TRAVEL FORECASTS RESULTS TECHNICAL REPORT

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Transit Development & Delivery
100 South Charles Street
Tower Two, Suite 700
Baltimore, Maryland 21201

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1. INTRODUCTION

The Maryland Transit Administration (MTA) has previously prepared an Alternatives Analysis/Draft Environmental Impact Statement (AA/DEIS) to study a range of alternatives for addressing mobility and accessibility issues in the corridor between Bethesda and New Carrollton in Montgomery and Prince George's Counties, Maryland. The Purple Line project considered a range of alternatives to improve east-west transit mobility in the 16-mile corridor that connects several major activity centers at the following Metrorail stations: Bethesda, Silver Spring (both on the Red Line), College Park (Green Line), and New Carrollton (Orange Line) as well as the Takoma Park/Langley Park area and the University of Maryland (UMD).

Governor Martin O'Malley identified a Locally Preferred Alternative (LPA) on August 4, 2009 based on the information contained in the AA/DEIS and input from the public, the local jurisdictions, and elected officials. The phrase "Locally Preferred" reflects its selection by the local jurisdiction, in this case, the State of Maryland. On October 7, 2011, the Federal Transit Administration (FTA) granted permission for the Purple Line project to enter the Preliminary Engineering phase of the New Starts funding program process. The MTA and FTA are preparing a Final Environmental Impact Statement (FEIS).

The Purple Line is a proposed 16-mile light rail transit line project located north and northeast of Washington, DC inside the circumferential I-95/I-495 Capital Beltway. The project would include 21 stations and would operate 5:00 AM to 1:00 AM at 6, 10, and 12-minute headways during peak, off-peak and fringe hours by 2040. The proposed stations are the following:

- Bethesda
- Chevy Chase Lake
- Lyttonsville
- Woodside/16th Street
- Silver Spring Transit Center
- Silver Spring Library
- Dale Drive
- Manchester Place
- Long Branch
- Piney Branch Road
- Takoma/Langley Transit Center
- Riggs Road
- Adelphi/West Campus
- Campus Center
- East Campus
- College Park Metro
- M Square
- Riverdale Park
- Beacon Heights
- Annapolis Road/Glenridge
- New Carrollton

The Purple Line generally would operate at-grade in dedicated travel lanes with some shared and some exclusive grade-separated operating environment. The Georgetown Branch right-of-way would be used between Silver Spring and Bethesda. No new Park-and-Ride facilities are proposed. Existing parking facilities at Bethesda, Silver Spring Transit Center, College Park/UMD Metro, and New Carrollton would serve the Purple Line.

1.1 Purpose of the Report

The purpose of this report is to document the findings of the travel demand forecasts performed for the Purple Line project. The report includes an overview of existing and future transportation facilities and projected growth in the corridor, transit markets in the corridor, existing transportation problems, and impacts of the proposed alternatives (No Build and Preferred Alternative) by 2040.

This report was prepared with data and information from the following Purple Line documents:

- New Starts Travel Forecasting Model Calibration Report (November 2010)
- The Case for the Project (November 2010)
- Final Definition of the Alternatives (December 2010)
- Alternatives Analysis/Draft Environmental Impact Statement (AA/DEIS) (October 2008)
- Case for the Project presentation (December 2010)

The forecasts for the Preferred Alternative are presented for the Purple Line FEIS horizon year of 2040. The appendices for this report provide information on the changes in the forecast components since the AA/DEIS (Appendix A), 2030 forecasts using the current modeling process that can be compared to the AA/DEIS results (Appendix B) and University of Maryland student, employee, and special event trips which are not covered in the regional modeling process (Appendix C).

1.2 Case for the Project

The Case for the Project is a document that MTA prepared for and submitted to FTA as part of the application to enter Preliminary Engineering for the Purple Line. The presentation and written summary outlining the Case for the Project evolved through an iterative and coordinated process involving FTA and MTA. The Case for the Project describes the setting today and in the future, and it summarizes the merits of the project based on benefits for each of the key travel markets. Information used in the Case for the Project was obtained from analysis of the travel forecasts, and this report documents and provides the technical background supporting the assertions presented in the Case for the Project. The improvements to the transportation system in the Purple Line corridor would address the following transportation challenges:

- Increasing congestion on the roadway system
- Slow transit travel times on this congested roadway system
- Limited travel mode options for east-west travel
- Degraded mobility and accessibility between major activity centers and residential areas
- Degraded transit accessibility to the larger metropolitan region due to inferior connections to radial Metrorail lines and to other rail and bus services

1.3 Project Context

The Purple Line corridor is located north and northeast of Washington, DC, with a majority of the alignment within one to three miles inside the circumferential I 95/I 495 Capital Beltway. The corridor is served by an extensive transit service, roadways that are over capacity, and includes five major activity centers: Bethesda, Silver Spring, Takoma/Langley Park, College Park, and New Carrollton. Figure 1 provides an overview of the corridor.

The corridor includes established inner-ring communities that contain pockets of higher-density development in the major activity centers. These activity centers are shown on Figure 2. The following sections provide an overview of the character of the area, starting from the west end of the corridor.

- Located at the western end of the Purple Line corridor, the Bethesda central business district is characterized by high-density mixed uses. Montgomery County planned for, and encouraged, the

dense development of Bethesda around the Metrorail station prior to construction of the Washington Metrorail Red Line in the area, applying zoning with densities and floor area ratios for high-rise development. The central business district has developed as planned and continues to grow, particularly to the south and west. Indicative of this development is the decision to move forward with the creation of a new south entrance to the Bethesda Metro station. The need for this entrance was anticipated when the station was initially built, but deferred until the station usage required it.

- East of the Bethesda central business district, single-family and some multi-family residences predominate in the corridor, with some small-scale commercial development.
- Continuing east along the corridor, i.e., downtown Silver Spring, the character is urban with a mix of commercial, residential, and entertainment uses. As part of a public/private venture at the existing Silver Spring Metro station, the MTA, Montgomery County, and the Washington Metropolitan Area Transit Authority (WMATA) are building a new expanded transit center with adjacent transit oriented development. The Silver Spring Transit Center will serve WMATA Metrorail, MARC commuter rail, Amtrak, Montgomery County Ride On, and intercity buses. The Silver Spring Transit Center is designed to accommodate a station for the Purple Line.

Figure 1: Project Area

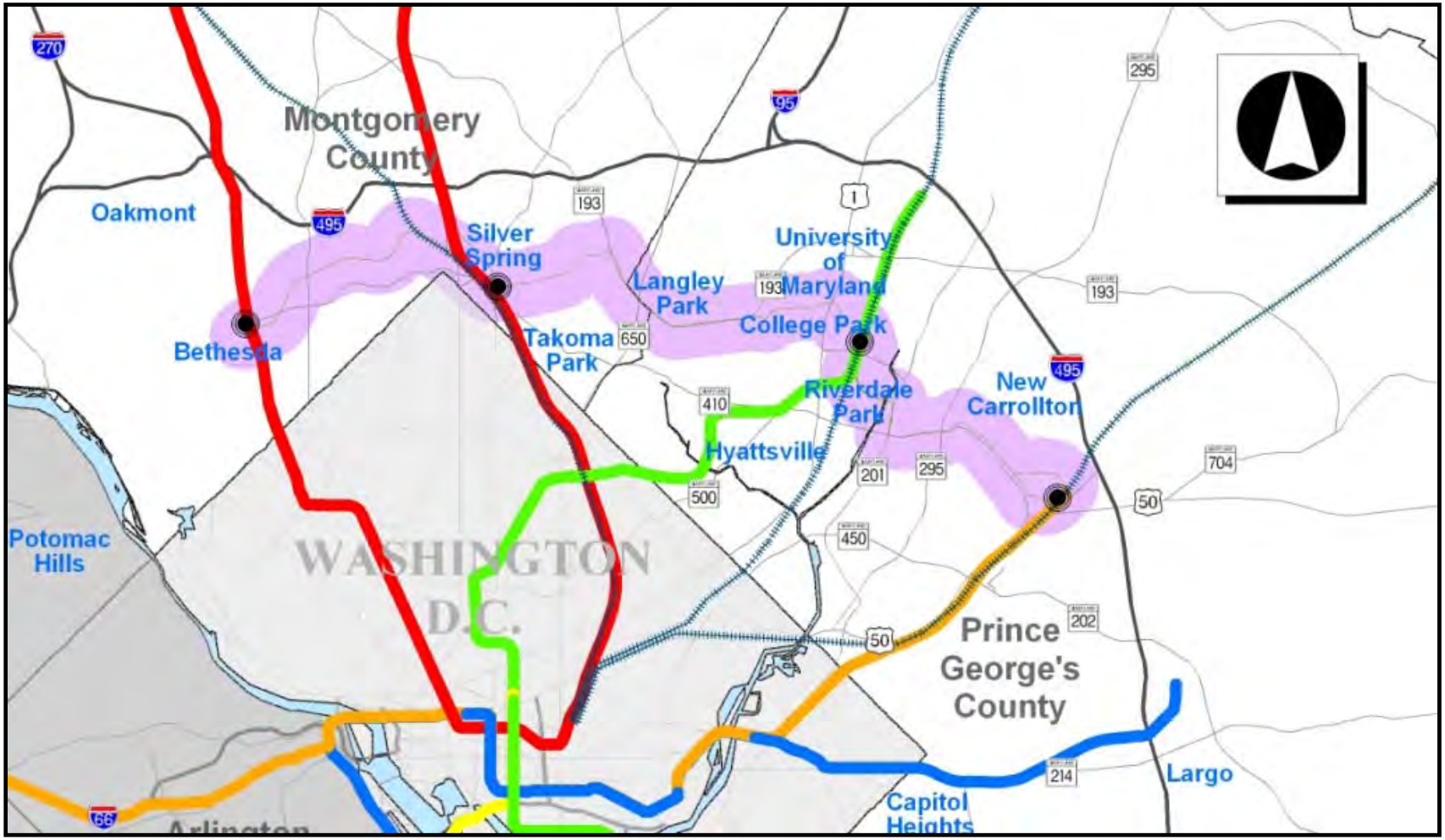
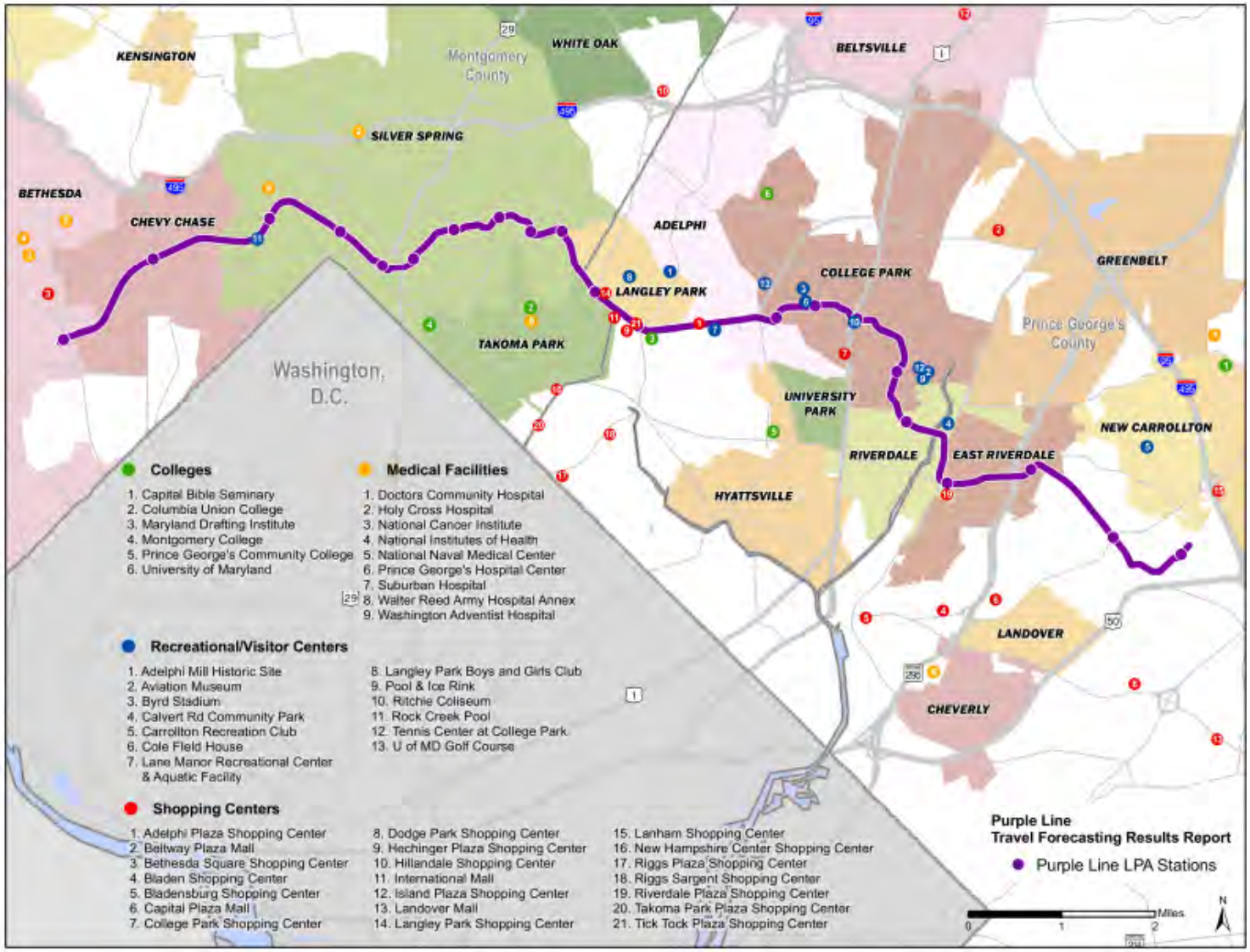


Figure 2: Activity Centers in the Purple Line Corridor



The eastern Silver Spring, Long Branch, and Takoma Park communities are characterized by established residential neighborhoods that are compactly developed with a mix of single-family and multi-family dwellings.

- At the border of Montgomery and Prince George's Counties, Langley Park is characterized by garden apartments, older automobile-oriented commercial areas, and diverse ethnic populations who rely heavily on transit. The area along University Boulevard, known as Maryland's International Corridor, is a major shopping and entertainment center, particularly for the many immigrant communities in the area. Despite very low levels of automobile ownership among residents, this area is very congested, with many pedestrians crossing busy roadways to access transit and shopping. The intersection of University Boulevard and New Hampshire Avenue, site of the future Takoma/Langley Transit Center, is one of the busiest bus transfer points in the region.

  Land use along the remaining Prince George's County portion of the corridor, from Langley Park to New Carrollton, except for the UMD, is primarily comprised of residential uses, with several large parks and some commercial areas. Housing types and densities in this area are largely single-family dwellings interspersed with low-rise apartment complexes.

  Continuing eastward, the UMD, located in College Park, is the largest employer and trip generator in Prince George's County. The UMD currently has 37,000 students and more than 13,000 employees. The UMD hotel and conference center, and new and existing sports and performing arts facilities are additional sources of activity.

- The Purple Line would serve two other UMD-associated developments: the East Campus development Initiative and the M-Square Research Park. The East Campus development is a mixed-use project located on the east side of US 1, south of Paint Branch Parkway. This development will be a mix of residential and commercial uses. Goals of the project include establishing a connection between the UMD, College Park Metro station, and the Research Park.

  M-Square Research Park, located in the River Road area adjacent to the existing College Park MARC and Metrorail stations, will include state-of-the-art research, laboratory, and incubator facilities dedicated to the advancement of technology, computer science, mathematics, engineering, biotechnology, and physical and life sciences. It is currently under construction and expected to employ more than 6,500 people at completion.

  WMATA is currently working with private developers, planning joint development at the College Park Metro station. This mixed-use transit oriented development may be an additional source of ridership for the Purple Line.

- The Riverdale Park area is primarily single-family residential with some older automobile-oriented commercial development. In early 2008, Prince George's County planners and local officials began coordinating on the potential for redevelopment of the west side of Kenilworth Avenue, and at the intersection of Kenilworth Avenue and East West Highway. The MTA is working with the county to integrate the Purple Line and its Riverdale Park station into these plans.

- Located at the eastern edge of the Purple Line corridor, Annapolis Road is a retail corridor characterized by strip commercial development. Although the residential development near the New Carrollton Metro station is primarily single-family, several large institutional trip generators, including the Internal Revenue Service, are located there. Local plans for the New Carrollton Metro station are for high-density transit oriented development. WMATA and the Maryland Department of Transportation are pursuing mixed-use joint development for the property each owns on both sides of the station. Also proposed is an extensive redevelopment of two privately owned sites east of the existing rail tracks. This development includes over 2,400 residential units, and over 900,000 square feet of retail and office uses in buildings as high as 40 stories. A separate 43-story municipal building is proposed.

Rail transit, including the WMATA Metrorail Red, Green, and Orange Lines, MTA's MARC service, and Amtrak operate in the corridor. These rail lines are oriented to downtown Washington, DC and do not provide east-west travel except by traveling into the Washington, DC core and back out again. WMATA Metrobus, Montgomery County Ride On, and Prince George's County TheBus provide transit service in the corridor. The current public transit options that accommodate east-west trips are bus routes traveling in mixed traffic. As a result, the Purple Line corridor is faced with increasing travel times and unreliable transit service which limits accessibility and negatively affects the corridor's economy and residents' quality of life (particularly for those without a private automobile).

There are four branches of the radial Metrorail system that have stations within the corridor:

- Red Line (west leg) – with stops at Bethesda and Medical Center
- Red Line (east leg) – with a station in Silver Spring (also the MARC Brunswick Line commuter rail)
- Green Line – with a station at College Park (also the MARC Camden Line commuter rail)
- Orange Line – New Carrollton (also the MARC Penn Line commuter rail and AMTRAK's Northeast Corridor)

The Purple Line corridor has a proven high transit patronage. Metrorail, Metrobus, and Ride On have more than 48,000 weekday boardings in Silver Spring, making this one of the busiest transit stations in the region. Twenty-two Metrobus and four Ride On routes serve the Silver Spring Transit Center. The bus stop at the Takoma/Langley Crossroads is Ride On's busiest transit hub not connected to a Metrorail station. Each weekday, more than 15,000 passengers get on and off buses at the Takoma/Langley Crossroads on four Metrobus, three Ride On, and two TheBus routes. The three busiest bus routes in the Ride On system travel between Silver Spring and Langley Park. The second highest ridership in the Metrobus service in Maryland is on the WMATA C2 route, which travels along University Boulevard in the Purple Line corridor. The WMATA F4 and F6, which serve the area between Silver Spring and the New Carrollton Metro station, have the highest ridership of any line in Prince George's County. New Carrollton is second only to Union Station in the Washington metropolitan area as a major multimodal transportation hub with Metrorail, Amtrak, MARC, Greyhound intercity bus, and both regional (Metrobus) and county (TheBus) bus service

available. Daily boardings and alightings for Metrorail at New Carrollton currently average 3,600, and 3,700, respectively. Metrobus serves the station with 20 routes, and TheBus serves it with four routes.

An extensive and comprehensive bus network consisting of 75 routes is currently in place along the Purple Line corridor, operated by WMATA and the two counties, Montgomery in the west and Prince George's in the east, and the UMD. Only 12 of these routes provide east-west service and all the routes require a transfer to travel the length of the corridor. While many of these routes have a role in serving purely local travel markets, a very large number of them feed the Metrorail stations at Bethesda, Silver Spring, College Park, and New Carrollton. Thus, they are a ready-made feeder bus network for the Purple Line, which would serve those Metrorail stations. The number of routes performing this feeder function is considerable, 14 routes at Bethesda, 28 routes at Silver Spring, 10 routes at College Park, and 24 routes at New Carrollton. In addition, nine bus routes plus the Shuttle-UM presently serve the area of the University Boulevard/New Hampshire Avenue intersection. This intersection is the site of the future Takoma/Langley Transit Center, a planned and programmed facility that will serve existing bus routes, as well as the Purple Line, and will provide enhanced amenities to transit patrons. Construction of the Takoma/Langley Transit Center is expected to be initiated before the end of 2013. Figure 3 shows existing transit service.

Existing bus service operating east-west in the corridor offers a disjointed service, consisting of several overlapping or interconnecting routes. Despite these conditions, the key buses serving the Purple Line corridor carry a substantial number of transit riders as illustrated on Table 1. WMATA operates the regional routes, those that are inter-jurisdictional, while each of the counties operates the local routes. WMATA routes J1, J2, and J3, with a combined headway of six minutes (a bus every six minutes in the peak period), serve the long-haul trips between Montgomery Mall, Medical Center, Bethesda, and Silver Spring, with 6,600 daily weekday passenger trips. Montgomery County Ride On route 15 is the primary service between Silver Spring and Langley Park with four-minute headways.

Figure 3: Existing Transit Service

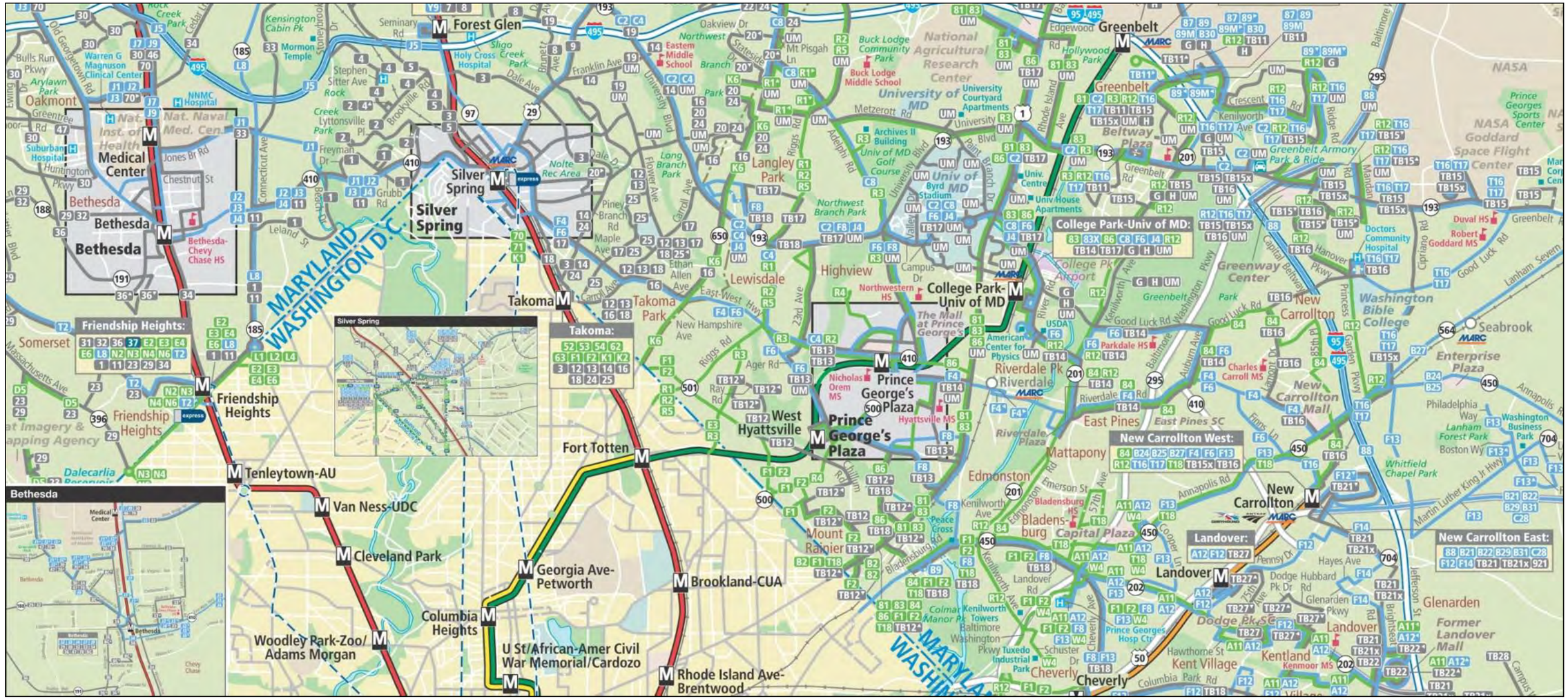


Table 1: Existing Service (2012) and Boardings on Key Bus Routes

Route	Terminal and Intermediate Points	Early Morning	AM Peak	Midday	PM Peak	Evening	Saturday	Sunday	Average Daily Riders
WMATA J1	Montgomery Mall-Medical Center – Silver Spring Metro	--	20	--	20	---	--	--	6,600
WMATA J2	Montgomery Mall – Bethesda – Silver Spring Metro	20	17	20	24	15	20	25	
WMATA J3	Montgomery Mall – Bethesda – Silver Spring Metro	--	17	--	24	--	--	--	
WMATA J4	Bethesda Metro – Silver Spring – College Park Metro	--	20	--	20	--	--	--	1,000
WMATA C2	Wheaton Metro – Greenbelt Metro	--	22	30	16	--	30	--	5,200
WMATA C4	Twinbrook Metro – Prince George's Plaza Metro	10	22	30	16	30	30	16	7,800
WMATA F4	Silver Spring – New Carrollton	12	12	40	15	--	30	60	4,600
WMATA F6	Silver Spring – New Carrollton	--	20	40	30	--	--	--	3,100
Ride On 15	Silver Spring Metro – Langley Park	15	4	12	4	30	12	15	7,200
TheBus 17	Langley Park – UM-College Park Metro	45	45	45	45	--	--	--	40
Shuttle-UM 111	UM – Silver Spring Metro	--	35	75	45	30	--	--	500
Shuttle-UM 104	UM – College Park Metro	8	8	12	8	20	20	20	2,500

2. EXISTING AND FUTURE CONDITIONS

The Washington metropolitan area has experienced continual population growth, both in employment and population. The existing transportation facilities, especially inside the I-95/I-495 Capital Beltway, often do not meet this increased demand. This is especially true of east-west travel. The following describe how population and employment will grow in the Purple Line corridor and how transit and highway travel times will continue to increase over the next decades.

For ease of analysis, the Traffic Analysis Zones (TAZs) in the Purple Line corridor and the region were grouped into districts as shown on in Figure 4. Districts are identified around the major activity centers of Bethesda, Silver Spring, College Park, and New Carrollton in the Purple Line corridor. Three additional districts are used to describe the "wedge" areas between the major activity centers at Connecticut Avenue/Lyttonsville, Takoma Park/Langley Park, and Riverdale Park. These seven districts constitute the Purple Line corridor. Other districts are used to define major sections in Washington, DC and travel market areas around the Metrorail lines (both branches of the Red Line, the Green Line, and the Orange Line) running north and northeast of the corridor. The rest of the region is defined by larger districts for the remainder of Maryland and the areas of Virginia. The demographic forecasts presented in this section and used for the travel forecasts are based on the Metropolitan Washington Council of Governments (MWCOG) Round 8.0 forecasts.

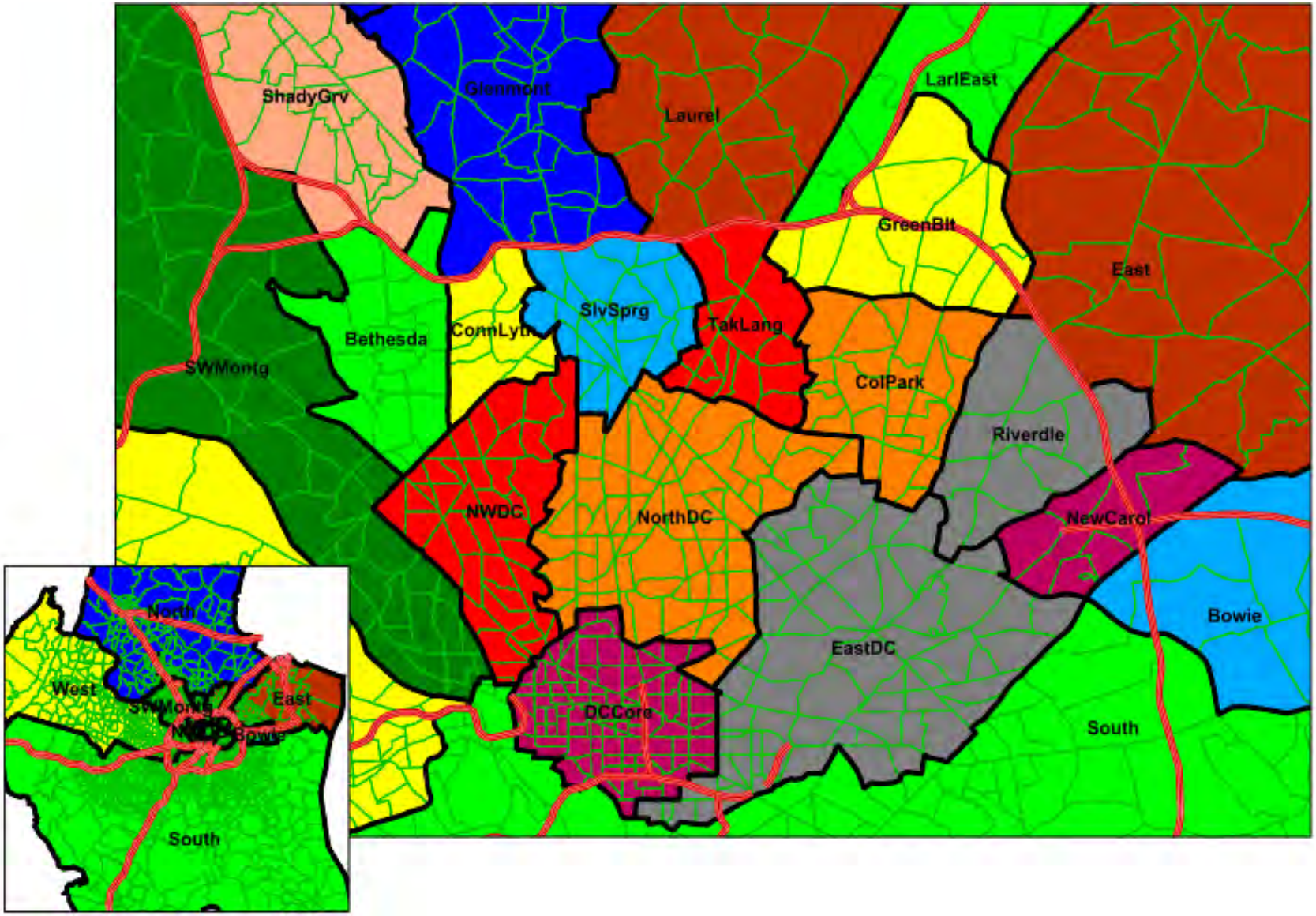
2.1 Demographic Growth

There are approximately 280,600 residents in 106,600 households in the corridor and 201,000 jobs. The corridor includes a transit-reliant population with 11 percent of the households not owning a car, many by choice, particularly near the Metrorail stations.

By 2040, close to 3 percent of the region's population growth is expected to occur in the Purple Line corridor for an increase of approximately 68,120 residents. The number of households in the corridor shows a 27 percent increase between the 2010 and 2040 compared to 43 percent in the region. By 2040, the number of households will increase by close to 28,480 in the corridor compared to a 64,000 increase in employment. Within the Purple Line corridor, the College Park area shows the largest increase in population, households, and employment. The Takoma/Langley Park area shows the same level of employment growth as the College Park area over the 35-year span.

Between 2005 and 2040, population and number of households in the region are expected to grow by 37 percent and 43 percent, respectively or 2,319,460 inhabitants and 1,002,500 households. Employment is expected to grow by 47 percent, or 1,747,500 new jobs for the entire region. Population, household, and employment growth in the Purple Line area is not as aggressive as the growth experienced by the region overall. While the population and number of households in the region are expected to grow by 37 and 43 percent between 2005 and 2040, the Purple Line corridor will see 24 and 27 percent growth, respectively.

Figure 4: Purple Line District Map



Employment in the Purple Line corridor will experience a 32 percent growth, compared to 47 percent in the region. Table 2, Table 3, and Table 4 summarize the demographic conditions in 2005 and 2040 for the corridor and the region.

Table 2: Population Growth (2005 to 2040)

District		Population			
		2005	2040	Increase	Percent Change
1	Bethesda	47,856	68,672	20,816	43%
2	Connecticut -Lyttonsville	12,590	15,625	3,035	24%
3	Silver Spring	58,820	80,383	21,563	37%
4	Takoma -Langley Park	58,313	60,634	2,321	4%
5	College Park	37,897	59,511	21,614	57%
6	Riverdale Park	44,995	42,346	(2,649)	-6%
7	New Carrollton	20,136	21,560	1,424	7%
8	Shady Grove	112,016	198,778	86,762	77%
9	Glenmont	107,260	117,516	10,256	10%
10	Laurel	101,685	102,550	865	1%
11	Laurel East	38,760	53,726	14,966	39%
12	Greenbelt	24,067	29,950	5,883	24%
13	Bowie	78,438	78,307	(131)	0%
14	Northwest Washington, DC	67,041	76,508	9,467	14%
15	North Washington, DC	186,142	221,441	35,299	19%
16	East Washington, DC	152,082	185,854	33,772	22%
17	Washington, DC Core	110,957	178,901	67,944	61%
18	Southwest Montgomery County	214,368	254,785	40,417	19%
19	North	961,441	1,339,670	378,229	39%
20	East	546,243	607,172	60,929	11%
21	South	2,459,589	3,563,363	1,103,774	45%
22	West	853,836	1,256,740	402,904	47%
	Total Corridor	280,607	348,731	68,124	24%
	Total Region	6,294,532	8,613,992	2,319,460	37%
	Percent Region Growth Occurring in the Corridor			3%	---

Table 3: Households Growth (2005 to 2040)

District		Households			
		2005	2040	Increase	Percent Change
1	Bethesda	22,086	29,604	7,518	34%
2	Connecticut -Lyttonsville	4,457	5,262	805	18%
3	Silver Spring	25,690	34,193	8,503	33%
4	Takoma -Langley Park	20,250	21,501	1,251	6%
5	College Park	11,401	21,117	9,716	85%
6	Riverdale Park	15,727	15,542	(185)	-1%
7	New Carrollton	7,000	7,872	872	12%
8	Shady Grove	45,625	82,205	36,580	80%
9	Glenmont	38,813	44,949	6,136	16%
10	Laurel	36,101	38,580	2,479	7%
11	Laurel East	15,725	22,911	7,186	46%
12	Greenbelt	9,218	12,003	2,785	30%
13	Bowie	27,969	29,273	1,304	5%
14	Northwest Washington, DC	37,190	40,659	3,469	9%
15	North Washington, DC	72,854	90,292	17,438	24%
16	East Washington, DC	58,394	77,694	19,300	33%
17	Washington, DC Core	59,538	90,052	30,514	51%
18	Southwest Montgomery County	76,467	92,888	16,421	21%
19	North	344,700	508,335	163,635	47%
20	East	204,693	244,127	39,434	19%
21	South	901,032	1,356,563	455,531	51%
22	West	322,311	494,120	171,809	53%
	Total Corridor	106,611	135,091	28,480	27%
	Total Region	2,357,241	3,359,742	1,002,501	43%
	Percent Region Growth Occurring in the Corridor			3%	---

Table 4: Employment Growth (2005 to 2040)

District		Employment			
		2005	2040	Increase	Percent Change
1	Bethesda	77,156	92,057	14,901	19%
2	Connecticut -Lyttonsville	5,331	6,281	950	18%
3	Silver Spring	45,518	55,266	9,748	21%
4	Takoma -Langley Park	8,644	13,819	5,175	60%
5	College Park	36,695	59,247	22,552	61%
6	Riverdale Park	6,871	9,143	2,272	33%
7	New Carrollton	20,806	29,195	8,389	40%
8	Shady Grove	134,084	199,267	65,183	49%
9	Glenmont	24,154	28,090	3,936	16%
10	Laurel	29,770	46,178	16,408	55%
11	Laurel East	37,232	65,135	27,903	75%
12	Greenbelt	22,601	24,054	1,453	6%
13	Bowie	14,039	22,212	8,173	58%
14	Northwest Washington, DC	46,491	50,155	3,664	8%
15	North Washington, DC	68,915	97,707	28,792	42%
16	East Washington, DC	74,348	106,495	32,147	43%
17	Washington, DC Core	516,813	652,466	135,653	26%
18	Southwest Montgomery County	128,311	169,375	41,064	32%
19	North	412,659	628,993	216,334	52%
20	East	298,557	395,159	96,602	32%
21	South	1,099,281	1,724,638	625,357	57%
22	West	601,249	982,081	380,832	63%
	Total Corridor	201,021	265,008	63,987	32%
	Total Region	3,709,525	5,457,013	1,474,488	47%
	Percent Region Growth Occurring in the Corridor			4%	

2.2 Roadway Levels of Congestion

The primary east-west roadways, consisting of the Capital Beltway, East West Highway (MD 410), and University Boulevard (MD 193) are heavily congested during peak periods and on weekends, and are unable to accommodate increases in demand for east-west travel. While the roadway network serving the Purple Line corridor includes major freeways and arterials typically ranging from 4 to 6 lanes, many major intersections, such as University Boulevard and New Hampshire Avenue, already experience failing levels of service (LOS) in both morning and evening peak periods. Table 5 shows the 2005 average daily traffic volumes and peak period levels of service for a number of these primary east-west travel routes within the corridor as well as the 2040 conditions. The high traffic volumes are

above the capacity of the existing east-west roadways and intersections, and this is reflected in the failing levels of service.

Table 5: Average Daily Traffic Levels and Levels of Service

Location	2010		2040	
	AADT[1]	LOS[2] (AM/PM)	AADT	LOS (AM/PM)
Capital Beltway, Wisconsin Avenue (MD 355) to Georgia Avenue (MD 97)	240,000	F/F	323,000	F/F
Capital Beltway, Georgia Avenue (MD 97) to I-95	221,000	F/F	298,000	F/F
Capital Beltway, I-95 to US 50	219,000	F/F	295,000	F/F
Jones Bridge Road at Connecticut Avenue (MD 185)	79,000	F/F	106,000	F/F
University Boulevard (MD 193) at New Hampshire Avenue (MD 650)	62,000	F/F	84,000	F/F
East West Highway (MD 410) at Connecticut Avenue (MD 185)	70,000	F/F	94,000	F/F
East West Highway (MD 410) at 16th Street (MD 390)	60,000	F/F	81,000	F/F
East West Highway (MD 410) at Baltimore Avenue (US 1)	63,000	F/F	85,000	F/F
East West Highway (MD 410) at Kenilworth Avenue (MD 201)	65,000	F/F	88,000	F/F
Annapolis Road (MD 450) at Veterans Parkway (MD 410)	66,000	F/F	89,000	F/F

Source: http://shagbhisdadt.mdot.state.md.us/itms_public/default.aspx
[1] Annual Average Daily Traffic
[2] Level of Service
The 2040 AADT was generated by applying the MDAA II modeled growth rate to 2010

The overall level of congestion is expected to increase in the future as traffic grows to accommodate the increase in population, households, and employment. Because the corridor is already built-up, expanding highway capacity and building new roadways to address the inadequate capacity of existing roadways is difficult. Therefore, very limited improvements are planned for the area. The Maryland Consolidated Transportation Program (FY 2010-2015) identifies the following future improvements in the Purple Line corridor:

- US 1 (Baltimore Avenue) – Reconstruct US 1 between College Avenue and Sunnyside Avenue to improve traffic operations, pedestrian circulation, and safety; it would also accommodate planned revitalization within College Park (project)
- New Hampshire Avenue/University Boulevard – Streetscape and safety improvements for New Hampshire Avenue from Holton Lane to Merrimac Drive and University Boulevard from 800 feet west of New Hampshire Avenue to 800 feet east of New Hampshire Avenue (project)
- College Park Trolley Trail – Construct shared-use path (project)
- I-95/I-495, Capital Beltway, from American Legion Bridge to Woodrow Wilson Bridge – Study (currently on hold)

2.3 Transit Travel Times

The major transportation routes in the area are generally radial (in this corridor running north-south). Of the 75 bus routes in the corridor, only 12 provide predominantly east-west service. There is no one-seat ride for the length of the corridor and buses in the corridor are subject to the same level of congestion as they operate in mixed flow traffic.

Table 6 shows current travel times which are expected to degrade further in the future as no major transit service is planned for the future. Future transit improvements in the corridor include:

- Construction of the Silver Spring Transit Center – This project provides a fully integrated transit center at the Silver Spring Metro station. It includes construction of bus bays for Metrobus and Ride On, an intercity bus facility, a taxi queue area, a kiss-and-ride facility, and a MARC ticketing office. Provision is also made for the Purple Line and a hiker-biker trail. This project is under construction.
- Construction of the Takoma/Langley Transit Center – The project is a joint effort between MTA and SHA, with financial contributions from Prince George's and Montgomery counties. It will include pedestrian safety, roadway and intersection improvements, new sidewalks and crosswalks, and a shelter for patrons awaiting buses. The transit center, on the northwest corner of the University Boulevard and New Hampshire Avenue intersection, would be located directly across from the Purple Line. This project received a USDOT TIGER grant award in February 2010.
- Bethesda Metro Station Entrance – This is a study for a new entrance proposed on the mezzanine level at the south end of the Bethesda Metro station platform. The new entrance would provide a direct connection between the Purple Line and the Metrorail Red Line. Montgomery County has committed $60 million for construction.

Bus travel times would remain relatively unchanged between 2012 and 2040 on the routes serving the Purple Line markets.

Table 6: Average Scheduled Transit Travel Times during Peak Hours (2012)

Location	Rail[1]		Bus[2]	
	Distance (miles)	Time (min.)	Distance (miles)	Time (min.)
Bethesda to Silver Spring	16.5	39	4.4	17
Bethesda to Takoma/Langley	No Service	No Service	7.7	33
Bethesda to College Park	18.0	48	11.2	49
Bethesda to New Carrollton	19.2	55	15.6	92
Silver Spring to Takoma/Langley	No Service	No Service	3.3	16
Silver Spring to College Park	18.5	25	7.3	32
Silver Spring to New Carrollton	19.4	54	11.2	52
Takoma/Langley to College Park	No Service	No Service	4.0	14
Takoma/Langley to New Carrollton	No Service	No Service	9.3	52
College Park to New Carrollton	21.6	56	5.1	20

[1] WMATA Metrorail times are based on peak-hour travel (7:00-7:30 and 4:00-4:30) and calculated from Trip Planner http://www.wmata.com/rider_tools/tripplanner/tripplanner_form_solo.cfm , retrieved May 2012

[2] Bus times are based on the fastest scheduled time at 7 am on a Wednesday morning, including WMATA's F4, J2, J4 and Ride On's 15, 16, 17, http://www.wmata.com/rider_tools/tripplanner/tripplanner.cfm retrieved May 2012

2.4 Travel Markets and Trip Growth

The diversity of land uses, markets, and socio-economic characteristics in the Purple Line corridor indicates that trip origins and destinations are present and, therefore, a substantial amount of travel occurs entirely within the corridor. The major activity centers in the corridor include business and retail destinations, educational institutions, and sports and entertainment facilities. The Purple Line would serve at least five important travel markets in the corridor:

- From an origin in one of the "wedges" (a wedge is one of the areas between the four major radial, rail corridors) to a Metrorail station to gain access to Metrorail and to travel to a destination outside the corridor, such as downtown Washington, DC. This is the conventional suburb-to-downtown work market trip during which the rider would use the Purple Line as a feeder service for the Metrorail to travel downtown or elsewhere.
- From one Metrorail station in the corridor to another. The Purple Line would eliminate the need to travel into the Washington, DC core and back out again on Metrorail to reach a destination in the Purple Line corridor. The Purple Line would provide a connector service between four Metrorail lines.
- From an origin outside the corridor, such as Shady Grove or Washington, DC, to a destination within the corridor either at an activity center or in a wedge. This is the converse of the first two types of market and serves as a distributor function for the Metrorail.
- Between a wedge and one of the activity centers in the corridor. These activity centers include Bethesda, Silver Spring, Takoma/Langley Park, College Park, Riverdale Park, and New Carrollton. This market is for a single-seat trip from an origin in one of the wedges to one of the major activity centers in the corridor without the need to use Metrorail.

- From wedge to wedge. This is a market that would be served exclusively by either local bus service or the Purple Line. It would not involve a transfer to Metrorail. Wedge-to-wedge travel may be entirely within the corridor and could be a one-seat ride or it could entail transfer to a local bus for travel from an origin or to a destination outside the corridor.

These markets were further grouped into three key major categories for ease of analysis:

- Completely within Corridor
- Produced Inside Corridor Attraction Outside
- Produced Outside Corridor Attraction Inside

The Purple Line would serve each of these travel markets, although in different ways and for different purposes. Each would dictate different planning strategies and operating paradigms. The first three travel markets are feeder, connector, or distributor services to Metrorail. For the last two travel markets, the destination is within or near the Purple Line corridor and does not require use of Metrorail. Feeder or distributor local bus service could supplement the Purple Line to complete the trip in any of these markets.

The Purple Line would directly connect several major activity centers to the MARC Penn Line and to Amtrak's Northeast Corridor via the New Carrollton station, the MARC Brunswick Line at Silver Spring, and the MARC Camden Line at College Park. Connections to these facilities substantially expand the market reach of the Purple Line by providing access to areas not served by Metrorail, including Frederick, Howard, and Anne Arundel Counties, BWI Airport, the Baltimore central business district, Western Maryland, and major metropolitan areas in the northeast.

Table 7 and Table 8 present the person trips for 2005 and 2040 that were used to identify the size of each of the three major travel markets in the Purple Line corridor and the overall growth in person trips. Table 9 summarizes the differences in person trips between 2005 and 2040.

Daily person trips in the region will increase by 7,815,200 trips, or a 20 percent growth between 2005 and 2040.[1] The markets served by the corridor are expected to increase by approximately 337,700 trips per day between 2005 (1,680,000) and 2040 (2,017,600). In 2040, of the total Purple Line corridor travel market share of 2,017,600 daily person trips, approximately 524,340 (26 percent) trips are completely within the Purple Line corridor; 697,260 (35 percent) are produced inside the corridor to other areas in the region; and 796,030 (39 percent) are produced outside the corridor with destinations in the corridor. Trips that start and end in the Purple Line corridor show the largest increase in the number of daily person trips or 43 percent between the 2005 and 2040.

[1] The future year forecasts results discussed in the main body of this report are for 2040, which is the horizon year for the FEIS. The horizon year for the AA/DEIS was 2030. Appendix A provides updated forecasts for 2030.

Table 7: 2005 Purple Line Corridor Daily Person Trips

Productions		District	Attractions																					Total
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	
	1	Bethesda	84,215	2,706	6,232	1,453	1,097	340	358	25,048	8,971	2,893	1,208	1,012	221	15,419	5,478	1,594	16,352	30,764	5,976	1,568	8,325	12,770	**234,000**
	2	Connecticut - Lyttonsville	7,463	7,326	3,992	581	396	122	97	3,174	3,362	972	420	350	60	5,326	2,441	627	5,597	3,457	999	487	1,844	1,615	**50,708**
	3	Silver Spring	13,769	3,978	52,708	10,327	4,561	1,092	1,049	12,464	16,341	9,818	4,611	4,291	508	10,659	16,526	4,785	23,287	11,102	5,750	4,522	8,505	4,895	**225,548**
	4	Takoma - Langley Park	4,923	975	12,805	36,828	8,894	1,579	1,317	5,825	7,302	9,414	5,453	7,236	618	4,482	15,734	5,730	13,706	5,346	4,352	5,595	6,585	2,555	**167,254**
	5	College Park	1,762	316	2,995	4,277	21,041	3,799	2,136	1,724	1,998	2,980	3,023	6,732	1,104	1,923	8,843	9,733	9,240	1,805	2,312	7,743	8,274	1,423	**105,183**
	6	Riverdale Park	1,363	223	1,922	1,618	8,469	27,362	7,830	1,126	1,167	1,779	2,486	4,756	2,649	1,570	6,137	14,634	12,231	1,416	1,674	14,822	14,787	1,613	**131,634**
	7	New Carrollton	660	111	837	709	2,310	4,209	14,372	718	749	1,144	1,399	2,043	3,863	828	3,035	8,225	6,456	818	1,190	10,029	13,007	942	**77,654**
	8	Shady Grove	27,638	1,699	6,503	2,009	1,510	429	546	242,850	24,822	7,704	2,491	1,575	341	6,778	3,865	1,481	13,665	80,277	75,339	2,500	9,055	16,789	**529,866**
	9	Glenmont	19,685	3,403	15,554	4,650	3,169	835	1,026	60,442	128,633	21,193	5,715	3,566	569	7,546	7,784	2,833	19,634	21,332	30,528	4,820	7,165	7,302	**377,384**
	10	Laurel	10,074	1,607	13,087	6,892	5,415	1,448	1,728	22,233	29,336	135,005	30,907	8,238	998	4,468	8,000	4,313	17,784	10,012	33,570	12,509	8,172	4,074	**369,870**
	11	LarlEast	2,648	438	3,126	2,234	3,723	1,240	1,441	4,315	4,183	16,795	69,349	7,490	1,062	1,431	3,306	3,142	4,981	2,800	22,180	24,527	5,360	1,382	**187,153**
	12	GreenBlt	1,726	319	2,436	3,339	5,828	1,790	1,774	2,183	2,487	4,874	6,841	24,577	1,105	1,148	3,673	3,849	5,105	1,887	3,824	9,740	6,191	1,095	**95,791**
	13	Bowie	1,661	235	1,749	1,137	4,517	4,923	12,435	1,541	1,557	2,437	4,038	4,949	75,518	1,771	5,384	16,195	20,526	1,661	3,200	60,606	58,273	2,159	**286,472**
	14	Northwest DC	27,391	4,317	9,686	2,263	1,843	651	583	8,252	6,011	2,554	1,037	980	351	115,452	29,229	6,189	78,474	35,406	3,212	1,699	34,281	24,532	**394,393**
	15	North DC	13,799	2,640	19,694	11,217	13,078	3,680	3,239	6,930	7,172	5,788	3,777	5,044	1,676	37,346	133,764	28,970	105,847	16,847	4,359	7,218	40,672	18,437	**491,194**
	16	East DC	3,659	524	4,682	3,381	12,394	8,758	10,080	2,145	1,965	2,654	3,067	5,030	5,281	7,963	28,981	105,176	83,085	5,382	2,586	14,326	72,032	13,317	**396,468**
	17	DC Core	6,057	678	4,680	2,022	3,569	1,974	2,190	3,057	2,347	1,649	1,034	1,490	1,534	21,513	28,731	23,586	166,888	15,460	1,864	4,603	93,898	43,803	**432,627**
	18	Southwest Montgomery	61,335	2,944	10,190	2,722	2,064	622	743	120,667	15,097	5,736	2,057	1,748	406	43,711	12,958	4,590	73,054	381,059	87,798	2,830	46,077	70,782	**949,190**
	19	North	29,916	2,776	15,474	5,118	7,335	1,771	2,450	188,413	54,927	45,618	43,788	8,187	1,604	9,515	9,118	6,128	41,921	158,433	2,455,458	116,417	25,486	45,540	**3,275,393**
	20	East	6,274	1,006	7,157	4,973	16,484	12,478	18,477	7,177	6,749	14,129	43,908	21,042	31,915	4,295	13,214	27,797	36,259	6,053	113,412	1,484,980	82,116	5,855	**1,965,750**
	21	South	16,219	1,328	9,179	4,618	15,996	13,296	24,995	13,391	5,752	7,003	8,499	12,131	36,726	33,175	46,801	114,388	451,993	37,349	11,910	124,006	6,869,538	767,021	**8,625,314**
	22	West	16,425	789	3,344	882	1,140	502	617	16,057	3,355	1,539	982	746	390	17,261	9,633	8,089	136,884	37,663	33,826	3,317	557,248	2,650,619	**3,501,308**
		Total	**358,662**	**40,338**	**208,032**	**113,250**	**144,833**	**92,900**	**109,483**	**749,732**	**334,283**	**303,678**	**246,090**	**133,213**	**168,499**	**353,580**	**402,635**	**402,054**	**1,342,969**	**866,329**	**2,905,319**	**1,918,864**	**7,976,891**	**3,698,520**	**22,870,154**

Markets	Summary	Percent of Total Market	Percent of Total Region
Completely within Corridor	379,504	23%	
Produced Inside Corridor Attraction Outside	612,477	36%	
Produced Outside Corridor Attraction Inside	687,994	41%	
Total of Key Three Markets	**1,679,975**	**100%**	**7%**
All Other Markets	21,190,179		
Regional Total	22,870,154		

Table 8: 2040 Purple Line Corridor Daily Person Trips

Productions		District	Attractions 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	Total
	1	Bethesda	124,120	4,522	9,101	2,166	1,865	319	378	28,931	10,672	3,608	1,753	1,133	197	20,729	8,181	2,094	22,901	34,410	5,658	1,376	9,661	14,357	**308,132**
	2	Connecticut - Lyttonsville	9,853	9,978	4,919	844	623	103	106	3,722	4,022	1,256	652	398	61	5,257	3,116	716	6,751	3,480	996	410	2,062	1,720	**61,045**
	3	Silver Spring	17,741	5,067	80,025	13,628	7,136	1,042	1,153	14,052	17,677	12,685	7,658	4,952	469	11,989	22,144	5,646	30,096	11,867	5,675	3,976	10,139	5,704	**290,521**
	4	Takoma - Langley Park	5,078	1,087	13,040	46,936	11,954	1,306	1,292	5,376	6,481	9,578	7,255	6,260	555	3,947	16,814	5,715	14,335	4,423	3,870	4,280	5,604	2,341	**177,527**
	5	College Park	2,609	471	4,601	8,252	42,603	4,627	3,429	2,495	2,566	5,190	6,890	10,370	1,549	2,373	14,190	13,812	13,969	2,159	3,125	9,209	10,114	1,826	**166,429**
	6	Riverdale Park	1,113	188	1,595	1,562	9,300	29,152	9,832	983	952	1,974	3,421	4,215	2,706	1,085	5,812	14,764	11,964	939	1,447	12,595	13,564	1,241	**130,404**
	7	New Carrollton	608	109	866	818	3,506	4,556	19,160	705	698	1,375	2,077	2,191	4,563	640	3,443	10,110	6,573	620	1,129	9,415	13,602	776	**87,540**
	8	Shady Grove	38,398	2,726	9,564	3,146	2,942	462	679	432,945	34,874	11,693	5,555	2,008	301	8,991	5,653	1,887	20,799	117,681	99,444	2,906	11,456	24,130	**838,240**
	9	Glenmont	21,594	4,353	17,911	6,162	4,787	719	1,037	64,655	139,370	23,819	9,775	3,754	519	7,113	9,017	2,917	20,979	19,759	28,390	4,440	6,652	7,303	**405,025**
	10	Laurel	9,773	1,788	15,254	9,051	8,535	1,442	1,924	22,531	27,165	123,818	49,273	8,804	992	3,888	9,043	4,386	16,672	9,264	35,026	14,072	7,176	3,718	**383,595**
	11	LarlEast	3,265	594	4,177	3,611	7,387	1,525	2,029	6,515	5,047	23,334	116,446	10,684	1,328	1,489	4,294	4,017	5,634	3,273	31,111	31,332	5,553	1,409	**274,054**
	12	GreenBlt	1,890	369	2,777	4,186	9,513	1,896	2,230	2,419	2,506	6,536	11,806	26,495	1,158	1,028	4,113	4,272	5,581	1,669	4,183	9,390	5,694	1,037	**110,748**
	13	Bowie	1,434	244	1,630	1,271	6,530	5,076	14,452	1,450	1,300	2,844	5,678	4,752	86,880	1,226	5,580	18,464	19,901	1,182	3,124	58,054	56,035	1,907	**299,014**
	14	Northwest DC	35,083	4,763	11,368	2,573	2,353	449	511	8,837	5,460	2,545	1,160	850	218	123,740	33,674	6,680	90,117	35,647	2,681	1,105	33,723	25,519	**429,056**
	15	North DC	15,877	2,908	22,884	14,050	17,111	3,273	3,391	6,896	6,692	6,372	5,000	4,544	1,505	38,825	161,056	34,361	130,713	16,053	3,954	5,183	41,037	19,416	**561,101**
	16	East DC	3,526	502	4,718	4,043	16,677	9,641	12,129	2,000	1,672	2,825	4,064	4,691	5,494	7,451	36,123	133,009	107,993	4,942	2,370	12,455	80,435	14,772	**471,532**
	17	DC Core	7,182	802	5,576	2,646	5,114	1,869	2,322	3,381	2,096	1,725	1,163	1,369	1,350	24,266	41,268	32,237	233,729	17,169	1,822	3,264	102,666	52,507	**545,523**
	18	Southwest Montgomery	64,533	3,331	10,913	2,991	2,855	485	633	151,948	14,336	7,122	3,428	1,620	277	46,919	14,733	5,095	84,328	454,438	104,480	2,378	47,196	81,431	**1,105,470**
	19	North	29,827	2,976	15,725	6,184	10,241	1,555	2,536	241,510	55,379	58,702	72,130	8,543	1,498	8,405	9,114	5,828	42,669	192,812	3,676,169	140,966	26,704	62,025	**4,671,498**
	20	East	4,776	804	5,858	4,977	21,525	12,422	22,590	6,719	5,313	15,807	52,777	18,275	43,097	2,703	11,720	28,710	31,533	4,411	117,367	1,725,174	80,243	6,483	**2,223,284**
	21	South	13,721	1,223	8,152	4,602	21,400	13,122	30,325	12,729	4,432	7,065	12,447	10,820	44,197	28,107	51,464	142,071	476,121	31,758	13,855	126,442	10,373,137	995,310	**12,422,500**
	22	West	16,340	816	3,444	1,044	1,456	400	576	18,736	3,170	1,703	1,760	659	277	16,438	11,000	8,997	144,966	37,724	43,153	4,526	674,419	4,069,157	**5,060,761**
		Total	**428,341**	**49,621**	**254,098**	**144,743**	**215,413**	**95,441**	**132,714**	**1,039,535**	**351,880**	**331,576**	**382,168**	**137,387**	**199,191**	**366,609**	**481,552**	**485,788**	**1,538,324**	**1,005,680**	**4,189,029**	**2,182,948**	**11,616,872**	**5,394,089**	**31,022,999**

Markets	Summary	Percent of Total Market	Percent of Total Region
Completely within Corridor	524,339	26%	
Produced Inside Corridor Attraction Outside	697,259	35%	
Produced Outside Corridor Attraction Inside	796,032	39%	
Total of Key Three Markets	**2,017,630**	**100%**	**7%**
All Other Markets	29,005,369		
Regional Total	31,022,999		

Table 9: Purple Line Corridor Daily Person Trips Growth (2040 minus 2005)

Productions		District	Attractions 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	Total
	1	Bethesda	39,905	1,816	2,869	713	768	-21	20	3,883	1,701	715	545	121	-24	5,310	2,703	500	6,549	3,646	-318	-192	1,336	1,587	**74,132**
	2	Connecticut - Lyttonsville	2,390	2,652	927	263	227	-19	9	548	660	284	232	48	1	-69	675	89	1,154	23	-3	-77	218	105	**10,337**
	3	Silver Spring	3,972	1,089	27,317	3,301	2,575	-50	104	1,588	1,336	2,867	3,047	661	-39	1,330	5,618	861	6,809	765	-75	-546	1,634	809	**64,973**
	4	Takoma - Langley Park	155	112	235	10,108	3,060	-273	-25	-449	-821	164	1,802	-976	-63	-535	1,080	-15	629	-923	-482	-1,315	-981	-214	**10,273**
	5	College Park	847	155	1,606	3,975	21,562	828	1,293	771	568	2,210	3,867	3,638	445	450	5,347	4,079	4,729	354	813	1,466	1,840	403	**61,246**
	6	Riverdale Park	-250	-35	-327	-56	831	1,790	2,002	-143	-215	195	935	-541	57	-485	-325	130	-267	-477	-227	-2,227	-1,223	-372	**-1,230**
	7	New Carrollton	-52	-2	29	109	1,196	347	4,788	-13	-51	231	678	148	700	-188	408	1,885	117	-198	-61	-614	595	-166	**9,886**
	8	Shady Grove	10,760	1,027	3,061	1,137	1,432	33	133	190,095	10,052	3,989	3,064	433	-40	2,213	1,788	406	7,134	37,404	24,105	406	2,401	7,341	**308,374**
	9	Glenmont	1,909	950	2,357	1,512	1,618	-116	11	4,213	10,737	2,626	4,060	188	-50	-433	1,233	84	1,345	-1,573	-2,138	-380	-513	1	**27,641**
	10	Laurel	-301	181	2,167	2,159	3,120	-6	196	298	-2,171	-11,187	18,366	566	-6	-580	1,043	73	-1,112	-748	1,456	1,563	-996	-356	**13,725**
	11	LarlEast	617	156	1,051	1,377	3,664	285	588	2,200	864	6,539	47,097	3,194	266	58	988	875	653	473	8,931	6,805	193	27	**86,901**
	12	GreenBlt	164	50	341	847	3,685	106	456	236	19	1,662	4,965	1,918	53	-120	440	423	476	-218	359	-350	-497	-58	**14,957**
	13	Bowie	-227	9	-119	134	2,013	153	2,017	-91	-257	407	1,640	-197	11,362	-545	196	2,269	-625	-479	-76	-2,552	-2,238	-252	**12,542**
	14	Northwest DC	7,692	446	1,682	310	510	-202	-72	585	-551	-9	123	-130	-133	8,288	4,445	491	11,643	241	-531	-594	-558	987	**34,663**
	15	North DC	2,078	268	3,190	2,833	4,033	-407	152	-34	-480	584	1,223	-500	-171	1,479	27,292	5,391	24,866	-794	-405	-2,035	365	979	**69,907**
	16	East DC	-133	-22	36	662	4,283	883	2,049	-145	-293	171	997	-339	213	-512	7,142	27,833	24,908	-440	-216	-1,871	8,403	1,455	**75,064**
	17	DC Core	1,125	124	896	624	1,545	-105	132	324	-251	76	129	-121	-184	2,753	12,537	8,651	66,841	1,709	-42	-1,339	8,768	8,704	**112,896**
	18	Southwest Montgomery	3,198	387	723	269	791	-137	-110	31,281	-761	1,386	1,371	-128	-129	3,208	1,775	505	11,274	73,379	16,682	-452	1,119	10,649	**156,280**
	19	North	-89	200	251	1,066	2,906	-216	86	53,097	452	13,084	28,342	356	-106	-1,110	-4	-300	748	34,379	1,220,711	24,549	1,218	16,485	**1,396,105**
	20	East	-1,498	-202	-1,299	4	5,041	-56	4,113	-458	-1,436	1,678	8,869	-2,767	11,182	-1,592	-1,494	913	-4,726	-1,642	3,955	240,194	-1,873	628	**257,534**
	21	South	-2,498	-105	-1,027	-16	5,404	-174	5,330	-662	-1,320	62	3,948	-1,311	7,471	-5,068	4,663	27,683	24,128	-5,591	1,945	2,436	3,503,599	228,289	**3,797,186**
	22	West	-85	27	100	162	316	-102	-41	2,679	-185	164	778	-87	-113	-823	1,367	908	8,082	61	9,327	1,209	117,171	1,418,538	**1,559,453**
		Total	**69,679**	**9,283**	**46,066**	**31,493**	**70,580**	**2,541**	**23,231**	**289,803**	**17,597**	**27,898**	**136,078**	**4,174**	**30,692**	**13,029**	**78,917**	**83,734**	**195,355**	**139,351**	**1,283,710**	**264,084**	**3,639,981**	**1,695,569**	**8,152,845**

Markets	Summary	Percent of Total Market Growth	Percent of Total Region Growth	Percent Growth from 2005
Completely within Corridor	144,835	43%		38%
Produced Inside Corridor Attraction Outside	84,782	25%		14%
Produced Outside Corridor Attraction Inside	108,038	32%		16%
Total of Key Three Markets	**337,655**	**100%**	**4%**	**20%**
All Other Markets	7,815,190			37%
Regional Total	8,152,845			36%

3. SUMMARY OF ALTERNATIVES

The Purple Line AA/DEIS evaluated eight alternatives: the No Build Alternative, the TSM Alternative, and six Build Alternatives. Corresponding bus and rail operating plans were defined for a 2030 horizon year. The transit network for the alternatives included bus, rail routes (where applicable), and transit facilities. Networks varied by alternative and were developed based on service planning strategies and guidelines, but the geographical coverage and feeder bus frequencies were identical in all alternatives. The regional travel demand model reflected networks according to coding parameters that represent current and future infrastructure, population, and employment. All alternatives extended the full length of the Purple Line corridor between Bethesda and New Carrollton. See the Detailed Definition of Alternatives Report (September 2008) for a description of the initial alternatives studied.

The following sections describe the No Build Alternative, the Baseline Alternative, and the Preferred Alternative as documented in the Final Definition of Alternatives and Operating Plans – Volume I (December 2010) and updated in Chapter 2.0 of the Purple Line FEIS.

3.1 No Build Alternative

The No Build Alternative consists of the transit service levels, highway networks and traffic volumes, and forecasted demographics for the horizon year of 2040 that are assumed in the Metropolitan Washington Council of Government's (the MPO) Constrained Long Range Plan (CLRP). The CLRP consists of the existing highway and transit network as well as planned and programmed (committed) improvements.

The Purple Line project is in the CLRP; however, the Purple Line is not assumed as part of the travel demand model and was removed from the model transportation system network for the purposes of forecasting the No Build Alternative.

3.1.1 Highway Improvements

The Maryland Consolidated Transportation Program (FY 2010-2015) includes the following highway, pedestrian, and bicycle projects and studies in the Purple Line corridor:

- The InterCounty Connector (completed) – This highway, located north of the corridor, is not expected to have a measurable impact on travel within the Purple Line corridor as it serves different travel markets. Likewise, planned changes at intersections along US 29 are not expected to have an impact on the Purple Line.
- US 1 (Baltimore Avenue) – Reconstruct US 1 between College Avenue and Sunnyside Avenue to improve traffic operations, pedestrian circulation, and safety. This project would accommodate planned revitalization within College Park (project).
- New Hampshire Avenue/University Boulevard – Streetscape and safety improvements for New Hampshire Avenue from Holton Lane to Merrimac Drive and University Boulevard from 800 feet west of New Hampshire Avenue to 800 feet east of New Hampshire Avenue (project).
- College Park Trolley Trail – Construct shared-use path (project).
- I-95/I-495, Capital Beltway, from American Legion Bridge to Woodrow Wilson Bridge – Study currently on hold.

3.1.2 Transit Improvements – Region

The following projects in the CLRP are major projects in Maryland that were included in the No Build Alternative, but not in the Purple Line corridor:

- The Corridor Cities Transitway from Shady Grove to COMSAT is a committed study, but it is sufficiently far from the Purple Line that there is not expected to be any synergy between the two. The Corridor Cities Transitway is not included in the future transportation network in the travel forecasting model.

3.1.3 Transit Improvements – Purple Line Corridor

Transit improvements in the Purple Line corridor include the following:

- Construction of the Silver Spring Transit Center – This project provides a fully integrated transit center at the Silver Spring Metro station. It includes construction of bus bays for Metrobus and Ride On, an intercity bus facility, a taxi queue area, a kiss-and-ride facility, and a MARC ticketing office. The transit center will accommodate the Purple Line and a hiker-biker trail. This project is under construction.
- Construction of the Takoma/Langley Transit Center – The project is a joint effort between MTA and SHA, with financial contributions for Prince George's and Montgomery counties. It will include pedestrian safety, roadway and intersection improvements, new sidewalks and crosswalks, and a passenger shelter. The transit center will be located on the northwest corner of the University Boulevard and New Hampshire Avenue intersection in Langley Park. This transit center would be a station directly across from the Purple Line. This project received a USDOT TIGER grant award in February 2010.
- A study for construction of a new entrance to the Bethesda Metro station mezzanine at the south end of the platform – This would provide a direct connection between the Purple Line and the Metrorail Red Line. Montgomery County has committed $60 million for construction.

Figure 5 illustrates transit services with the No Build Alternative in 2040. Table 10 describes the service characteristics of the corridor bus network.

Figure 5: 2040 No Build Transit Service in the Purple Line Corridor

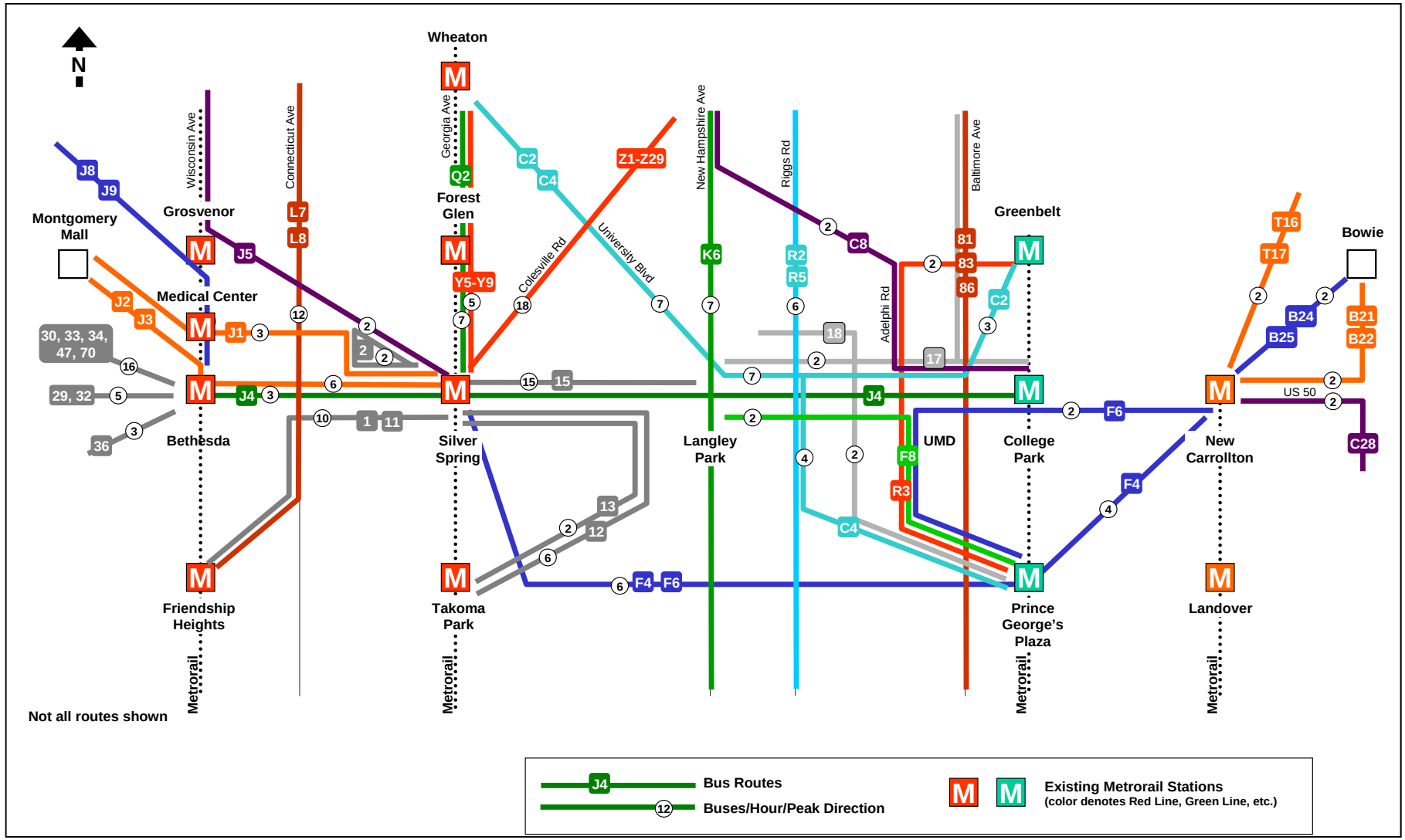


Table 10: Purple Line Corridor Bus Network

Route	Terminal and Intermediate Points	Peak Headway		Off-Peak Headway	
		Existing Service	2040 No Build Alternative	Existing Service	2040 No Build Alternative
J1	Terminate at Medical Center Metro – Silver Spring	20	10	60	60
J2	Montgomery Mall to Silver Spring Metro	15	10	20	20
J3	Combined with J2 service Montgomery Mall – Bethesda – Silver Spring Metro	20	10	60	60
J4	Bethesda to College Park	20	n/a	n/a	n/a
C2	Langley Park – Greenbelt	20	20	30	30
C4	Twinbrook Metro – Prince George's Plaza Metro	20	20	30	30
F4	Silver Spring – New Carrollton	15	10	40	40
F6	Silver Spring – New Carrollton	30	10	40	40
Ride On 15	Silver Spring – Langley Park	5	10	12	12
The Bus 17	Langley Park–UM–College Park Metro	30	30	45	45
Shuttle-UM 111	UM – Silver Spring Transit Center	35	30	75	45
Shuttle-UM 104	UM – College Park Metro	8	35	8	12

3.2 Preferred Alternative

The Preferred Alternative is a 16-mile east-west light rail line that would extend from the Bethesda Metro station to the New Carrollton Metro station. The Preferred Alternative is largely surface-running with one short tunnel section, one aerial section, and several underpasses and overpasses of busy roadways. The Purple Line would operate mainly in dedicated or exclusive lanes, allowing for fast, reliable transit operations. The headways would be 6 minutes during peak periods and 10 minutes during the off-peak.

There are approximately 51 at-grade crossings of streets plus several crossings of business entrances within the 13.4 miles between Lyttonsville and New Carrollton. The majority of these crossings occur along the light rail guideway located within the median of the street. At least 45 of these crossings are through signalized intersections. Most of the remaining crossings are median openings that would use some type of warning system for vehicles crossing the tracks. The specific warning device would be determined during later phases of the project. Several major roadways are crossed with grade-separated structures, and the approximately 3-mile segment between Bethesda and Lyttonsville includes no at-grade crossings of streets.

Figure 6 shows the 21 stations proposed with the Preferred Alternative; four of these stations would serve existing Metrorail stations. Table 11 summarizes the operating plan for the Preferred Alternative.

Figure 6: Preferred Alternative Alignment and Stations

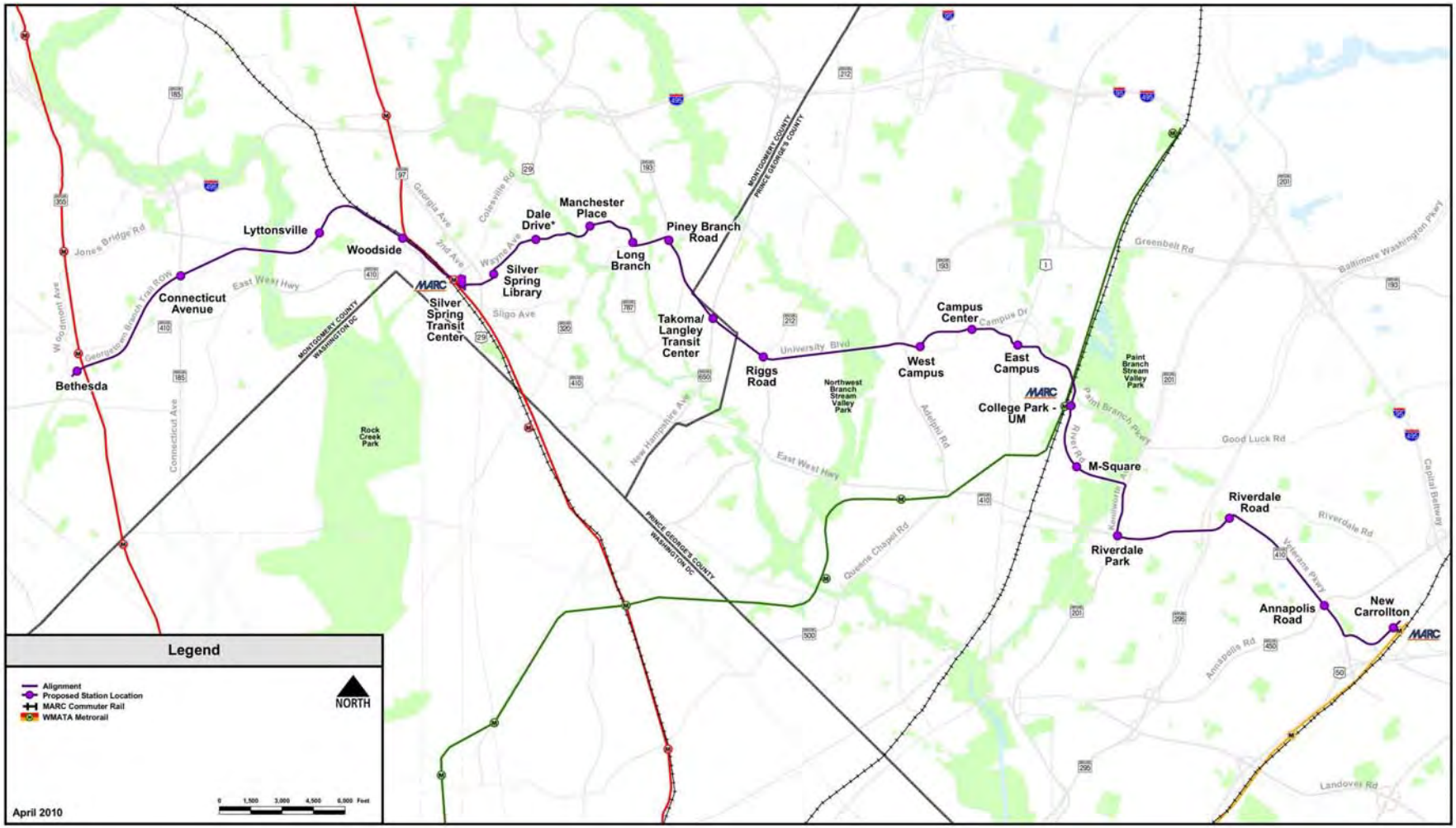


Table 11: Preferred Alternative Operating Plan2

Station/Stop	Station-Station		
	Distance (feet)	Time (decimal minutes)	Average Speed (mph)
Bethesda	7,181	2.7	30.04
Chevy Chase Lake	7,286	2.4	34.03
Lyttonsville	5,227	2.1	27.84
Woodside/16th Street	2,957	1.7	19.38
Silver Spring Transit Center	2,218	3.5	7.13
Silver Spring Library	2,957	3.9	8.58
Dale Drive (future)	2,904	4.1	8.15
Manchester Place	2,218	1.8	14.13
Long Branch	2,165	3.3	7.53
Piney Branch Road	3,960	2.3	19.42
Takoma/Langley Transit Center	3,115	2.6	13.44
Riggs Road	7,550	4.6	18.79
Adelphi/West Campus	2,640	3.6	8.37
Campus Center	2,957	4.0	8.51
East Campus	4,805	3.9	13.88
College Park Metro	3,960	2.1	21.77
M Square	4,594	3.7	14.30
Riverdale Park	4,910	2.4	23.09
Beacon Heights	6,758	3.4	22.48
Annapolis Road/Glenridge	4,858	4.5	12.27
New Carrollton			
Total	85,219	62.6	15.47

The Purple Line would operate in a dense and congested corridor and would connect four Metrorail stations that each serves many bus routes. The Bethesda, Silver Spring, and New Carrollton Metro stations, in particular, are the terminal points for approximately 57 bus routes from Metrobus, Montgomery County Ride On, and Prince George's County TheBus.

The Purple Line would not include any additional parking at the new stations. Passengers boarding the Purple Line would either walk, ride a bike, transfer from bus, or transfer from other rail lines. Feeder bus would be a large component of the line. Passenger volumes may increase on any of the existing bus routes that do not operate parallel to the Purple Line. Only a few routes operate parallel to the Purple Line for any large distance including WMATA routes J2, J3, J4, portions of routes C2 and F6, and Ride On route 15. Similar to the Baseline alternative, WMATA route J4 is eliminated and replaced by the

[2] The Operating Plan for the Preferred Alternative continues to be refined and certain station-to-station times change slightly with further operational planning

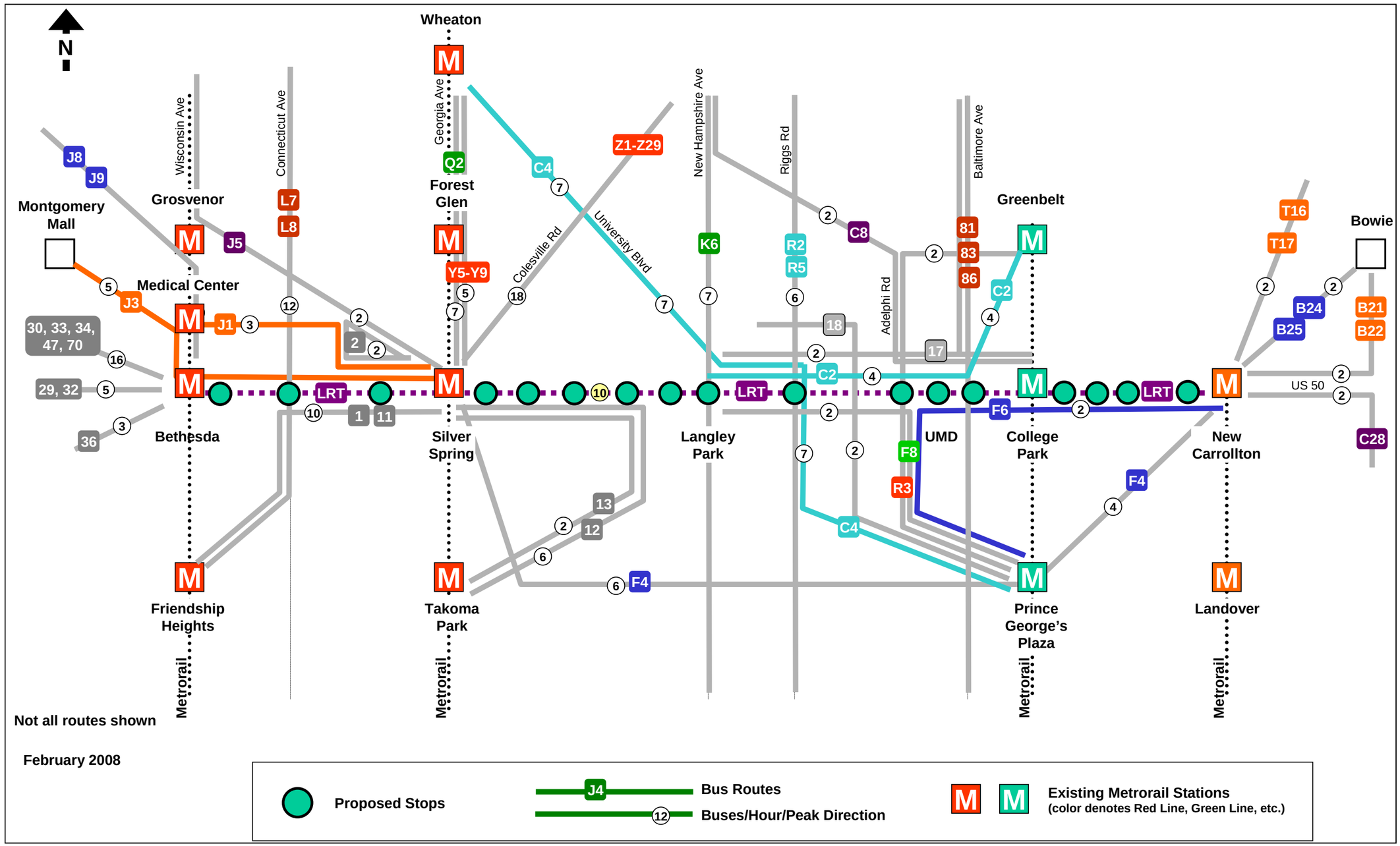
Purple Line. Ride On route 15 is reduced in frequency because the Purple Line parallels that route, and WMATA routes J2 and J3 are combined because they serve the same markets. Shuttle-UM's route to Silver Spring is eliminated, as is the shuttle between the campus and the College Park Metro station. WMATA route C2 is terminated at the Langley Park Transit Center and frequencies are adjusted on WMATA routes C2 and C4.

Table 12 lists the change in bus service and frequencies for the Preferred Alternative. Figure 7 displays the proposed transit service operating plans for the Preferred Alternative.

Table 12: 2040 Bus Service Changes for the Preferred Alternative

Route	Terminal and Intermediate Points	Preferred Alternative	
		Peak Headway	Off-Peak Headway
LRT Line	Bethesda – New Carrollton	10	60
J1	Terminate at Medical Center Metro Medical Center – Silver Spring	10	20
J2	Montgomery Mall to Silver Spring Metro	10	60
J3	Combined with J2 service Montgomery Mall – Bethesda – Silver Spring Metro	Eliminated	Eliminated
J4	Bethesda to College Park	15 Terminated at Langley Park	30 Terminated at Langley Park
2	Langley Park – Greenbelt	10	15
C4	Twinbrook Metro – Prince George's Plaza Metro	10	40
F4	Silver Spring – New Carrollton	10	40
F6	Silver Spring – New Carrollton	10	12
Ride On 15	Silver Spring – Langley Park	10	45
The Bus 17	Langley Park–UM–College Park Metro	30	45
UM Shuttle- UM 111	UM – Silver Spring Metro	Eliminated	Eliminated
UM Shuttle- UM 104	UM – College Park Metro	Eliminated	Eliminated

Figure 7: 2040 Preferred Alternative Transit Service



4. THE FORECASTS

Travel forecasts provide a wide range of information used for analysis of the proposed alternatives. These estimates include measures such as mode shares, mode of access, user benefits, station boardings, vehicle hours, vehicle-miles, and average daily volumes. The results presented in this section are based mainly on the information used in the Case for the Project. This section includes information on 2040 conditions regarding person trips and transit trips with and without the project, ridership levels, and benefits of the Preferred Alternative.

There are special market trips that are generated when a rail system becomes available to the transit user because of the rail's visibility, reliability, and ease of use. Examples of such trips include mid-day trips for business or personal purposes. A non-home-based-direct demand model was developed in 1989 for estimating these trips for WMATA. This model estimates the number of non-home-based-trip ends at each rail station. The model was updated and re-estimated using a series of on-board transit passenger surveys conducted on the Washington DC regional transit systems (Metrorail, Metrobus, MARC, VRE, all other locally-operated bus services, and commuter buses) during a period between 2005 and 2008.

The forecast runs summarized in this section include special market trips. In the Preferred Alternative, the Purple Line produces approximately 170,400 daily trips, resulting in total regional transit trips of 1,470,620 per day. The Purple Line trips represent approximately 12 percent of the total daily transit trips. Trips from models that are exogenous to the mode choice model such as non-home-based direct demand trips, visitors, air passengers and external trips are also excluded from the summaries below. These trips would increase the total regional trips to 1,683,700 with the Preferred Alternative and are constant across the alternatives. Some of the summary results in the tables in this section will be different from some summary information in the FEIS because of the excluded trips outlined above. Appendix B includes further information for horizon years 2030 and 2040 with all the trip types included that support the summaries presented in the FEIS.

4.1 Design Year (2040) Without the Project (No Build Alternative)

Within the Purple Line corridor, no significant changes to transit service, aside from the Purple Line itself, are planned over the next three decades. Similarly, the highway network will remain relatively unchanged. In contrast, increases in population and employment are projected to occur by 2040. Therefore, while the demand for transportation service will increase due to demographic growth, under the No Build Alternative the transportation system would not keep up with the expected needs. Figure 8 shows transit trips by travel market. Table 13 and Table 14 summarize the size of each of the three major travel markets in the corridor. Table 15 displays the differences between 2005 and 2040.

Under the No Build Alternative, transit usage in the markets served by the corridor is expected to increase by approximately 326,770 trips per day between 2005 (1,124,150) and 2040 (1,450,920). In 2040, of the total Purple Line corridor market share of 200,860transit trips (14 percent of the total transit trips), approximately 21,510 trips are produced and attracted within the corridor, and 79,860 trips are produced outside the corridor and travel to the corridor. The largest market share, 50 percent, or 99,490, is produced inside the corridor and destined to locations outside the corridor. Between 2005 and 2040, the transit trips identified in the travel markets for the Purple Line would increase by 55,700 (38 percent). The greatest growth between 2005 and 2040 is experienced by the transit trips that remain entirely within the corridor. This travel market grows by 74 percent from

12,370 in 2005 to 21,515 in 2040. The other two markets increase by 43 percent and 27 percent, respectively.

Figure 8: 2040 Transit Trips by Travel Market (No Build Alternative)

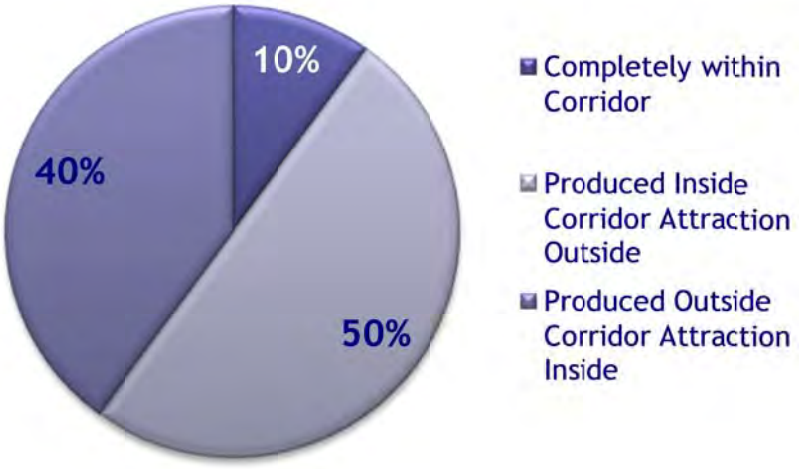


Table 13: 2005 Transit Trips by District (Production/Attraction Format)

Productions		District	Attractions 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	Total
	1	Bethesda	1,447	77	576	36	84	5	42	1,665	281	45	4	39	1	1,013	849	296	7,974	1,186	83	281	1,334	683	**18,001**
	2	Connecticut - Lyttonsville	243	7	159	8	16	1	2	114	55	11	1	5	0	138	167	64	1,514	96	6	1	169	51	**2,828**
	3	Silver Springs	1,881	171	1,458	347	450	44	83	1,242	856	361	91	187	4	1,092	2,701	845	11,350	906	110	77	1,838	632	**26,726**
	4	Takoma - Langley Park	510	47	1,142	200	586	47	55	517	364	306	124	233	2	302	1,719	576	4,577	257	56	133	656	168	**12,577**
	5	College Park	184	11	337	98	239	65	92	156	91	63	75	259	5	153	1,088	659	3,146	66	52	162	685	160	**7,846**
	6	Riverdale Park	131	8	247	53	351	69	201	75	37	20	38	185	32	107	832	1,040	3,567	49	4	186	826	134	**8,192**
	7	New Carrollton	111	3	104	16	127	58	143	98	24	6	5	67	45	106	466	714	2,677	45	3	132	827	186	**5,963**
	8	Shady Grove	2,666	52	709	45	124	5	58	5,945	641	116	5	55	2	843	764	360	8,908	2,625	1,288	52	1,640	742	**27,645**
	9	Glenmont	1,766	118	1,751	159	269	14	42	3,725	1,692	492	51	124	2	573	1,291	441	9,082	1,149	390	37	1,232	424	**24,824**
	10	Laurel	770	61	1,333	193	308	13	23	1,159	726	944	278	150	0	239	1,015	350	6,336	252	147	77	652	158	**15,184**
	11	LarlEast	102	7	254	48	238	15	28	104	71	164	307	196	1	49	360	174	1,392	29	285	282	229	49	**4,384**
	12	GreenBlt	132	27	193	53	295	36	59	120	68	54	107	93	2	99	532	330	2,015	49	24	170	468	121	**5,047**
	13	Bowie	157	4	109	6	93	92	391	94	20	5	3	37	115	119	501	1,130	6,063	58	3	349	1,703	186	**11,238**
	14	Northwest DC	2,472	101	1,005	58	194	13	72	1,006	241	48	8	73	4	2,776	2,818	1,139	28,601	1,709	109	307	5,397	2,173	**50,324**
	15	North DC	3,761	314	4,828	692	2,065	252	454	1,973	847	410	199	732	33	6,947	14,900	5,801	62,429	3,447	231	403	10,979	4,603	**126,300**
	16	East DC	1,120	53	1,166	224	1,396	448	1,060	695	206	104	71	510	135	2,020	6,755	9,382	44,862	1,221	47	351	11,883	3,068	**86,777**
	17	DC Core	3,127	82	2,207	152	1,034	107	703	2,643	680	87	43	435	23	5,916	10,686	6,804	67,382	3,193	199	1,290	23,535	10,539	**140,867**
	18	Southwest Montgomery	2,587	47	651	26	61	4	24	3,298	186	27	1	22	0	1,798	1,134	633	19,833	2,737	939	238	3,468	1,215	**38,929**
	19	North	2,572	74	1,840	58	566	10	61	7,804	915	262	386	146	1	1,577	1,682	968	23,463	4,695	8,521	328	2,306	658	**58,893**
	20	East	524	37	604	56	742	166	841	371	103	59	658	638	70	557	1,649	1,982	15,309	197	347	2,198	2,474	386	**29,968**
	21	South	3,059	57	1,777	100	1,100	233	1,338	2,163	411	89	21	567	234	4,170	9,513	17,821	162,181	2,532	79	598	93,903	22,698	**324,644**
	22	West	1,107	12	473	15	116	6	111	893	203	10	1	63	3	1,272	1,639	1,619	45,998	915	95	190	16,712	25,537	**96,990**
		Total	**30,429**	**1,370**	**22,923**	**2,643**	**10,454**	**1,703**	**5,883**	**35,860**	**8,718**	**3,683**	**2,477**	**4,816**	**714**	**31,866**	**63,061**	**53,128**	**538,659**	**27,413**	**13,018**	**7,842**	**182,916**	**74,571**	**1,124,150**

Markets	Summary	Percent of Total Market	Percent of Total Region
Completely within Corridor	12,370	9%	
Produced Inside Corridor Attraction Outside	69,760	48%	
Produced Outside Corridor Attraction Inside	63,030	43%	
Total of Key Three Markets	**145,160**	**100%**	**13%**
All Other Markets	978,980		
Regional Total	1,124,150		

Table 14: 2040 No Build Alternative Transit Trips by District (Production/Attraction Format)

		District	Attractions																					Total
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	
Productions	1	Bethesda	2,712	201	1,322	99	181	9	26	2,639	455	153	48	47	1	1,759	1,376	453	11,031	2,177	181	13	1,675	1,270	**27,828**
	2	Connecticut - Lyttonsville	328	10	234	16	25	0	3	150	71	20	6	9	0	139	254	101	1,965	101	9	1	270	96	**3,808**
	3	Silver Springs	3,298	302	2,851	747	1,023	66	120	1,965	1,307	908	383	332	4	1,671	4,844	1,302	16,805	1,391	250	83	2,610	1,204	**43,466**
	4	Takoma - Langley Park	578	47	1,406	318	841	40	63	497	335	489	226	250	0	285	2,087	704	5,235	235	60	59	835	311	**14,901**
	5	College Park	398	28	750	401	950	141	244	303	164	292	374	652	9	315	2,536	1,593	5,649	183	43	188	1,318	393	**16,924**
	6	Riverdale Park	101	4	191	48	375	71	298	69	25	26	39	145	25	72	806	1,164	3,487	32	6	106	971	169	**8,230**
	7	New Carrollton	81	2	95	20	198	68	183	66	15	9	7	74	43	69	507	942	2,331	42	4	107	841	144	**5,848**
	8	Shady Grove	5,954	144	1,533	174	332	14	61	16,001	1,393	512	216	106	2	1,488	1,214	520	12,917	7,024	3,463	41	2,100	2,019	**57,228**
	9	Glenmont	2,160	152	2,453	299	474	16	51	4,132	1,877	774	253	169	2	575	1,717	622	10,486	1,220	539	44	1,363	801	**30,179**
	10	Laurel	819	61	1,635	344	578	18	32	1,508	712	1,330	1,035	276	0	215	1,301	470	6,430	352	503	114	843	307	**18,883**
	11	LarlEast	213	13	448	132	575	24	42	489	153	518	1,246	364	0	77	624	313	2,015	94	542	410	427	134	**8,853**
	12	GreenBlt	158	10	269	105	561	43	89	156	69	142	303	99	1	96	691	451	2,297	59	36	128	542	178	**6,483**
	13	Bowie	136	3	105	7	138	101	572	102	18	9	4	40	176	88	573	1,393	5,892	42	2	111	1,882	219	**11,613**
	14	Northwest DC	3,197	139	1,351	109	320	17	58	1,097	252	106	40	64	4	3,350	3,918	1,576	34,594	1,883	92	14	6,232	3,264	**61,677**
	15	North DC	4,743	408	6,791	1,417	4,004	353	583	2,077	955	897	604	859	37	8,397	23,262	9,218	78,737	4,058	310	237	13,332	6,322	**167,601**
	16	East DC	1,145	60	1,317	315	2,452	637	1,600	648	200	234	166	583	150	2,132	9,890	14,606	58,826	1,371	65	285	16,489	4,547	**117,718**
	17	DC Core	1,865	116	1,587	300	1,050	142	321	742	214	200	142	221	33	5,213	12,458	9,247	63,873	3,696	125	94	19,795	10,968	**132,402**
	18	Southwest Montgomery	2,995	58	808	39	122	5	26	4,788	223	72	23	31	0	2,021	1,566	961	23,921	3,309	1,552	8	3,836	2,273	**48,637**
	19	North	2,914	76	1,928	107	430	13	71	11,152	1,073	676	882	174	0	1,610	1,933	975	24,944	6,455	15,899	325	2,217	1,247	**75,101**
	20	East	329	13	478	73	808	124	957	402	102	187	1,009	487	77	181	1,483	2,005	9,549	103	490	1,209	2,220	417	**22,703**
	21	South	2,486	62	1,560	160	1,642	286	1,719	1,743	286	187	101	531	212	3,760	11,176	26,283	175,565	2,429	102	166	142,223	44,989	**417,668**
	22	West	1,326	25	494	32	157	14	76	1,037	97	41	9	43	1	1,476	1,898	2,210	54,079	1,294	241	5	24,338	64,279	**153,172**
		Total	**37,936**	**1,934**	**29,606**	**5,262**	**17,236**	**2,202**	**7,195**	**51,763**	**9,996**	**7,782**	**7,116**	**5,556**	**777**	**34,989**	**86,114**	**77,109**	**610,628**	**37,550**	**24,514**	**3,748**	**246,359**	**145,551**	**1,450,920**

Markets	Summary	Percent of Total Market	Percent of Total Region
Completely within Corridor	21,510	10%	
Produced Inside Corridor Attraction Outside	99,490	50%	
Produced Outside Corridor Attraction Inside	79,860	40%	
Total of Key Three Markets	**200,860**	**100%**	**14%**
All Other Markets	1,250,060		
Regional Total	1,450,920		

Table 15: Difference in Transit Trips (2040 No Build minus 2005) (Production/Attraction Format)

		District	Attractions 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	Total
Productions	1	Bethesda	1,265	124	746	63	97	4	-16	974	174	108	44	8	0	746	527	157	3,057	991	98	-268	341	587	**9,827**
	2	Connecticut - Lyttonsville	85	3	75	8	9	-1	1	36	16	9	5	4	0	1	87	37	451	5	3	0	101	45	**980**
	3	Silver Springs	1,417	131	1,393	400	573	22	37	723	451	547	292	145	0	579	2,143	457	5,455	485	140	6	772	572	**16,740**
	4	Takoma - Langley Park	68	0	264	118	255	-7	8	-20	-29	183	102	17	-2	-17	368	128	658	-22	4	-74	179	143	**2,324**
	5	College Park	214	17	413	303	711	76	152	147	73	229	299	393	4	162	1,448	934	2,503	117	-9	26	633	233	**9,078**
	6	Riverdale Park	-30	-4	-56	-5	24	2	97	-6	-12	6	1	-40	-7	-35	-26	124	-80	-17	2	-80	145	35	**38**
	7	New Carrollton	-30	-1	-9	4	71	10	40	-32	-9	3	2	7	-2	-37	41	228	-346	-3	1	-25	14	-42	**-115**
	8	Shady Grove	3,288	92	824	129	208	9	3	10,056	752	396	211	51	0	645	450	160	4,009	4,399	2,175	-11	460	1,277	**29,583**
	9	Glenmont	394	34	702	140	205	2	9	407	185	282	202	45	0	2	426	181	1,404	71	149	7	131	377	**5,355**
	10	Laurel	49	0	302	151	270	5	9	349	-14	386	757	126	0	-24	286	120	94	100	356	37	191	149	**3,699**
	11	LarlEast	111	6	194	84	337	9	14	385	82	354	939	168	-1	28	264	139	623	65	257	128	198	85	**4,469**
	12	GreenBlt	26	-17	76	52	266	7	30	36	1	88	196	6	-1	-3	159	121	282	10	12	-42	74	57	**1,436**
	13	Bowie	-21	-1	-4	1	45	9	181	8	-2	4	1	3	61	-31	72	263	-171	-16	-1	-238	179	33	**375**
	14	Northwest DC	725	38	346	51	126	4	-14	91	11	58	32	-9	0	574	1,100	437	5,993	174	-17	-293	835	1,091	**11,353**
	15	North DC	982	94	1,963	725	1,939	101	129	104	108	487	405	127	4	1,450	8,362	3,417	16,308	611	79	-166	2,353	1,719	**41,301**
	16	East DC	25	7	151	91	1,056	189	540	-47	-6	130	95	73	15	112	3,135	5,224	13,964	150	18	-66	4,606	1,479	**30,941**
	17	DC Core	-1,262	34	-620	148	16	35	-382	-1,901	-466	113	99	-214	10	-703	1,772	2,443	-3,509	503	-74	-1,196	-3,740	429	**-8,465**
	18	Southwest Montgomery	408	11	157	13	61	1	2	1,490	37	45	22	9	0	223	432	328	4,088	572	613	-230	368	1,058	**9,708**
	19	North	342	2	88	49	-136	3	10	3,348	158	414	496	28	-1	33	251	7	1,481	1,760	7,378	-3	-89	589	**16,208**
	20	East	-195	-24	-126	17	66	-42	116	31	-1	128	351	-151	7	-376	-166	23	-5,760	-94	143	-989	-254	31	**-7,265**
	21	South	-573	5	-217	60	542	53	381	-420	-125	98	80	-36	-22	-410	1,663	8,462	13,384	-103	23	-432	48,320	22,291	**93,024**
	22	West	219	13	21	17	41	8	-35	144	-106	31	8	-20	-2	204	259	591	8,081	379	146	-185	7,626	38,742	**56,182**
		Total	**7,507**	**564**	**6,683**	**2,619**	**6,782**	**499**	**1,312**	**15,903**	**1,278**	**4,099**	**4,639**	**740**	**63**	**3,123**	**23,053**	**23,981**	**71,969**	**10,137**	**11,496**	**-4,094**	**63,443**	**70,980**	**326,780**

Markets	Summary	Percent of Total Market Growth	Percent of Total Region Growth	Percent Growth from 2005
Completely within Corridor	9,140	16%		74%
Produced Inside Corridor Attraction Outside	29,730	53%		43%
Produced Outside Corridor Attraction Inside	16,830	30%		27%
Total of Key Three Markets	**55,700**	**100%**	**17%**	**38%**
All Other Markets	271,080			28%
Regional Total	326,780			29%

4.2 Impacts of the Project

The Preferred Alternative would improve mobility for the identified key markets. The following sections summarize the impacts of the Preferred Alternative on transit trips, travel times, travel markets, and daily user benefit hours.

4.2.1 Transit Trips with the Preferred Alternative

Table 16 shows the projected 2040 daily transit trips by district for the Preferred Alternative. Table 17 shows the change in transit trips between the No Build Alternative and the Preferred Alternative.

In the markets served by the Purple Line, transit trips under the Preferred Alternative would increase by 9 percent when compared to the No Build Alternative. Of the 219,670 transit trips serving the corridor's markets in the Preferred Alternative, 29,885 per day would be produced in and attracted to the corridor. Approximately 102,835 transit trips per day produced by the corridor would have destinations outside the corridor, while 86,940 trips would be attracted to the corridor from the region.

Compared to the No Build Alternative, most of the increase in transit trips with the Preferred Alternative would occur in trips that are completely within the corridor. That market would increase by close to 39 percent or 8,870 trips when compared to the No Build Alternative. Transit trips produced inside the corridor and attracted to the region would increase by approximately three percent or 3,345 trips per day from the No Build Alternative. The third key travel market segment shows a modest increase of nine percent from the No Build Alternative or 7,080 daily transit trips in trips produced outside the region and attracted to the corridor.

4.2.2 Travel Time Savings

The transit improvements being considered for the Purple Line corridor are intended to provide shorter and more reliable east-west transit travel times by enabling faster transit vehicle operating speeds through the provision of more priority, dedicated and exclusive operating conditions. The degree that the alternatives address these goals can be measured by reduced transit travel times, time saving for users, improved operating speeds, and attraction of more riders to transit for each of the key travel markets identified.

As shown on Figure 9, during the peak period, riders would save as much as 10 minutes of in-vehicle travel time on average with the Preferred Alternative.

Table 18 summarizes the travel time savings of the Preferred Alternative when compared to the No Build Alternative. On average, the Preferred Alternative saves approximately 11 minutes during the peak period for a trip between Silver Spring and Bethesda, close to 3 minutes from Bethesda to Glenmont, and 8 minutes for a trip between north Washington, DC, and Bethesda.

4.2.3 New Transit Trips

The Preferred Alternative would generate approximately 19,700 new transit trips daily, including trips from the non-home-based direct demand model, when compared to the No Build Alternative.

Over 95 percent (18,790) of the new daily transit trips (19,700) are within the identified travel markets for the Purple Line corridor. Approximately 8,370 (45 percent) of the new transit trips are completely with the corridor. Table 19 shows that almost 20 percent (3,340) of the new transit trips

are produced in the corridor and attracted to the region, and 7,080 produced in the corridor and attracted outside the corridor.

4.2.4 Passenger Travel Benefits

Benefits to travelers as a result of implementing the Purple Line can accrue to existing transit riders who might benefit from a faster trip or more convenient access to the service, as well as to new transit users. The travel benefits are calculated within the region's mode choice model for all alternatives using a measure of the traveler's value of time to convert monetary and other costs to their equivalence in time, which is added to actual time savings. In this way, the measure includes a comprehensive accounting of the total benefits of travel. Table 20 lists the total passenger travel benefits for the Preferred Alternative showing that the Preferred Alternative provides a faster travel option for the corridor. This table does not include any benefits for UMD students or special generator trips, such as for sporting events or other special events.

Table 16: 2040 Preferred Alternative Daily Transit Trips by District (Production/Attraction Format)

		District	Attractions																					Total
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	
Productions	1	Bethesda	2,933	262	1,589	162	274	21	34	2,646	520	183	60	60	1	1,770	1,444	461	11,076	2,183	185	14	1,681	1,273	**28,832**
	2	Connecticut - Lyttonsville	440	20	277	29	41	3	8	169	76	22	7	11	0	146	267	105	2,067	105	10	1	283	104	**4,191**
	3	Silver Springs	4,379	471	3,658	1,100	1,410	123	206	2,209	1,333	914	394	364	6	1,741	4,912	1,345	17,067	1,540	275	87	2,652	1,234	**47,420**
	4	Takoma - Langley Park	1,055	99	1,663	421	1,352	97	174	583	363	494	235	269	6	343	2,164	737	5,402	344	73	48	863	329	**17,114**
	5	College Park	609	59	888	605	1,493	298	445	324	168	296	379	642	20	337	2,579	1,635	5,712	235	45	170	1,342	398	**18,679**
	6	Riverdale Park	227	20	295	115	811	163	464	97	48	51	57	190	28	90	898	1,232	3,845	60	7	113	1,080	191	**10,082**
	7	New Carrollton	118	11	146	62	443	126	186	70	26	26	20	96	43	73	531	947	2,332	48	5	108	841	144	**6,402**
	8	Shady Grove	5,990	193	1,701	220	397	28	69	16,013	1,454	518	219	108	2	1,488	1,220	522	12,917	7,024	3,463	41	2,100	2,019	**57,706**
	9	Glenmont	2,678	180	2,480	350	593	45	103	4,247	1,994	786	257	162	3	575	1,726	628	10,490	1,246	542	37	1,363	801	**31,286**
	10	Laurel	1,217	94	1,647	353	663	49	105	1,551	733	1,331	1,035	271	0	216	1,306	475	6,436	385	504	110	844	308	**19,633**
	11	LarlEast	361	27	489	139	617	48	103	498	158	518	1,246	364	1	78	627	321	2,015	110	542	409	427	134	**9,232**
	12	GreenBlt	236	19	302	127	604	72	145	160	67	141	303	93	3	97	694	458	2,305	68	36	121	544	179	**6,774**
	13	Bowie	185	11	188	51	628	154	583	103	24	16	7	67	176	88	621	1,421	5,905	50	2	114	1,882	219	**12,495**
	14	Northwest DC	3,208	171	1,391	139	345	23	59	1,098	253	108	40	64	4	3,350	3,918	1,576	34,594	1,883	92	14	6,232	3,264	**61,826**
	15	North DC	5,083	481	6,840	1,545	4,210	444	656	2,087	959	898	606	864	41	8,397	23,263	9,221	78,737	4,082	312	231	13,332	6,323	**168,612**
	16	East DC	1,206	78	1,352	384	2,768	739	1,616	651	204	235	167	590	151	2,132	9,892	14,606	58,818	1,374	66	279	16,487	4,547	**118,342**
	17	DC Core	1,881	123	1,591	319	1,066	163	322	742	214	200	142	221	33	5,213	12,458	9,247	63,873	3,697	125	93	19,795	10,968	**132,486**
	18	Southwest Montgomery	3,008	79	888	63	158	10	28	4,788	238	78	23	31	0	2,021	1,572	961	23,922	3,309	1,552	8	3,836	2,273	**48,846**
	19	North	3,091	103	1,982	141	503	25	85	11,160	1,077	680	882	174	0	1,611	1,937	977	24,947	6,461	15,899	325	2,217	1,247	**75,524**
	20	East	426	23	552	125	1,271	205	996	403	96	189	1,010	492	79	182	1,491	2,052	9,531	115	491	1,211	2,213	415	**23,568**
	21	South	2,507	91	1,596	212	2,014	408	1,731	1,743	287	190	103	547	212	3,760	11,183	26,298	175,565	2,430	102	163	142,223	44,988	**418,353**
	22	West	1,329	36	500	40	168	21	76	1,037	98	41	9	43	1	1,476	1,899	2,210	54,079	1,294	241	5	24,338	64,279	**153,220**
		Total	**42,167**	**2,651**	**32,015**	**6,702**	**21,829**	**3,265**	**8,194**	**52,379**	**10,390**	**7,915**	**7,201**	**5,723**	**810**	**35,184**	**86,602**	**77,435**	**611,635**	**38,043**	**24,569**	**3,702**	**246,575**	**145,637**	**1,470,620**

Markets	Summary	Percent of Total Market	Percent of Total Region
Completely within Corridor	29,890	14%	
Produced Inside Corridor Attraction Outside	102,840	47%	
Produced Outside Corridor Attraction Inside	86,940	40%	
Total of Key Three Markets	**219,670**	**100%**	**15%**
All Other Markets	1,250,965		
Regional Total	1,470,620		

Table 17: Difference in Daily Transit Trips (2040 Preferred Alternative minus No Build Alternative) (Production/Attraction Format)

		District	Attractions 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	Total
Productions	1	Bethesda	221	61	267	63	93	12	8	7	65	30	12	13	0	11	68	8	45	6	4	1	6	3	**1,004**
	2	Connecticut - Lyttonsville	112	10	43	13	16	3	5	19	5	2	1	2	0	7	13	4	102	4	1	0	13	8	**383**
	3	Silver Springs	1,081	169	807	353	387	57	86	244	26	6	11	32	2	70	68	43	262	149	25	4	42	30	**3,954**
	4	Takoma - Langley Park	477	52	257	103	511	57	111	86	28	5	9	19	6	58	77	33	167	109	13	-11	28	18	**2,213**
	5	College Park	211	31	138	204	543	157	201	21	4	4	5	-10	11	22	43	42	63	52	2	-18	24	5	**1,755**
	6	Riverdale Park	126	16	104	67	436	92	166	28	23	25	18	45	3	18	92	68	358	28	1	7	109	22	**1,852**
	7	New Carrollton	37	9	51	42	245	58	3	4	11	17	13	22	0	4	24	5	1	6	1	1	0	0	**554**
	8	Shady Grove	36	49	168	46	65	14	8	12	61	6	3	2	0	0	6	2	0	0	0	0	0	0	**478**
	9	Glenmont	518	28	27	51	119	29	52	115	117	12	4	-7	1	0	9	6	4	26	3	-7	0	0	**1,107**
	10	Laurel	398	33	12	9	85	31	73	43	21	1	0	-5	0	1	5	5	6	33	1	-4	1	1	**750**
	11	LarlEast	148	14	41	7	42	24	61	9	5	0	0	0	1	1	3	8	0	16	0	-1	0	0	**379**
	12	GreenBlt	78	9	33	22	43	29	56	4	-2	-1	0	-6	2	1	3	7	8	9	0	-7	2	1	**291**
	13	Bowie	49	8	83	44	490	53	11	1	6	7	3	27	0	0	48	28	13	8	0	3	0	0	**882**
	14	Northwest DC	11	32	40	30	25	6	1	1	1	2	0	0	0	0	0	0	0	0	0	0	0	0	**149**
	15	North DC	340	73	49	128	206	91	73	10	4	1	2	5	4	0	1	3	0	24	2	-6	0	1	**1,011**
	16	East DC	61	18	35	69	316	102	16	3	4	1	1	7	1	0	2	0	-8	3	1	-6	-2	0	**624**
	17	DC Core	16	7	4	19	16	21	1	0	0	0	0	0	0	0	0	0	0	1	0	-1	0	0	**84**
	18	Southwest Montgomery	13	21	80	24	36	5	2	0	15	6	0	0	0	0	6	0	1	0	0	0	0	0	**209**
	19	North	177	27	54	34	73	12	14	8	4	4	0	0	0	1	4	2	3	6	0	0	0	0	**423**
	20	East	97	10	74	52	463	81	39	1	-6	2	1	5	2	1	8	47	-18	12	1	2	-7	-2	**865**
	21	South	21	29	36	52	372	122	12	0	1	3	2	16	0	0	7	15	0	1	0	-3	0	-1	**685**
	22	West	3	11	6	8	11	7	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	**48**
		Total	**4,231**	**717**	**2,409**	**1,440**	**4,593**	**1,063**	**999**	**616**	**394**	**133**	**85**	**167**	**33**	**195**	**488**	**326**	**1,007**	**493**	**55**	**-46**	**216**	**86**	**19,700**

Markets	Summary	Percent of Total Market Growth	Percent of Total Region Change	Percent Change from No-Build Alternative
Completely within Corridor	8,370	45%		39%
Produced Inside Corridor Attraction Outside	3,340	18%		3%
Produced Outside Corridor Attraction Inside	7,080	38%		9%
Total of Key Three Markets	**18,790**	**100%**	**95%**	**9%**
All Other Markets	910			0%
Regional Total	19,700			1%

Figure 9: 2040 Estimated Average Travel Times (minutes)

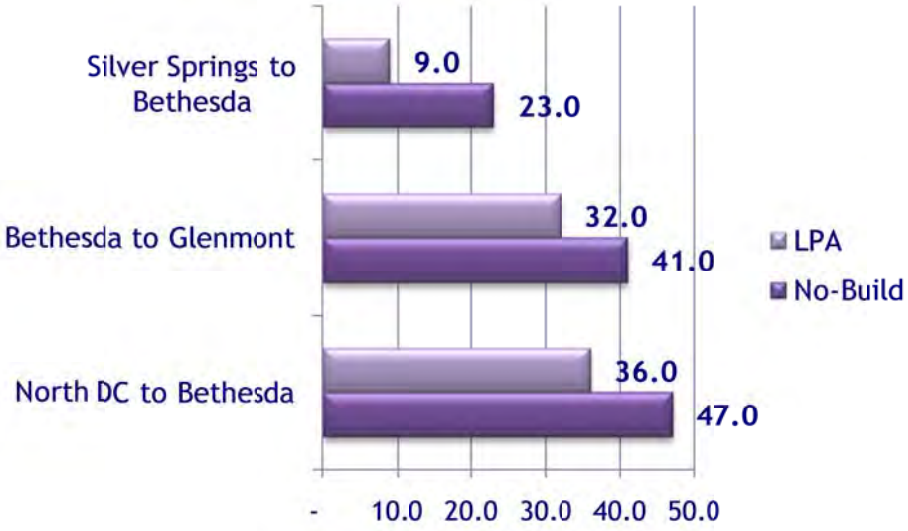


Table 18: Travel Time Savings

Market	Origin Location	Destination Location	Alternative	IVT (min)	Wait Time (min)	Walk Access Time (min)	OVT (min)	No of Transfers	Saved IVT + 2 OVT (min)
Completely within the Corridor	Silver Springs (District 3)	Bethesda (District 1)	No-Build	23.00	1.50	6.40	7.90	0.00	38.80
			LPA	9.00	3.00	6.20	9.20	0.00	27.40
	Savings								11.40
Produced Inside the Corridor with Attractions Outside the Corridor	Bethesda (District 1)	Glenmont (District 9)	No-Build	41.00	3.67	2.20	5.90	1.00	52.80
			LPA	32.00	4.67	4.40	9.10	1.00	50.20
	Savings								2.60
Produced Outside the Corridor with Attractions to the Corridor	North DC (District 15)	Bethesda (District 1)	No-Build	47.00	4.17	4.60	8.60	1.00	64.20
			LPA	36.00	4.00	4.60	10.10	1.00	56.20
	Savings								8.00

Table 19: New Transit Trips with the Preferred Alternative (Production/Attraction Format)

	District		Attractions																					Total
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	
Productions	1	Bethesda	221	61	267	63	93	12	8	7	65	30	12	13	0	11	68	8	45	6	4	1	6	3	1,004
	2	Connecticut - Lyttonsville	112	10	43	13	16	3	5	19	5	2	1	2	0	7	13	4	102	4	1	0	13	8	383
	3	Silver Springs	1,081	169	807	353	387	57	86	244	26	6	11	32	2	70	68	43	262	149	25	4	42	30	3,954
	4	Takoma - Langley Park	477	52	257	103	511	57	111	86	28	5	9	19	6	58	77	33	167	109	13	-11	28	18	2,213
	5	College Park	211	31	138	204	543	157	201	21	4	4	5	-10	11	22	43	42	63	52	2	-18	24	5	1,755
	6	Riverdale Park	126	16	104	67	436	92	166	28	23	25	18	45	3	18	92	68	358	28	1	7	109	22	1,852
	7	New Carrollton	37	9	51	42	245	58	3	4	11	17	13	22	0	4	24	5	1	6	1	1	0	0	554
	8	Shady Grove	36	49	168	46	65	14	8	12	61	6	3	2	0	0	6	2	0	0	0	0	0	0	478
	9	Glenmont	518	28	27	51	119	29	52	115	117	12	4	-7	1	0	9	6	4	26	3	-7	0	0	1,107
	10	Laurel	398	33	12	9	85	31	73	43	21	1	0	-5	0	1	5	5	6	33	1	-4	1	1	750
	11	LarlEast	148	14	41	7	42	24	61	9	5	0	0	0	1	1	3	8	0	16	0	-1	0	0	379
	12	GreenBlt	78	9	33	22	43	29	56	4	-2	-1	0	-6	2	1	3	7	8	9	0	-7	2	1	291
	13	Bowie	49	8	83	44	490	53	11	1	6	7	3	27	0	0	48	28	13	8	0	3	0	0	882
	14	Northwest DC	11	32	40	30	25	6	1	1	1	2	0	0	0	0	0	0	0	0	0	0	0	0	149
	15	North DC	340	73	49	128	206	91	73	10	4	1	2	5	4	0	1	3	0	24	2	-6	0	1	1,011
	16	East DC	61	18	35	69	316	102	16	3	4	1	1	7	1	0	2	0	-8	3	1	-6	-2	0	624
	17	DC Core	16	7	4	19	16	21	1	0	0	0	0	0	0	0	0	0	0	1	0	-1	0	0	84
	18	Southwest Montgomery	13	21	80	24	36	5	2	0	15	6	0	0	0	0	6	0	1	0	0	0	0	0	209
	19	North	177	27	54	34	73	12	14	8	4	4	0	0	0	1	4	2	3	6	0	0	0	0	423
	20	East	97	10	74	52	463	81	39	1	-6	2	1	5	2	1	8	47	-18	12	1	2	-7	-2	865
	21	South	21	29	36	52	372	122	12	0	1	3	2	16	0	0	7	15	0	1	0	-3	0	-1	685
	22	West	3	11	6	8	11	7	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	48
	Total		4,231	717	2,409	1,440	4,593	1,063	999	616	394	133	85	167	33	195	488	326	1,007	493	55	-46	216	86	19,700

Markets	Summary	Percent of Total Market	Percent of Total Region
Completely within Corridor	8,370	45%	
Produced Inside Corridor Attraction Outside	3,340	18%	
Produced Outside Corridor Attraction Inside	7,080	38%	
Total of Key Three Markets	**18,790**	**100%**	**95%**
All Other Markets	905		
Regional Total	19,700		

Note: Sub-totals in summary table may not add to regional total due to rounding.

Table 20: 2040 Passenger Travel Benefits

	Daily Passenger Benefits (hours)	Daily Passenger Benefits (minutes)
Preferred Alternative	33,960	203,760

Close to 33,960 hours are estimated to be saved on a daily basis with the implementation of the Purple Line. An additional 14,065 passenger travel benefit hours would come from the non-home-based direct demand model and would be experienced by riders whose trips start and end completely within the corridor. Table 21 shows the total daily passenger travel benefit hours (33,960) by district with the Preferred Alternative. Sixty-six percent, or 22,020 hours, are benefits experienced by residents living and traveling in the corridor. Approximately 3,390 hours or 12 percent of the benefit hours are experienced by trips produced in the corridor and attracted to the region. Trips produced in the region and attracted to the corridor would experience approximately 7,260 hours of benefits per day or 22 percent of the benefit hours. These three key markets account for 98 percent of the benefits in the entire region.

4.2.5 Trips with the Preferred Alternative

Project trips are defined as trips getting on and off at any station along the Preferred Alternative. Table 22 shows the district-to-district project trips in production/attraction format.

The Preferred Alternative generates approximately 68,650 project trips, with 97 percent or 66,460, serving the travel markets identified using the corridor. Approximately 30,560 daily project trips are trips produced and attracted completely within the corridor. The number of project trips attracted to the region and produced in the corridor account for 22 percent of the project trips or 14,430 per day. The remaining 21,480 project trips are in the travel market represented by trips produced outside the corridor and attracted to the corridor.

4.2.6 User Benefits per Project Trip

Table 23 shows that user benefits per project trip average 30 minutes over the entire region. User benefits remaining entirely within the corridor average 58 minutes per project trip. Trips produced in the corridor and attracted to the region have an average 17 minutes of benefits per project trip. Trips attracted to the corridor and produced in the region would experience 19 minutes of user benefits per project trips.

4.3 Ridership Volumes with the Preferred Alternative

The Preferred Alternative is forecasted to attract over 69,300 daily boardings at stations which connect to Metrorail (Bethesda, Silver Spring, College Park, and New Carrollton) receiving the highest number of boardings. Table 24 and Table 25 summarize the total daily on and off boardings and alightings with the Preferred Alternative. The Bethesda and the Silver Spring Center Metro stations have the highest number of daily boardings and alightings.

On and off values shown in Table 24 are in production/attraction (P/A) format, while the total daily boardings are in origin/destination (O/D) format in Table 25. The difference between P/A and O/D trips is that P/A trips are aggregated trips associated with individual traffic analysis zones (TAZ) while O/D trips refer to the origin and the destination ends of a trip. An example includes a household with

two people traveling from home to work and back home again. The P/A trip table would have two trips produced in the TAZ representing home and two trips attracted to the TAZ representing work. The O/D table would show one trip originating at the home TAZ, one destination at the work TAZ, one origin at the work TAZ, and one destination at the home TAZ.

Table 21: Daily Passenger Benefit Hours with the Preferred Alternative

Productions		District	Attractions																					Total
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	
	1	Bethesda	646	176	713	236	1,578	2,224	4,686	8	73	39	13	14	0	9	117	11	98	4	4	2	7	3	**10,660**
	2	Connecticut - Lyttonsville	196	4	46	12	39	43	78	16	4	2	1	2	0	6	17	7	136	4	1	0	15	7	**640**
	3	Silver Springs	2,025	168	606	304	566	58	112	284	26	6	8	33	1	76	88	52	396	167	25	0	52	33	**5,090**
	4	Takoma - Langley Park	662	43	273	50	442	36	73	81	27	5	5	14	1	52	98	39	270	83	6	-11	37	19	**2,310**
	5	College Park	2,042	47	285	198	522	110	251	28	5	3	6	-7	5	26	60	43	112	47	2	-13	24	6	**3,800**
	6	Riverdale Park	911	8	123	45	282	26	110	23	16	13	8	33	2	15	110	82	504	12	1	3	122	25	**2,470**
	7	New Carrollton	582	8	80	32	229	26	3	3	9	7	3	17	0	2	27	5	2	5	0	1	0	0	**1,040**
	8	Shady Grove	53	48	207	46	79	10	10	11	56	6	2	2	0	0	7	2	0	0	-1	-1	0	0	**540**
	9	Glenmont	578	22	23	48	118	15	39	89	52	10	3	-6	0	1	10	5	0	20	2	-5	0	-1	**1,020**
	10	Laurel	423	30	11	7	77	12	28	38	16	0	0	-5	0	1	4	4	8	24	0	-3	1	1	**680**
	11	LarlEast	111	9	45	6	35	10	21	8	3	0	0	0	0	1	4	5	1	9	0	-1	0	0	**270**
	12	GreenBlt	77	7	37	19	37	21	42	3	-3	-2	0	-3	1	1	3	6	11	6	0	-5	2	0	**260**
	13	Bowie	38	3	44	7	131	22	8	1	4	4	1	13	0	0	36	17	13	5	0	1	0	0	**350**
	14	Northwest DC	17	34	51	30	36	7	2	1	2	2	0	0	0	0	0	0	0	0	0	0	0	0	**180**
	15	North DC	1,023	144	70	144	429	113	132	16	7	2	1	6	3	0	1	4	0	47	8	-8	0	3	**2,150**
	16	East DC	108	29	47	74	403	108	18	3	3	1	1	6	0	0	2	-2	-14	4	0	-3	-3	-1	**780**
	17	DC Core	87	23	10	34	53	29	3	0	0	0	0	1	0	0	0	0	0	6	0	-1	0	0	**250**
	18	Southwest Montgomery	10	16	73	17	26	3	2	0	11	5	0	1	0	0	5	0	1	1	0	0	0	0	**170**
	19	North	165	19	43	25	45	7	10	6	4	2	0	0	0	0	5	1	3	3	0	-1	0	0	**340**
	20	East	69	6	56	20	219	33	27	1	-4	1	1	1	1	0	3	28	-30	8	0	1	-8	-3	**430**
	21	South	19	29	30	36	245	83	9	0	1	2	1	11	0	0	5	10	0	1	0	-3	0	0	**480**
	22	West	2	13	5	6	12	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**50**
		Total	**9,840**	**890**	**2,880**	**1,400**	**5,600**	**3,000**	**5,670**	**620**	**310**	**110**	**50**	**130**	**10**	**190**	**600**	**320**	**1,510**	**460**	**50**	**-50**	**250**	**90**	**33,960**

Markets	Summary	Percent of Total Market	Percent of Total Region
Completely within Corridor	22,020	66%	
Produced Inside Corridor Attraction Outside	3,990	12%	
Produced Outside Corridor Attraction Inside	7,260	22%	
Total of Key Three Markets	**33,270**	**100%**	**98%**
All Other Markets	670		
Regional Total	33,960		

Note: Sub-totals in summary table may not add to regional total due to rounding.

Table 22: Daily Project Trips with the Preferred Alternative (Production/Attraction Format)

		District	Attractions																					Total
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	
Productions	1	Bethesda	1,617	365	2,233	572	1,930	227	403	22	229	115	35	47	0	11	394	30	271	9	13	7	10	2	**8,542**
	2	Connecticut - Lyttonsville	436	17	145	32	66	6	15	55	13	8	2	5	0	23	57	23	459	16	3	0	55	26	**1,462**
	3	Silver Springs	4,739	411	2,092	801	1,249	140	244	1,118	77	27	26	120	5	355	352	194	1,705	588	90	34	248	141	**14,756**
	4	Takoma - Langley Park	1,403	102	786	164	1,130	103	192	156	32	3	9	94	6	155	327	136	997	220	18	40	134	70	**6,277**
	5	College Park	2,160	90	719	499	1,165	311	541	78	53	18	11	32	16	81	240	167	551	114	5	32	130	37	**7,050**
	6	Riverdale Park	407	24	283	122	770	124	329	59	38	42	26	90	7	50	339	278	1,629	42	3	20	439	88	**5,209**
	7	New Carrollton	456	19	179	83	546	96	12	11	21	23	16	59	0	6	120	16	10	12	1	3	0	0	**1,689**
	8	Shady Grove	207	130	830	91	206	26	24	0	59	42	7	5	0	0	1	1	0	2	0	0	0	0	**1,631**
	9	Glenmont	1,444	80	80	97	352	41	94	156	1	1	2	12	1	4	2	8	0	92	4	1	0	1	**2,473**
	10	Laurel	981	77	46	8	258	45	100	65	0	0	0	3	1	8	3	12	1	91	1	1	1	2	**1,704**
	11	LarlEast	281	25	115	18	127	33	80	9	3	0	0	1	1	5	11	19	2	29	0	1	1	0	**761**
	12	GreenBlt	191	39	121	71	164	53	120	12	7	2	0	6	2	5	18	23	30	17	0	1	7	1	**890**
	13	Bowie	99	9	133	49	606	80	32	4	10	11	4	38	1	1	115	56	95	12	0	7	0	0	**1,362**
	14	Northwest DC	67	90	228	82	118	20	5	0	4	21	4	1	0	0	0	0	0	0	1	0	0	0	**641**
	15	North DC	2,433	339	199	413	1,247	280	332	6	0	0	3	24	11	0	0	18	0	164	20	4	0	13	**5,506**
	16	East DC	266	65	144	186	1,041	299	60	3	6	5	4	29	1	3	14	23	52	14	1	1	11	3	**2,231**
	17	DC Core	339	69	37	148	248	93	13	0	0	0	0	4	0	0	0	2	0	24	0	0	0	0	**977**
	18	Southwest Montgomery	39	46	319	47	85	9	5	0	32	22	2	2	0	0	19	1	4	3	0	0	0	0	**635**
	19	North	436	67	214	77	363	22	41	3	7	4	0	0	0	2	14	6	12	12	0	0	1	0	**1,281**
	20	East	200	28	190	100	909	138	91	9	9	13	5	30	2	2	70	98	15	26	0	8	1	0	**1,944**
	21	South	53	79	85	107	797	235	37	0	4	4	2	29	0	0	18	33	1	2	0	5	0	0	**1,491**
	22	West	6	33	21	17	41	16	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	**136**
		Total	**18,260**	**2,204**	**9,199**	**3,784**	**13,418**	**2,397**	**2,770**	**1,766**	**605**	**362**	**158**	**631**	**54**	**711**	**2,115**	**1,144**	**5,834**	**1,489**	**160**	**165**	**1,038**	**384**	**68,650**

Markets	Summary	Percent of Total Market	Percent of Total Region
Completely within Corridor	30,560	46%	
Produced Inside Corridor Attraction Outside	14,430	22%	
Produced Outside Corridor Attraction Inside	21,480	32%	
Total of Key Three Markets	**66,470**	**100%**	**97%**
All Other Markets	2,190		
Regional Total	68,650		

Note: Sub-totals in summary table may not add to regional total due to rounding.

Table 23: Minutes of User Benefits per Project Trip

Productions		District	Attractions																				Total
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	
	1	Bethesda	24	29	19	24	49	582	691	*	19	20	*	*	*	*	18	*	21	*	*	*	*	*	74
	2	Connecticut - Lyttonsville	27	*	19	*	36	*	*	17	*	*	*	*	*	*	18	*	18	*	*	*	16	*	26
	3	Silver Springs	25	24	17	23	27	25	27	15	20	*	*	16	*	13	15	16	14	17	17	*	12	14	21
	4	Takoma - Langley Park	28	25	21	18	23	21	23	31	*	*	*	9	*	20	18	17	16	22	*	*	16	16	22
	5	College Park	56	31	24	24	27	21	28	21	6	*	*	*	*	19	15	15	12	25	*	*	11	*	32
	6	Riverdale Park	133	*	26	22	22	12	20	23	*	*	*	22	*	18	19	18	18	*	*	*	17	17	28
	7	New Carrollton	76	*	26	23	25	16	*	*	*	*	*	17	*	*	13	*	*	*	*	*	*	*	37
	8	Shady Grove	15	22	15	30	23	*	*	*	56	*	*	*	*	*	*	*	*	*	*	*	*	*	20
	9	Glenmont	24	16	17	29	20	*	25	34	*	*	*	*	*	*	*	*	*	13	*	*	*	*	25
	10	Laurel	26	23	*	*	18	*	17	35	*	*	*	*	*	*	*	*	*	16	*	*	*	*	24
	11	LarlEast	23	*	23	*	16	*	16	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	21
	12	GreenBlt	24	*	18	16	13	24	21	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	17
	13	Bowie	23	*	20	*	13	16	*	*	*	*	*	*	*	*	19	18	8	*	*	*	*	*	15
	14	Northwest DC	15	22	13	22	18	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	17
	15	North DC	25	25	21	21	20	24	24	*	*	*	*	*	*	*	*	*	*	17	*	*	*	*	23
	16	East DC	24	27	19	24	23	21	18	*	*	*	*	*	*	*	*	*	*	-16	*	*	*	*	21
	17	DC Core	15	20	*	14	13	19	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	15
	18	Southwest Montgomery	*	*	14	*	18	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	16
	19	North	22	17	12	19	7	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	16
	20	East	21	*	18	12	14	14	18	*	*	*	*	*	*	*	3	17	*	*	*	*	*	*	13
	21	South	21	22	21	20	18	21	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	19
	22	West	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	22
		Total	**32**	**24**	**19**	**22**	**25**	**74**	**122**	**21**	**30**	**18**	**19**	**12**	**11**	**16**	**17**	**17**	**15**	**18**	**19**	**-18**	**14**	**14**	**30**

Markets	Summary
Completely within Corridor	58
Produced Inside Corridor Attraction Outside	17
Produced Outside Corridor Attraction Inside	19
Total of Key Three Markets	**32**
All Other Markets	18
Regional Total	30

Table 24: Daily Station Boardings (Rounded) with the Preferred Alternative

Station	Total On*	Total Off*	Total Daily Boardings**
Bethesda	10,210	19,800	15,010
Chevy Chase Lake	1,520	2,940	2,230
Lyttonsville	970	1,700	1,340
Woodside/16th Street	2,220	1,020	1,620
Silver Spring Transit Center	15,700	10,190	12,950
Silver Springs Library	1,750	4,280	3,020
Dale Drive (future)	1,580	350	970
Manchester Place	3,180	650	1,920
Long Branch	1,520	260	890
Piney Branch Road	2,090	380	1,240
Takoma/Langley Transit Center	2,520	1,860	2,190
Riggs Road	2,640	1,810	2,230
Adelphi/West Campus	1,130	910	1,020
Campus Center	200	1,270	740
East Campus	2,570	6,050	4,310
College Park Metro	6,230	5,360	5,800
M Square	970	2,490	1,730
Riverdale Park	2,210	2,580	2,400
Beacon Heights	2,820	990	1,910
Annapolis Road/Glenridge	1,990	830	1,410
New Carrollton	5,310	3,610	4,460
Total	69,330	69,330	69,330

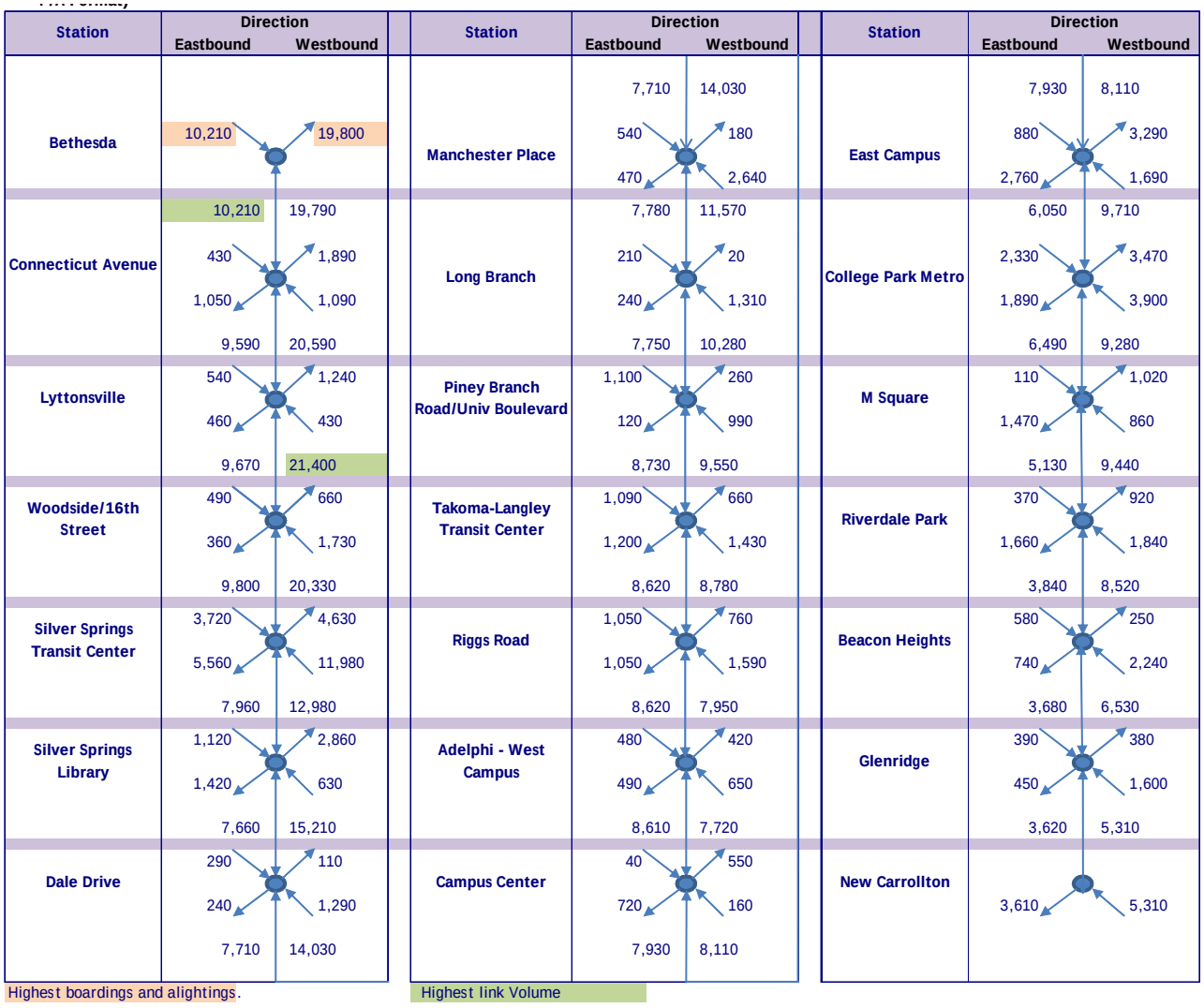
* In production/attraction (P/A) format

Table 25: Daily Station Boardings (Rounded) with the Preferred Alternative

Station	Total Daily Boardings
Bethesda	14,990
Chevy Chase Lake	2,250
Lyttonsville	1,340
Woodside/16th Street	1,620
Silver Spring Transit Center	12,940
Silver Spring Library	3,010
Dale Drive (future)	960
Manchester Place	1,910
Long Branch	890
Piney Branch Road	1,240
Takoma/Langley Transit Center	2,190
Riggs Road	2,220
Adelphi/West Campus	1,020
Campus Center	730
East Campus	4,310
College Park Metro	5,790
M Square	1,730
Riverdale Park	2,390
Beacon Heights	1,900
Annapolis Road/Glenridge	1,410
New Carrollton	4,460
Total	69,300

Figure 10 shows the daily boardings, alightings and segment loads for the Preferred Alternative. The most heavily traveled segment is between Bethesda and Silver Spring with approximately 15,600 riders on each segment. The maximum load link is between Lyttonsville and Woodside/16th Street, with 21,400 riders in the westbound direction, and between Bethesda and Chevy Chase Lake in the eastbound direction. Between Silver Spring and Piney Branch Road link loads average 10,100 riders. The segment between Piney Branch Road, University Boulevard and College Park averages 8,290 riders. The segment between College Park and New Carrollton averages 5,330 riders per day.

Figure 10: Preferred Alternative 2040 Daily Link Volumes



4.3.1 Mode of Access at Purple Line Stations

With the Preferred Alternative, close to 43 percent of the transit riders would walk to the Purple Line stations and 33 percent would take a bus to the stations. Thirteen percent would ride Metrorail to the Purple Line stations. Ten percent would use park-and-ride at the station, while a very small number would be dropped off via automobile or use commuter rail to access the Preferred Alternative. Figure 11 illustrates this information.

Table 26 shows that the Silver Spring Transit Center has the highest number of riders accessing the Purple Line via bus and Metrorail. The highest number of riders walking to the Purple Line would occur at the Bethesda Metro station. The Silver Spring Transit Center would have the highest number of riders driving to the station, riding a bus to the station, or being dropped off at the station. Highest commuter rail access activity is estimated to occur at the New Carrolton Metro station.

Figure 11: 2040 Preferred Alternative Mode of Access

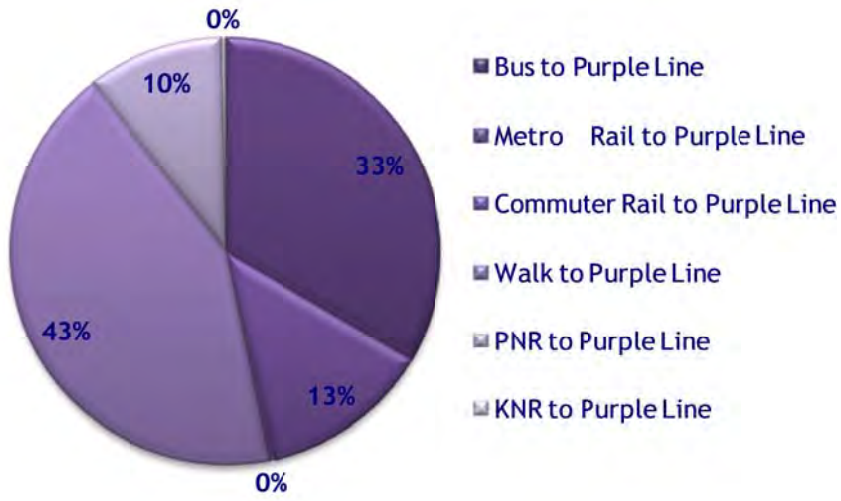


Table 26: Purple Line Passenger Mode of Access

Station	Bus to Purple Line	Metrorail to Purple Line	Commuter Rail to Purple Line	Walk to Purple Line	Park-and-Ride to Purple Line	Kiss-and-Ride to Purple Line	Total
Bethesda	764	2,030	0	6,469	942	3	10,208
Chevy Chase Lake	569	0	0	945	0	0	1,514
Lyttonsville	434	0	0	541	0	0	975
Woodside/16th Street	947	0	0	1,268	0	5	2,220
Silver Spring Transit Center	6,314	2,860	74	3,235	3,112	107	15,702
Silver Spring Library	962	0	0	783	0	4	1,749
Dale Drive (future)	902	0	0	669	0	0	1,571
Manchester Place	1,360	0	0	1,812	0	0	3,172
Long Branch	571	0	0	956	0	0	1,527
Piney Branch Road	1,203	0	0	886	0	5	2,094
Takoma/Langley Transit Center	783	0	0	1,724	0	6	2,513
Riggs Road	1,138	0	0	1,480	0	20	2,638
Adelphi/West Campus	498	0	0	629	0	3	1,130
Campus Center	18	0	0	179	0	0	197
East Campus	774	0	0	1,799	0	1	2,574
College Park Metro	264	2,781	101	1,770	1,312	0	6,228
M Square	380	0	0	582	0	0	962
Riverdale Park	1,152	0	0	1,061	0	0	2,213
Beacon Heights	1,629	0	0	1,190	0	0	2,819
Annapolis Road/Glenridge	1,510	0	0	407	0	68	1,985
New Carrollton	1,014	1,271	137	1,180	1,674	33	5,309

Station	Bus to Purple Line	Metrorail to Purple Line	Commuter Rail to Purple Line	Walk to Purple Line	Park-and-Ride to Purple Line	Kiss-and-Ride to Purple Line	Total
Total	23,186	8,942	312	29,565	7,040	255	69,300
Percent Access of Total	33.5%	12.9%	0.5%	42.7%	10.2%	0.4%	

At most Purple Line stations, walking and bus would be the principal ways that passengers get to and leave the stations. At the Bethesda, Silver Spring Transit Center, College Park/UMD Metro, and New Carrollton Stations, the most common transfer would be to or from Metrorail. MARC connections are available at Silver Spring Transit Center, College Park/UMD Metro, and New Carrollton. Major bus transfers would occur at Bethesda, Silver Spring Transit Center, the Takoma/Langley Transit Center, College Park/UMD Metro, and New Carrollton. At the UMD Campus Center station transfers would occur with the Shuttle-UM system. All these connections are with existing services. Some of the existing bus services in the corridor could be modified to better integrate with the Purple Line service, either by relocating stop locations or modifying schedules.

The four Metrorail stations that would connect with the Purple Line have existing parking facilities that could be used by Purple Line riders. The existing parking facilities at the Bethesda and Silver Spring Transit Center Metro stations are provided by Montgomery County and nearby privately-operated facilities, while at the College Park Metro and New Carrollton stations, the parking is provided by WMATA. Some of the Metrorail users at these stations, who would access these stations via the Purple Line under the Preferred Alternative, would access the station by automobile under the No Build Alternative. Some Purple Line riders who would use the Metrorail system as part of their trips would access the system at other Metrorail stations and those Purple Line riders who would access by automobile would use the existing parking facilities at Metrorail stations. The travel forecasting analysis showed that adequate parking supply was available for the changes in parking demand with the Purple Line. No new park-and-ride facilities would be provided at the Purple Line stations.

5. UNCERTAINTIES

The travel demand estimates for the No Build Alternative and the Preferred Alternative are based on a series of assumptions that, although considered likely, are not assured. Some of the uncertainties in travel forecasts are related to assumptions regarding networks and land use. In order to identify potential impacts to the Purple Line project from changes in network and land-use assumptions, a "stepwise build-up" approach was used.

1. The first step in the process was to evaluate the attractiveness of the Purple Line if it were in place in the base year. For this step, the transit demand for 2005 was assigned to the 2040 Preferred Alternative network. In the case of the Purple Line, all base year transit trips were assigned to a "best path", where all in-vehicle time weights were set to 1.0. The 2005 on-board survey transit trips were used to evaluate the number of riders assigned by the model to the available modes in the 2040 Preferred Alternative network which include the Purple Line. This simply reflects a change in paths, with NO influence on ridership based upon level-of-service improvements offered by the Preferred Alternative.
2. The second step evaluates the impact of highway speeds on projected ridership in 2040. This step uses estimated 2040 person trips, 2005 highway skims, and 2040 zonal input data. The transit skims are simply 2030 transit skims for all transit modes.
3. In this step, ridership estimates for opening year (land-use and network) were evaluated. This build-up uses the entire project as defined in the Preferred Alternative since there is no phasing. It includes highway projects and the person trips for the 2020 opening year.
4. The forecasts developed for the Preferred Alternative in 2040 are compared with other scenarios in order to identify potential impacts with changes in land-use and networks.

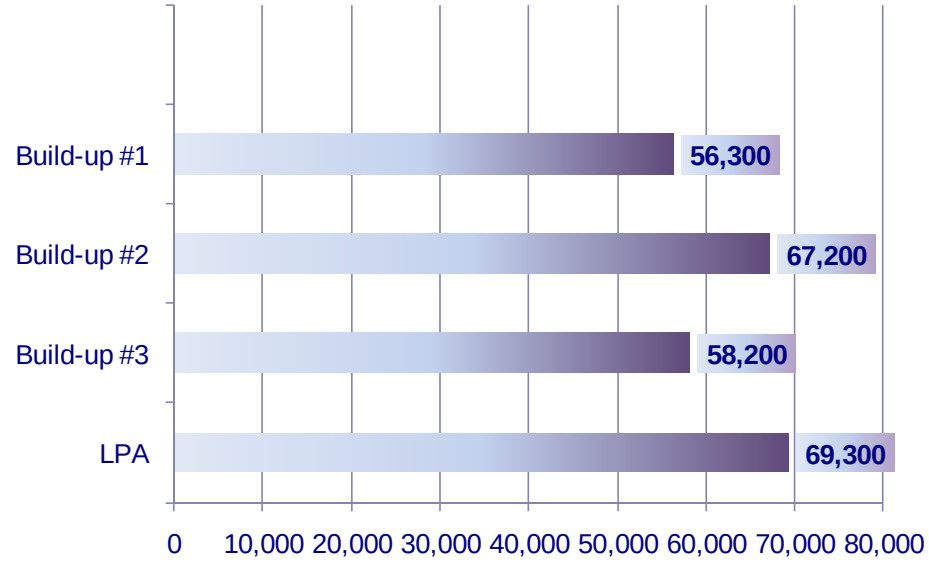
Table 27 and Figure 12 show the change in linked transit trips for the stepwise build-up by mode. The analysis highlighted the following results:

1. If the Purple Line existed in 2005 (Build-up #1) and the demand remained unchanged, the system would experience a ridership level of nearly 56,300 daily riders or 80 percent of the future year forecasted riders. This shows that the project can stand alone without the future demand.
2. Assuming that in 2040, the highway speeds remain the same as in 2005 (Build-up #2), ridership on the Purple Line is nearly the same as projected, 67,200 riders per day or 96 percent, of the projected ridership with the Preferred Alternative in 2040.
3. The 2020 opening year (Build-up #3) produces daily ridership of 58,200, or 84 percent of the predicted ridership in 2040.

Table 27: Uncertainty Test Results

	Build-Up #1	Build-Up #2	Build-Up #3	Preferred Alternative
Person trips	2005	2040	2020	2040
Highway speeds	2005	2005	2020	2040
Transit network	2040	2040	2020	2040
Purple Line Average Daily Ridership	56,300	67,200	58,200	69,300

Figure 12: Daily Boardings by Scenario



6. SUMMARY

The summary of travel forecast results of the stepwise build-up analysis includes:

- If the Preferred Alternative were in service today, estimated ridership would be 56,300 or 80 percent of the estimated average daily ridership in 2040.
- The projected increase in population and employment by 2040 accounts for close to a 20 percent increase in projected ridership with the Preferred Alternative, from 56,300 (Build-up #1) to 67,200 (Build-up #2).
- Opening year ridership accounts for approximately 84 percent of the projected design year ridership.
- The projected ridership on the Preferred Alternative is estimated at 69,300 riders per day by 2040, with 16,330 new transit trips. Average travel time savings range between 14 and 18 minutes per project trip.
- Total user benefit hours per day in the design year are estimated at 17,175, with 98 percent of these benefits in the key travel markets. These travelers are those who start and end their trip entirely within the corridor; who start their trips in the corridor and are attracted to the region; and who have their origin in the region and are attracted to the corridor.

APPENDIX A: CHANGES TO THE FORECASTS FROM AA/DEIS TO THE FEIS

The Regional Travel Demand Model

The travel forecasts for the Purple Line discussed in this report were prepared using the regional travel forecasting model maintained by the Metropolitan Washington Council of Governments (MWCOG). A regional travel demand forecasting model is a mathematical representation of the availability of transportation facilities (roads and transit) and the demand for travel in an urban area. The region covered in the MWCOG model covers 22 jurisdictions and about 6,800 square miles and includes the District of Columbia and parts of three states: Maryland, Virginia, and West Virginia.

The model uses population and employment data, approved zoning, and the highway and transit networks, to calculate the expected demand for transportation facilities. By introducing the Purple Line into transit system network in terms of changes in connectivity and travel times, the changes in the future usage of the transportation system can be forecasted.

This appendix discusses the changes in the daily boardings forecasts resulting from changes in the various components of the travel forecasting modeling process.

Changes to the Forecasts from AA/DEIS to the FEIS

The 2008 AA/DEIS was prepared using information and data from the MWCOG Round 7.0 Cooperative Land Use Forecast and a forecasting tool based on MWCOG's regional forecasting model, with a horizon year of 2030 to estimate the No Build conditions and the subsequent changes in travel patterns that would result from the introduction of each Purple Line alternative into the transportation system. The Travel Demand Forecasting Technical Report, September 2008, documents the forecast prepared for the AA/DEIS.

Since that time, MWCOG has developed the Round 8.0 cooperative forecasts representing updated land use projections and the updated transportation system network to include existing and committed changes to the network. The forecasts prepared for the Purple Line FEIS reflects three changes in forecasting since the publication of the 2008 AA/DEIS: (1) The use of the Round 8.0 model rather than the Round 7.0; (2) A horizon year of 2040 rather than 2030, and (3) changes in the travel times for Purple Line service as a result of refinements of the operations plans and traffic analyses. In addition, the regional model was refined based on further validation analysis of the on-board survey data for MARC and Ride-On bus services (see page 34).

The inclusion of the employment shifts resulting from the closure of the Walter Reed Army Medical Center and the transfer of its functions to the National Naval Medical Center in Bethesda, pursuant to the Base Realignment and Closure Act, are the most significant differences between Round 7.0 and Round 8.0 forecasts within the corridor.

The Round 8.0 forecasts have been updated to 2030. Appendix B presents a comparison of the 2030 AA/DEIS ridership estimates with the 2040 forecasts presented in the main body of this report.

In order to track the changes in the forecasts from the AA/DEIS to current FEIS, a series of forecast scenarios was performed to identify the changes as a result of specific changes in the land use forecasts, horizon years, Purple Line run times, and model refinements. The version of the model used for the travel forecasts in the FEIS is referred to as MDAAII M80.

The forecast scenarios are listed and described below with the results, presented in terms of daily boardings, summarized in Table A-1:

- **Scenario NS** is the forecast used in MTA's application for Entry into Preliminary Engineering for the Purple Line project.
- **Scenario 0** isolated the effects of changing the land use version from Round 7.1a (used for the Preferred Alternative New Starts Entry into Preliminary Engineering) to Round 8.0. Results showed moderate increases in ridership with Round 8.0.
- **Scenario A** tested the MDAAII M80 model with the previous land use, network, and New Starts Definition (NSD) alternatives definitions to isolate any changes in results from the new model version only.
- **Scenario B** isolated changes resulting from the updated Preferred Alternative and compared them with the new station-to-station run times to determine the impacts of the run time changes on the New Starts results.
- **Scenarios C, D, and E** compared three horizon years – 2014, 2020 and 2040. The MDAAII M80 model was used in all scenarios.

The Preferred Alternative examined in the FEIS approximates the Medium Investment AA/DEIS Medium Investment LRT alternative with some elements of the High Investment LRT alternative. The AA/DEIS Medium Investment LRT forecasted daily boardings in 2030 was 62,600, and the High Investment LRT was 68,100. These forecasts were exclusive of any UMD student, employee and special event trips. (See Appendix C) The FEIS Preferred Alternative daily boardings in 2030 (Scenario B), exclusive of any UMD student, employee, and special event trips, is 64,538, which is comparable to the AA/DEIS forecasted boardings.

Table A-1: Summary of Forecast Scenarios

Test Scenario	Purpose	Model Version	Forecast Year	Land Use Version	MWCOG Network	Options Tested	Purple Line Ridership
NS	New Starts Application to Enter Preliminary Engineering	Previous MDAAII version (M71)	2030	7.1a	2030	NSD LPA	55,362
0	Run Round 8.0 Land Use against Previous Model Results	Previous MDAAII version	2030	8.0	2030	NSD LPA	57,318
A	Run MDAAII M80 Model	MDAAII M80	2030	7.1a	2030	New Starts LPA	63,245
B	Run Updated Run Times for PA;	MDAAII M80	2030	8.0	2030	FEIS PA	64,538
C	FEIS Input -2014	MDAAII M80	2014	8.0	2005	FEIS PA	49,596
D	FEIS Input - 2020	MDAAII M80	2020	8.0	2030	FEIS PA	58,175
E	FEIS Input 2040	MDAAII M80	2040	8.0	2030	FEIS PA	69,299

APPENDIX B: 2030 AND 2040 FORECASTS

Year 2030 was the horizon year for the Purple Line AA/DEIS and development of the Preferred Alternative at the start of Preliminary Engineering. Year 2040, the horizon year for the FEIS, is consistent with the MWCOG Constrained Long Range Plan. The 2030 forecasts for the Preferred Alternative used the updated model and MWCOG Round 8.0 land use forecasts which were developed for comparison to the 2030 horizon year forecasts previously presented in the AA/DEIS.

Total and New Transit Trips

The Preferred Alternative is projected to generate 28,626 new transit trips for the entire Washington, DC region in year 2040. This is an increase of 1.7 percent in total regional transit ridership over the No Build Alternative. Year 2030 is forecasted to have 26,654 new trips.

Table B-1 presents total daily regional transit trips. It includes four transit service types, for both work and non-work trips. A trip that would be traveled mostly on the Purple Line, and would involve a short ride on a bus, is assigned as a trip on the Purple Line. Similarly, a trip that would be traveled mostly on Metrorail, and uses the Purple Line as a means of accessing the Metrorail station, is assigned as a Metrorail trip.

Table B-1: Total Daily Regional Transit Trips, 2030 and 2040

Transit Service	Type of Trip	2030 No Build Alternative	2040 No Build Alternative	2030 Preferred Alternative	2040 Preferred Alternative
Bus	Work	312,829	326,373	300,964	313,802
	Non-work	215,736	230,303	211,194	225,521
Metrorail	Work	758,022	802,619	755,725	800,235
	Non-work	232,737	249,646	231,441	248,271
Commuter Rail	Work and Non-work	45,126	46,134	45,088	46,105
Purple Line	Work	NA	NA	30,250	32,259
	Non-work	NA	NA	16,451	17,532
Total Transit Trips		1,564,450	1,655,074	1,591,104	1,683,700
New Transit Trips Relative to No Build		N/A	N/A	26,654	28,626

Travel Patterns

Areas surrounding Metrorail stations in the corridor (Bethesda, Silver Spring, College Park, and New Carrollton) contain concentrations of commercial and residential activity. Between these station areas are the "wedge" areas: Connecticut Avenue/Lyttonsville, Takoma Park/Langley Park, and Riverdale Park. These seven areas constitute the Purple Line corridor. Other areas are used to define major sections of Washington, DC and travel market areas around the Metrorail lines (both branches of the Red Line, Green Line, and Orange Line) running north and northeast of the corridor. The rest of the region includes the remainder of Maryland and Virginia surrounding Washington, DC. Travel forecasts show that while there is considerable existing transit travel within the Purple Line corridor itself, the

majority of transit trips in the Purple Line corridor have an origin or destination outside the corridor. For example, many transit trips that begin or end in the corridor are part of a trip that extends into Washington, DC or areas to the north of the Purple Line corridor. These trips commonly use the Metrorail Red, Green, and Orange Lines, especially in the Shady Grove/Rockville area and the Glenmont area. While the major activity centers account for the majority of the trips, a substantial number of trips are associated with areas that are not served by Metrorail and depend on street-running bus service operating in congested mixed traffic. The following terms are used to describe the different types of transit trips in the corridor:

- Transit trip "associated with the corridor" means the trip has either an origin or a destination in the corridor.
- Transit trip "within the corridor" means the trip origin and the trip destination are both in the corridor.
- "Corridor-related" transit trips include trips "associated with the corridor" and trips "within the corridor".

Table B-2 shows regional transit trips. Under the No Build Alternative, daily transit trips are forecast to grow by 503,080 to 1,655,074, almost 44 percent, over the 29 years from 2011 to 2040. Corridor-related transit trips grow by 49 percent, to 221,833. While the general pattern and distribution of these transit trips would be similar to current trips, the level of growth is substantial, increasing the severity and the magnitude of the mobility needs of travelers within the corridor. Corridor-related transit trips in 2040 for the Preferred Alternative would increase by 25,345 trips compared with the No Build Alternative 11 percent), with 77 percent of this increase would be trips within the corridor. These increases in transit trips demonstrate the benefit of the Preferred Alternative in improving mobility by better connecting the communities within the corridor.

Table B-2: Regional Transit Trips

	2011 Existing	2030 No Build Alternative	2040 No Build Alternative	2030 Preferred Alternative	2040 Preferred Alternative
Trips Associated with Purple Line Corridor	135,851	187,996	199,709	193,750	205,586
Trips within Purple Line Corridor	12,914	20,520	22,124	38,384	41,592
Corridor-Related Transit Trips	148,765	208516	221,833	232,134	247,178
Total Regional Trips	1,151,994	1,564,450	1,655,074	1,591,104	1,683,700

Daily Boardings

Table B-3 shows the total number of daily boardings on the Preferred Alternative, as well as the breakdown for three types of trips: (1) trips using the Purple Line where the Purple Line would be the primary means of travel and include those passengers who go to and from the Purple Line on foot or by bus; (2) trips primarily on Metrorail, which use the Purple Line for part of that trip; and (3) trips primarily on MARC, which use the Purple Line for part of that trip. In 2040, 27 percent of the Purple

Line boardings would be trips that also involve riding Metrorail, demonstrating the ability of the Preferred Alternative to provide connectivity to the Metrorail system.

Table B-3: 2030 and 2040 Daily Purple Line Boardings

Transit Ridership (daily boardings)	2030 Preferred Alternative	2040 Preferred Alternative
Purple Line	46,837	49,791
Purple Line via Metrorail	17,224	18,972
Purple Line via MARC	477	536
Total	64,538	69,299

In subsequent discussions of this information, many numbers are rounded to facilitate the presentation.

Daily Station Boardings

Table B-4 shows daily boardings, by station, for the Preferred Alternative during 2030 and 2040. The columns for the Preferred Alternative in 2030 and 2040 do not include UMD student, employee and special event/special generator trips. The 2030 and 2040 "Preferred Alternative with Student/Special Boardings Included" columns incorporated these boardings although, as discussed above, these boardings would only occur on days when UMD is in session.

Table B-4: Year 2030 and 2040 Daily Purple Line Boardings by Station*

Station	2030 Preferred Alternative	2040 Preferred Alternative
Bethesda	14,780	14,990
Chevy Chase Lake	2,240	2,250
Lyttonsville	1,330	1,340
Woodside/16th Street	1,570	1,620
Silver Spring Transit Center	12,490	12,940
Silver Spring Library	2,810	3,010
Dale Drive (future)	870	960
Manchester Place	1,860	1,910
Long Branch	790	890
Piney Branch Road	1,160	1,240
Takoma/Langley Transit Center	1,940	2,190
Riggs Road	1,860	2,220
Adelphi/West Campus	910	1,020
Campus Center	550	730
East Campus	3,650	4,310
College Park Metro	5,190	5,790
M Square	1,350	1,730
Riverdale Park	2,100	2,390
Beacon Heights	1,830	1,900
Annapolis Road/Glenridge	1,360	1,410
New Carrollton	3,910	4,460
Total Boardings	64,550	69,300

*Includes UMD student, special event, and special generator trips

Transportation System User Benefits

Transportation system user benefit is a measure that would accrue to users of the entire transportation system as a result of implementing an alternative. The users include both existing transit riders who might benefit from a faster trip or more convenient access to the service, as well as new transit users. The user benefit measure is calculated within the region's mode choice model for all alternatives and uses a measure of the traveler's value of time to convert monetary and other costs to their equivalence in time, which is added to actual time savings. In this way, the measure includes a more comprehensive accounting of the total costs of travel.

To measure this benefit in the New Starts process, the Preferred Alternative has been compared to a low cost alternative, which is similar to the AA/DEIS Transportation System Management (TSM) Alternative. This New Starts low cost bus alternative was developed to see how effectively the project's purpose and need could be addressed by the low cost bus service. While no longer formally used in the New Starts process, it can provide a measure of the benefit of a transportation system improvement to the users.

Table B-5 compares the total user benefits for the New Starts Low Cost Bus Alternative and the Preferred Alternative (it does not include any user benefits for UMD students, employees and special event/special generator trips). The New Starts Low Cost Bus would generate more than 400,000 minutes of user benefit to travelers in the Washington, DC region each day over the No Build Alternative, but the Preferred Alternative generates substantially more benefits (more than 1,444,000 in 2040), which demonstrates that the Preferred Alternative provides a faster travel option for the corridor.

Table B-5: 2030 and 2040 Daily Transportation System User Benefits by Alternative

	Daily User Benefits (minutes)	Increase in Daily User Benefits over TSM (minutes)	Percent over Low Cost Bus
2030 New Starts Low Cost Bus	402,894	--	--
2040 New Starts Low Cost Bus	439,079	--	--
2030 Preferred Alternative	1,172,342	769,448	191%
2040 Preferred Alternative	1,444,403	1,005,324	229%

Travel Time Savings

The transit improvements being considered for the Purple Line corridor are intended to provide shorter and more reliable east-west transit travel times by enabling faster transit vehicle operating speeds through the provision of more priority, dedicated and exclusive operating conditions. The degree that the alternatives address these goals can be measured by reduced transit travel times, time savings for users, improved operating speeds, and attraction of more riders to transit for each of the key markets identified.

During the peak period, users of the Purple Line would save as much as 10 minutes of in-vehicle travel time, on average. A trip completely within the corridor, from Silver Spring to Bethesda would save 10 minutes. Trips from the corridor to the region (Bethesda to Glenmont) would save approximately 6 minutes. A trip from the corridor to the region (north Washington, DC to Bethesda) would save approximately 8 minutes during the peak period.

APPENDIX C: UMD STUDENT, EMPLOYEE AND SPECIAL EVENT TRIPS

Student and Employee Trips

The travel of UMD employees, faculty and staff to and from the campus is captured within the regional model's travel forecasts and these trips are included in the forecasts for the Preferred Alternative. Many of the 37,000 students live on campus or in nearby housing within walking distance of the campus. Others live off campus and commute to school. These trips are not as concentrated in the peak periods as employee trips and are not as regular, as UMD is not in full session over the summer and various break periods.

UMD operates a shuttle bus service for its students, faculty and staff who make two million trips per year on these services. Four of the 18 Shuttle-UM routes – Shuttle-UM 111 Silver Spring Metro, Shuttle-UM 126 New Carrollton Metro, Shuttle-UM 109 River Road, and Shuttle-UM 104 College Park Metro operate in the Purple Line corridor serving such major activity centers and destinations as the Silver Spring Metro station, the College Park Metro station, New Carrollton Metro station, and M Square Research Park. While the university employees are assumed accounted for in the model, the student trips are not. The ridership on these routes has been growing for the last several years and is estimated to grow 25 percent over the next 20 years as the student population grows and on-campus parking supply becomes more restricted.

Of the four routes, Shuttle-UM 104 between UMD and the College Park Metro station is the most heavily used, running at 6-minute headways from 6:00 AM to 7:30 PM, and every 20 minutes until 3:30 AM. Students comprise an estimated 60 percent of the route usage. This shuttle route is assumed discontinued with the opening of the Purple Line, diverting 2,550 student and visitor trips per average weekday in 2030 to the Purple Line. The Shuttle-UM 111 Silver Spring Metro also is assumed discontinued, diverting another 525 student and visitor trips per day. The Shuttle-UM 126 New Carrollton Metro and Shuttle-UM 109 River Road carry a much smaller estimated percent of students and visitors among their ridership. These routes likely would be modified so as not to duplicate the Purple Line service. In 2030, another 90 trips would be diverted from these two routes.

Student and visitor trips would also be diverted from various The Bus routes (14-River Road and 17-College Park Metro) and Metrobus routes (J4, F6, F8, and C2/C4). An estimated 900 trips would be diverted from these routes.

The total number of student and visitor trips diverted from the discontinued or modified Shuttle-UM, The Bus and Metrobus routes is estimated to be 4,065 trips in 2030 on an average weekday when school is in session. UMD employees are already counted in the regional model forecasts.

Special Event and Special Generator Trips

Venues such as sport stadiums, arenas, and events such as festivals or holiday fireworks displays, generate trips that may not be included in the regional travel forecasting process. Washington, DC is the site of many special events and special generators that occur with enough regularity and frequency that these are included in the regional model forecasts. Special events/special generators within the corridor are not included in the regional forecasts. The principal special event/special trip generator in the corridor is the UMD including Byrd Stadium, Comcast Center, and the Clarice Smith Performing Arts Center. Byrd Stadium seats 50,000 people and hosts five to seven home weekend football games annually. UMD is the site of many major sport and cultural events including major football and

basketball games, numerous other sporting events and tournaments, concerts and similar activities that bring several hundred thousand visitors to the campus throughout the year – albeit typically on weekends and evenings. Not all these trips would be candidates for the Purple Line; however, the Purple Line could make using transit for these types of trips associated with the UMD more attractive, especially for those traveling along Campus Drive. The percentage of trips using the Purple Line is estimated to be relatively small (3 percent), generating 75,000 boardings per year or the equivalent of 255 average boardings on a typical day in 2030.

While the University of Maryland University College campus, located adjacent to the proposed Adelphi/West Campus station, is largely a distance learning institution, there is a commuter student population which would be directly served by the Purple Line. These students would generate an estimated 350 daily boardings. The hotel and conference center hosts many large events, as well numerous smaller events. While these vary by day of the week and season, average daily Purple Line boardings of 80 are estimated for 2030.

The combined boardings on the Purple Line in 2030 is 4,750 for UMD student and special event/special generators. These boardings would occur on days when UMD is in session or special events are occurring. Compared with employee trips, the UMD student and special event/special generator trips are not as concentrated in the peak periods and are not as regular because UMD is not in full session over the summer and various break periods. The number of boardings on the Purple Line is expected to grow by a little more than 2 percent between 2030 and 2040, to total of 4,860.

Daily Station Boardings

Table C-1 shows the daily boardings, by station, for the Preferred Alternative during 2030 and 2040. The 2030 Preferred Alternative and 2040 Preferred Alternative columns do not include the UMD student and special event/special generator trips discussed previously. The 2030 and 2040 “Preferred Alternative with Student/Special Boardings Included” columns incorporated these boardings although, as discussed above, these boardings would only occur on days when UMD is in session.

Table C-1: 2030/2040 Daily Purple Line Boardings by Station

Segment	2030 Preferred Alternative	2030 Preferred Alternative with Student/Special Boardings Included*	2040 Preferred Alternative	2040 Preferred Alternative with Student/Special Boardings Included*
Bethesda	14,780	14,780	14,990	14,990
Chevy Chase Lake	2,240	2,240	2,250	2,250
Lyttonsville	1,330	1,330	1,340	1,340
Woodside/16th Street	1,570	1,570	1,620	1,620
Silver Spring Transit Center	12,490	12,870	12,940	13,320
Silver Spring Library	2,810	2,810	3,010	3,010
Dale Drive (future station)	870	870	960	960
Manchester Place	1,860	1,860	1,910	1,910
Long Branch	790	790	890	890
Piney Branch Rd/University Boulevard	1,160	1,160	1,240	1,240
Takoma/Langley Transit Center	1,940	1,940	2,190	2,190
Riggs Road	1,860	1,960	2,220	2,320
Adelphi / West Campus	910	1,280	1,020	1,390
Campus Center	550	2,270	730	2,500
East Campus	3,650	3,930	4,310	4,600
College Park/UMD Metro	5,190	7,090	5,790	7,740
M Square	1,350	1,350	1,730	1,730
Riverdale Park	2,100	2,100	2,390	2,390
Beacon Heights	1,830	1,830	1,900	1,900
Annapolis Road/Glenridge	1,360	1,360	1,410	1,410
New Carrollton	3,910	3,910	4,460	4,460
Total Boardings	64,550	69,300	69,300	74,160

*Includes UMD student, special event and special generator trips

Fare Box Revenue

Fare box revenues are the fares collected from passengers using the transit services. People use a variety of means to pay fares including cash, passes, and electronic fare cards. Fare revenues include both fares at the initial boarding of the trip as well as any transfer costs for transfers to other services.

Compared with the No Build Alternative, the Preferred Alternative is expected to increase the number of future systemwide transit users and systemwide (all services) fare box revenues: $8,888,502 in 2030 and $9,615,564 in 2040.