bus stops, or ensuring that existing bus stop zones are enforced.
- Explore if intersection stop bars can be moved back to allow buses to turn from Martin Luther King Jr. Highway onto Greenleaf Road, as well as ensure that there is proper enforcement of vehicles encroaching on the intersection
- Shorten the loop around Landover Mall, thereby reducing the amount of circulation on this private road that is in poor condition.

