# TRAVEL FORECASTS RESULTS TECHNICAL REPORT

**August 2013**

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Appendix B: 2030 and 2040 Forecasts
Appendix C: UMD Student, Employee and Special Event Trips

# ACRONYMS

FEIS Final Environmental Impact Statement

FTA Federal Transit Administration

LPA Locally Preferred Alternative

MTA Maryland Transit Administration

# 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**

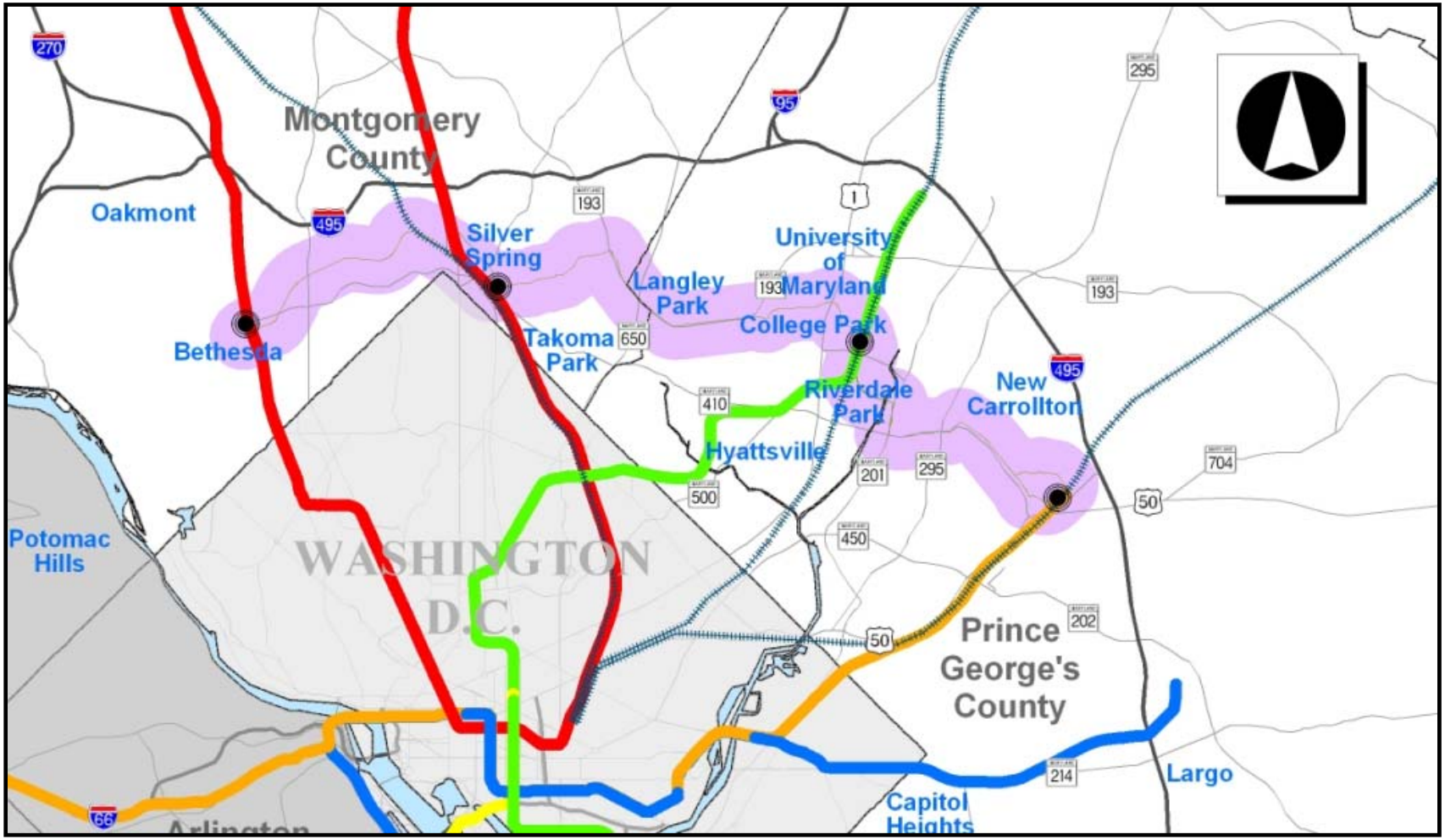
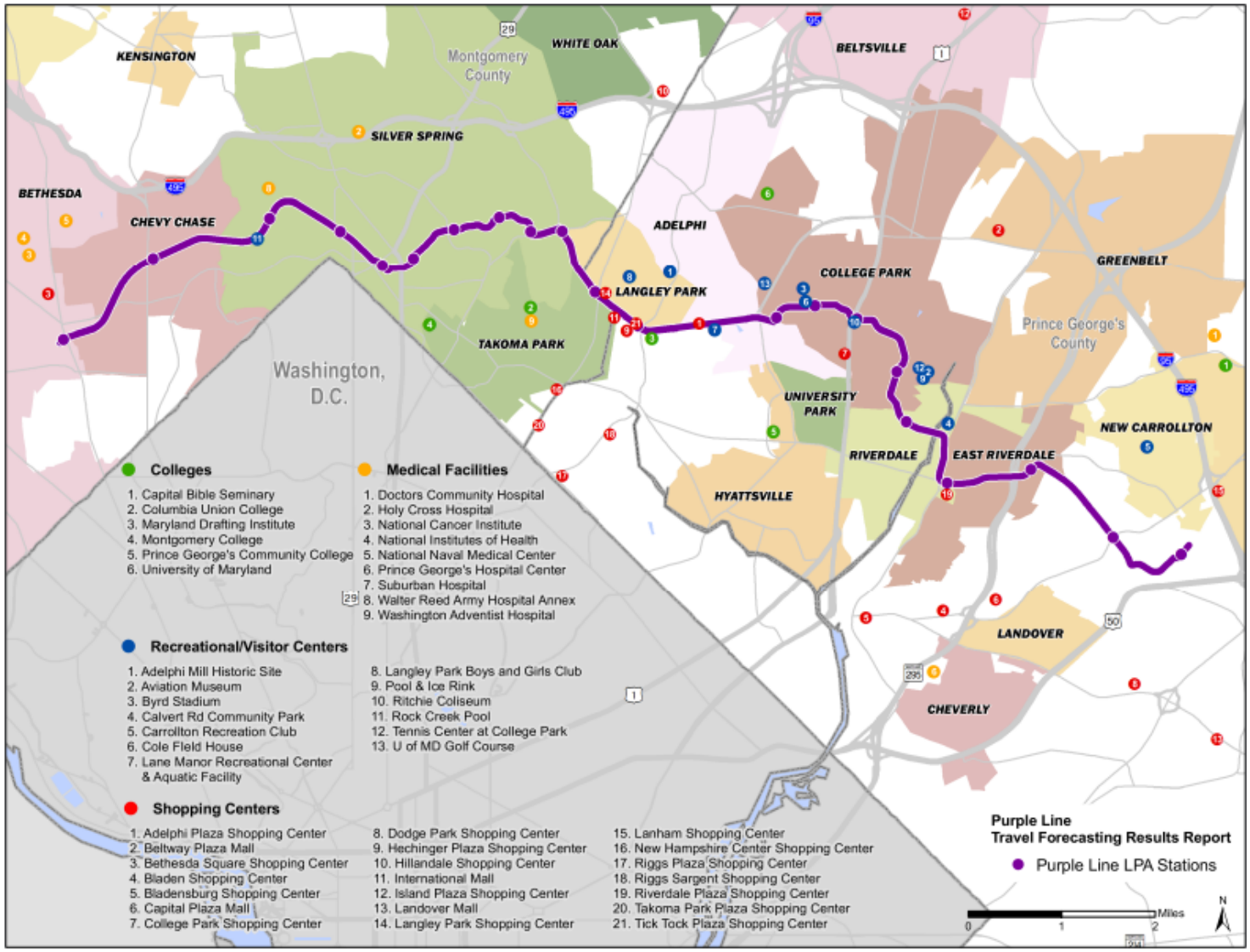


**Figure 2: Activity Centers in the Purple Line Corridor**



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.

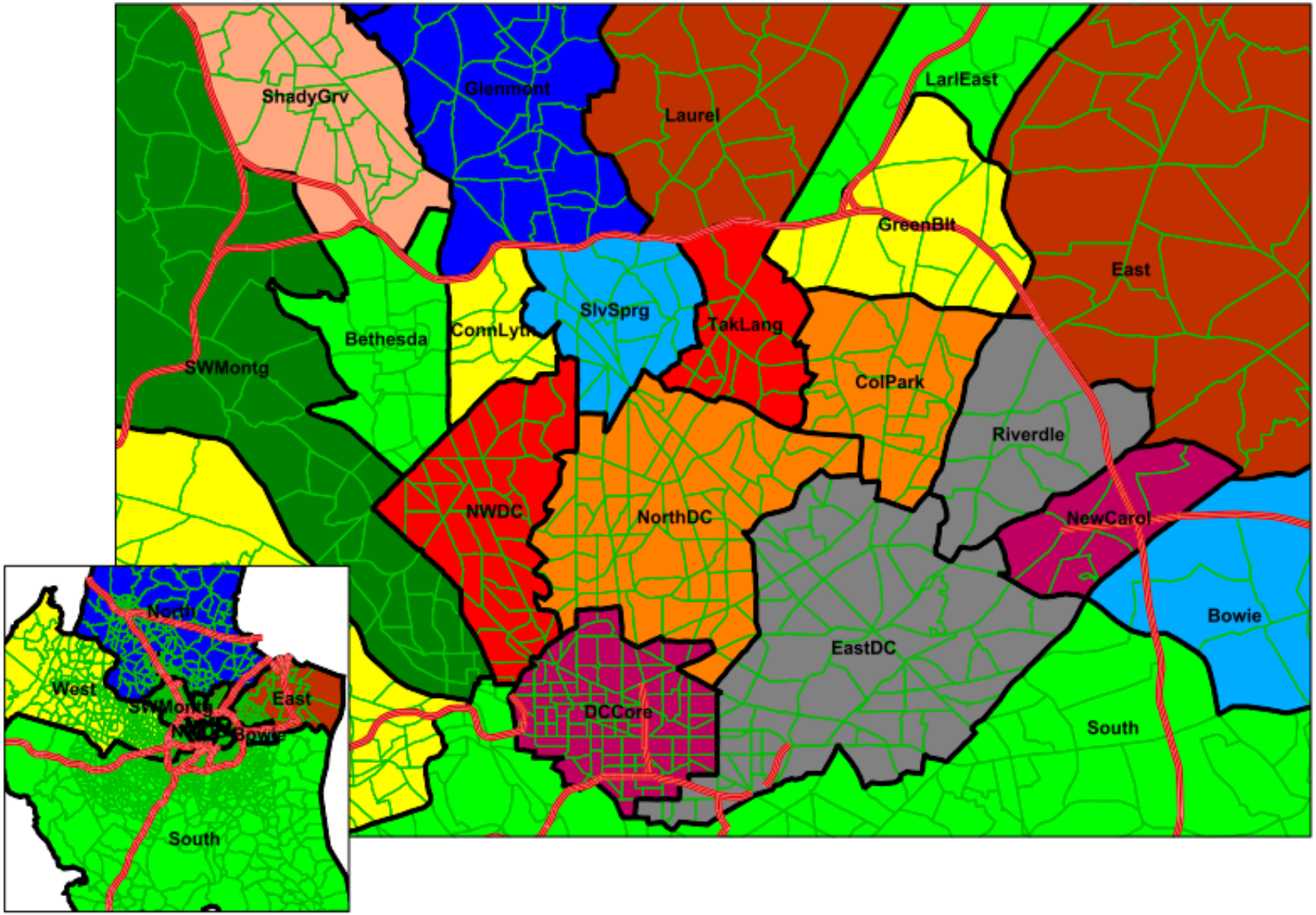
## 2.1 Demographic Growth

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**

| | 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 | 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**

| | 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 | 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)**

| | 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 | 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**

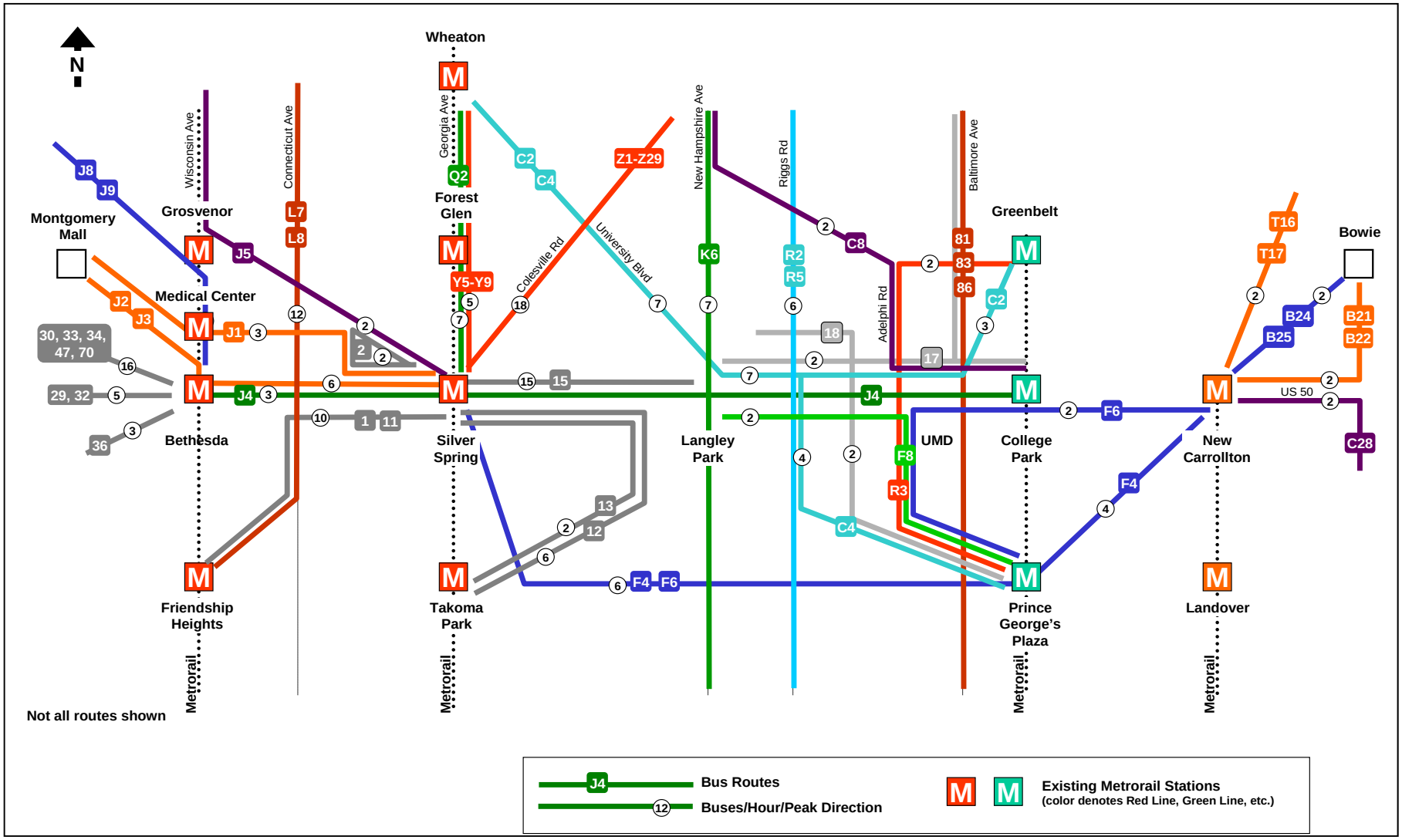


**Table 10: Purple Line Corridor Bus Network**

| 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**

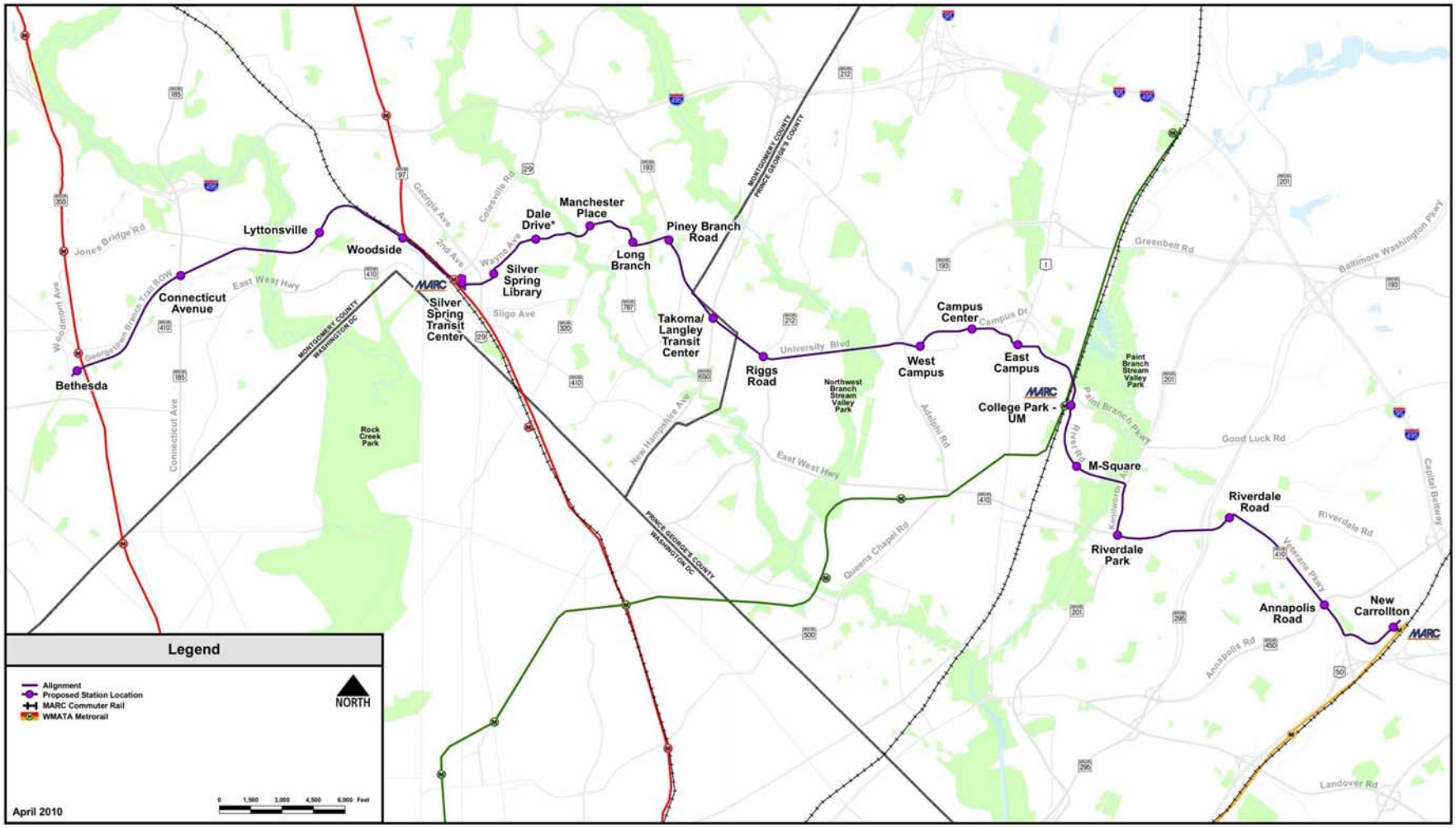


**Table 11: Preferred Alternative Operating Plan2**

| 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

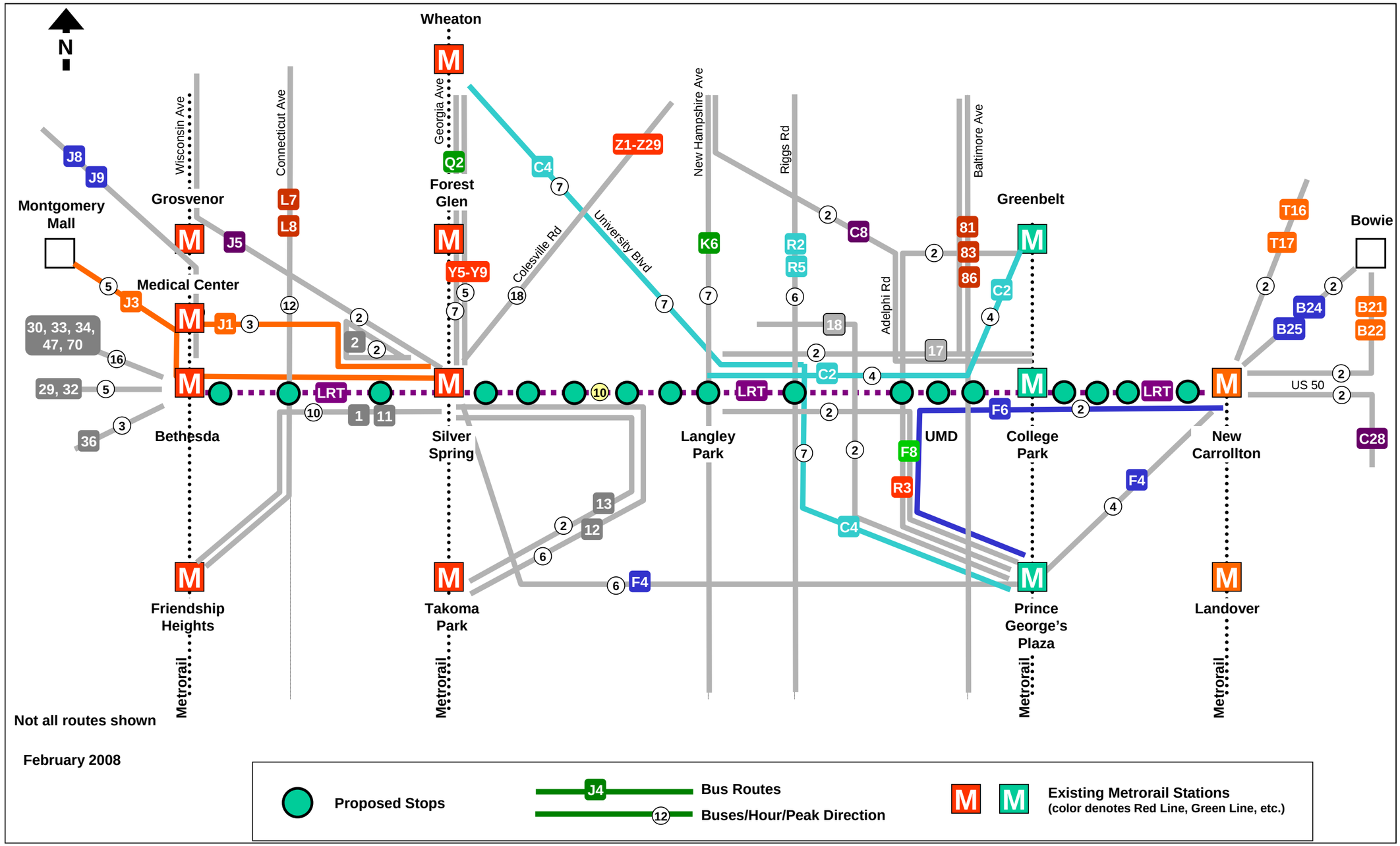
Purple Line. Ride On route 15 is reduced in frequency because the Purple Line parallels that route, and WMATA routes J2 and J3 are combined because they serve the same markets. Shuttle-UM's route to Silver Spring is eliminated, as is the shuttle between the campus and the College Park Metro station. 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)**

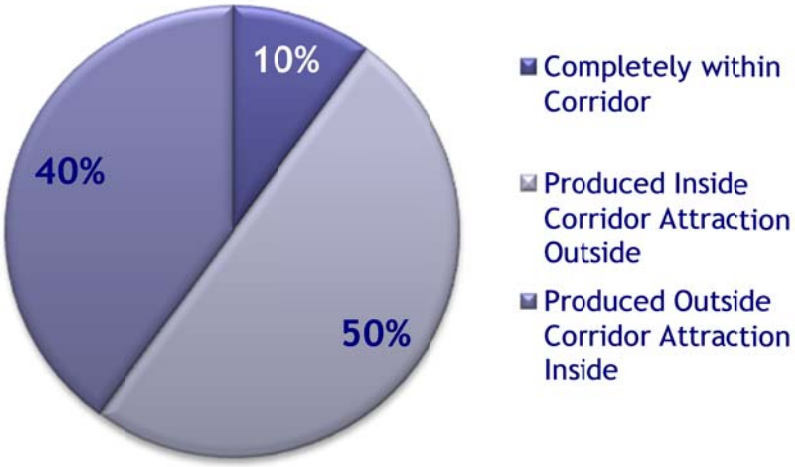


**Table 13: 2005 Transit Trips by District (Production/Attraction Format)**

| | 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 | 1,447 | 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 | |
| | 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** |
| Productions | 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 | | | | | | | | | | | | | | | | | | | | | | 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 | 1,265 | 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 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 | 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 | | | | | | | | | | | | | | | | | | | | | | 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 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)**

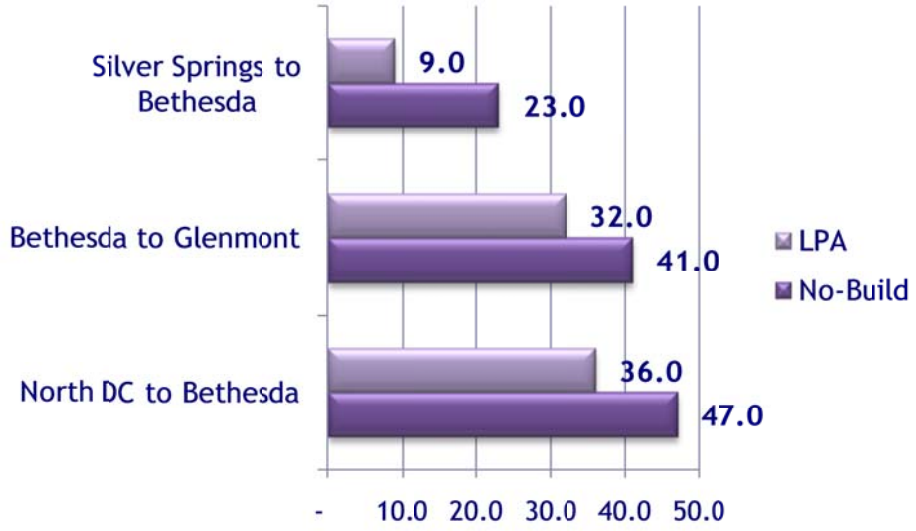


**Table 18: Travel Time Savings**

| 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 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 | 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**

| | 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 | 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 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 | 1,617 | 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**

| | 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 | 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 |

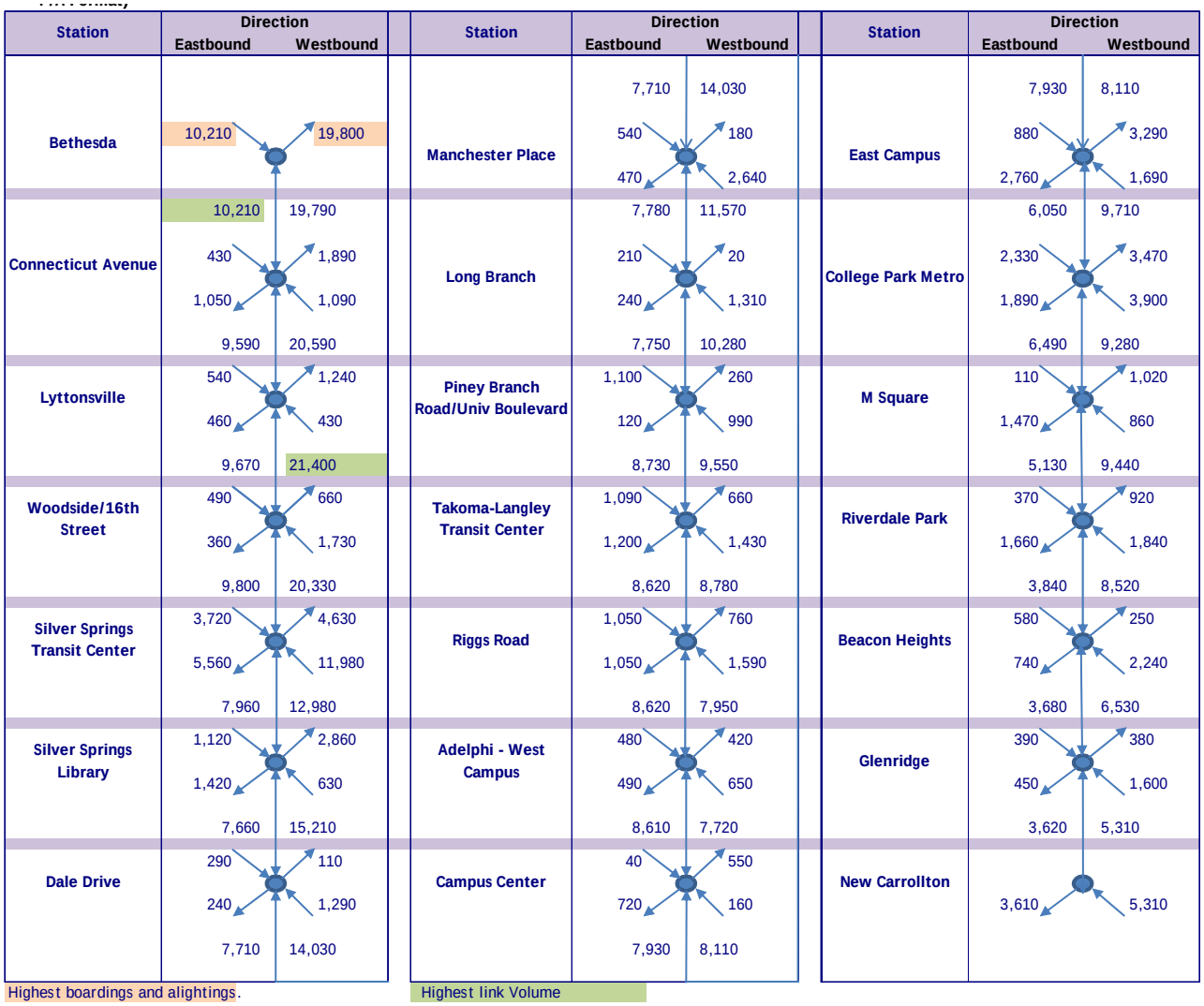
* In production/attraction (P/A) format

**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**

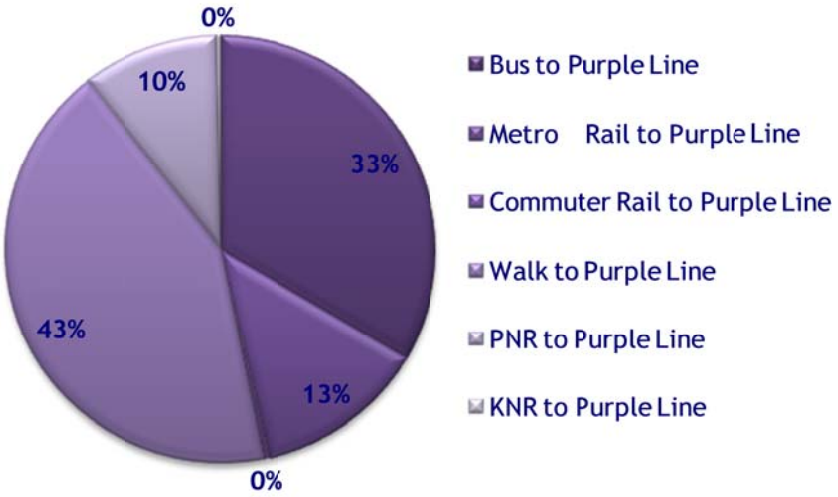



**Table 26: Purple Line Passenger Mode of Access**

| 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.

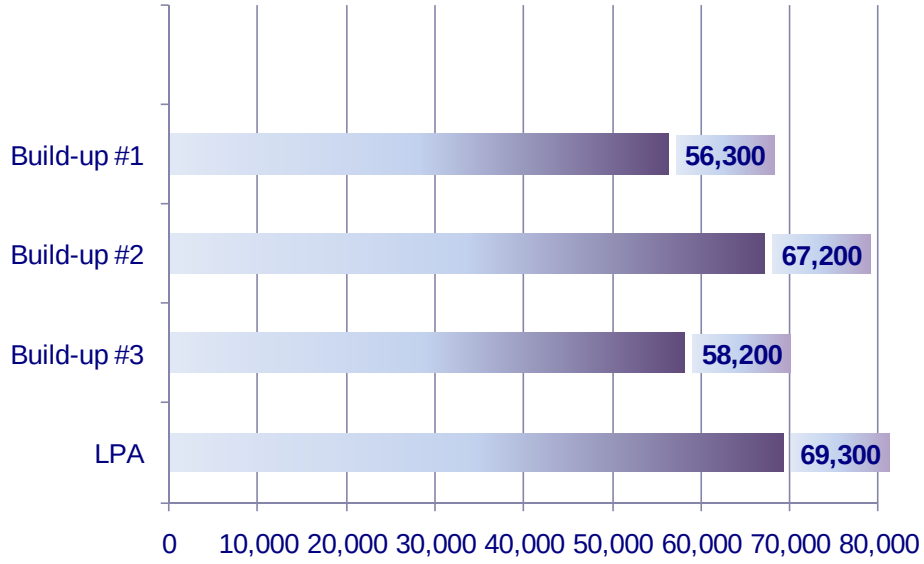
Table 27 and Figure 12 show the change in linked transit trips for the stepwise build-up by mode. The analysis highlighted the following results:

1. If the Purple Line existed in 2005 (Build-up #1) and the demand remained <u>unchanged</u>, 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.