

Metrobus Service Evaluation Study – Oxon Hill Area

Oxon Hill-Suitland (D12, 13, 14)
National Harbor (NH1, NH3)

Oxon Hill-Fort Washington (P17, 18, 19)
Bock Road (W13, 14)

Camp Springs-Indian Head Highway (W15)
Indian Head Highway Express (W19)

Final Report

July 2014



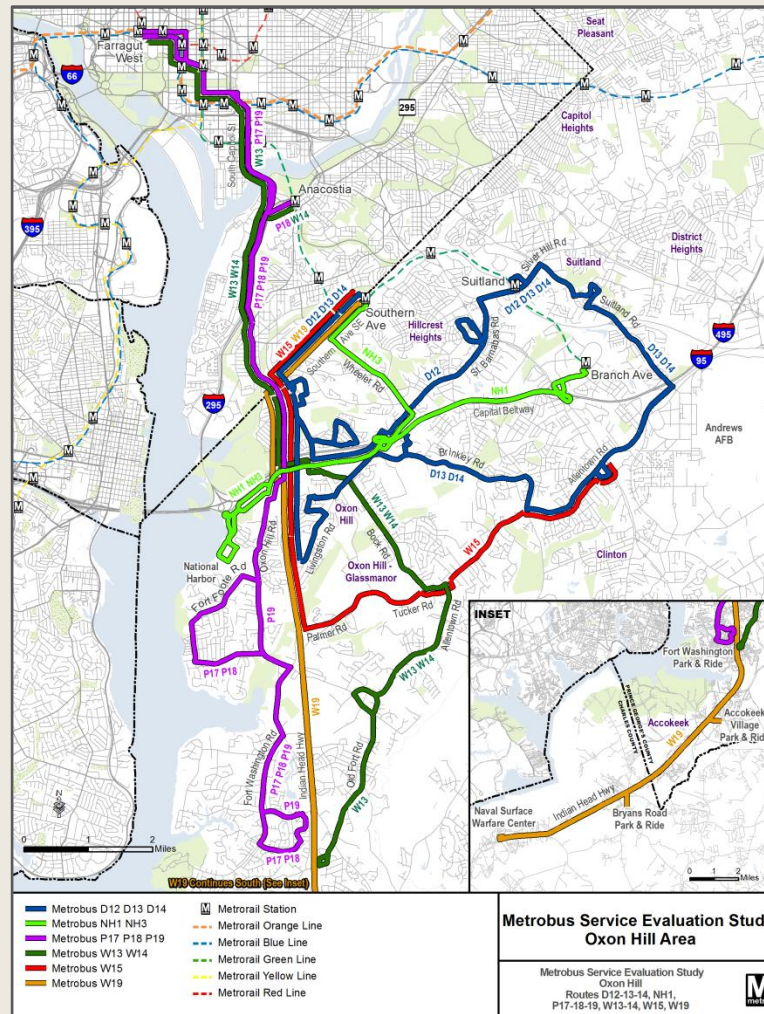
Metrobus Service Evaluation Study: Routes D12/13/14, NH1/3, P17/18/19, W13/14, W15, W19

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 Oxon Hill Area Lines (D12/13/14, NH1/3, P17/18/19, W13/14, W15, and W19).



Existing Oxon Hill Area Lines Route Map



Metrobus Service Evaluation Study: Routes D12/13/14, NH1/3, P17/18/19, W13/14, W15, W19

Project Scope of Work

- *Transit Service Assessment*
 - Develop a detailed assessment and “snapshot” of the Oxon Hill Area Lines
 - Overall service characteristics, ridership and productivity, boardings and alightings, passenger loads, bus stop spacing, on-time performance, bus stop amenities, driver and planner interviews.
 - Results contained in Technical Memorandum #1
- *Traffic Operations Assessment*
 - Identify the full range of traffic issues on the Oxon Hill Area Lines
 - 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
 - Two focus group meetings and two public 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 – incorporated project team comments

Recommendations are contained in Technical Memorandum #4

- Improvements covered by recommendations:

- Schedule run time
 - Frequency
 - Service hours
 - Route structure
 - Transferring routes to other operators
 - Reconfigure existing Park & Ride
 - Introduce new services
 - Bus stop restrictions
 - Bus stop distances and amenities
 - Traffic operations



Lines Summary

- *Line Description*

- The Oxon Hill-Suitland Line (D12, 13, 14) runs from Southern Avenue Metro in the west to Suitland Metro in the east via several roadways including Southern Avenue, Indian Head Highway, Oxon Hill Road, Saint Barnabas Road, Brinkley Road, Allentown Road, and Suitland Road.
- The National Harbor Line (NH1, NH3) runs from National Harbor in the west to Southern Avenue Metro (NH3) and Branch Avenue Metro (NH1) in the east via Oxon Hill Road.
- The Oxon Hill-Fort Washington Line (P17, 18, 19) runs from Fort Washington Park & Ride in the south to Anacostia Metro (P18) and Farragut Square (P17, 19) via South Capitol Street, Indian Head Highway, and Oxon Hill Road.
- The Bock Road Line (W13, 14) runs from Fort Washington Forest (W13) and Friendly (W14) in the south to Anacostia Metro (W14) and Farragut Square (W13) in the north via South Capitol Street, Indian Head Highway, Bock Road, and Old Fort Road.
- The Camp Springs-Indian Head Highway Line (W15) runs from Southern Avenue Metro in the north to Camp Springs in the south via Southern Avenue, Indian Head Highway, Palmer Road, and Allentown Road.
- The Indian Head Express Line (W19) runs from Southern Avenue Metro in the north to the Naval Surface Warfare Center in the south via Southern Avenue and Indian Head Highway.



Line Summary

- *Service Characteristics – Span of Service*

- Weekdays hours of service (start of first trip to end of last trip)

Route	Departure Time of First Southbound/ Westbound Trip	Arrival Time of Last Southbound/ Westbound Trip	Departure Time of First Northbound/ Eastbound Trip	Arrival Time of Last Northbound/ Eastbound Trip
D12	4:23 AM	12:27 AM	5:00 AM	1:46 AM
D13	5:53 AM	8:45 AM	4:00 PM	7:42 PM
D14	4:10 AM	12:06 AM	5:09 AM	1:46 AM
NH1/3	5:55 AM	11:59 PM	6:25 AM	11:27 PM
P17	2:57 PM	8:06 PM	4:47 AM	9:53 AM
P18	9:40 AM	3:24 PM	9:25 AM	3:13 PM
P19	3:42 PM	7:07 PM	5:35 AM	9:06 AM
W13	3:35 PM	7:53 PM	4:52 AM	9:02 AM
W14	10:15 AM	3:54 PM	8:54 PM	3:33 PM
W15	4:00 PM	7:14 PM	5:29 AM	8:39 PM
W19 AM	5:37 AM	7:36 AM	4:29 AM	8:40 AM
W19 PM	3:40 PM	7:46 PM	4:50 PM	6:22 PM



Line Summary

- *Service Characteristics – Span of Service*
 - Weekend hours of service (start of first trip to end of last trip)

Day	Route	Departure Time of First Westbound Trip	Arrival Time of Last Westbound Trip	Departure Time of First Eastbound Trip	Arrival Time of Last Eastbound Trip
Saturday	D12	6:05 AM	11:40 PM	6:25 AM	11:12 PM
	D14	6:21 AM	11:10 PM	6:47 AM	11:49 PM
	NH1/3	6:25 AM	12:59 AM	6:55 AM	1:26 AM
Sunday	D12	7:50 AM	7:40 PM	8:50 AM	7:38 PM
	D14	6:20 AM	8:10 PM	8:20 AM	8:22 PM
	NH1/3	6:25 AM	11:59 PM	6:55 AM	12:26 AM



Line Summary

- Weekday Ridership and Productivity*

Route	Daily Ridership	Fare Recovery	Boardings/ trip	Subsidy/ passenger	Boardings/ revenue mile
D12, 13, 14	4,908	25.1%	38.3	\$2.93	2.5
NH1	707	14.4%	10.0	\$5.81	1.2
P17, 18, 19	1,400	37.4%	25.9	\$4.85	1.5
W13, W14	799	38.5%	23.5	\$4.63	1.6
W15	340	15.9%	24.3	\$5.18	2.0
W19	519	32.8%	19.2	\$5.91	0.8
WMATA Service Standard	>454	>15.8%	>11.3	<\$4.36	>1.3

Source: WMATA Productivity Report – FY 2013



Study Findings

- Reliability
 - Running time and reliability are issues for the D14 evening service, P19 PM peak, and W13 PM peak.
- Frequency
 - The W19 PM peak, D12 PM peak, W14 midday, and W19 AM peak do not meet WMATA frequency guidelines.
- Service Hours
 - The D14 Saturday, W15 AM, and W19 AM and PM trips do not meet WMATA service hour criteria.
 - Limited evening and weekend services and no weekend service for the Fort Washington area.



Study Findings

- Bus Stops

- Too many stops on express routes (P17, P19, and W13) with confusing stop restrictions between the Beltway and Downtown DC.
- Multiple bus stops on the Oxon Hill Area Lines are too close together and lack basic amenities as outlined in WMATA's Bus Stop Guidelines.

- Traffic/Road Improvements

- The Maryland State Highway Administration (SHA) proposes to convert the intersection at Kirby Hill Road/Livingston Road and Indian Head Highway into a separated interchange.
 - The median opening at Indian Head Highway and Wilson Bridge Drive would be closed and the traffic signal would be removed, prohibiting northbound buses access to Wilson Bridge Drive.
 - Construction would start after improvements to Oxon Hill Road, approximately sometime after 2015.



Short Term Recommendations

Recommendation #1: Increase Schedule Run Time

- Increase scheduled run time to meet WMATA's on-time performance guidelines
- Increase scheduled run time (adding approximately 5 minutes to each route) along the following trips:
 - D14: 9 Evening trips
 - P17: 12 PM Peak trips
 - P19: 9 PM Peak trips
 - W13: 11 PM Peak trips

Estimated Annual Cost: \$137,218



Metrobus Service Evaluation Study: Routes D12/13/14, NH1/3, P17/18/19, W13/14, W15, W19

Short Term Recommendations

Recommendation #2: Increase D Line Service Frequency

- Add additional service frequency to the D12.
 - Adjust D12 southbound PM peak from every 34 minutes to 30 minutes.
 - Adjust D12 midday service between 11 am to 3pm from every 60 minutes to 30 minutes to address overcrowding.

Estimated Annual Cost: \$158,331



Short Term Recommendations

Recommendation #3: Increase D Line Saturday Service Hours

- Increase D14 Saturday span of service to meet WMATA's service span guidelines.
 - Adjust first D14 AM westbound trip (6:21 am) to depart from Suitland Metro at 6:01 am and arrive at Southern Avenue Metro at 7:10 am.
 - Adjust second D14 AM eastbound trip (7:47 am) to depart from Southern Avenue Metro at 6:51 am and arrive at Suitland Metro at 8:00 am.

Estimated Annual Cost: \$8,456



Short Term Recommendations

Recommendation #4: Improvements to Bus Stop Amenities

- The study identified the number of stops that are in need of repair or additional bus stop amenities based on WMATA's Bus Stop Guidelines and the data collection performed for the *Oxon Hill Area Lines Transit Assessment*.

Unit	Quantity
Bus Shelter and Bench	19
Bus Stop Flag	5
Information Case (Immediate Installation)	21
Information Case (Future Installation)	56
Bus Stop Landing Pad	312
Trash Receptacle	35
Stops Requiring Sidewalks	146

Estimated Capital Cost: \$708,900



Short Term Recommendations

Recommendation #5: Consolidate P17/P19/W13 Maryland Bus Stops Inside the Beltway and Eliminate Stop Restrictions

- Consolidate stops between I-495 / I-95 and Downtown DC to the following:

Southbound	Northbound
Indian Head Highway and Southern Avenue	Indian Head Highway and Southern Avenue

- Change stop restrictions to the following:
 - Board and alight at all stops outside the DC Line.
 - No passenger stops between the DC Line and South Capitol Street and E Street.
 - Northbound: Alight only at all stops from South Capitol Street and E Street to Farragut Square.
 - Southbound: Board only at all stops from Farragut Square to South Capitol Street and E Street.

No costs associated with change

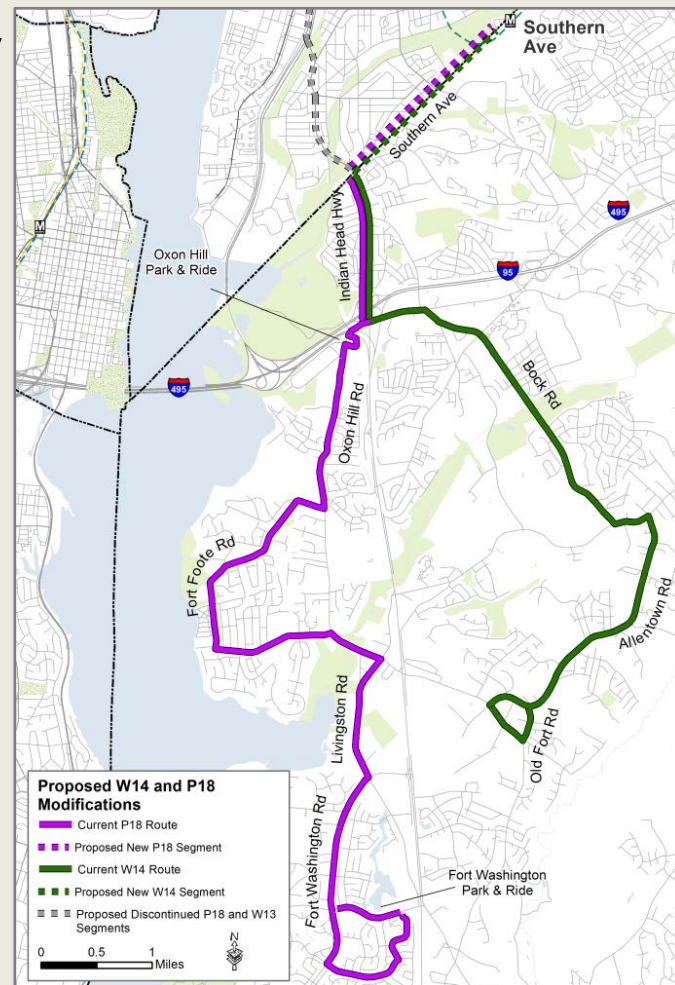


Short Term Recommendations

Recommendation #6: Reroute All Midday Services to Southern Avenue Metro

- Reroute midday P18 and W14 services from Anacostia Metro to Southern Avenue Metro.
 - The DC segment of the P18 and W14 are adequately served midday by Metrobus Routes A4, A8, and the W4.
 - Frees up a bus bay at Anacostia Metro, which is already at capacity.

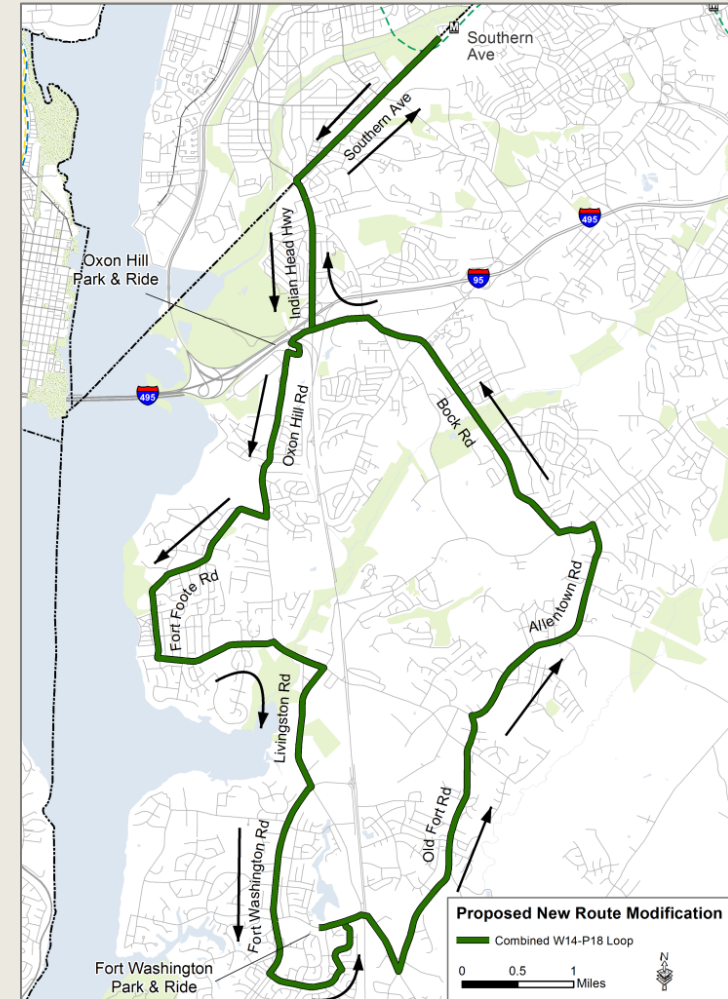
Reroute is expected to be cost neutral



Short Term Recommendations

Recommendation #7: Consolidate P18/W14 Service as a Loop Route

- Consolidate the P18 and W14 service into a loop service to and from Southern Avenue
 - Both the P18 and W14 service have low ridership and consolidating will make them more efficient and cost effective.
 - The DC segments of the P18 and W14 are adequately served midday by Metrobus Routes A4, A8, and the W4.

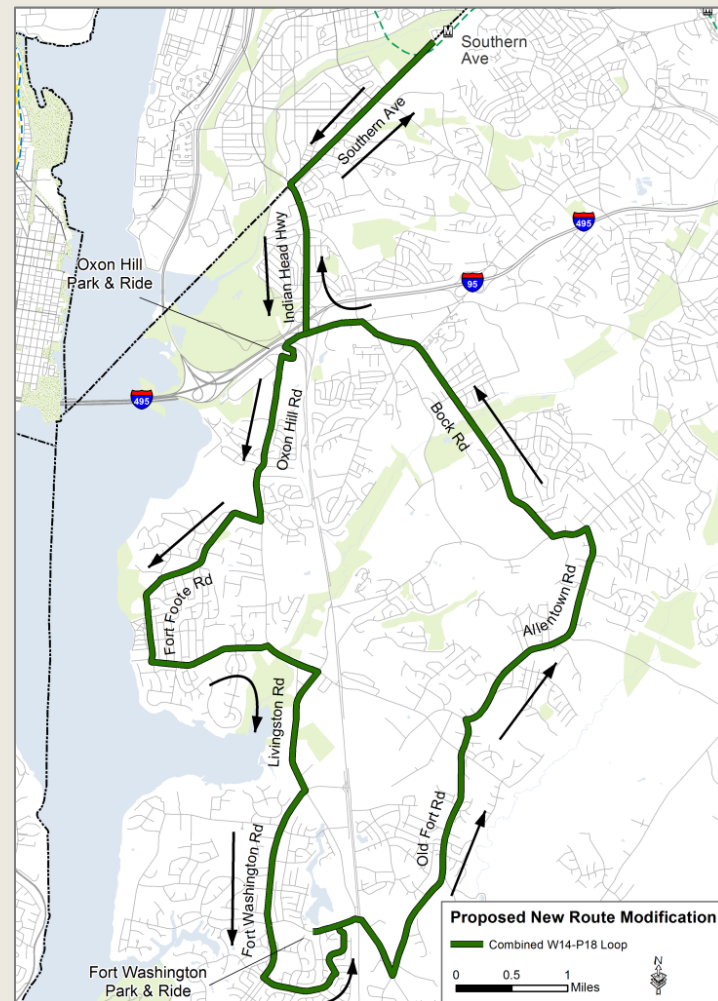


Short Term Recommendations

Recommendation #7: Continued

- Service characteristics include:
 - Hourly service (9:00 am to 3:00 pm).
 - Travel counterclockwise, serving the existing P18 alignment first from Southern Avenue to Fort Washington Park & Ride.
 - From the Fort Washington Park & Ride, the bus would follow the W14 alignment to Southern Avenue.
 - Trips are expected to take 83 minutes to complete.

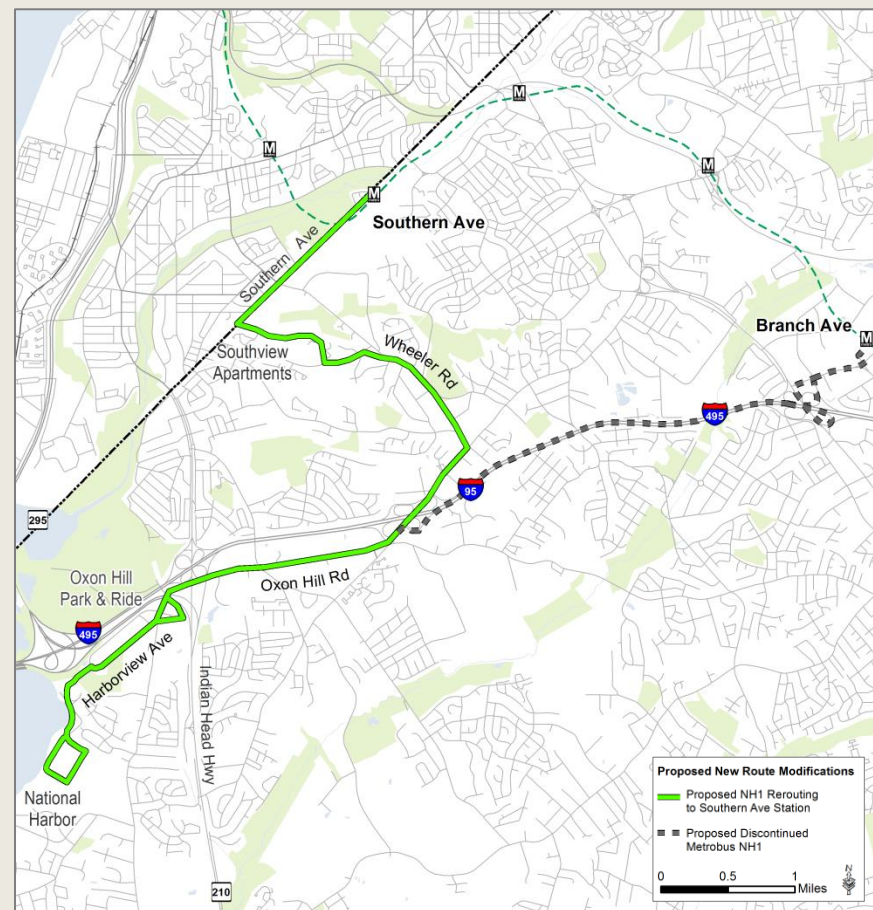
Estimated Annual Cost Savings: \$402,906



Short Term Recommendations

Recommendation #8: Reroute NH1 from Branch Avenue to Southern Avenue Metro

- Shortens travel time for riders traveling to National Harbor to/from DC.
- Provides more opportunity for increasing ridership by connecting jobs and entertainment to new areas.
- Relieves capacity constraint on the D12, D14, and P12 services.
- Creates opportunities to connect to regional bus services at Southern Avenue Metro (12 bus routes as opposed to 6 routes at Branch Avenue).

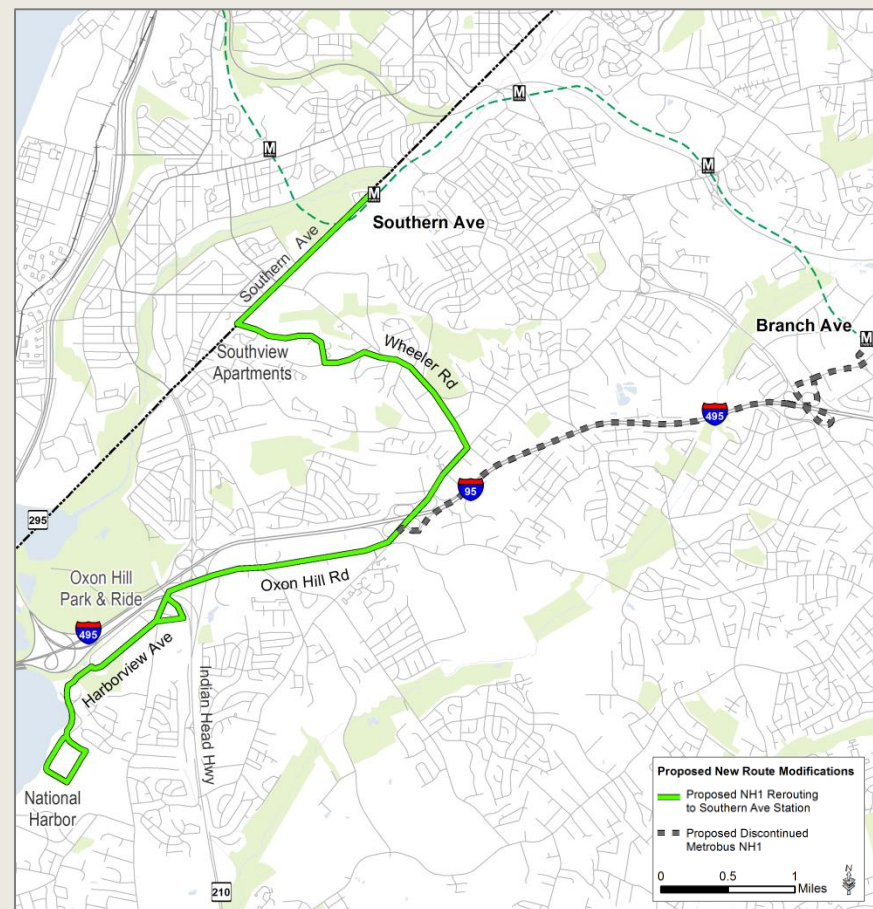


Short Term Recommendations

Recommendation #8: Continued

- Service characteristics include:
 - Proposed alignment from the Oxon Hill Park & Ride would serve Oxon Hill Road, St. Barnabas Road, Wheeler Road, Southview Apartments, and Southern Avenue.
 - Existing NH3 service would be modified to follow the same alignment.
 - No changes to route frequency is proposed (cost neutral).
 - A long-term modification of this recommendation is found under **Recommendation #15**.

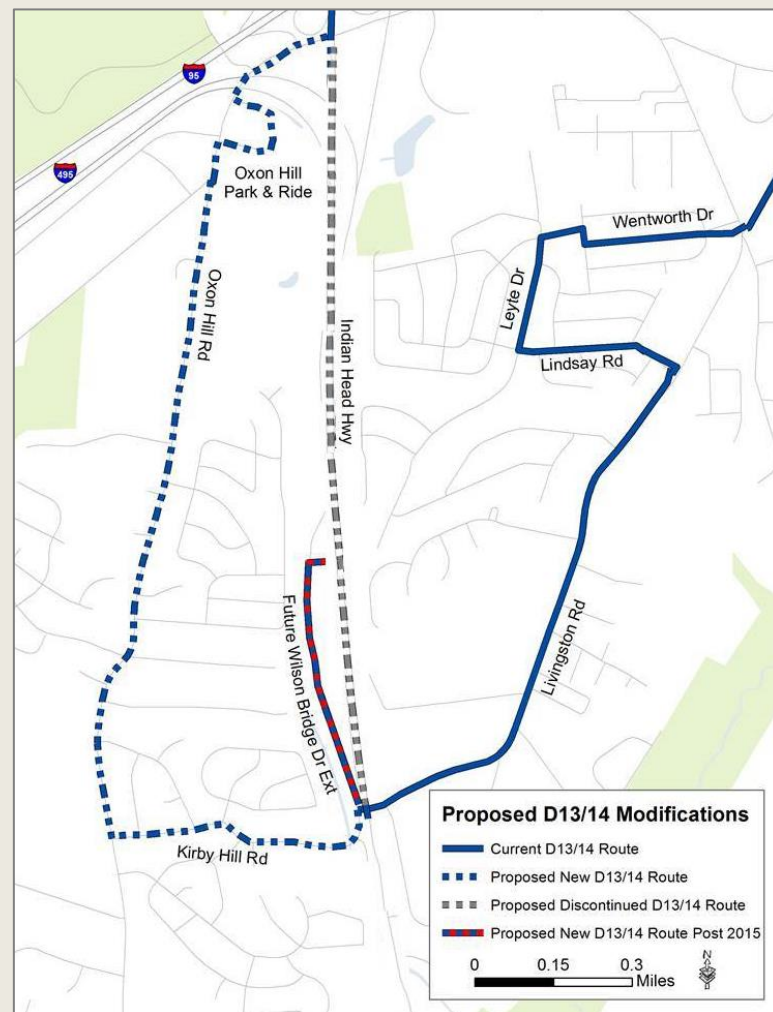
Reroute is expected to be cost neutral



Short Term Recommendations

Recommendation #9: Reroute D13/D14

- SHA plans to convert the intersection at Kirby Hill Road/Livingston Road and Indian Head Highway into a separated interchange.
 - The median opening at Indian Head Highway and Wilson Bridge Drive would be closed and the traffic signal would be removed, prohibiting northbound buses access to Wilson Bridge Drive.
- The D13/D14 would be rerouted to travel along Kirby Hill Road and Oxon Hill Road instead of the southern segment of Indian Head Highway.

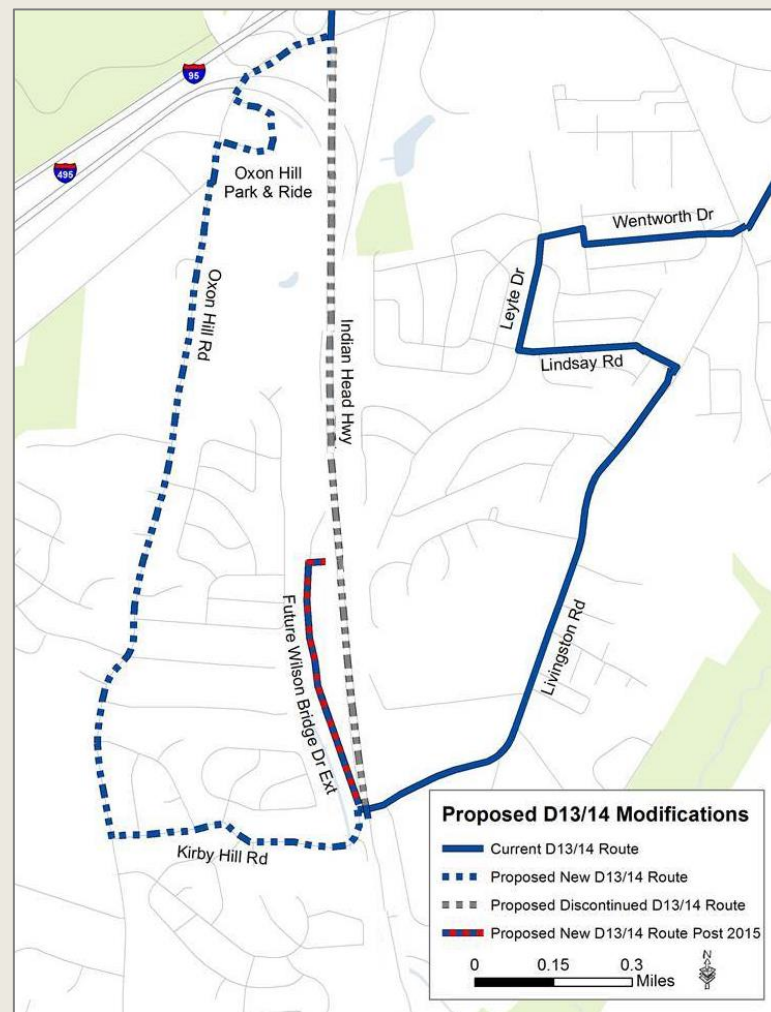


Short Term Recommendations

Recommendation #9: Continued

- Reroute would provide additional service to the Oxon Hill Park & Ride, Tanger Outlets, and the proposed MGM Casino.
- Rerouted D13/D14 would miss the stop at Wilson Bridge Drive, but could serve the stop once SHA improvements are complete.
 - In the interim, a stop would be placed at Kirby Hill Road and Indian Head Highway.
- Recommendation #14 provides a long-term option to the SHA road improvements.

Estimated Annual Cost: \$318,170



Short Term Recommendations

Recommendation #10: Explore the Transfer of W15 Service to Prince George's County TheBus and W19 Service to MDOT

- This recommendation proposes two policy actions:
 - *Metrobus will work with Prince Georges County staff to assess the possibility of transferring the W15 route to be operated by TheBus as a local service.*
 - *Metrobus will explore the possibility transferring the W19 service to the Maryland Department of Transportation (MDOT) to be operated as a commuter route.*
- Reasons for the proposed transfer include:
 - The W15 current ridership and route structure is comparable to surrounding TheBus routes rather than Metrobus service.
 - The W19 operates more as commuter service, with only a few peak period trips and limited stops at Park & Rides, similar to other MDOT commuter buses. In addition, the W19 provides service to Charles County, which is outside the WMATA Compact Area.

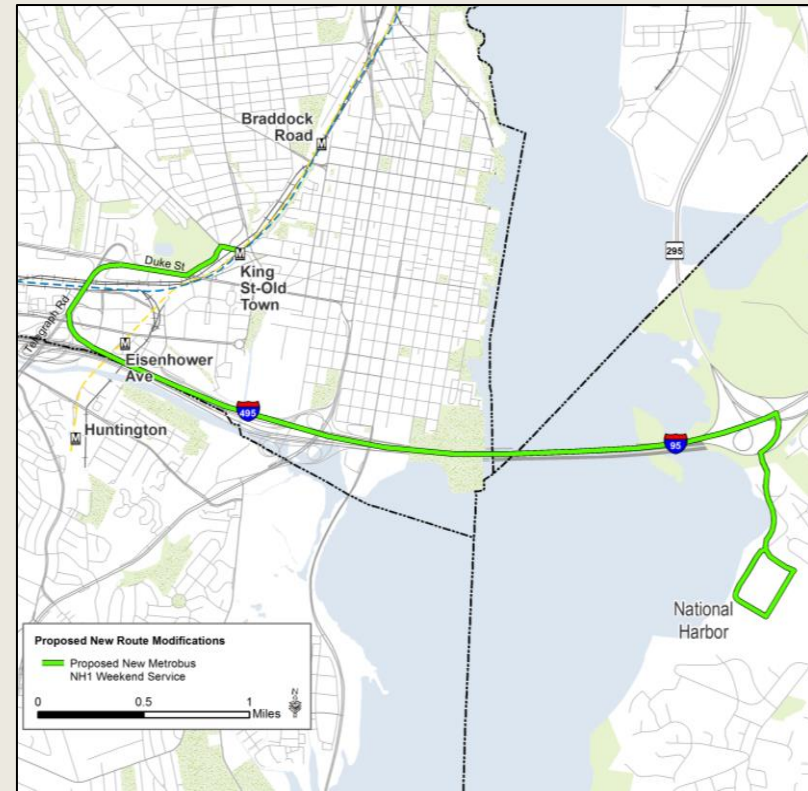
No costs associated with policy actions.



Mid-Term Recommendations

Recommendation #11: Introduce Weekend Service from National Harbor to King Street Metro

- Provide new weekend service from National Harbor to King Street Metro (designated as NH2). The initial proposal was developed based on the following findings from the study:
 - Latent demand exists for a transit connection across the Woodrow Wilson Bridge.
 - National Harbor will continue to generate new trips from new developments (entertainment & retail - mostly weekend trips).
 - King Street Metro Bus Bays are at capacity on weekdays, but have additional capacity on weekends.
- The service is expected to run every 30 minutes between 7:00 am and 11:00 pm.



Estimated Annual Cost: \$ 214,244



Metrobus Service Evaluation Study: Routes D12/13/14, NH1/3, P17/18/19, W13/14, W15, W19

Mid-Term Recommendations

Recommendation #12: Consolidate Bus Stops

- Begin bus stop consolidation process following WMATA procedures – potential candidates identified based on distance between stops guidelines.
- Consolidation of stops will:
 - Improve passenger convenience
 - Improve service reliability
 - Reduce travel times
- Candidate stops identified are in the following tables:

Capital costs associated with change cannot be calculated until specific stops to be consolidated are determined.



Mid-Term Recommendations

Recommendation #12: Continued

Westbound Candidate Stops	Boardings/Alightings	Eastbound Candidate Stops	Boardings/Alightings
D12			
St Barnabas Rd + Clifton Rd	3/3	St Barnabas Rd + Arts Dr	8/6
St Barnabas Rd + Marlow Towers (N)	9/9	Birchwood Dr + Livingston Rd	1/0
Birchwood Dr + Galloway Dr	8/0	Birchwood Dr + Galloway Dr	1/3
Galloway Dr + Colony Rd	5/0	St Barnabas Rd + Temple Ln	16/4
St Barnabas Rd + Leisure Dr	4/3	Silver Hill Rd + Terrace Dr	2/2
Helmont Dr + Fenwood Ave	5/1	Birchwood Dr + Galloway Dr	1/0
Keith St + St Clair Dr	8/4	Galloway Dr + Colony Rd	4/2
Birchwood Dr + Fountain Rd	3/0	Helmont Dr + Fenwood Ave	1/4
St Barnabas Rd + Bedford Way	1/3	Keith St + St Clair Dr	4/9
St Barnabas Rd + Frazier Terr	1/0	Marlow Hgts SC + #3927	5/14
St Barnabas Rd + Stamp Rd	3/4	Birchwood Dr + Fountain Rd	1/0
Birchwood Dr + Dunwoody Ave (W)	5/0	St Barnabas Rd + Stamp Rd	16/6
28th Ave + Riviera St	10/2	St Barnabas Rd + Clifton Rd	3/2
Silver Hill Rd + Maywood La	9/1	Birchwood Dr + Dunwoody Ave (W)	2/0
28th Ave + #4219	1/0	28Th Ave + Riviera St	3/7
		28th Ave + #4219	1/2
		Silver Hill Rd + Maywood La	1/1
		Kennebec St + Deal Dr	10/9
D12, D14			
Audrey La + Deal Dr	23/1	Glassmanor Dr + #4911	2/8
Deal Dr + Kennebec St	15/7	Marcy Ave + Leverett St	4/9
Deal Dr + Marcy Ave	2/0		
D12, D13, D14, W15			
Southern Ave + Wheeler Rd	5/3	Southern Ave + Wheeler Rd	2/0
Southern Ave + United Medical Center	3/3		



Mid-Term Recommendations

Recommendation #12: Continued

Westbound Candidate Stops	Boardings/Alightings	Eastbound Candidate Stops	Boardings/Alightings
D13, D14			
Everhart Pl + Corning Ave	12/4	Brinkley Rd + #2505	0/1
Regency Pkwy + Stoney Meadows Dr	3/13	St Barnabas Rd + Careyhurst Dr	2/2
Glen Rock Dr + Corning Ave	15/0	Glen Rock Dr + Corning Ave	11/1
Brinkley Rd + Brinkley Manor Apts	2/1	Wentworth Dr + # 1121	1/3
Suitland Rd + John St	3/5	Wentworth Dr + Haven Ave	5/7
Leyte Dr + Shelby Dr	15/4	Leyete Dr + Shelby Dr	7/14
Glen Rock Dr + Brinkley Rd	3/1	Leyete Dr + # 6902	0/1
Leyte Dr + # 6903	1/0	Regency Pkwy + Rock Quarry Terr	9/3
Suitland Rd + Elmendorf Dr	2/6	Silver Hill Rd + Randall Rd	1/8
D12, D14, W15			
Allentown Rd + #7075	7/4	Allentown Rd + Westchester Ct	1/0
D14			
Allentown Way + Old Branch Ave	0/1	Everhart Pl + Corning Ave	9/11
Allentown Way + Old Branch Ave	0/1	Allentown Rd + Allentown Way	3/3
D14			
Allentown Way + Old Branch Ave	0/1	Everhart Pl + Corning Ave	9/11
Allentown Way + Old Branch Ave	0/1	Allentown Rd + Allentown Way	3/3
		Kennebec St + Deal Dr	10/9
P17, P19, W13			
		Pennsylvania Ave + 11th St	0/0
		H St Nw + 13th St Nw	0/0
		13th St Nw + G St NW	0/0



Mid-Term Recommendations

Recommendation #12: Continued

Westbound Candidate Stops	Boardings/Alightings	Eastbound Candidate Stops	Boardings/Alightings
P18, W14			
		South Capitol St + Forrester St	0/6
W13			
Jackson Dr + Washington La	0/0	Old Fort Rd + Folk Dr	0/0
Old Fort Rd + Valley View Dr	0/0	Old Fort Rd + Gallahan Rd	0/2
Madison Dr + Monroe Ave	0/0	Old Fort Rd + Washington La	0/0
Jefferson Rd + Monroe Ave	0/0	Madison Rd + Monroe Ave	0/0
Old Fort Rd + Old Piscataway Rd	20/1	Madison Rd + Harrison Ave	0/0
Jackson Dr + Adams Dr	0/0	Jackson Dr + Adams Pl	0/1
Madison Dr + Harrison Ave	0/0	Monroe Ave + Jefferson St	0/0
Madison Dr + Jefferson Rd	0/0	Old Fort Rd + Old Piscataway Rd	1/17
Jefferson Rd + Jackson Dr	0/0	Jackson Dr + Jefferson Rd	0/2
Clarion Rd + Jefferson Rd	0/0	Jefferson Rd + Madison Dr	0/0
		Jefferson St + Clarion Rd	0/0
		Clarion Rd + Clarion Terr	0/0
W15			
Palmer Rd + Devon Hills Dr	13/7	Allentown Rd + Payne Dr	0/2
Allentown Rd + Jocelle Ct	0/0	Allentown Rd + Gennene La	0/1
Allentown Rd + Prince Georges Dr	6/0	Palmer Rd + Devon Hills Dr	0/7
		Allentown Rd + Jocelle Ct	0/0



Mid-Term Recommendations

Recommendation #13: Reconfigure the Oxon Hill Park & Ride into a Regional Transit Center

- Prince George's County proposes reconfiguring the existing Oxon Hill Park & Ride into a regional transit center. Improvements are needed based on the following reasons:
 - Potential future increase in the number of routes serving the facility:
 - D12 Reroute, D14 Reroute, and H12 Extension
 - Demand for transit service is expected to grow due to the new Tanger Outlet and proposed MGM Casino.
- WMATA will continue to work with Prince George's County and other stakeholders to develop Oxon Hill Park & Ride into a regional transit center.

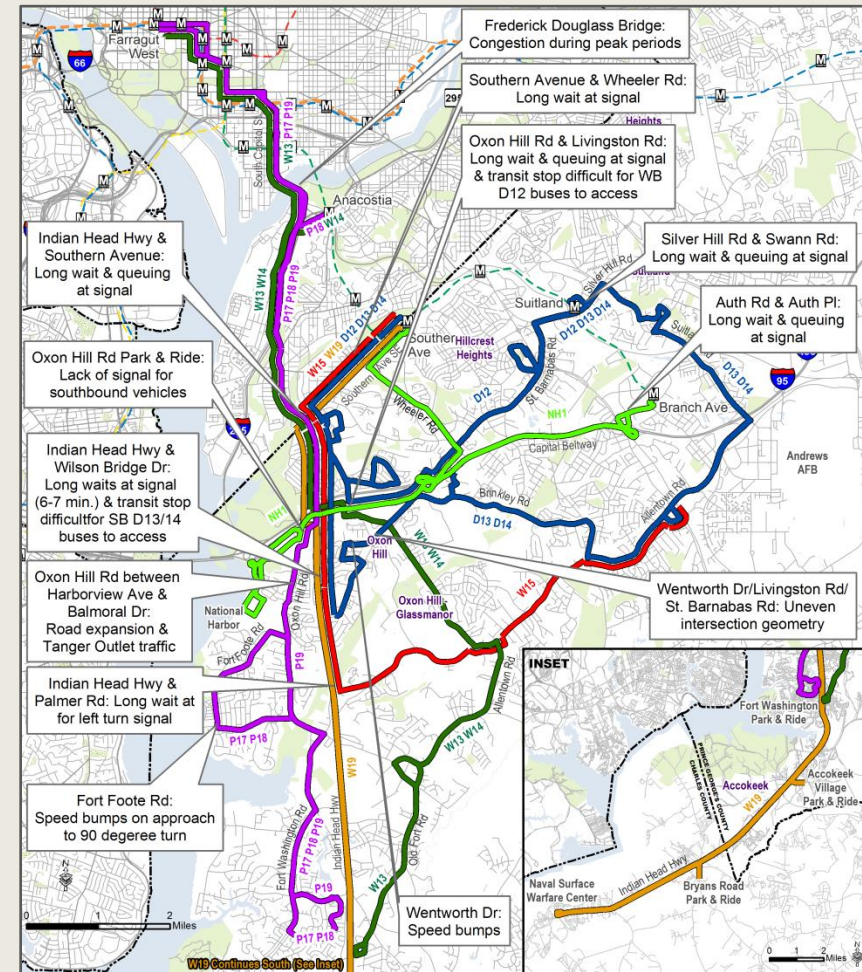
Costs will be determined after consultation with Prince George's County and preliminary design.



Mid-Term Recommendations

Recommendation #14: Improvements to Traffic Operations

- Implement multiple traffic related recommendations to improve operations and reliability on the Oxon Hill Area Lines.
- Metro will work with the District Department of Transportation, Prince George's County, and Maryland Department of Transportation to coordinate on traffic related issues.

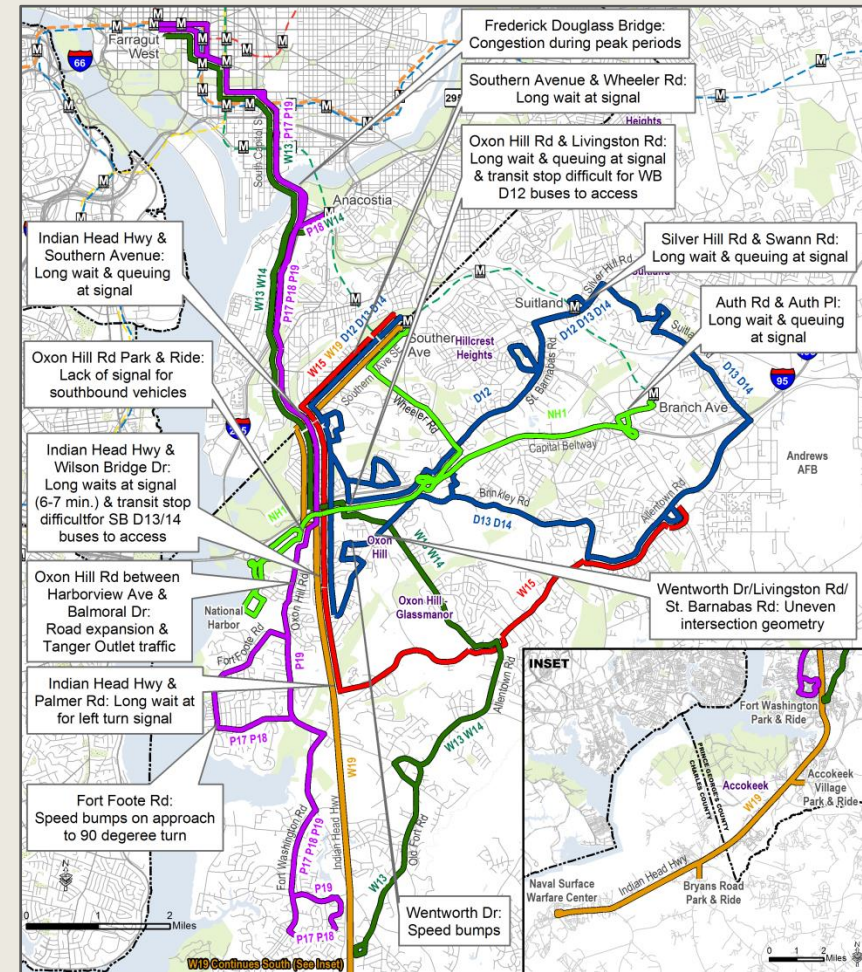


Mid-Term Recommendations

Recommendation #14: Continued

- Traffic related issues to address include:
 - Conducting traffic movement counts at certain intersections to optimize cycle length/splits and prioritize bus traffic movements.
 - Transit stop placement and enforcement of parking restrictions.
 - Coordinate on construction traffic management and road design to optimize bus traffic movements.

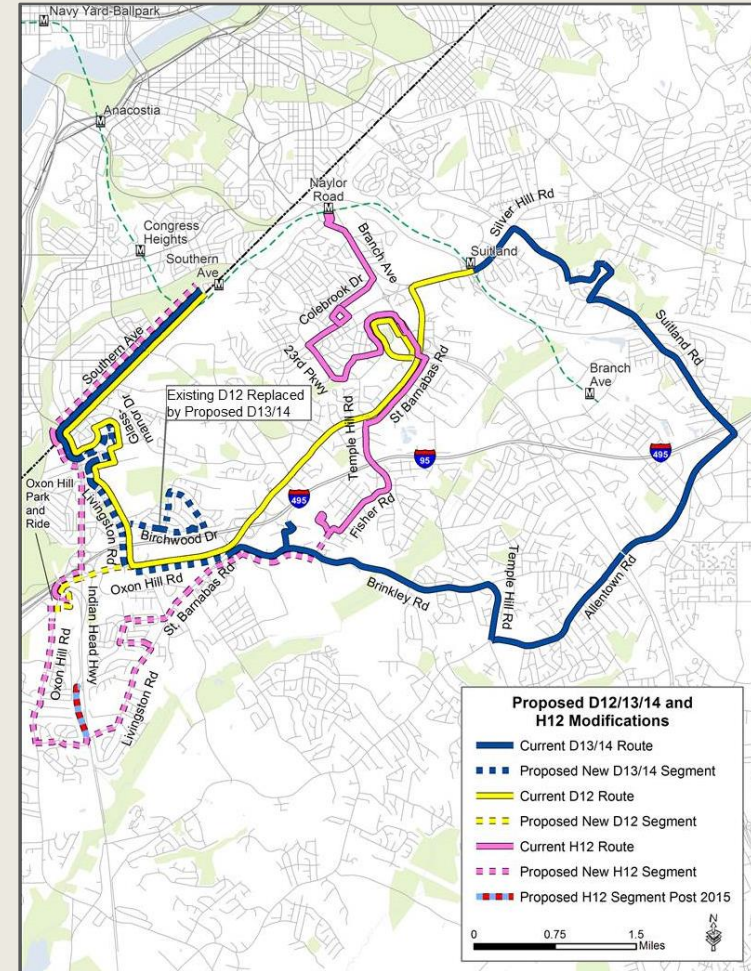
Costs will be determined after consultation with local jurisdictions.



Long Term Recommendations

Recommendation #15 – Reroute D13/D14 with H12 Extension

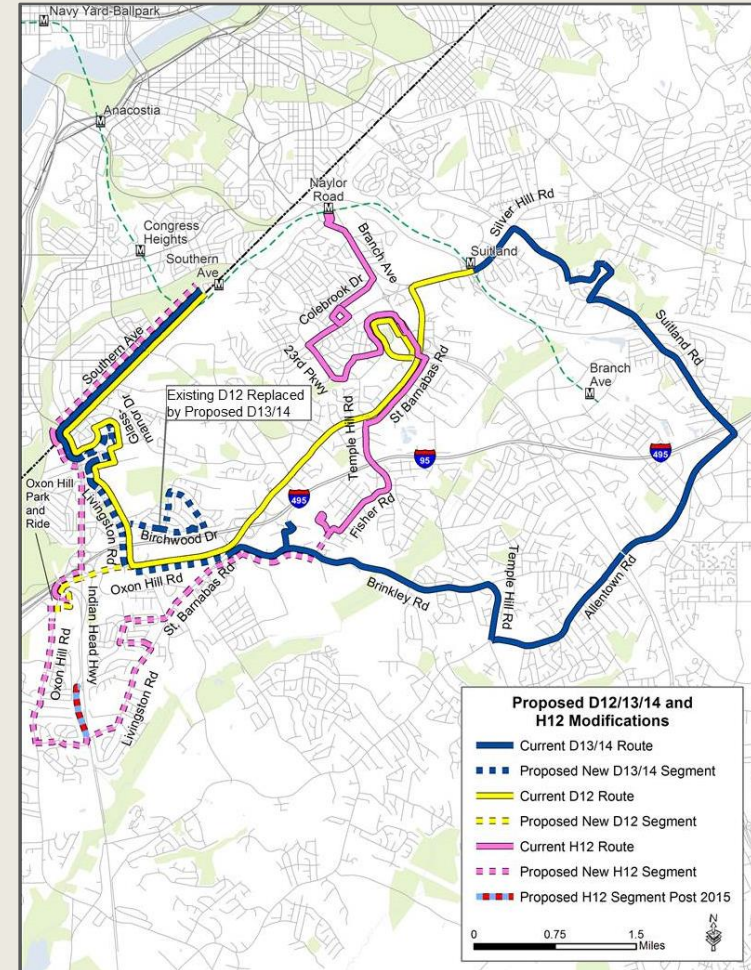
- Builds off D13/14 reroute in Recommendation #9.
- Provides more trips along the western segments of the D12.
 - Provides a connection between the Oxon Hill Area and the Naylor Road Metro.
 - Proposed road network changes in the Oxon Hill Area would create substantially long travel times on an already long D13/D14 trip.



Long Term Recommendations

Recommendation #15: Continued

- The H12 extension would serve:
 - The western portion of the D13/D14 route from the intersection of Brinkley Avenue and Fisher Road to the intersection of Indian Head Highway and Livingston Road.
 - The rerouted D13/D14 segment along Kirby Hill Road and Oxon Hill Road.
 - Indian Head Highway and Southern Avenue to Southern Avenue Metrorail Station.
 - The new alignment would not initially serve the community off of Wilson Bridge Drive, but could once SHA construction is completed.

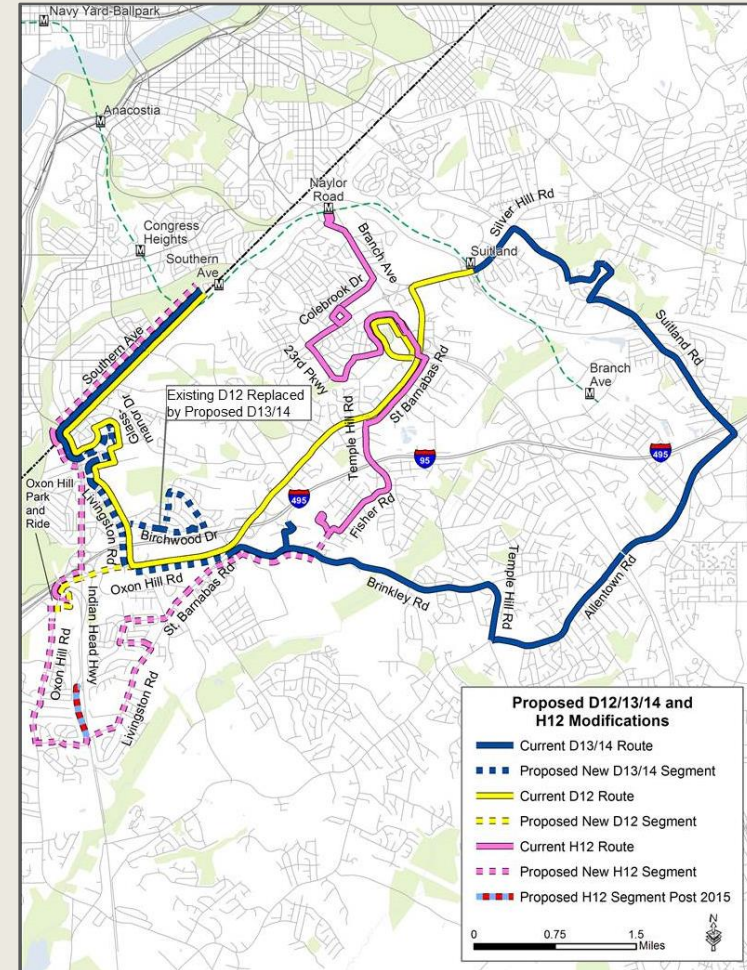


Long Term Recommendations

Recommendation #15: Continued

- The D13/D14 would be rerouted to follow the existing D12 alignment at the intersection of Brinkley Road and Oxon Hill Road to the Southern Avenue Metrorail Station.
- The D14 would replace the D12 to serve the Birchwood Drive loop.
- The D12 would be extended to serve the Oxon Hill Park & Ride.

Estimated Annual Cost: \$2,411,369



Long Term Recommendations

Recommendation #16 – New Weekday Service between Virginia and Southern Avenue Metro via National Harbor

- Proposal builds off of Recommendation #8, but with an additional connection across the Woodrow Wilson Bridge to the Eisenhower Avenue or King Street Metro.
 - Latent demand exists for a transit connection across the Woodrow Wilson Bridge.
 - National Harbor will continue to generate new demand with new developments.
- Service is expected to run every 30 minutes between 6:00 am – Midnight on weekdays and 6:00 am – 1:00 am on weekends.

Estimated Annual Cost: \$693,898

