MEMORANDUM

November 26, 2008

TO: Montgomery County Planning Board

VIA: Dan Hardy, Chief, Transportation Planning DKH

FROM: Tom Autrey (301-495-4533), Supervisor, Transportation Planning TA
Katherine Holt (301-495-4549), Senior Planner, Transportation Planning

SUBJECT: Planning Board Work Session on Purple Line Alternatives Analysis / Draft Environmental Impact Statement (AA/DEIS)

STAFF RECOMMENDATION

There is no staff recommendation at this time. This is a discussion item only. No public testimony will be taken. The purpose of this agenda item is to review selected key issues with the MTA Purple Line Project Team.

ORGANIZATION OF THIS STAFF MEMO

This memo includes the major sections listed below. The first three sections present an update from the staff and the remaining sections summarize material from the AA/DEIS compiled by the staff that focuses on Montgomery County.

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KEY ISSUES FOR MTA DISCUSSION ON DECEMBER 8

This section presents a summary of key issues for MTA discussion on December 8 featured in public comments to date. The purpose of including this discussion is to afford the Planning Board, staff and the MTA project team an opportunity to review these or other items of interest in advance of the Planning Board public hearing on January 8, 2009. The discussion of these topics will, for some issues, inform our staff recommendations.

1. Capacity of Light Rail Transit (LRT) compared to Bus Rapid Transit (BRT)

The staff asked the MTA late last month to provide estimates for the peak directional line load (ridership) and the assumptions regarding mode capacities used in the AA/DEIS.

The table below presents this information:

Table 1. Peak Hour Ridership and Line Capacity

Alternative	Location	Direction	Peak Hour Directional Line Load	Peak Hour Capacity[1]
Low Investment BRT	Rt. 1/UM East to College Park Metro	Eastbound - PM	1,087	2,100
Med Investment BRT	SSTC[2] to 16th Street	Eastbound - PM	1,652	2,100
High Investment BRT	SSTC to 16th Street	Eastbound - PM	1,858	2,100
Low Investment LRT	SSTC to 16th Street	Eastbound - PM	2,147	2,800
Medium Investment LRT	SSTC to 16th Street	Eastbound - PM	2,239	2,800
High Investment LRT	SSTC to 16th Street	Eastbound - PM	2,533	2,800

The AA/DEIS notes that the "TSM and BRT vehicle fleets could be a combination of articulated or standard buses."[3]

Directional line capacity is dependent upon the frequency of the service and the capacity of the vehicle and/or train, among other things. The peak hour capacity of 2,100 shown in Table 1 for the BRT alternatives assumes that additional BRT vehicles are introduced into service during the busiest one hour in the afternoon to accommodate the demand. It also assumes that each BRT vehicle can accommodate 140 passengers.

There are numerous articles and professional references on transit capacity. The Transportation Research Board's Transit Capacity and Quality of Service Manual – 2nd Edition includes a table that suggests a good range for BRT vehicle capacity is 100-120 for a high floor vehicle.[4] Another good reference for comparing LRT and BRT on the issue of capacity (and costs) is a presentation by Jay Evans Consulting in 2005 at the Institute of Transportation Engineers (ITE)

[1] The MTA assumptions for Peak Hour Capacity include the following: For BRT – 10 vehicles per hour times 140 people per vehicle plus 5 trippers per hour times 140 people per vehicle. "Trippers" are extra buses placed in operation for only the period of time needed to accommodate the demand – in this case it is theoretically the busiest consecutive 15 minutes during the peak period. For LRT – the assumption is 10 trains per hour with each train consisting of 2 cars, each car carrying 140 people.

[2] SSTC is the Silver Spring Transit Center

[3] See Subsection 2.6.5, page 2-31.

[4] See Transit Capacity and Quality of Service Manual – 2nd Edition (Exhibit 4-17)

Annual Meeting.[5] The presentation includes what the staff believes to be an objective look at the issues of capacity and costs. BRT vehicle capacity is estimated to range from 110 to 120, including more than one-third as standees. Mr. Evans concludes the presentation by noting:

"No rapid transit mode is singly superior in all contexts. Consideration of 'right sizing' should be paramount in decision making."

The staff is concerned that BRT may not provide enough capacity to serve expected demand on the Purple Line - especially given its connections with the Metrorail system, the forecasted peak hour passenger demand, and the fact that the forecasting model does not capture certain other external factors (e.g., the risk that cost of fuel rises significantly faster than inflation).

Fifteen BRT vehicles an hour would accommodate 1,800 passengers per hour if you assume 120 passengers per BRT vehicle (lower than the MTA estimate presented in Table 1). Ten LRT trains an hour would accommodate 2,700 passengers an hour if you assume two cars per train – each car being able to accommodate 135 passengers.[6] Under those assumptions, the BRT vehicles would accommodate the estimated peak hour directional line load on two of the three alternatives. We would like Planning Board and staff to review and discuss this information with the MTA Project Team.

2. Single Tracking vs. Double Tracking

The Georgetown Branch Trolley track described in the 1990 Master Plan between Bethesda and Silver Spring is a distance of 4.4 miles (22,585 feet). Of the 22,585 feet of track, only 8,320 linear feet consists of double track. All of the light rail alternatives being examined in the DEIS/AA include a double track corridor. The BRT transitway east of Pearl Street in Bethesda is also a two-way transitway. There is therefore a need to review the issue of single vs. double tracking (or transitway) with the MTA Project Team.

Single tracking affects line capacity.[7] The degree of the capacity effect is based on several other factors, including:

- The number of stations within the single track segment
- The length of the single track segment
- Whether there are multiple single track segments
- How much variability there is in the running time due to conflicts along the right of way (e.g., at grade intersections, etc.)

Any of the above factors (in combination or together) can easily result in an inability to achieve a frequency of service that otherwise (with double tracking) would be attainable. We often now

[5] See the following link for the slide show: http://www.ite.org/meetcon/2005AM/Evans_Tues.pdf

[6] A 90 foot light rail vehicle is estimated to have a capacity equivalent to 1.5 passengers per foot length of the car, or 135 passengers (Source: Transit capacity and Quality of Service Manual – 2nd Edition – page 5-29).

[7] See page 16 of the aforementioned presentation by Jay Evans Consulting.

experience the impact of single tracking on weekends on Metrorail as repairs are made (and single-tracking affects repair and maintenance flexibility as well).

The operations plan developed for the trolley in the Georgetown Branch Master Plan Amendment was able to assume a six minute frequency of service in large part because the entire segment was devoted exclusively to the trolley (i.e., there was no shared right of way assumed). That important fact is no longer present with the extension of the service east of Silver Spring. The MTA Project Team has experience with this issue in the Baltimore area and we think it would be beneficial to review that experience with them in this worksession.

3. Funding the Purple Line

The AA/DEIS notes that the decision on the Locally Preferred Alternative will establish the level of need for capital funds. More specifically it notes the following

"It is possible that the Locally Preferred Alternative may be a modification of an alternative considered in the AA/DEIS in terms of the location of the terminal stations, the number and location of stations, and other components of the project definition.

The timing or phasing of the construction is an important cost factor and major influences on the timing will be the availability of funding, especially the state funding, and the state priorities relative to the other New Starts projects."

The staff believes it is important to review the latest issues from the MTA's perspective related to funding both the Purple Line and the Corridor Cities Transitway. However, we advocate making the most effective long-term choice for each corridor independently, rather than selecting the wrong alternative simply to reflect current cash flows. Once a locally preferred alternative is selected, a phasing and funding plan can be developed in greater detail.

4. The Jones Bridge Road Alternatives

The Planning Board reviewed the Jones Bridge alignment in June 2003 and recommended that the alternative be dropped from further consideration.[8] Supporters of the Jones Bridge alignment note that the Planning Board action in 2005 predates the Base Realignment and Closure (BRAC) decision to relocate the activities at Walter Reed Army Hospital to the National Naval Medical Center in Bethesda and was based upon an assumed typical section for Jones Bridge Road east of Connecticut Avenue that is significantly wider than that assumed in the Sam Schwartz Engineering review of the MTA work.[9]

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[8] See the staff report at: http://www.montgomeryplanningboard.org/meetings_archive/03_meeting_archive/agenda_062603/item12_062603.pdf

[9] The Town of Chevy Chase retained a consulting firm, Sam Schwartz Engineering (SSE) to review the MTA study

The Town of Chevy Chase believes that the AA/DEIS process has not adequately considered the advantages of an alignment on Jones Bridge Road. SSE issued an initial report on April 23, 2008 and an update on July 31, 2008.[10]

The SSE reports stated that with greater existing and future population and employment along the Jones Bridge Road alignment more people and jobs would have direct access to the Purple Line and the result would be a Purple Line that was more effective and more attractive.

The Low Investment BRT Alternative is the only original build alternative that does not use the Georgetown Branch west of Jones Mill Road. The MTA, in response to concerns expressed by the Town of Chevy Chase, examined two supplemental alternatives;

- The Jones Bridge Road alignment with the Medium Investment BRT Alternative for all other segments of the alignment;
- A Medium Investment BRT Alternative that would operate within the Georgetown Branch Right of Way and extend north to the Medical Center – in effect a mirror image of the first supplemental Medium Investment BRT Alternative.

The model run indicated that the alignment over the Georgetown Branch alignment would result in an increase of over 8,000 passengers on an average weekday in 2030 as compared to the first supplemental alternative that uses Jones Bridge Road.

We find the model results as presented by the MTA in the AA/DEIS are reasonable and reflect the attractiveness of the reduced travel time provided by the Georgetown Branch alignment coupled with the greater density of both housing and employment in Bethesda and Silver Spring – as opposed to the campus settings at NIH and the Naval Medical Center.

A summary of the existing and forecast household and employment densities in the applicable traffic analysis zones (TAZ) is presented below[11]:

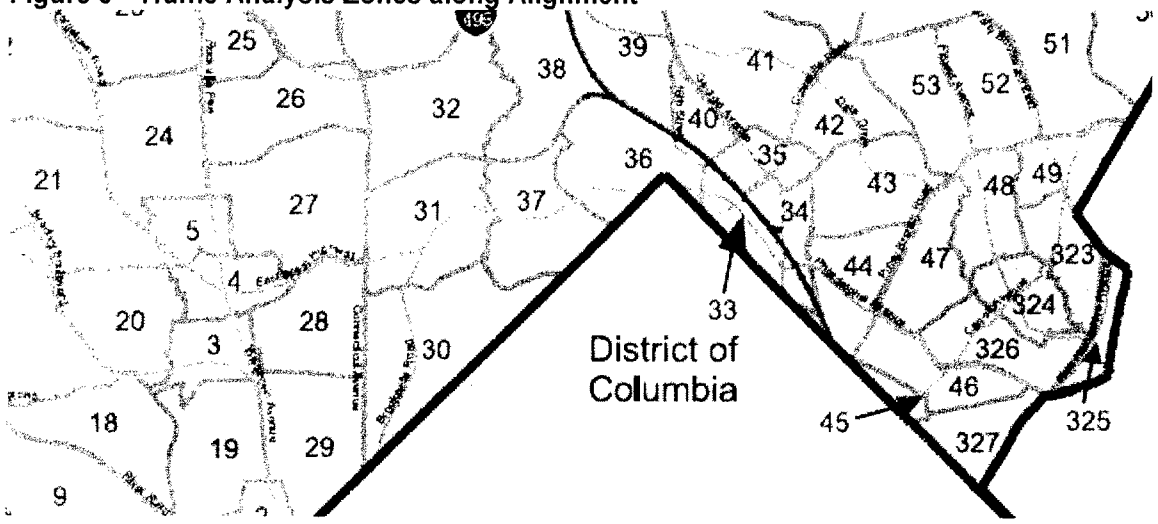
[10] A summary of the various reports – along with the staff's response to the initial SSE report – is available for review at the following link:
http://www.mcparkandplanning.org/planning/viewer.shtm#http://www.mcparkandplanning.org/Transportation/projects/documents/SummaryofSSEandMTAReports092508_000.pdf

[11] Source: Washington Metropolitan Council of Governments Round 7.1 Cooperative Forecasts and Planning Department Research Division. These estimates include the estimated increase in employment attributable to BRAC.

Table 2. Comparison of Forecast Jobs and Household Densities in Activity Centers.

Description	TAZ #	HH / Acre - 2005	HH / Acre - 2030	% Increase Over 25 Years	Jobs / Acre - 2005	Jobs / Acre - 2030	% Increase Over 25 Years
Bethesda Area							
NIH/National Library of Medicine	24	1	1	0%	50	61	22%
Bethesda CBD[12]	5	21	48	133%	62	68	10%
Bethesda CBD	4	16	30	89%	137	158	15%
Bethesda CBD	3	18	28	61%	76	87	15%
National Naval Medical / USUHS	26	0	0	0%	25	32	31%
Silver Spring Area							
Silver Spring CBD – Between Wayne and Spring Street	35	18	37	100%	121	143	19%
Silver Spring CBD – Between E/W Highway and Fenton Street	34	4	39	784%	85	94	11%
Silver Spring CBD – Between DC Line and CSX ROW	33	19	38	96%	47	56	21%

Figure 3 - Traffic Analysis Zones along Alignment



[12] TAZ 5 is one area of focus in the SSE analysis. SSE's position is that this area is not within walking distance of the Bethesda Metrorail Station. . The proposed station in the Woodmont North area near Rugby Avenue and Woodmont Avenue under the SSE proposal is 0.67 miles north of the proposed Bethesda Purple Line station on the Georgetown Branch Right-of-Way.

5. The Trail on the Georgetown Branch Right-of-Way

The AA/DEIS includes a parallel, 10' wide, trail on the Georgetown Branch right of way between Bethesda and the Silver Spring Transit Center. The AA/DEIS notes that

"It is assumed that a separate funding program would be undertaken by Montgomery County for implementation of the trail (e.g., local or state funding sources)."

The purpose of this statement is that the cost of the trail is not included in the total project cost that is used to determine the cost-effectiveness rating. This strategy makes the transit project more competitive for federal funding, but places a greater burden on local governments to implement planned multi-modal projects. We will want to get a clarification from the MTA on this important issue. The AA/DEIS does not include the cost of the trail overall or the cost for elevating the trail through the tunnel under Wisconsin Avenue.

Another issue that has been raised is the width of the trail. The MTA – working with guidance from the Department of Parks and the Planning Department and consistent with master plan and AASHTO standards and guidance – has in its design a ten foot paved path with two foot shoulders. We would like to get the MTA's thoughts on the feasibility of a wider trail.

The hard-surface trail network is wooded with young and mature trees closing the canopy over the trail. The construction of any of the AA/DEIS transitway alternatives along this portion of the alignment will result in the loss of all existing trees within the 66' wide corridor. Because the trees do not count as a 'forest', SHA does not propose mitigation or reforestation for the loss of trees. The FEIS must recognize the importance of this resource and determine if minimization is possible to reduce impacts and what mitigation techniques could be developed to restore some of the green edge over time.

6. Silver Spring and Wayne Avenue Alignment

One focus of the Master Plan Advisory Group (MPAG) work has been on the alignment in the Silver Spring CBD and in East Silver Spring, especially on Wayne Avenue. The MTA Project Team conducted supplemental studies of alignment options in this area in response to community concerns.

One of the major issues on Wayne Avenue is the widening of the roadway that would be necessary primarily to accommodate the addition of left turn lanes under the Medium Investment LRT Alternative. Some of the widening is within the right of way and some would require property acquisition.

The MTA estimates the width of the property takings (i.e., the area outside of the right of way) could vary from 10 to 20 feet along the north side of Wayne Avenue within the area between Fenton Street and Cedar Street and then again between Mansfield Road and Sligo Creek Parkway. It is estimated that the property takings on the south side of Wayne could vary from 2 to 6 feet.

When it became apparent that there was (and still is) opposition to a surface alignment on Wayne Avenue, the staff examined the boarding / alighting profile of the one Ride-On route (Route 15) that essentially duplicates the proposed Purple Line alignment between the Silver Spring Transit Center (SSTC) and Takoma Langley. The route operates on an average five minute frequency in the peak direction – very similar to the proposed Purple Line frequency. It is one of the most heavily used routes in the Ride-On system but less than 5% of the weekday boardings and alightings occur between the Silver Spring CBD and Sligo Creek

Given concern in the community, we asked the MTA to couple the High Investment LRT tunnel in the Silver Spring CBD with the Medium Investment LRT for the balance of the alignment (from Bethesda to New Carrollton) with no station at Dale Drive.[13] The results indicated the total ridership would increase by 2,100 and the cost effectiveness would remain under the current FTA threshold for a project to remain competitive for funding.

Once we confirmed that the tunnel was under the FTA threshold, we examined the likelihood that an extended tunnel – to the Mansfield Road area – would also result in a cost effective rating under the FTA threshold. Our simple extrapolation of the costs (based upon an additional $65,000,000 for the tunnel extension from Cedar Street east to some point near Mansfield Road) suggests the resulting cost effectiveness rating would be right at the FTA threshold. We have requested that the MTA analyze this modification and would like to review the status of the request and other issues related to the longer tunnel.

It should be noted that even if the longer tunnel would prove to be "cost-effective" under the FTA criteria, there are a number of other issues to be considered when attempting to reach a recommendation on the preferred alignment. Some of these include:

- Cost – the tunnel (only to Cedar Street) under the "Hybrid" Alternative that has been analyzed by the MTA would add $110,000,000 to the Medium Investment Light Rail Alternative. It is estimated that the extension to the area around Mansfield Road would bring the additional costs to somewhere around $175,000,000.

- The Library Site and surrounding area would not be served.

- There would be no stop at Dale Drive.[14]

- There are concerns about how to make a tunnel portal work in the area just west of Sligo Creek.

7. Prince George's County and the City Of Takoma Park Position On The Purple Line

The staff is not aware of any formal position taken to date by Prince George's County on the issue of the Locally Preferred Alternative. The City of Takoma Park passed a resolution on Monday, November 17, 2008, in support of Light Rail. We will continue to coordinate with the

[13] There is also no station at Fenton Street under this "Hybrid" Alternative. None of the tunnel options in the Silver Spring CBD have a station stop at Fenton Street at the proposed library site.
[14] There is some community opposition to a stop at Dale Drive under any alternative.

Prince George's Planning Department and both County Executive branches to ensure that a united local agency position is developed on the project mode.

8. Station Area Planning

One of the concerns expressed by a number of members of the MPAG is that the Purple Line should not result in significant changes to established neighborhoods. There is concern about gentrification, the loss of neighborhood character and appropriate scale, and potential reduction in workforce housing and small businesses.

The Purple Line Functional Master Plan is only evaluating mode and alignment as the master plan amendment is not intended to facilitate land use changes in Montgomery County except perhaps in the Takoma Crossroads area, where a concurrent area master plan amendment is underway. The Planning Board is proposing a work element in the FY 2010 Work Program that would evaluate station area land use master plans. In that context, we would like to get MTA input on areas of particular concern.

Similarly, the AA/DEIS considers the relative transportation performance of the Purple Line alternatives considering a constant set of land use assumptions for the horizon year 2030 based on the Metropolitan Washington Council of Governments Cooperative Forecasting process. Any changes to land use (from those already master planned to occur over the next two decades) as a result of the selected alternative are considered Indirect and Cumulative Effects (ICE). These Indirect and Cumulative Effects are impacts that are caused by an action that may occur because of a project along with other foreseeable future actions. The AA/DEIS states in part:

"Development within the ICE area is expected to occur in the immediate vicinity of the Purple Line stations, approximately ¼ mile radius."[15]

As noted above, there is concern in some established neighborhoods adjacent to the alignment (most notably in East Silver Spring and the Takoma Langley Crossroads area) that the stations could result in adverse changes – the reduction of the inventory of workforce or affordable housing for instance. It is for that reason that one logical next step in the planning process is the addition of a work program element to address station area planning in areas where there is concern and no current station planning effort underway.[16]

PROJECT STATUS AND HISTORY

The Purple Line Alternative Analysis / Draft Environmental Impact Statement (AA/DEIS) was released on October 17, 2008.[17] We are therefore a little over one month into the 90 day review period. The purpose of this worksession is to provide the Planning Board with a brief overview of the document and to briefly examine some of the goals of the project as well as some of the issues that have been raised in response to the project planning.

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[15] The Purple Line AA/DEIS 4.18.2

[16] Work on the Takoma Langley Crossroads Sector Plan is currently underway.

[17] The Purple Line AA/DEIS is available on-line at: http://www.purplelinemd.com/aadeis

Staff will ask the Planning Board to support a recommendation on a Locally Preferred Alternative (LPA) for the Purple Line at its meeting on January 8, 2009. The recommendation will then be forwarded to the County Council and the Maryland Transit Administration (MTA). It is the state that will ultimately select the LPA. The LPA designates the preferred mode and alignment for the Purple Line. Once the LPA is identified, the Planning Department staff will go to work on finalizing the Draft Purple Line Functional Plan to establish as County policy the alignment between Bethesda and the county boundary in the Takoma Langley Crossroads area. The selection of the LPA is also a necessary precursor to the MTA submitting a formal request to the Federal Transit Administration to enter the next phase (preliminary engineering) of the project planning with the intent of ultimately obtaining federal funding under the FTA's "New Starts" funding program.

The overview of the AA/DEIS document will be provided by the MTA Purple Line project team. Mr. Mike Madden is the MTA Project Team Manager. Glenn Orlin of the County Council staff and Gary Erenrich of the County Department of Transportation (DOT) Director's office have also been invited to join the discussion after the MTA provides its overview.

UPCOMING PLANNING BOARD HEARING

As noted above, the Planning Board has scheduled a hearing on January 8, 2009. Two hours will be set aside for public testimony at that hearing in advance of the Planning Board deliberations on the LPA.

Given the scope of, and interest in the project, the procedure for soliciting and determining how best to allocate the available time is important. The staff has issued the following press release:

Montgomery County Transportation Planners Identify Issues for Planning Board Review of Proposed Purple Line

SILVER SPRING *– In response to a Maryland Transit Administration (MTA) report specifying the details of alternative approaches for the Purple Line, Montgomery County transportation planners will brief the Planning Board and a citizens' advisory group in early December on key issues they should consider as they form a local recommendation for the project.*

On January 8, the Board will hold a public hearing on the Purple Line to inform its decision on a recommendation for the route and type of transit – light rail or bus rapid transit – for the Montgomery County section of the Purple Line. The Board's recommendation will go to the County Council and then to MTA, which will make the final decision.

The Purple Line, a proposed 16-mile light rail or bus rapid transit line, would run from Bethesda to New Carrollton and provide direct connections to Metrorail, local and inter-city bus and the MARC train.

In preparation for the January decision, the Board has invited MTA on December 8 to review some key issues in a work session format. No public testimony will be accepted during that work session.

Also in advance of the January hearing, the Board's transportation planning staff will present some of the main issues to its advisory group, among them:

- *Ridership data for each Purple Line segment contrasted for bus rapid transit and light rail*
- *Funding opportunities and constraints*
- *Whether the route should run along Jones Bridge Road between Bethesda and Jones Mill Road*
- *How the Purple Line route might impact the Georgetown Branch trail, a popular bikeway along which the county and state have acquired right-of-way for an eventual transit route*
- *How to accommodate the route through downtown Silver Spring and East Silver Spring*

The public is welcome to speak at the Board's January 8 public hearing, although Chairman Royce Hanson is encouraging people to send written testimony given the large number of people who may wish to be heard. Testimony will be limited to two hours, with each speaker receiving no more than three minutes.

People wishing to sign up to speak on January 8 will need to specify which segment of the Montgomery County Purple Line they wish to address – Bethesda/Chevy Chase; Silver Spring; Long Branch/Takoma/Langley; or the entire length – using the online sign-up system available in late December on the Planning Board website or by calling 301/495-4600.

ADDITIONAL ISSUES TO BE ADDRESSED

The issues raised in this staff memo and subsequent discussion with the Planning Board will be supplemented with a second staff memo to be posted December 22, in advance of the January 8, 2009 public hearing. That memo will include a staff recommendation on a Locally Preferred Alternative. Other issues that will be examined in the December 22 memo include:

- Review of potential Purple Line terminus at Woodmont East and the design concerns associated with transit vehicle accommodation within public open space.
- Review of mitigation strategies including the tree and vegetation loss on the Georgetown Branch Right-of-Way
- Coordination with the Takoma Langley Sector Plan schedule and recommendations for University Boulevard design treatments
- Historic Preservation
- Trail and bikeway connectivity
- LRT and BRT rolling stock characteristics
- Alternatives not retained for detailed study
- Purple Line in the context of the General Plan
- Other MPAG comments

MTA PUBLIC HEARING AND OTHER OUTREACH EFFORTS

The MTA held the following public hearings on the AA/DEIS:

- November 15th in New Carrollton
- November 18th at the National 4-H Center in Chevy Chase
- November 19th at the University of Maryland in College Park

- November 22nd at the Takoma Park Campus of Montgomery College

The staff will prepare a brief summary of the testimony at the hearings and make it available at the December 8th worksession.

A summary of other outreach activities and agency coordination is presented in Chapter 1 of the AA/DEIS.[18]

In addition, the Planning Board's Purple Line Functional Master Plan Advisory Group (MPAG) has met 17 times since its appointment in September of last year.[19] The MPAG is comprised of individuals and stakeholders along the Purple Line alignment. The MPAG's role is to assist the Planning Board and staff in the review of the AA/DEIS – to delve into the project details and let the staff and Planning Board know of things (positive and negative) that deserve additional focus as well as things about the project they like or do not like.[20] The MPAG continue to advise the Planning Board and staff on the development of the Purple Line Functional Master Plan. The staff believes the MPAG's input over the last year has been constructive and added value to the planning of the Purple Line. To our knowledge, it is the only forum where the many diverse views of residents and/or stakeholders along the entire alignment are heard on a regular basis in a somewhat formal setting. The staff believes the absence of a consensus by the MPAG on any specific issue of a project of this scope should not be considered to diminish the value of MPAG contributions.

PROJECT DESCRIPTION

The Purple Line is planned to be a 16 mile rapid transitway between Bethesda and New Carrollton. It is intended to improve east west travel options and connect major activity centers and transportation facilities and services within the urban ring of our County. Key features of the Purple Line as envisioned in the project planning to date include the following:

- Bus Rapid Transit (BRT) or Light Rail Transit (LRT) vehicles
- Peak period service frequencies around six minutes
- Service hours similar to Metrorail
- Connections with Metrorail at Bethesda, Silver Spring, University of Maryland / College Park, and New Carrollton
- Connections with MARC at Silver Spring, College Park, and New Carrollton
- Connection with Amtrak at New Carrollton
- Completion of the Capital Crescent Trail to the Metropolitan Branch Trail and Silver Spring Transit Center

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[18] See pages 1-16 through 1-19.

[19] A summary of the MPAG work – along with related Purple Line documents and reports – is available on the Planning Board Purple Line project web site at: http://www.mcparkandplanning.org/Transportation/projects/bicounty.shtm

[20] See the Purple Line Functional Master Plan Purpose and Outreach Strategy Report, pages 15-18, at: http://www.mcparkandplanning.org/planning/viewer.shtm#http://www.mcparkandplanning.org/Transportation/projects/documents/FINALPURPOSEANDOUTREACHREPORT010808.pdf for a discussion of initial issues raised by the MPAG. A more detailed discussion of these and other issues will be presented in the staff memo in advance of the January 8, 2009 Purple Line agenda item.

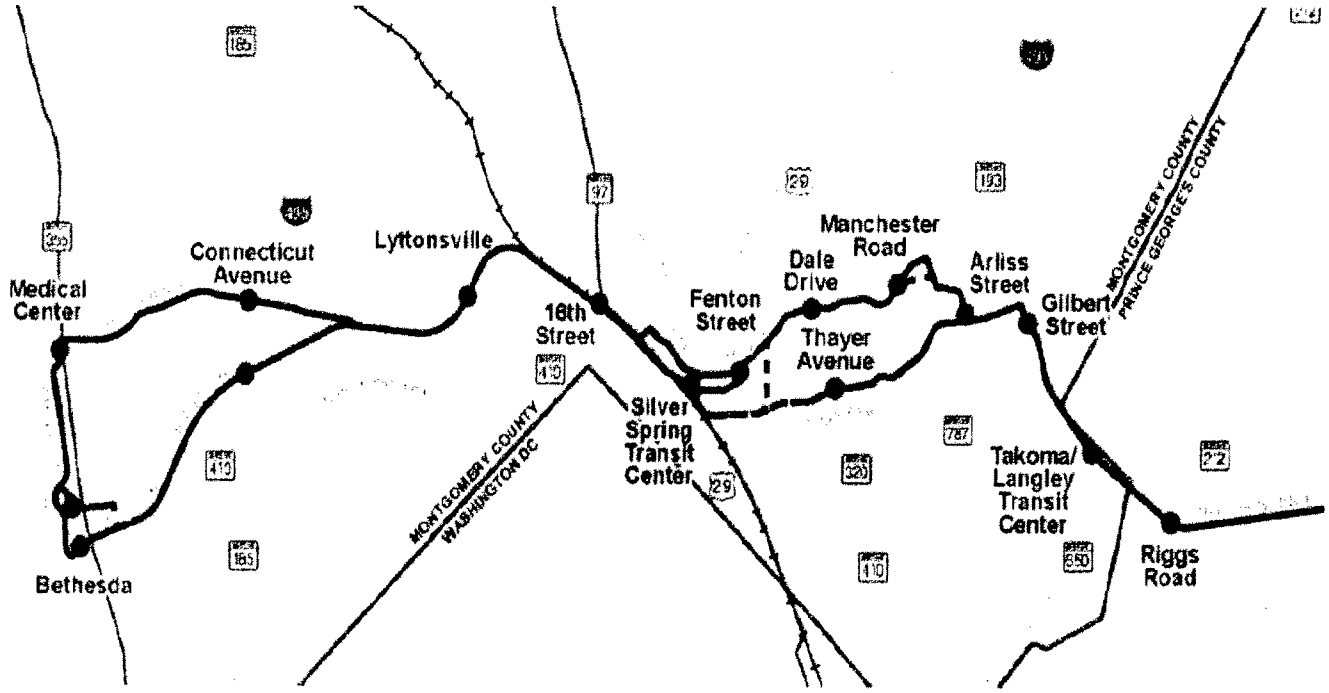
- Yard and Shop adjacent to Ride-On facility in Lyttonsville

A summary of the information contained in the AA/DEIS follows.

ALTERNATIVES UNDER CONSIDERATION

There are a total of eight alternatives considered in the AA/DEIS. A map of the alternative alignments and potential station locations within Montgomery County and brief summary chart of the key features of each alternative is provided below[21].

Figure 4 - Alternative Alignments & Potential Station Locations within Montgomery County



[21] See Section 2.4 of the AA/DEIS for additional detail on the alternatives. The summary chart is not intended to represent a complete list of all of the key features. All of the key features noted in the chart under the "no-build" alternative are in all of the other alternatives.

Table 3. Key Features of Purple Line Alternatives in Montgomery County

Alternative	Key Features In Bethesda – Chevy Chase Area	Key Features In CSX Right-of-way, Silver Spring CBD and East Silver Spring	Key Features In Long Branch / Takoma / Langley Park Area
No - Build	New South Entrance to Bethesda Metrorail Station	New Silver Spring Transit Center (SSTC)	New Takoma – Langley Transit Center
TSM Alternative[22]	Frequent Limited Stop Bus Service To/From New Carrollton via Silver Spring	Frequent Limited Stop Bus Service To/From Bethesda and New Carrollton	Frequent Limited Stop Bus Service To/From Bethesda via Silver Spring
Low Investment BRT	Routing On Woodmont Avenue and Jones Bridge Road. Enters Georgetown Branch At Jones Mill Road. Trail Is Constructed East Of Jones Mill Road To Silver Spring. There Are Two New Bridges Over Rock Creek – One For The Transitway and One For The Trail	Transitway stays on South Side Of CSX Right-of-Way While Trail Crosses CSX On New Bridge Near Talbot Street Bridge. The Transitway Crosses 16th Street and Spring Streets At Grade. Leaves the CSX Right-of-Way At The Spring Street Bridge and Uses 2nd Avenue and Wayne Avenue In Shared Lanes (Curbside)	Operates In Shared Lanes (Curbside) On Piney Branch Road and University Blvd.
Medium Investment BRT	Routing On Georgetown Branch Right of Way – Exits ROW at Pearl Street Westbound and Re-enters Right-of-Way From Woodmont Avenue. Station Stop With Elevator Connection To Bethesda Metrorail South Entrance. Two Bridges Over Connecticut Ave. and Rock Creek – One For Transitway and One For Trail. The Transitway and Trail Go Under Jones Mill Road.	Crosses 16th Street and Spring Streets At Grade and Crosses Over The CSX ROW East of the Falklands Apartments. Leaves the SSTC in Dedicated Lanes on Bonifant Street and Operate (Curbside) in Shared Lanes With Added Left Turn Lanes On Wayne Avenue.	Operates In Dedicated Lanes (Curbside) On Piney Branch Road and University Blvd. All Intersections are Crossed At-Grade.

[22] Transportation System Management or "TSM" alternatives are low-cost approaches to improving mobility that do not involve a significant amount of capital expenditure. They are required by the FTA to be included as an alternative and represent the baseline against which the other "build" alternatives are evaluated.

Alternative	Key Features In Bethesda – Chevy Chase Area	Key Features In CSX Right-of-Way, Silver Spring CBD and East Silver Spring	Key Features In Long Branch / Takoma / Langley Park Area
High Investment BRT	Same Routing As Medium BRT.	Same Routing As Medium BRT West of SSTC. In Tunnel After Leaving SSTC Eastbound. Surfaces on Wayne East of Cedar Street and Continues In Dedicated Lanes Until It Enters Tunnel Under Plymouth Street to Arliss Street.	Same Routing As Medium BRT Except There Are Bridges Over Key Intersections – New Hampshire Avenue and Riggs Road.
Low Investment LRT	Alignment Is Along Georgetown Branch ROW – Starting Under The Air Rights Building With Connection To Bethesda Metrorail South Entrance. Trail Exits the ROW And Goes Through Elm Street Park. The LRT and Trail Cross Connecticut Ave. At Grade. Two New Bridges Over Rock Creek – One For The LRT and One For The Trail. The Transitway and Trail Go Under Jones Mill Road	Same Routing and Features As Medium BRT Except It Travels In The Middle of Wayne Avenue and There Are No Added Left Turn Lanes. The LRT Enters A Tunnel After Manchester Place And Continues Under Plymouth To Emerge On Arliss Street.	The transitway is in dedicated lanes in the median of Piney Branch Road and University Blvd. All Intersections in This Area Within The County are Crossed At Grade.
Medium Investment LRT	Same Routing As Low Investment LRT Except That There Are Also Two New Bridges Over Connecticut Ave. – One For The LRT and One For The Trail.	Transitway Stays On South Side of CSX Corridor While The Trail Crosses To North Side On New Bridge Near Talbot Street Bridge. The Transitway Crosses The 16th Street and Spring Street Below Grade. Crosses Over The CSX ROW East of the Falklands Apartments. Leaves the SSTC in Dedicated Lanes on Bonifant Street and Operates In Median in Shared Lanes With Added Left Turn Lanes On Wayne Avenue. The LRT Enters A Tunnel After Manchester Place And Continues Under Plymouth To Emerge On Arliss Street.	Same Routing As Low Investment LRT In This Area

Alternative	Key Features In Bethesda – Chevy Chase Area	Key Features In CSX Right-of-Way, Silver Spring CBD and East Silver Spring	Key Features In Long Branch / Takoma / Langley Park Area
High Investment LRT	Same Routing As Medium LRT Except That The Trail Is In The Tunnel Elevated Above The Eastbound Tracks	Same Routing As Medium LRT West of SSTC. In Tunnel After Leaving SSTC Eastbound. Surfaces on Wayne East of Cedar Street and Continues In Dedicated Lanes Until It Enters Tunnel Under Plymouth Street to Arliss Street	Same Routing As Medium LRT Except There Are Bridges Over Key Intersections – New Hampshire Avenue and Riggs Road.

TRAVEL TIME AND RIDERSHIP

The alternatives feature running ways that have different levels of service that are largely determined by the extent to which they conflict with other traffic. As a result, travel times and (therefore) ridership varies even while the peak period service frequency (six minutes) is held constant. A summary of the travel times over selected segments and the estimated ridership (over the entire alignment) is presented below:

Table 4. Travel Times in Montgomery County and System Ridership

BRT Alternatives 	End To End Running Time (Min.)	Bethesda To Silver Spring[23] (Min.)	Silver Spring To Takoma Langley (Min.)	Average Weekday Boardings – 2030
Low Investment	96.0	24.5[24]	25.9	40,000
Medium Investment	73.0	18.3	18.8	51,800
High Investment	59.0	18.3	12.3	58,800

LRT Alternatives 	End To End Running Time (Min.)	Bethesda To Silver Spring (Min.)	Silver Spring To Takoma Langley (Min.)	Average Weekday Boardings - 2030
Low Investment	62.0	11.2	17.4	59,300
Medium Investment	59.0	8.8	16.4	62,600
High Investment	50.0	8.8	13.3	68,100

[23] The Medium and High BRT Alternatives operate in a counter-clockwise loop after exiting the Georgetown Branch Right-of-Way and stop at both the north and south entrances to the Bethesda Metrorail Station.
[24] The Low Investment BRT alternative western terminus is the existing Bethesda Metrorail North Entrance.

COST AND COST EFFECTIVENESS

The AA/DEIS includes estimates of capital costs and overall benefits of each of the alternatives. The estimates of the costs and benefits are arrived using methodologies that are reviewed by the FTA and are described in some detail in Chapter 6 of the AA/DEIS. It is important to note the following with respect to the way the cost effectiveness measure is arrived at:

- The costs are in 2007 dollars
- The cost effectiveness is an estimate of the incremental benefit over the TSM alternative.
- The cost effectiveness number is an "annualized cost per hour of user benefit"
- The lower the cost effectiveness number the better.
- When using 2007 dollars, the cost effectiveness number cannot exceed $23.99 – otherwise the alternative is not eligible for federal funding
- The cost effectiveness measure reflects benefits to all travelers, not just transit users.
- The methodology for arriving at an annualized cost per hour of user benefit is designed to capture as many costs as possible and provide an "apples to apples" comparison. It captures life cycle costs, the cost of capital, travel time savings and other factors. It ignores funding sources and costs or revenues that are not directly related to the project.

The chart below presents the cost and estimate of the cost effectiveness for each of the original six build alternatives along with three variations – two of which are included in the AA/DEIS and another that the staff requested the MTA to examine.

Table 5. Cost Effectiveness

Alternative	Total Capital Costs (2007)	Annual Operating Costs (2007)	Cost Effectiveness (CE) Measure – Annualized Cost Per Hour Of User Benefit	Average Weekday Boardings - 2030	Notes
TSM	$81,960,000	$14,600,000	N/A	16,900	Baseline Alternative
Low Investment BRT	$386,390,000	$17,300,000	$18.24	40,000	Via Jones Bridge Rd.
Medium Investment BRT	$579,820,000	$17,300,000	$14.01	51,800	
Medium Investment BRT via Jones Bridge Road	$597,000,000	$17,300,000	$15.62[25]	50,000	Reviewed In Response To Town of Chevy Chase Concerns

[25] This CE number reflects the estimated $60 million cost of a new entrance at the southern end of the Medical Center Red Line Station. Without the entrance, the CE number is $14.04.

Alternative	Total Capital Costs (2007)	Annual Operating Costs (2007)	Cost Effectiveness (CE) Measure – Annualized Cost Per Hour Of User Benefit	Average Weekday Boardings – 2030	Notes
Medium Investment BRT via Georgetown Branch & Extended To Medical Center	$585,000,000	$18,300,000	$13.34	58,000	Included By MTA For Comparison With Medium Investment BRT via Jones Bridge Road
High Investment BRT	$1,088,480,000	$15,800,000	$19.34	58,800	
Low Investment LRT	$1,206,150,000	$26,400,000	$26.51	59,300	
Medium Investment LRT	$1,220,150,000	$25,000,000	$22.82	62,600	
Medium Investment LRT With Tunnel From SSTC To East Of Cedar Street[26]	$1,330,000,000	$24,000,000	$22.89	64,700	"Hybrid" Alternative Analyzed By MTA At Request Of Staff[27]
High Investment LRT	$1,634,840,000	$22,200,000	$23.71	68,100	

Light rail operating costs exceed bus transit costs due in part to maintenance of right-of-way and the costs of maintaining more specialized equipment. The light rail cost allocation used in the AA/DEIS to estimate the light rail operating costs are based upon the Baltimore system and are consistent with the unit costs in the National Transit Database.[28]

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[26] This alternative – like the other High Investment Alternatives – does not include stations at Dale Drive or at the proposed library site at Wayne Avenue and Fenton Street.

[27] The staff has also recently asked the MTA to consider analyzing (i.e., include in the coded network) a tunnel that would extend under Wayne Avenue and surface in the vicinity of Mansfield Road.

[28] See the following link for additional information:
http://www.ntdprogram.gov/ntdprogram/pubs/top_profiles/2006/2006-Top50-AppendixA-Aggregate.pdf

INTERSECTION LEVEL OF SERVICE (LOS)

The AA/DEIS noted the following with respect to traffic and level of service at major intersections along the corridor in 2030 including six in Montgomery County:

"The Build alternatives are generally expected to maintain traffic conditions. The addition of left turn lanes is expected to improve traffic congestion in some locations, while the use of shared lanes by the Purple Line would degrade conditions in other locations."

Level of service or LOS is a measure of the efficiency of traffic flow through an intersection. LOS A represents uncongested flow with an average delay of less than ten seconds for each vehicle that passed through the intersection. LOS F represents congested conditions with demand that exceeds the intersection capacity resulting in average delays exceeding 80 seconds per vehicle. More information is available in the AA/DEIS Traffic Analysis Technical Report (page 4-10).

The intersections shown in Tables 6 and 7 are only those where it is estimated that the LOS will change (either positive or negative) for one or more Purple Line build alternatives when compared to the "2030 No Build" state. The Purple Line is only expected to materially change LOS at six intersections in the morning peak hour and six intersections in the evening peak hour. The dedicated transit lanes under the High Investment Alternatives result in more roadway congestion along Wayne Avenue due to the "take-a-lane" strategy. Additional widening of the roadway (beyond that envisioned in the Medium Investment Alternatives) would be required for the High Investment Alternatives to achieve the LOS Performance of the Medium Investment Alternatives.

Table 6. Impacts on Intersection Level of Service – AM Peak Hour

Intersection	2030 No Build	Low BRT	Med BRT	High BRT	Low LRT	Med LRT	High LRT
Jones Bridge Rd. @ Wisconsin Ave.	E	F	E	E	E	E	E
Wayne Ave. @ Fenton Street	C	D	C	C	C	C	C
Wayne Ave. @ Cedar St.	C	C	A	C	B	B	C
Wayne Ave. @ Dale Drive	C	D	B	F	B	B	F
Wayne Ave. @ Mansfield Rd.	A	A	A	D	A	A	D
Wayne Avenue @ Sligo Creek Pkwy	E	E	C	F	C	C	F

Table 7. Impacts on Intersection Level of Service – PM Peak Hour

Intersection	2030 No Build	Low BRT	Med BRT	High BRT	Low LRT	Med LRT	High LRT
Jones Bridge Rd. @ Jones Mill Rd.	E	F	E	E	E	E	E
Wayne Ave. @ Fenton Street	C	C	D	C	D	D	C
Wayne Ave. @ Cedar St.	D	D	C	C	D	D	C
Wayne Ave. @ Dale Drive	E	F	D	F	D	D	F
Wayne Ave. @ Mansfield Rd.	A	A	A	C	A	A	C
Wayne Avenue @ Sligo Creek Pkwy	E	F	E	F	E	E	F

The tables above reflect the improvements attained with the addition of the left turns at selected intersections along Wayne Avenue under the Medium Investment alternatives. The traffic volumes are expected to be similar for each Purple Line alternative. Like any major investment study, the forecasting process reflects the fact that traveler behavior adjusts in response to changes in provided transportation service. Therefore, the value in constructing the Purple Line is not in reducing traffic congestion but rather in improving travel choices and increasing accessibility for all modes of travel.

ON STREET PARKING IMPACTS

The AA/DEIS includes the following analysis of the impact the respective alternatives would have on on-street parking:

Table 8. Effects on On-Street Parking

Alternative	Street & Segment	Impact
Low Investment BRT	Woodmont Avenue From Old Georgetown Road To Wisconsin Avenue	Extend Peak Period Restrictions In Both Directions For Entire Segment
	Jones Bridge Road Near Jones Mill Road	Introduce Peak Period Restriction To Accommodate East Bound Bus By-Pass Lane
	Wayne Avenue From Cedar Street To Mansfield Road	Extend Peak Period Restrictions In Both Directions For Entire Segment
Medium Investment BRT	Bonifant Street From SSTC To Fenton Street	Eliminate On-Street Parking On North Side of Street. Parking On South Side Remains If Bonifant Is Converted To One Way Eastbound
	Wayne Avenue From Cedar Street To Mansfield Road	Extend Peak Period Restrictions In Both Directions For Entire Segment

High Investment BRT	Wayne Avenue From Cedar Street To Mansfield Road	Extend Peak Period Restrictions In Both Directions For Entire Segment
Alternative	**Street & Segment**	**Impact**
Low Investment LRT	Bonifant Street From SSTC To Fenton Street	Eliminate On-Street Parking On North Side of Street. Parking On South Side Remains If Bonifant Is Converted To One Way Eastbound
	Wayne Avenue From Cedar Street To Mansfield Road	Extend Peak Period Restrictions In Both Directions For Entire Segment
Medium Investment LRT	Bonifant Street From SSTC To Fenton Street	Eliminate On-Street Parking On North Side of Street. Parking On South Side Remains If Bonifant Is Converted To One Way Eastbound
High Investment LRT	Wayne Avenue From Cedar Street To Mansfield Road	Extend Peak Period Restrictions In Both Directions For Entire Segment

SUMMARY OF ENVIRONMENTAL RESOURCES, IMPACTS AND MITIGATON

Chapter 4 of the AA/DEIS presents a summary of the environment impacts. The AA/DEIS notes the following:

"Because all the alternatives have very similar alignments and station locations the impacts to these resources are not appreciably different between alternatives. The magnitude of the impacts is quite small relative to the length of the Purple Line corridor; for example the wetlands impacts range from 1 to 1.4 acres."

A summary of site specific impacts is presented below. Area where the AA/DEIS indicates property acquisitions will be necessary are highlighted in bold.

Community Impacts[29]

In Bethesda …

- Low Investment BRT would result in strip acquisitions of property owned by NIH and the National Naval Medical Center.

- Under each of the Build Alternatives, access to the permanent Capital Crescent Trail would be limited to specific locations.[30]

- Under each of the Build Alternatives, loss of trees and other vegetation along the Georgetown Branch right-of-way.[31] The loss in Bethesda and Chevy Chase (i.e., the trail

[29] This summary of Chapter 4 does not include the impacts upon on-street parking that is covered in the preceding section of this memo.

[30] While this is noted in Chapter 4, this statement may not apply to the trail west of Jones Mill Road as that segment of the trail would not be constructed as part of one Build Alternative – the Low Investment BRT Alternative.

[31] M-NCPPC Environmental Planning staff estimate the trail area (including the trail and adjoining tree and vegetation cover) from Bethesda to just east of Rock Creek to total about six acres).

west of Jones Mill Road) does not occur under the Low BRT Alternative that would operate on Jones Bridge Road.

- Four locations in Bethesda were monitored for noise and no impacts are anticipated from any of the alternatives.

In Chevy Chase …

- Low Investment BRT **could result in the displacement of one residential property at Jones Bridge and Jones Mill Roads.**[32] The Low Investment BRT would also require temporary construction easements at nine residential properties on Jones Bridge Road as well as North Chevy Chase Elementary School. All of the other Build Alternatives would require temporary construction easements within the Columbia Country Club in order to relocate a golf cart path.

- As noted above, the Build Alternatives (excluding the Low Investment BRT) result in the loss of trees and other vegetation along the Georgetown Branch right-of-way.

- Under the High Investment BRT and the Medium and High Investment LRT alternatives, there would be an aerial structure over Connecticut Avenue.

- Eleven locations in Chevy Chase were monitored for noise impacts and no noise impacts are anticipated from any of the Build Alternatives.

In Rock Creek Forest/Lyttonsville/Rosemary Hills …

- **The Build Alternatives require a strip acquisition from the Roundhill Apartments on Freyman Drive.**[33]

- All of the LRT alternatives would require a temporary construction easement from five properties on Talbot Avenue.

- **All of the Build Alternatives would require a strip acquisition from Rosemary Hills Elementary School for the construction of the Capital Crescent Trail.**

- All of the Build Alternatives would also limit access to the trail.

- All of the Build Alternatives would result in the loss of trees and other vegetation along the Georgetown Branch right-of-way.

- Under any build alternative, the existing County operations and maintenance facility in Lyttonsville would be expanded to accommodate the Purple Line fleet. The existing viewshed is not expected to change significantly.[34]

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[32] A "displacement" is the complete taking of property.

[33] A "strip acquisition" is the taking of a smaller (usually linear or longer than it is wide) piece of property and does not involve the displacement of a residence. The staff has been unable to locate a quantitative summary of the total area that could be impacted by "strip acquisitions."

[34] There are two Purple Line Operations and Maintenance locations. One is on Brookville Road in Lyttonsville and the other is the M-NCPPC's Glenridge maintenance facility in Prince George's County. The use of the Glenridge

- Introduction of the transitway between the CSX right-of-way and the residential property and school along Porter Road would change the existing viewshed in that area.
- Three locations in the community were monitored for noise and no impacts are anticipated from any of the Build Alternatives.

In Woodside …

- Under any build alternative, the construction of the Capital Crescent Trail along the north side of the CSX right-of-way would require temporary construction easements from two residential properties.

- Two locations in the community were monitored for noise and no impacts are anticipated.

In Silver Spring…

- **Each of the Build Alternatives requires strip acquisitions along the CSX right-of-way.**

- **Each of the Build Alternatives would require property acquisition from one residence and the displacement of two other residences on Leonard Drive.**

- **Each of the Build Alternatives except Low Investment BRT would result in displacements from one building of the Barrington Apartments and two buildings of the Falklands Apartments.**

- **Medium and High Investment BRT and LRT would require strip acquisitions on Wayne Avenue where widening is required for left turn lanes.** These alternatives would also require temporary construction easements from some residences along Wayne Avenue to re-grade and reconstruct driveway connections.

- High Investment BRT would require temporary construction easements along Wayne Avenue.

- **The Silver Spring Avenue / Thayer Avenue design option for the High Investment BRT and LRT Alternatives would require both property acquisition and temporary construction easements at some residences along Thayer Avenue, Hartford Avenue, and Dale Drive.**

- All Build Alternatives except for the Low Investment BRT would require temporary construction easements from the Silver Spring International Middle School.

- **The Silver Spring Avenue / Thayer Avenue design option for the High Investment BRT and LRT Alternatives includes a portal behind East Silver Spring Elementary School and as a result, would require property acquisition from the school.**

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facility will require the relocation of the Park Department vehicle maintenance activity. The use of the Lyttonsville site will require the acquisition of additional (commercial) property in the area.

- Introduction of the transitway between the CSX right-of-way and the commercial and residential apartment areas along 16th Street would introduce a new visual element under all of the Build Alternatives.

- The introduction of any LRT alternative along Wayne Avenue and along Thayer Avenue (in the case of the design option) would result in a substantial visual effect.

- The High Investment BRT and LRT Alternatives include a portal on Wayne Avenue east of Cedar Street and that would introduce a new visual element.

- Eight locations in Silver Spring were monitored for noise impacts with the following results:

  - One location along the CSX right-of-way at Leonard Drive would experience moderate noise impacts under all of the BRT alternatives.

  - The area on 16th Street between East West Highway and Spring Street would experience noise impacts under the Medium and High BRT Alternatives.

  - Two locations along Wayne (one near Cedar Street and another near Mansfield Road) would experience moderate noise impacts under each of the BRT Alternatives.

  - A location along Wayne Avenue near Dale Drive would experience moderate noise impacts under the Medium and High Investment BRT Alternatives.

- **Each of the Build Alternatives would require strip acquisitions of residential property along Wayne Avenue and Piney Branch Road.**

- On Wayne Avenue, the LRT and (under the High Investment Alternatives) the tunnel portal would introduce new visual elements.

- Two locations were monitored for noise and neither location is expected to experience any impact.

In Long Branch …

- **The High Investment BRT Alternative and all of the LRT Alternatives would result in the displacement of one apartment building on Plymouth Street and one residence at the corner of Arliss Street and Flower Avenue. In addition, there would be the need for right-of-way acquisitions from six residential properties along Plymouth and Reading Streets for the Plymouth Street tunnel.**

- **Under the Silver Spring Avenue / Thayer Avenue design option, there would be strip acquisitions from 13 residential properties on Piney Branch Road.**

- The two tunnel portals, one off of Wayne Avenue and one on Arliss Street would introduce new visual elements.

- Two locations were monitored for noise and one of those (along Arliss Street) is expected to experience moderate impacts under the Medium and High Investment BRT alternatives.

In Takoma Park ...

- **Under each of the Build Alternatives, some strip property acquisition and temporary construction easements would be required under each of the Build Alternatives.**

- Five locations in Takoma Park were monitored for noise and none are anticipated to experience noise impacts.

In Langley Park ...

- **Each of the Build Alternatives except Low Investment BRT would require strip acquisitions from four apartment complexes along University Boulevard.**

- Parking impacts in Langley Park are not included in the table above and there would be impacts along University Boulevard where the service road, now used for parking, would be removed.

Parks, Recreation Areas, and Open Space

Section 4.4 of the AA/DEIS identifies the impacts upon parks, recreational areas, and open spaces. A brief summary of the potential impact (in acres) on parks and open space (schools) within the County is presented below.

Table 9. Effects on Parkland and Open Space

Park / Open Space (School)	Total Size (Acres)	Impact (acres)							
		Low Inv. BRT	Med. Inv. BRT	High Inv. BRT	High Inv BRT – SS/Thayer Option	Low Inv. LRT	Med Inv. LRT	High Inv. LRT	High Inv. LRT – SS/Thayer Option
North Chevy Chase Local Park	32	.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sligo Creek Stream Valley Park – Unit 2	39	.43	.90	.73	.78	.73	.90	.73	.78
Long Branch Local Park	14	.01	.01	.06	.06	.06	.06	.06	.06

Park / Open Space (School)	Total Size (Acres)	Impact (acres)							
		Low Inv. BRT	Med. Inv. BRT	High Inv. BRT	High Inv BRT – SS/Thayer Option	Low Inv. LRT	Med Inv. LRT	High Inv. LRT	High Inv. LRT – SS/Thayer Option
North Chevy Chase ES	8	.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sligo Creek ES and Silver Spring International MS	16	.03	.08	.05	0.00	.05	.36	.05	0.00
East Silver Spring ES	9	0.00	0.00	0.00	1.65	0.00	0.00	0.00	1.65
Rosemary Hills ES	7	.24	.28	.28	.28	.32	.32	.32	.32

A summary of the potential impact (miles) on trails within the County as presented in the AA/DEIS the County is presented below:

Table 10. Impact on Trails

Name	Total Length (Miles	Impacts (miles)							
		Low Inv. BRT	Med. Inv. BRT	High Inv. BRT	High Inv BRT – SS/Thayer Option	Low Inv. LRT	Med Inv. LRT	High Inv. LRT	High Inv. LRT – SS/Thayer Option
Interim Georgetown Branch Trail[35]	5	1.57	1.23	1.19	1.19	1.65	1.67	1.62	1.62
Sligo Creek Trail	10	.04	.06	.06	.02	.06	.06	.06	.02
Rock Creek Trail	19	.03	.03	.03	.03	.03	.03	.03	.03

The AA/DEIS notes the following with respect to the impacts on the Interim Georgetown Branch Trail:

"All of the Build Alternatives would have visual changes to the Interim Georgetown Branch Trail. The Purple Line would result in substantial visual effects to the visual character of the Interim Georgetown Branch Trail due to the presence of the Purple Line in the Georgetown Branch right of way and the required clearing of trees and other vegetation for construction. While new landscaping would be included in the construction, the mature trees would not be replaced. The clearing of vegetation for construction would reduce screening of the right of way from neighboring land uses."

[35]The County purchased the surface easement of the Georgetown Branch Right-of-Way for transportation use; therefore, the impacts are not subject to Section 4(f) requirements.

Historic Structures

A total of 261 properties were identified within the Area of Potential Effect (APE) and one – the Falklands Apartments – was identified as a standing structure that will be adversely affected as a result of the project. The Planning Board has previously considered the impact on the Falklands Apartments in its prior decision related to the designation of the south and west parcels as eligible for inclusion in a Master Plan amendment and retaining the north parcel on the Locational Atlas until such time as the Planning Board approves a development plan for the entire north parcel. The MTA Purple Line project consultant has issued a report that identifies potential approaches for mitigation. The fact that the two buildings that would be taken are not within the interior courtyard perimeter is an important aspect of the consultant's finding.

Air Quality

The project is not predicted to cause or exacerbate a violation of the National Ambient Air Quality Standards or measurably increase emission levels.

Noise and Vibration

In general, there is moderate noise impact associated with the BRT alternatives at the following locations:

- Leonard Drive
- 16th Street – Between East West Highway and Spring Street
- Wayne Avenue – Between Cedar Street and Cloverleaf Road
- Wayne Avenue – Between Dartmouth Avenue and Dale Drive
- Wayne Avenue – Between Mansfield Road and Sligo Creek Parkway
- Arliss Street – Between Flower Avenue and Walden Road

Noise mitigation for the BRT line operations is anticipated to be four foot wall type barriers.

The potential for wheel squeal noise annoyance associated with the LRT operations exists at between 5-8 locations in the County, depending upon the alternative under consideration. The locations are for the most part within 300 feet of Wayne Avenue.[36]

Noise mitigation for LRT line operations will take the form of vehicle skirts on all light rail vehicles and right of way walls on either side of the transitway within the entire length of the Georgetown Branch Right of Way.

Vibration impacts for the BRT Alternatives would occur at the edge of Columbia Country Club under the Medium and High Investment Alternatives.
The LRT Alternatives are expected to produce vibration impacts along the Georgetown Branch Right of Way at three locations:

[36] See pages 4-55 and 4-56 of the AA/DEIS – along with Figure 4.8-1.

- East West Highway
- Edgevale Court
- Boundary of Columbia Country Club

Also, within the Georgetown Branch Right of Way, structures located within 40 feet of the proposed Light Rail Transit centerline are expected to experience vibration levels at or above the FTA impact threshold for Category 2 land uses for all three alternatives.[37]

The AA/DEIS indicates the preferred mitigation in the case of ground borne vibration is the proper maintenance of wheels and rails and with that maintenance, the impacts would cease to exist.

Significant Trees

Significant trees were not specifically identified within the corridor during this stage of the planning process. Forested areas and neighborhoods with street tress that appeared to contain a number of significant trees were mapped for identification. The delineation and surveying of these significant trees is to occur following the selection of a preferred alternative.

[37] A category 2 land use includes residences and buildings where people normally sleep.