

North Bethesda  
**BUS RAPID TRANSIT**

# Termini Screening Report



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## 1 TERMINI SCREENING CRITERIA DEVELOPMENT

Following the Corridor Foundations Report, which details the current conditions of the project area, the **Termini Screening Report** assesses the two eastern terminus alternatives for the North Bethesda Transitway. The two termini alternatives originated from the [2013 Countywide Transit Corridors Functional Master Plan](#) and included assumptions for alignment, running way, and preliminary station locations. Under these assumptions, screening metrics associated with each of the study's goals and objectives have been applied to select a preferred eastern terminus. Accompanying this Report are Screening "Report Cards" that detail the two eastern termini alternative's scoring assigned for each metric.

As shown in **Figure 1**, the termini screening is a preliminary analysis to determine the eastern terminus and does not include a detailed alternative evaluation of each alignment. Once the eastern terminus is selected, a more detailed alternatives analysis for the selected alignment will occur.

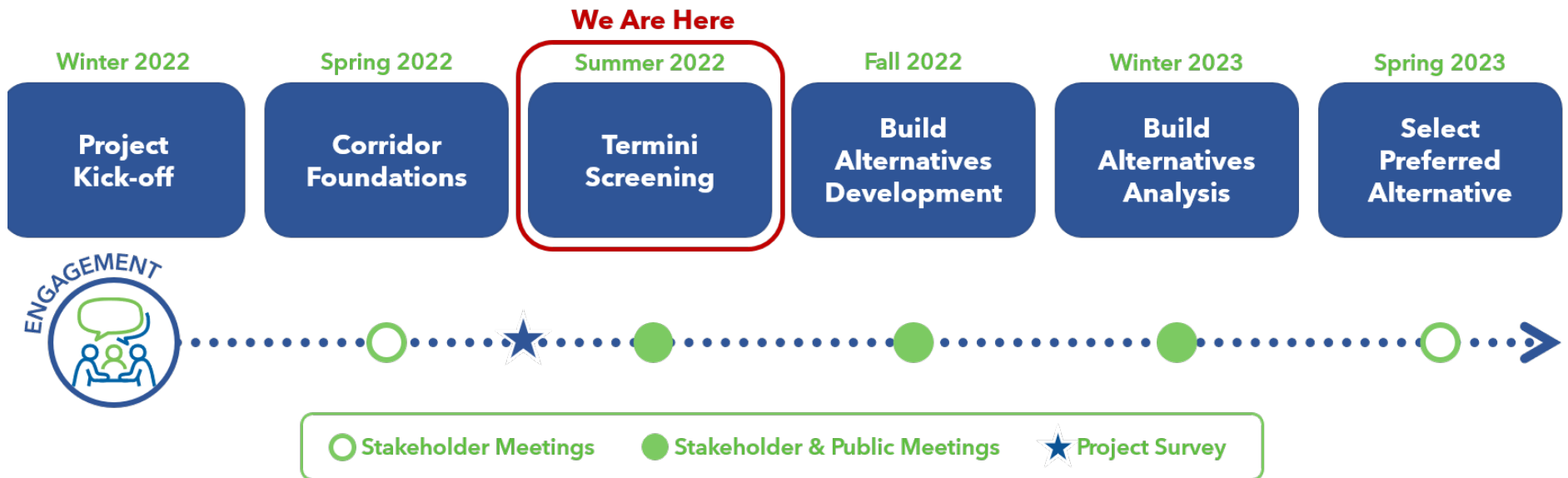


Figure 1: Project Schedule



## 1.1 TERMINI SCREENING ALTERNATIVES DEVELOPMENT

The North Bethesda Transitway was originally conceived as a connection from the Grosvenor-Strathmore Metrorail Red Line Station to the Rock Spring office park area and to Montgomery Mall in the [1992 North Bethesda/Garrett Park Master Plan](#). The concept was updated in the [2013 Countywide Transit Corridors Functional Master Plan](#) with a proposed rerouting to the White Flint Metrorail Station because it would create a shorter trip from the north and because White Flint is a larger activity center. Out of the 2013 Plan, two alternatives were identified for further study.

To assess the two termini options, assumptions must be made about the service and infrastructure that would be in place. Due to the preliminary nature of this screening, alignment configuration for the alternatives corresponds to what is shown in the 2013 Plan: with one alternative that ends at Grosvenor-Strathmore Metrorail Station and one alternative that ends at the White Flint Metrorail Station. West of Tuckerman and Old Georgetown Road, the alternatives are identical. For the purposes of this report the alternatives will be referred to as:

- White Flint Alternative
- Grosvenor Alternative

Assumptions for each of the termini screening alternatives include the following components:

- **Alignment** -- *Alignment refers to the path that the transit service would take.*  
Because the 2013 Plan did not include proposed alignments beyond the intersection of Rockville Pike (Route 355), the alignment was assumed to match other planned BRT configurations and existing transit routing to the two termini. To connect to the Grosvenor-Strathmore (referred to in this memo as Grosvenor) Metrorail Station, the transitway is assumed to travel through the Rockville Pike intersection on Tuckerman lane, turn into the Grosvenor Metrorail Kiss & Ride Entrance, and stop at the bus bay there. To connect to the White Flint Metrorail Station, the transitway is assumed to turn south onto Rockville Pike to stop at the bus drop off before the intersection of Rockville Pike and Marinelli Road.
- **Running way** – *Running way refers to the type and number of lanes the transit service would travel on.*  
In many cases, the County has preserved the alignment for the transitway through development approvals, including right-of-way dedication and easements to reflect what was proposed in the 2013 Plan. In locations where dedicated lanes are assumed but additional transit lanes are not proposed to be added, the assumption for this Termini Screening is to remove a lane of general-purpose traffic, as is the case for the Grosvenor alternative along Tuckerman Lane and for the White Flint alternative along Old Georgetown Road. These assumptions will be readdressed during the detailed Build Alternatives Analysis.
- **Stations** – *Stations refer to the stops that the transit service would include.*  
For this termini screening, stops are identical to what is shown in the 2013 Plan.
- **Operating Plan** – *Operating plan refers to the frequency, headways, and span of the transit service.*  
Assumed peak and off-peak frequency and span is constant among both alternatives. For this screening, it is assumed that once implemented, the new service will operate between 5:30 a.m. and 11:45 p.m. daily with 15-minute frequencies.

**Figure 2 and Figure 3** summarize the assumed characteristics for each roadway segment along the alternatives. A full table of roadway segment assumptions is included in the **Appendix**. Once the eastern terminus is selected, more detailed assumptions will be made during the alternative evaluation process later in the study.

As shown in **Figure 2**, the White Flint Alternative includes dedicated lanes along most of the alignment as identified in the 2013 Plan. The number of transitway lanes and general-purpose lanes reflect what is in the current [Montgomery County Master Plan of Highways and Transitways](#). In that plan, Old Georgetown Road is listed as having 1 maximum additional transit lane added to the right-of-way. At this stage in the study, it is assumed that the Old Georgetown Road includes 4 general purpose and 2 dedicated transitway lanes in the White Flint Alternative. This termini screening includes testing that assumed lane configuration from a traffic perspective, as reported in **Section 2.1.2.3**.

The Grosvenor Alternative, **Figure 3**, includes dedicated lanes along the alignment except for the small portion of Tuckerman Lane to the east of Rockville Pike, which would be mixed traffic. If selected as the eastern terminus, there may be opportunities to analyze additional stops along Tuckerman Lane.

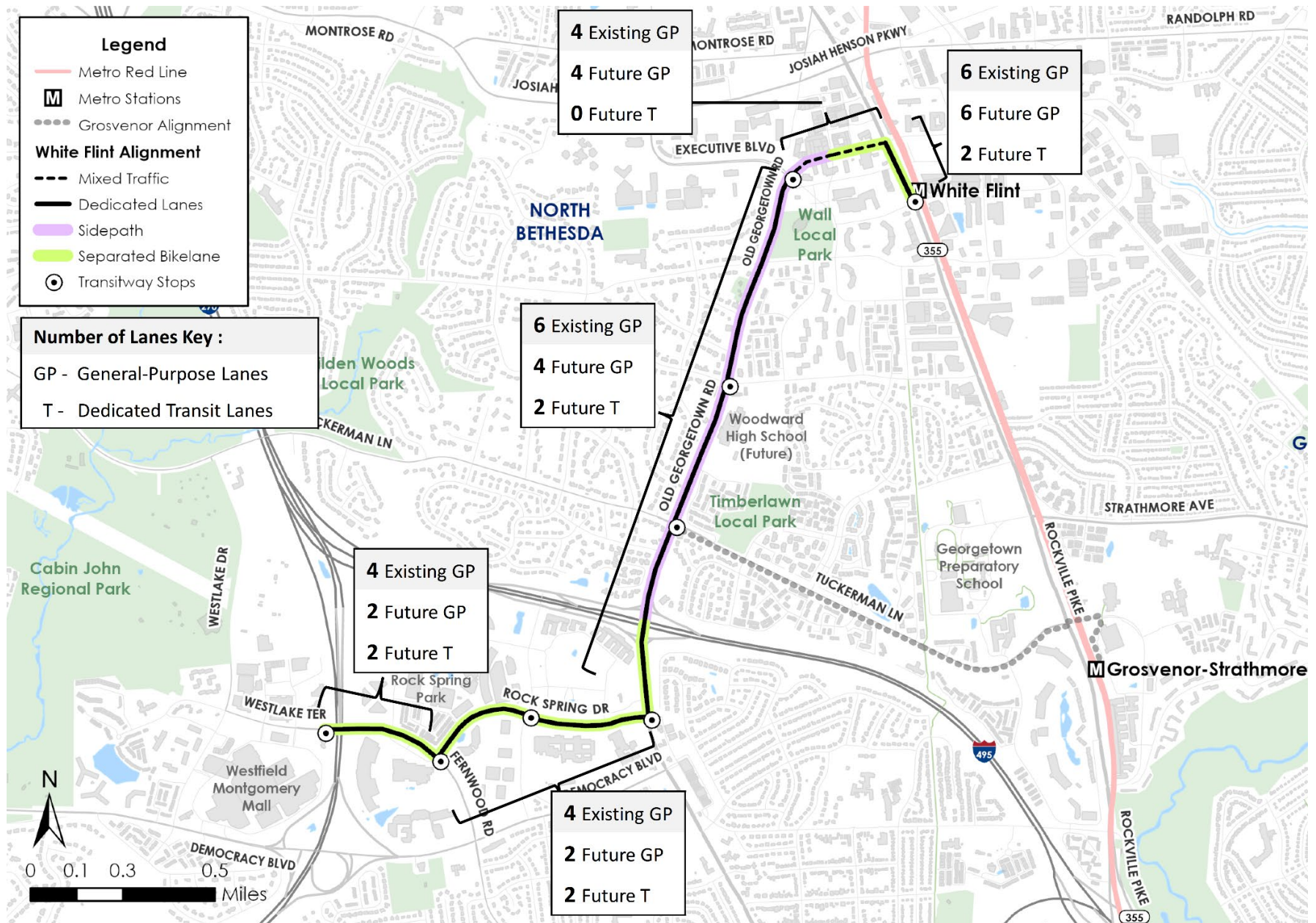


Figure 2: White Flint Alternative Segment Detail



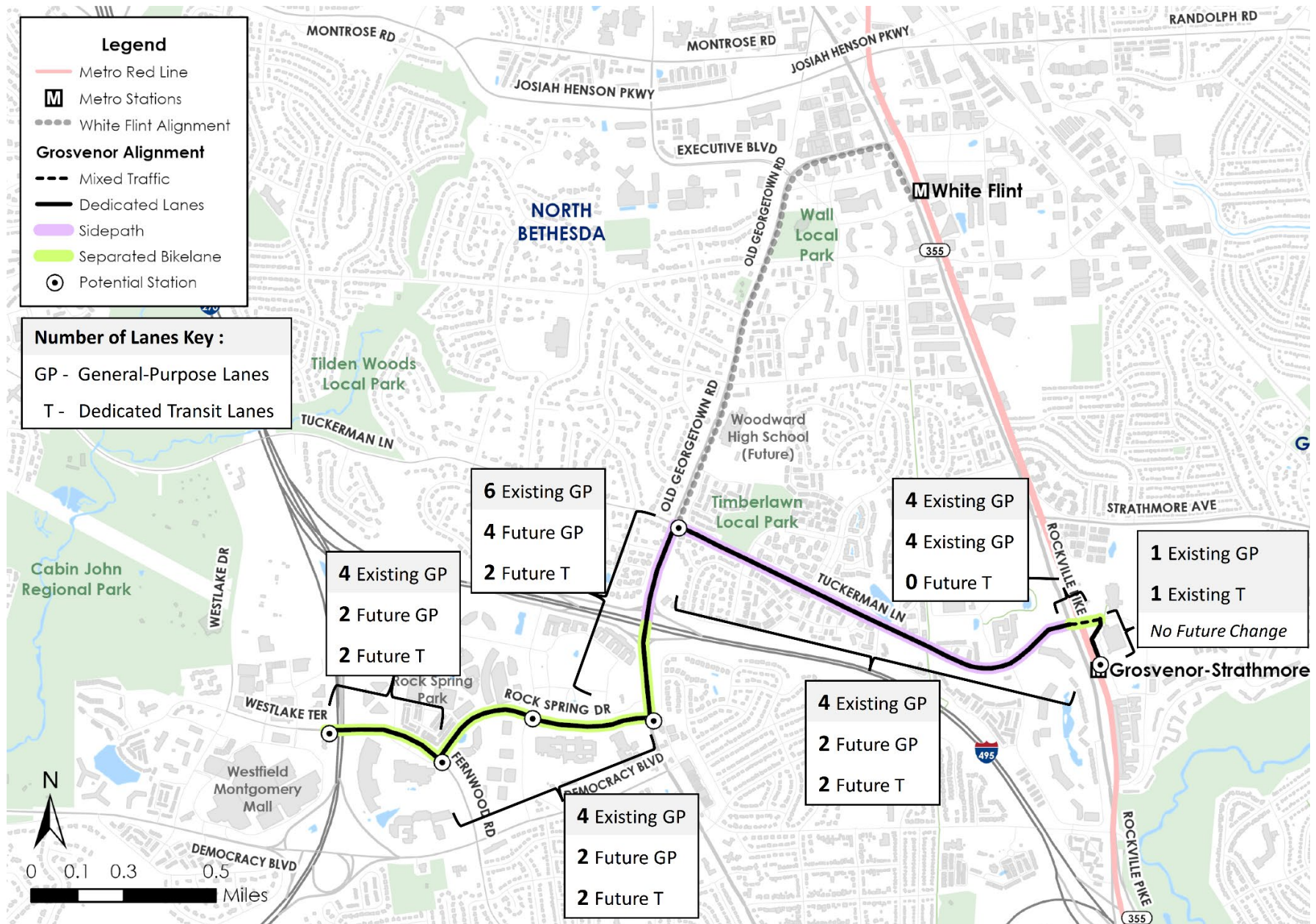


Figure 3: Grosvenor Alternative Segment Detail

## 1.2 METRICS DEVELOPMENT

Following the development of goals and objectives for this study, a set of metrics was drafted to measure how well each route alternative would achieve the study goals and objectives comparative to one another. Objectives were the foundation of metrics development. **Figure 4** shows the relationship between the study goals, objectives, and metrics.



Figure 4. Project Goals, Objectives, and Metrics

## 1.2.1 ADDITIONAL ANALYSIS METRICS

Additional metrics that may be utilized in the full build alternatives analysis for this study will have a greater emphasis on comparing roadway configurations, rather than the termini. These include, but are not limited to the following:

- **Quality Service**
  - Ridership forecasts
  - Refined travel time comparisons
  - Intersection-level traffic assessments
  - Interactions with existing bus service
- **Sustainable Solutions**
  - Potential emissions reductions
  - More detailed capital cost assumptions
  - Operational cost changes from proposed local service changes
  - Potential impacts to environmental factors and right-of-way (ROW)
  - Applicability to funding opportunities
- **Mobility Choices**
  - Travelshed and access analysis using walksheds from Metrorail stations
  - Anticipated bike stress or pedestrian level of comfort improvement
  - Mileage of new pedestrian/bike facilities
- **Community Equity**
  - Similar to termini screening metrics, but applied to travelsheds and walksheds from station locations rather than entire alignment
  - Potential ridership demographic information
- **Public Safety**
  - Potential to connect proposed alternatives with research about safety improvements
- **Economic Growth**
  - Similar to termini screening metrics, but applied to travelsheds and walksheds from station locations rather than entire alignment

## 1.2.2 ANALYSIS AREAS

For the analysis, a 0.25-mile buffer around the alignments and a 0.5-mile buffer around the termini locations were used as shown in **Figure 5**. In coordination with the County, the 0.25-mile buffer around alignments was selected because specific stop locations are preliminary and may change further into this study. The 0.5-mile buffer around each of the termini was identified because of the larger draw and connectivity potential of BRT starting and ending stations.



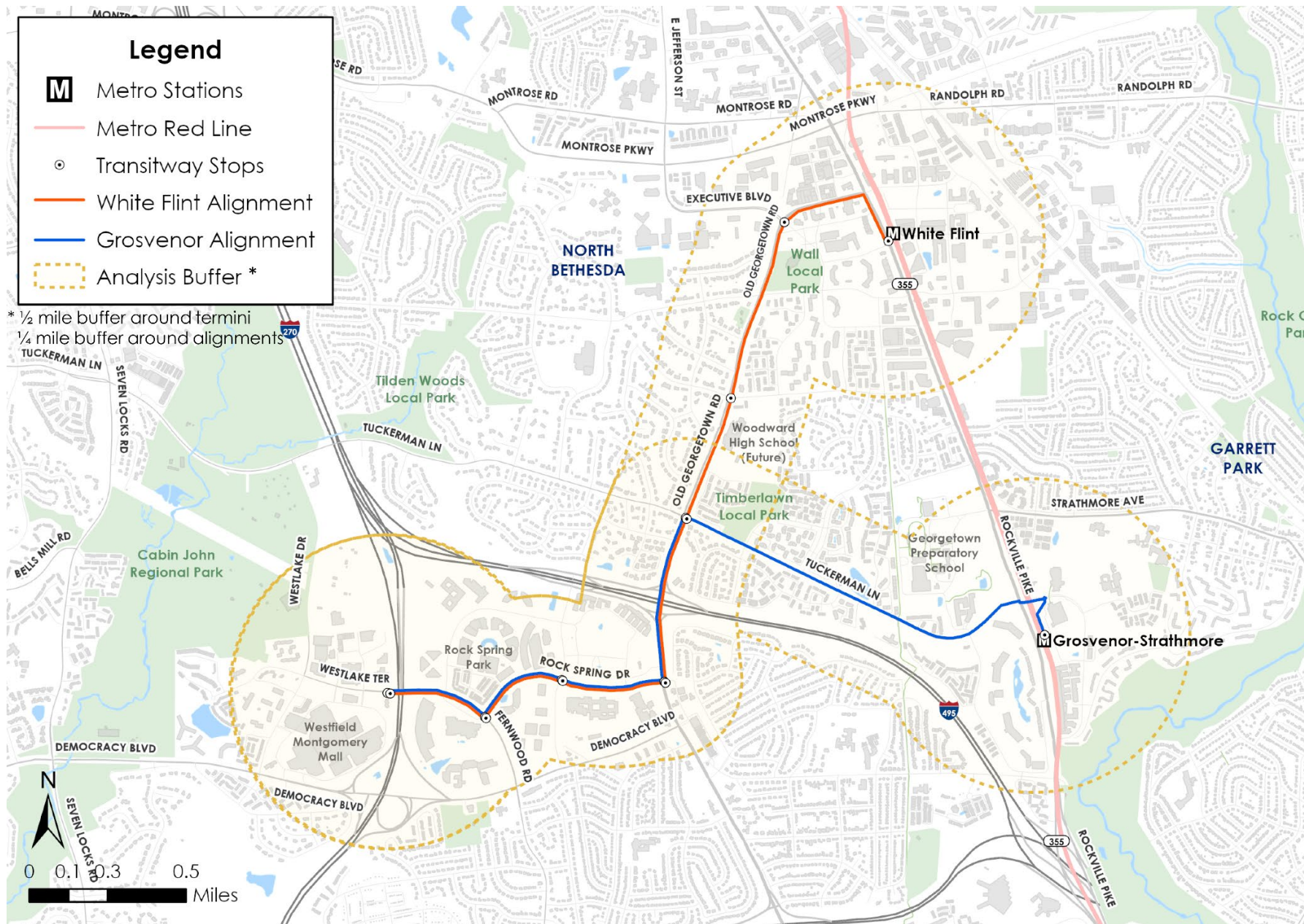


Figure 5: Termini Alternatives Analysis Buffers

## 1.3 EASTERN TERMINI OVERVIEW

This section contains a brief introduction of the two eastern terminus alternatives, particularly related to the station layout and other planned improvements that are slated to connect to the two eastern termini Metrorail stations.

### 1.3.1 METRORAIL STATION LAYOUT

The following section contains an overview of the layout of the Metrorail stations associated with each alternative terminus: White Flint Metrorail Station and Grosvenor-Strathmore Metrorail Station, both located on the red line.



## 1.3.1.1 White Flint Metrorail Station

The White Flint Metrorail Station is located along Rockville Pike (MD355), in the center of a major transit-oriented development site as part of the 2010 White Flint Sector Plan. It will provide a connection to the planned MD 355 Flash BRT service. It offers facilities such as parking (1,270 all-day spaces), bike racks and lockers, and passenger amenities.

The facility serves as a transfer point within the area served by Ride On, including the high frequency Flash service, Metrobus, and the Metrorail Red Line. It has three bus stops, two on Rockville Pike and one on Marinelli Road, that are served by eight routes, as shown in **Figure 6**. The routes serving the White Flint Metrorail Station have connections to major destinations and transfer points including: Silver Spring, Rockville, Twinbrook, Glenmont, Montgomery Mall Transit Center, Wheaton, Montgomery College, Bethesda, and Medical Center. Note that there are no bus bays within the White Flint Metrorail facility. All bus stops are on-street which will have implications for ease of end-of-line circulation for the transitway.

On weekdays, bus service is provided at the facility between the hours of 4:00 a.m. and 1:00 a.m., with a bus coming approximately every 30 minutes. On Saturday and Sunday, bus service operates between 5:00 a.m. and 1:00 a.m., with a bus coming approximately every 40 minutes.

According to a 2016 rail survey, assessing mode of access by each Washington Metropolitan Area Transit Authority (WMATA) Metrorail Station, walking has the highest access mode share for White Flint at 61 percent, while the second highest access mode share is driving alone (14 percent).

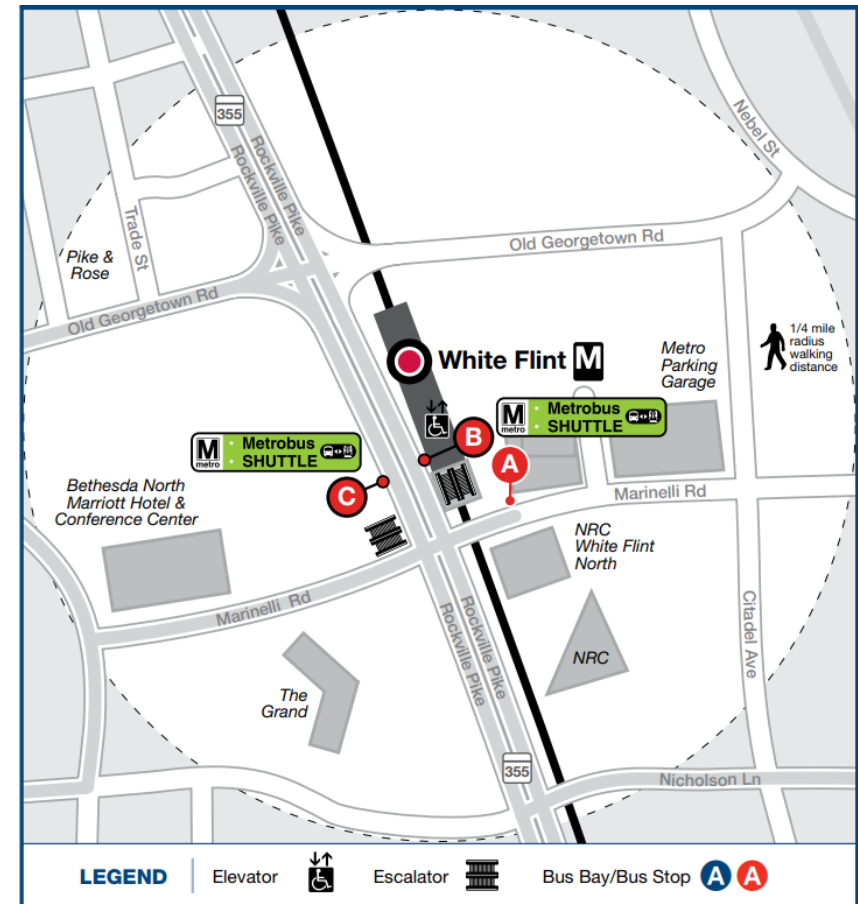


Figure 6. White Flint Metrorail Station Layout

## 1.3.1.2 Grosvenor-Strathmore Metrorail Station

The Grosvenor-Strathmore Metrorail Station is located along Rockville Pike (MD355), just before the I-495 interchange, and is directly connected to the Music Center at Strathmore. It will provide a connection to the planned MD 355 Flash BRT service. It offers facilities such as parking (1,894 all-day spaces, 57 short-term spaces), park and ride facility, bike racks and lockers, and passenger amenities.

The facility serves as a transfer point within the area served by Ride On, Metrobus, and the Metrorail Red Line. It has four bus bays within the facility and one bus bay in the northbound direction on the Rockville Pike, as shown in **Figure 7**. This facility is served by five routes which have connections to major destinations and transfer points such as: Lake Forest Transit Center, Rockville, Twinbrook, White Flint, Montgomery Mall Transit Center, Wheaton, and Medical Center.

All week long, bus service is provided at the facility between the hours of 5:00 a.m. and 1:00 a.m., with a bus coming every 30 to 40 minutes.

According to the same 2016 rail survey referenced above, driving alone has the highest access mode share for Grosvenor-Strathmore at 41 percent, while walking represents the second highest access mode share of 33 percent.

It should be noted that prior to the COVID-19 pandemic, service on the Metrorail red line was modified, where some service ended at the Grosvenor-Strathmore station rather than continuing to Shady Grove.

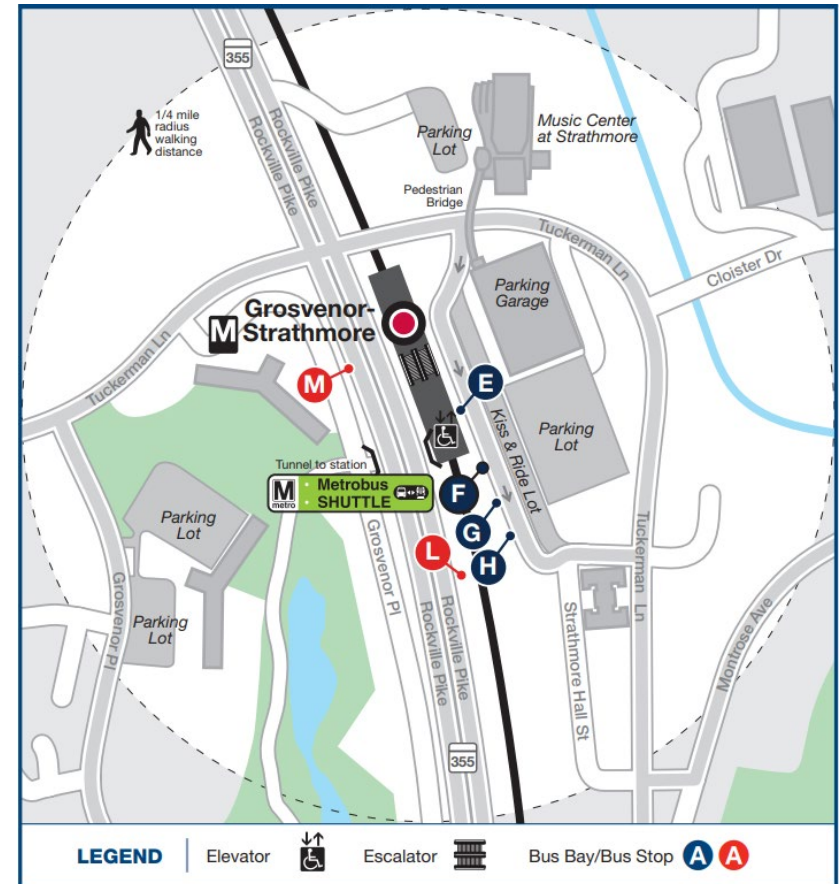


Figure 7. Grosvenor-Strathmore Metrorail Station Layout

## 1.3.2 PLANNED IMPROVEMENTS AND CONNECTIONS

The following section highlights the various planned improvements and future connections to each terminus, which includes an additional Metrorail Station entrance and connections to the Flash BRT service planned for Rockville Pike (MD 355).

### 1.3.2.1 White Flint

A recent [White Flint Metrorail Station North Entrance Feasibility Study](#) called attention to an improvement from the 2010 White Flint Station Access Plan, which includes a planned additional North entrance to the station. The planned North entrance configuration is shown in **Figure 8**. Design for this project is slated to begin in Fiscal Year (FY) 2024

and construction will commence in FY 2026. It should be noted that this project is not fully funded for construction yet (approximately \$35 million total estimated construction costs). Funding is expected to come from the Montgomery County capital budget, WMATA, and a potential private partnership that is still being explored<sup>1</sup>.

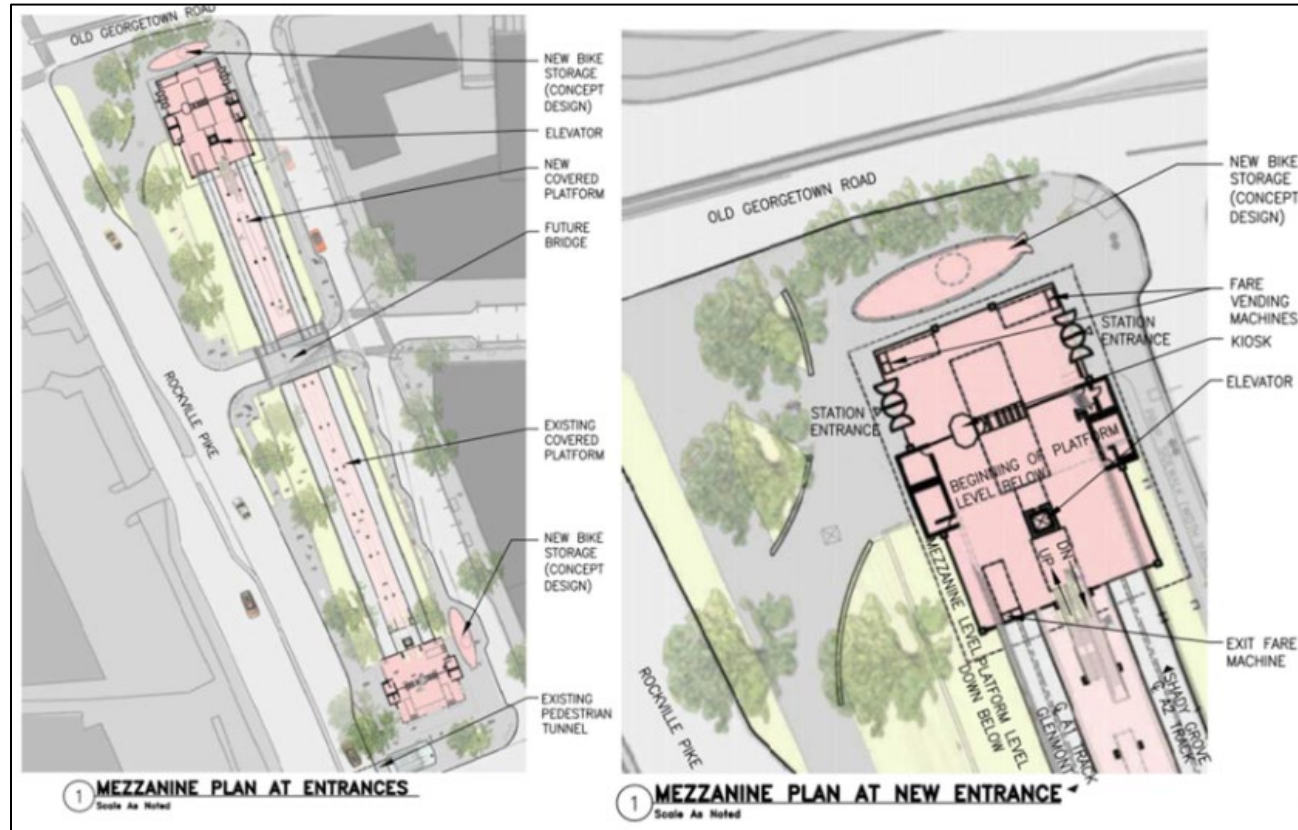
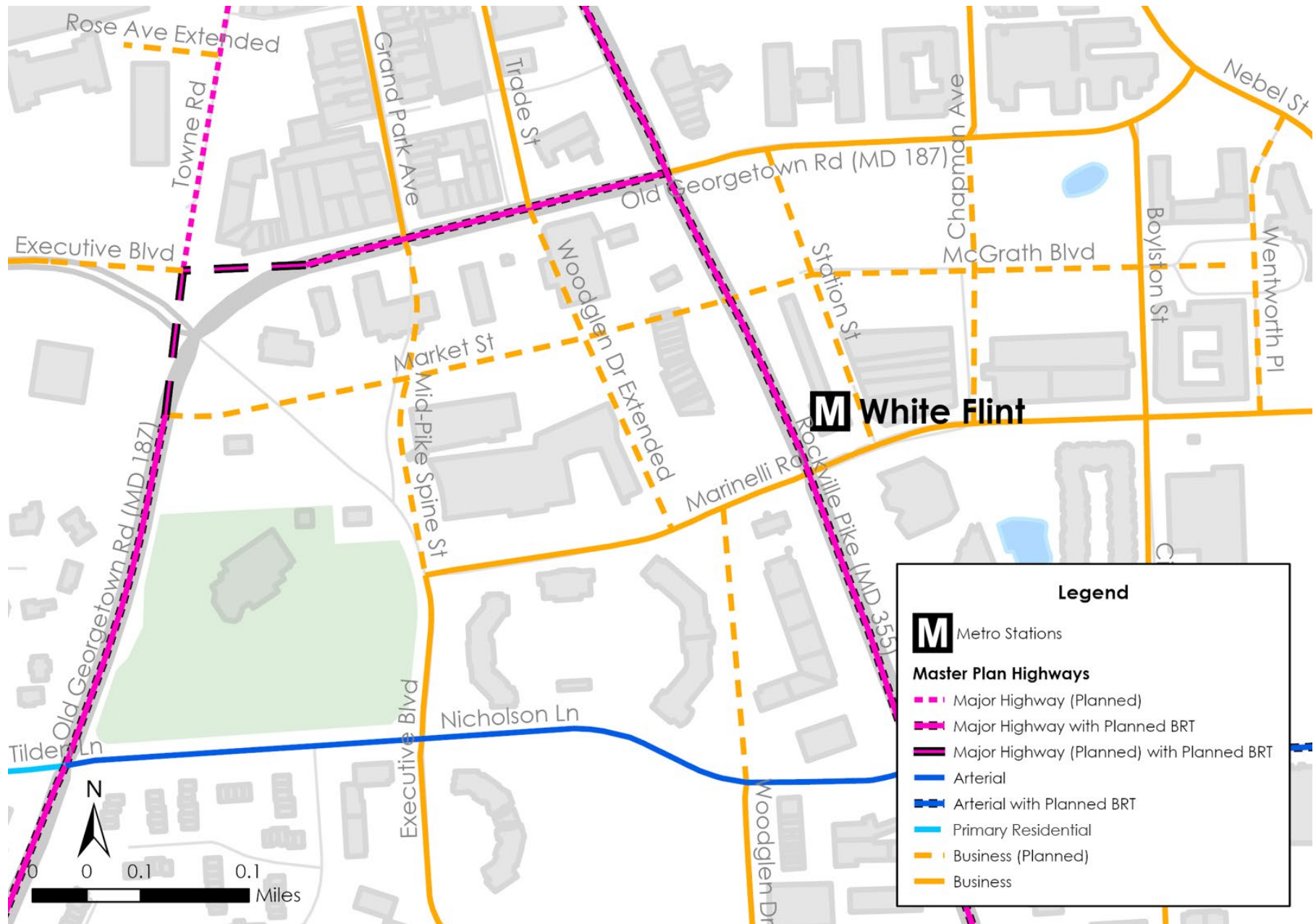


Figure 8. White Flint Metrorail Station Planned North Entrance

The Master Plan of Highways shows multiple new planned streets as part of the planned development in the vicinity of White Flint Metrorail Station. **Figure 9** shows a portion of the planned street network. This planned street network is critical to circulation of potential BRT buses serving and terminating at the Metrorail Station. Based on coordination of the design of the MD 355 FLASH project, the planned station is located in the median-running dedicated lanes on the southern leg of the intersection of Old Georgetown Road and Rockville Pike (MD 355). For purposes of the analysis, the corridor was assumed to travel along MD 355 between Old Georgetown Road and the Metrorail station. However, the future alternatives analysis phases would analyze multiple circulation alternatives.

<sup>1</sup> [North Bethesda Metro Station Northern Entrance \(P501914\) | Montgomery County Maryland Capital Budget \(montgomerycountymd.gov\)](#)





Additionally, there are various bicycle infrastructure improvements planned at and adjacent to the White Flint Metrorail station. These improvements primarily include separated bike lanes on adjacent streets (Marinelli Road and Rockville Pike) and a new bicycle parking station at the Metrorail station, with an additional small portion of striped bikeway. **Figure 19** in **Section 2.2.2** shows the details of the existing and planned bicycle network in the area, according to the County's Bicycle Master Plan. The new bicycle parking station will be located adjacent to a station entrance and will consist of 250 long-term spaces and 50 short-term spaces.

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### 1.3.2.2 Grosvenor

Unlike the White Flint Metrorail station, the existing Metrorail Station already has a bus circulation pattern in place at the facility using the bus loop. For this screening, it is assumed the proposed BRT will following those existing entrance and exit patterns. The planned MD 355 BRT service along Rockville Pike will run adjacent to the Grosvenor station, and therefore intersect the Grosvenor BRT alternative alignment for this study. Connection to the Montgomery County BRT will be discussed further in **Section 2.1.3.1**.

Similar to the White Flint Metrorail station, there are various planned bicycle infrastructure improvements planned at and around the Grosvenor-Strathmore Metrorail station, including sidepaths, a separated bike lane, a shared road, a striped bikeway, a trail, and a new bicycle parking station. **Figure 19** in **Section 2.2.2** shows the details of the existing and planned bicycle network in the area, according to the County's Bicycle Master Plan. The new bicycle parking station will be located at the WMATA parking lot adjacent to the Metrorail station and will consist of 250 long-term and 100 short-term bicycle parking spaces.

## 2 TERMINI SCREENING EVALUATION

The termini screening uses the alignment assumptions and the developed metrics to recommend a preferred alternative and alignment to move forward for a build analysis. This section of the report details assumptions and highlights findings from termini screening metric analyses and is broken out by project goals. An overview of results from the screening and key takeaways are included in **Section 3: Summary of Results**.

### 2.1 QUALITY SERVICE

Providing fast, reliable, efficient, and well-connected transit service is a key goal of all Flash BRTs and is a primary objective of this study. Eight metrics related to ridership, trip reliability, and transit connectivity were analyzed to quantify each alternative's potential toward achieving this goal, shown in **Table 1** and summarized in the section below.

**Table 1: Quality Service Termini Screening Metrics**

Goal / Objective	Termini Screening Metrics	Metric Measure
<b>Quality Service</b>  Provide a fast, reliable, efficient, and connected transit service	<b>Existing Bus Ridership</b> <i>Capture of existing transit usage along the corridor—how much is the BRT service relevant to existing transit use?</i>	Total number of weekday boardings at Washington Metropolitan Area Transit Authority (WMATA) and Ride On bus stops located directly on the alignment in Fall 2019.
	<b>Access for Existing Residents Along the Corridor</b> <i>As a proxy for current ridership demand, how many residents live along the corridor?</i>	ACS 2015-2019 5-year population averages by block group within the alternative analysis buffer.
	<b>Existing Metrorail Ridership at Termini</b> <i>How many people are already utilizing the Metrorail Station at the terminus? What potential BRT ridership could come from it?</i>	Total number of average weekday entries and exits in 2019 at the terminus Metrorail station.
	<b>Potential to Improve Transit Reliability</b> <i>Is the transit service on the alternative in need of reliability improvements?</i>	On-time performance from Fall 2019 for Ride On routes that approximately follow the alignment.
	<b>Increase of Service Frequency and Span</b> <i>How would the BRT compare to existing transit service?</i>	Number of new bus trips (weekday and weekend) that operate along the corridor.
	<b>Minimizing Impacts to Traffic Flow</b> <i>Does the alternative minimize impacts to traffic flow?</i>	Percent increase of weighted volume to capacity ratios between the no build and build alternative options.
	<b>Connections to Planned BRT Network</b> <i>How does the terminus fit with other planned BRT routes?</i>	Number of BRT routes from the 2013 Countywide Transit Corridors Functional Master Plan within 0.5- mile buffer of terminus.
	<b>Regional Connectivity</b> <i>Other than Metrorail, what connections are there to the region?</i>	Trips ending in alternative analysis area that originate elsewhere in the region on an average weekday between Sept. 2019 and Nov. 2019.

## 2.1.1 RIDERSHIP POTENTIAL

The following section contains the analysis and results of metrics related to sources of potential BRT ridership in the alternatives analysis areas. Sources of potential ridership include boardings at existing bus stops along the corridor, existing residents/population along the corridor, and Metrorail ridership at each eastern terminus.

### 2.1.1.1 Existing Bus Ridership

Bus boardings are substantially higher at White Flint Metrorail Station than at Grosvenor Metrorail Station (for more information on available parking spaces and access mode split for the two Metrorail stations, refer to **Section 1.3.1**) Including the trunk connection to Montgomery Mall, bus stops along the White Flint Alternative have a total of 1,603 average daily boardings, while the Grosvenor Alternative have only 1,145 boardings. Pre-COVID-19, bus stops along the White Flint Alternative alignment had 40 percent higher bus ridership, or about 450 more weekday riders, than bus stops the Grosvenor Alternative alignment. **Figure 10** shows the average weekday boardings for WMATA and Ride On bus routes in the study area prior to the COVID-19 pandemic.



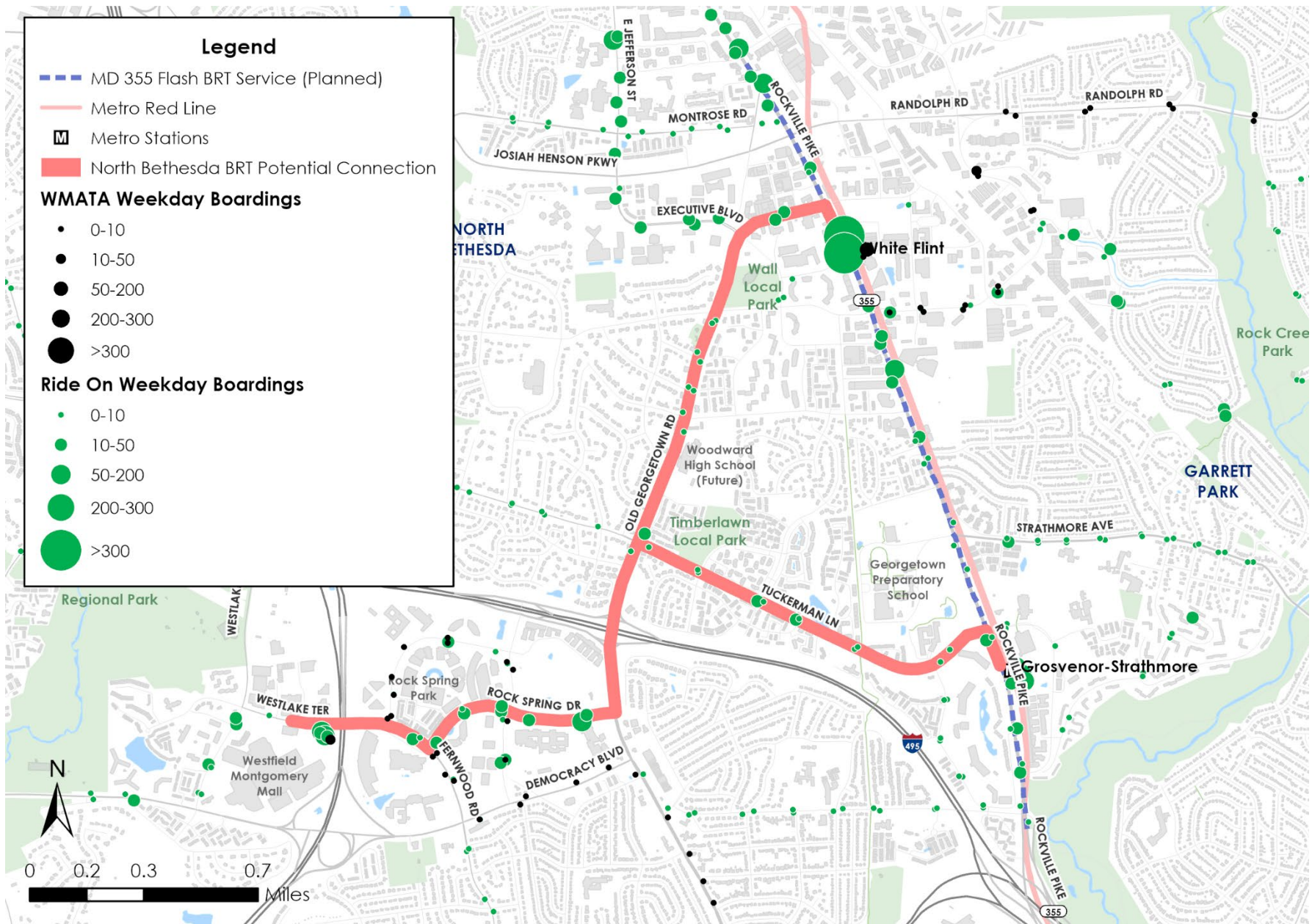


Figure 10. Metrobus and Ride On Weekday Boardings by Stop in the Alternative Analysis Areas



## 2.1.1.2 Access for Existing Residents Along the Corridor

The total number of people living within walking distance of both the White Flint and Grosvenor Alternatives is similar. Approximately, 19,200 people live within the White Flint Alternative's analysis area and 20,300 live within the Grosvenor Alternative's analysis area. **Section 2.5.2** describes the future forecast growth in people and jobs, which is much higher in the White Flint alternative. In general, the areas immediately surrounding the Grosvenor-Strathmore Metrorail Station as well as along Tuckerman Lane have the highest population. **Figure 11** presents the number of people currently living within each alignment's study area, highlighting the number of existing residents who will have access to the new transit service. This metric is calculated based on block group level data from the 2015-2019 American Community Survey (ACS) 5-year averages. **Table 2** breaks down this information in more detail, as well as indicating the projected 2030 population for both alternatives for reference. More information regarding population density and forecasts can be found in **Table 20** in a later section.

**Table 2. Population Along Both Alternatives in 2020 and 2030**

Alternative	2020 Population	2030 Population
White Flint	19,235	24,409
Grosvenor	12,564	18,185

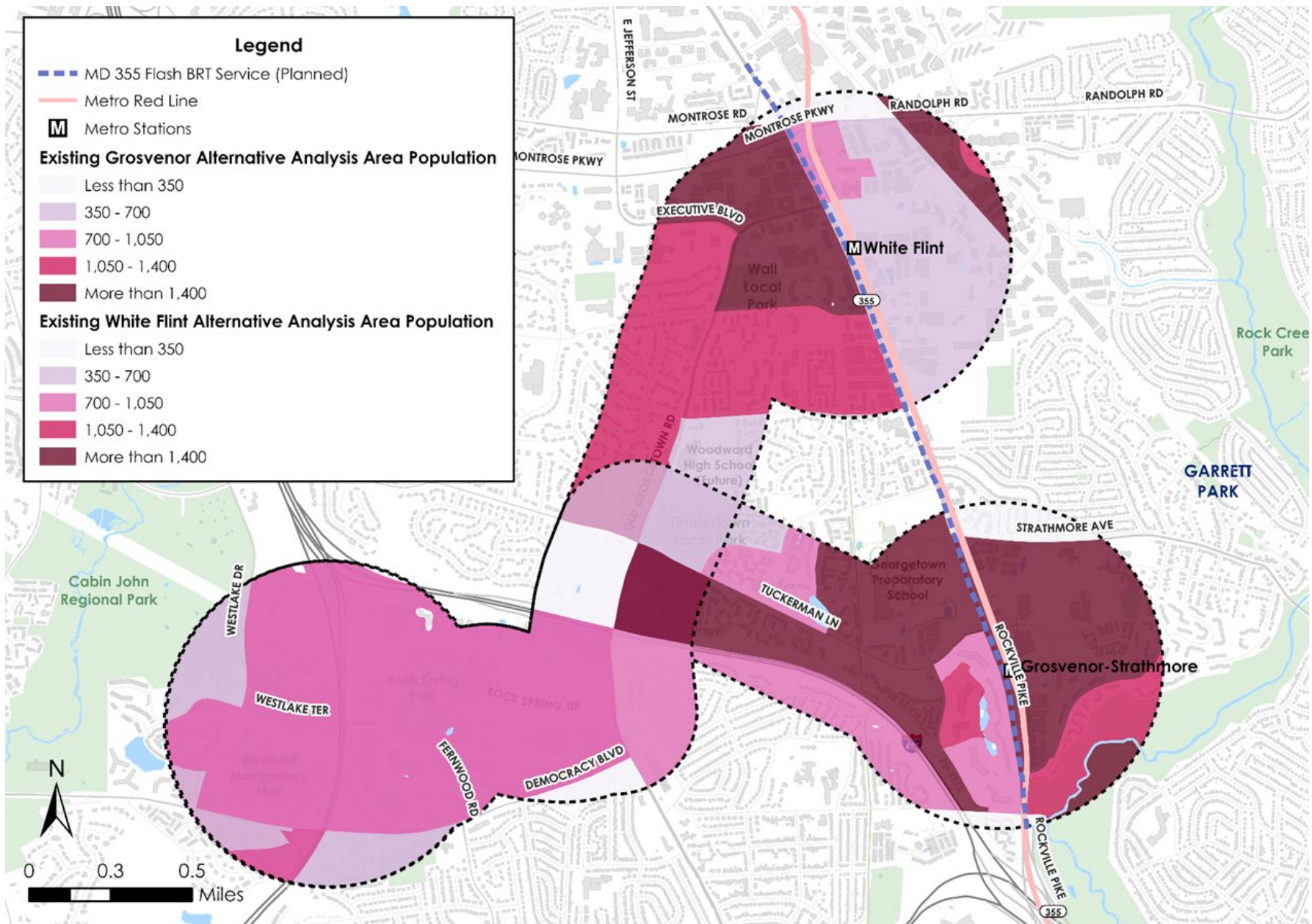


Figure 11. Existing Residents in the Alternative Analysis Areas

## 2.1.1.3 Existing Metrorail Ridership at Termini

Since both the White Flint and Grosvenor-Strathmore alternatives terminate at a Metrorail Station, measuring average daily ridership at each station can shed light on how many people are already utilizing each terminus. Riders who are already utilizing these Metrorail stations may be a source of potential BRT ridership along the study corridor in the future.

The Washington Metropolitan Area Transit Authority (WMATA) regularly updates a publicly available [Rail Ridership Data Viewer](#) for Metrorail stations, with various data filtering capabilities and data viewing configurations. This WMATA data source was utilized to pull 2019 (prior to the COVID-19 pandemic) average daily entries and exits for the White Flint and Grosvenor-Strathmore Metrorail stations, for weekdays and weekends. 2022 data was also extracted to provide a snapshot of how ridership has changed since the COVID-19 pandemic; however, 2019 average weekday total activity (entries and exits) was ultimately used for alternatives scoring to best capture “normal” ridership. **Figure 12** and **Figure 13** show the average daily Metrorail Station activity in the study area for weekdays and weekends, respectively.

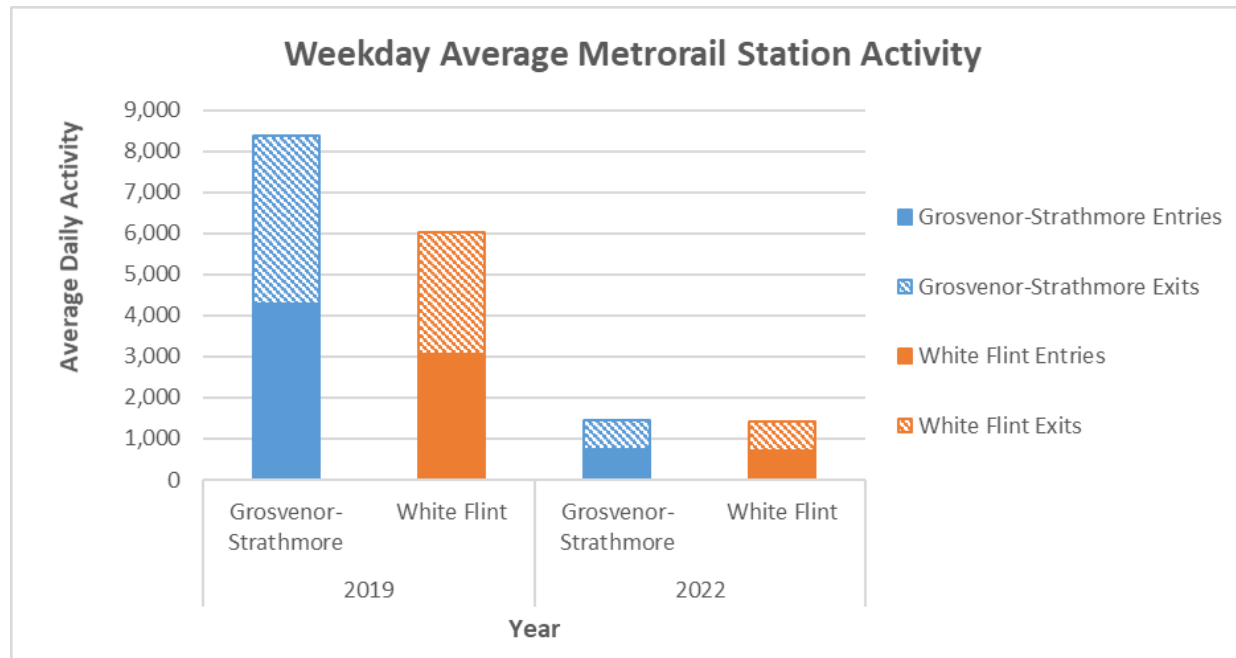
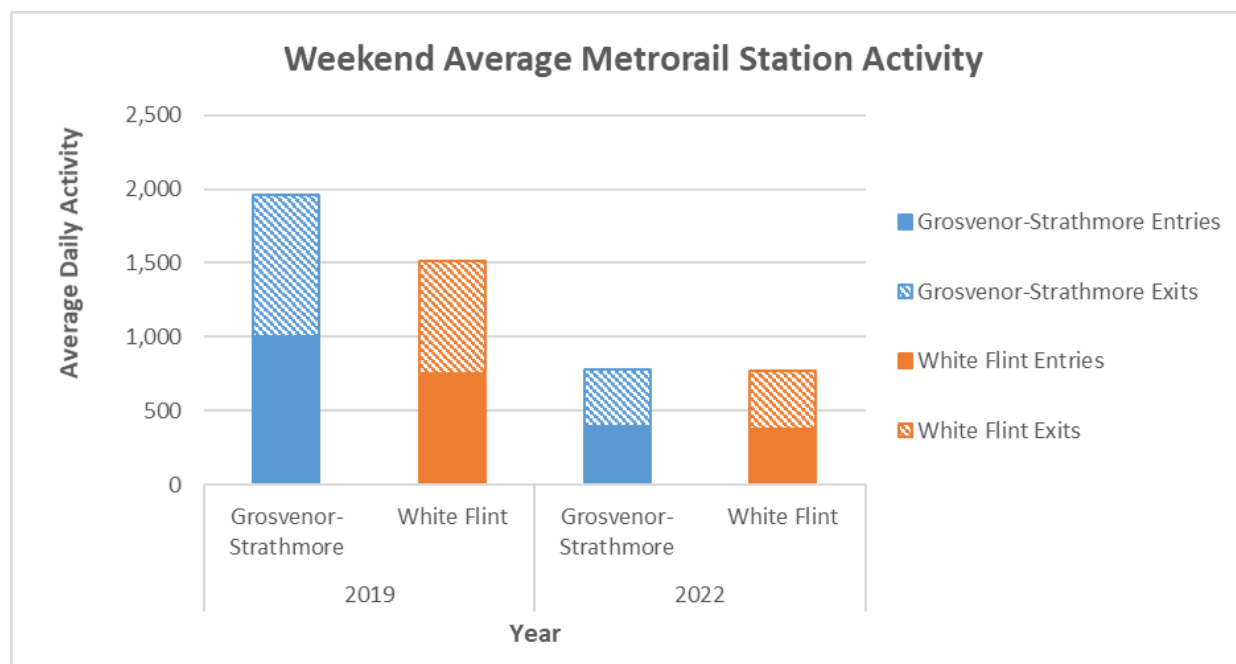


Figure 12. Weekday Average Daily Metrorail Station Activity



**Figure 13. Weekend Average Daily Metrorail Station Activity**

Comparing weekday activity at the two Metrorail stations in 2019, White Flint experienced about 30 percent less activity than Grosvenor-Strathmore, on average. The same trend was true of 2019 weekday activity, where White Flint experienced about 25 percent less activity than Grosvenor-Strathmore. In comparison, activity was approximately equal at both stations on weekdays and weekends in 2022.

It should be noted that both the White Flint and Grosvenor alternatives both have paid parking facilities for Metrorail riders at a cost of \$5.20 per weekday. The White Flint Metrorail Station has approximately 1,300 all-day spaces available, while the Grosvenor-Strathmore alternative has approximately 1,900 all-day spaces available to riders, in addition to 75 short-term paid parking spaces. The higher volume of parking spaces at Grosvenor-Strathmore, the closer proximity to the DC-DMV area, and the previous Metrorail service patterns (in which some red line trains ended service at the Grosvenor-Strathmore station), may all contribute to the higher activity reflected in the data above. **Table 2** shows some of the results of a 2016 WMATA Metrorail access mode survey that analyzed the typical mode of access to each WMATA Metrorail station, to demonstrate the mode split by which people travel to the two Metrorail stations relevant to this study.

**Table 3. WMATA Metrorail Station Typical Mode of Access Survey Results**

Metrorail Station	Drive Alone Mode Share	Walk Mode Share
White Flint	14%	61%
Grosvenor-Strathmore	41%	33%

Although this mode share information is not factored into the evaluation of the terminus alternatives, it sheds light on the reasons why Metrorail riders may or may not consider shifting their Metrorail Station access mode to BRT.

In summary, while both White Flint and Grosvenor-Strathmore had high average weekday activity in 2019, Grosvenor-Strathmore had the highest average weekday activity in 2019 by a measure of approximately 2,300 entries and exits. Both alternatives have the potential (Grosvenor-Strathmore slightly more so) to provide BRT ridership and therefore work towards achieving the goal of Quality Service.

## 2.1.2 TRIP RELIABILITY

A key component to providing quality transit service is ensuring that a trip is reliable. In this section of the report, existing bus routes are compared to the future enhanced service of the termini alternatives to determine increases in trip reliability, and service frequency and span. The alternatives' impacts to general traffic flow are also analyzed in this section as traffic congestion is a key component to trip reliability as well. Higher frequencies and longer spans can increase service reliability to provide for greater flexibility and more of a likelihood that buses will be available at times they are needed.

Based on similarity to the proposed alignments, Ride On 26 was used as a proxy for the White Flint Alternative as it follows nearly the same route, with the exception of a deviation in how it accesses White Flint Metro. Ride On 96 was used as a proxy for the Grosvenor Alternative, as it follows nearly the same route except for a small added loop on Rockledge Drive/Fernwood Road/Democracy Boulevard. **Figure 14** provides an overview of where the Ride On 26 and 96 operate.

Utilizing Routes 26 and 96 as proxies for the White Flint and Grosvenor Alternatives provides a baseline for measuring improvements that BRT would bring to the corridor, including dedicated lanes or signal timing, and how those improvements would impact service and travel times along the corridor.



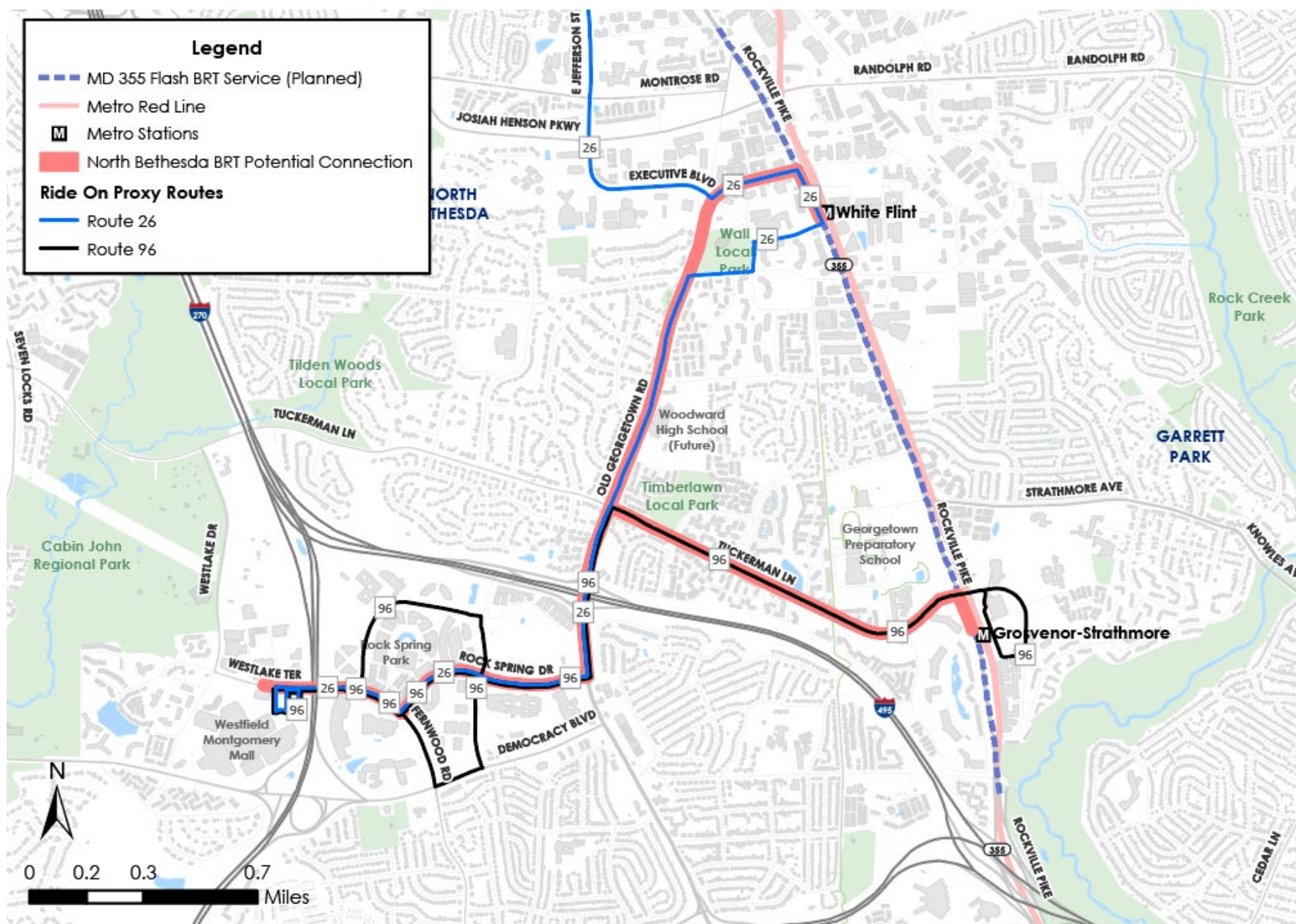


Figure 14. Existing Services Along the Proposed Alternatives

**Table 3** and **Table 4** show the existing and planned headway by hour for the White Flint and Grosvenor Alternatives on weekdays and on weekends. Once implemented, the new service will operate between 5:30 a.m. and 11:45 p.m. daily with 15-minute frequencies.

For the White Flint Alternative, the planned service will result in:

- An improvement in service frequencies between 5:30 a.m. and 3:00 p.m. and between 6:00 p.m. and 1:00 a.m. on weekdays. Currently, Route 26 operates every 15 to 45 minutes before 3:00 p.m. and every 15 to 60 minutes after 6:00 p.m.
- An improvement in weekend service frequencies from 6:00 a.m. to 12:00 a.m. Currently, Route 26 provides service every 30 minutes from 6:00 a.m. until 8:00 p.m., then operates every 45 minutes until it goes out of service at 1 a.m.

For the Grosvenor Alternative, the planned service will result in:

- Extending weekday service from 9:00 p.m. until 11:45 p.m.
- Improved service frequencies ranging from every 15- to 45-minute headways throughout the day to 15-minute headways all day. Currently Ride On Route 96 does not operate on weekends, so the new service will introduce new high-frequency, all day service on the corridor.



Frequency of Service	<=12 min	13-15 min	16-20 min	21-30 min	31-45 min	46-59 min	>=60 min	No Service
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Table 4. Weekday Alternative Headways by Hour

Agency	Route	Hours of Operation																					
		AM										PM											AM
		4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1
Ride On	26																						
White Flint Alternative																							
Ride On	96																						
Grosvenor Alternative																							

Table 5. Weekend Alternative Headways by Hour

Agency	Route	Hours of Operation																					
		AM										PM											AM
		4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1
Ride On	26																						
White Flint Alternative																							
Ride On	96																						
Grosvenor Alternative																							

## 2.1.2.1 Potential to Improve Transit Reliability

For Ride On routes, a trip is considered on time if a bus serves each time point between one minute early and four minutes late.<sup>2</sup> For this analysis Ride 26 and 96 were used as proxies for the alternatives and uses trip level data for Fall 2019. As shown in **Table 5**, the two alternatives have very similar on-time performance—ranging from 62 to 65 percent. Both corridor’s transit reliability could benefit from priority treatments.

**Table 6. On-Time Performance for Existing Ride On Routes on the Proposed Alternatives**

Alternative	Peak On-Time Performance	Off-Peak On-Time Performance
White Flint	65 percent	62 percent
Grosvenor	62 percent	63 percent

## 2.1.2.2 Increase of Service Frequency and Span

With Ride On routes 26 and 96 taken as proxies for existing transit service along the alternative alignments, the increase of service frequency and span is measured as the number of new bus trips (for both weekday and weekend service) that operate along the corridor if the BRT was implemented. This analysis is based on an assumed increase of service changes, to levels currently operated by the existing Flash service. It is a subject of current scheduling and may change over time, especially given the Imagine RideOn study. **Table 6** shows the existing bus trips per day, proposed bus trips per day, and increase in bus trips per day for each alternative, determined with existing and proposed hourly service frequencies in **Table 3** and **Table 4**.

**Table 7. Change in Existing and Proposed Bus Trips Per Day**

Alternative	Weekday			Weekend		
	Existing Bus Trips Per Day	Proposed Bus Trips Per Day	Increase (Change)	Existing Bus Trips Per Day	Proposed Bus Trips Per Day	Increase (Change)
White Flint	46	76	30	28	76	48
Grosvenor	32	76	44	0	76	76

For both weekday and weekend service, assuming Flash service levels, the Grosvenor alternative would have a higher increase in service frequency and span. Its possible that demand may not warrant these service levels and will be analyzed further in the build alternatives stage.

## 2.1.2.3 Minimizing Impacts to Traffic Flow

The 2030 and 2045 Metropolitan Washington Council of Governments (MWCOC) Travel Demand Models were utilized to capture the magnitude of traffic impacts that the termini alternatives may bring to the study area. Volumes and intersection volume to capacity ratios were pulled from three MWCOC model runs for 2030 and 2045: a “No

<sup>2</sup> Montgomery County Performance Dashboard, 2022, <https://www.montgomerycountymd.gov/dot-transit/dashboard/index.html>.

Build” scenario in which no changes to the models were made, and a White Flint Alternative and a Grosvenor Alternative in which the reduction of general-purpose lanes assumed for the alternatives were coded into the models. Results from roadway segments along both termini alternatives were summarized for each alternative and the “No Build” scenario. As shown in **Table 7**, the White Flint Alternative has a higher centerline mileage with a v/c ratio of 1.0 or greater in almost all model run scenarios. The orange text in the table signifies an increase in the Alternative Scenario from “No Build” Scenario. Overall, only 19 percent of total centerline in the White Flint alternative has a v/c ratio greater than 1.0 (compared to 9 percent in “No Build”) and of those roadway segments, the highest v/c ratio was 1.23 in the 2045 model. While the Grosvenor Alternative has a lower percentage of centerline with a v/c ratio greater than 1.0 (12 percent), its highest v/c ratio in 2045 was 1.30.

**Table 8: Alternatives Impacts to Traffic Flow in Travel Demand Model**

MwCOG Analysis Period	Alignment Centerline* (mi) with V/C Over 1.0		
	No Build	White Flint Alternative	Grosvenor Alternative
2030 AM	0.28	0.62	0.54
2030 PM	0.62	0.87	0.28
2045 AM	0.00	0.62	0.62
2045 PM	0.62	1.21	0.62

\*Centerline mileage was held constant in the alternatives to account for traffic impacts throughout the study area. Roadway segments analyzed include: Old Georgetown Road, Tuckerman Lane, Rock Springs Pike, Fernwood Road and Westlake Terrace

Orange text signifies an increase in v/c in the Alternative Scenario compared to the “No Build” Scenario.

## 2.1.3 TRANSIT CONNECTIVITY

If transit is fast and reliable, a two-seat transit trip with a transfer can still provide quality service while benefiting a larger pool of riders. Because of this, the North Bethesda Transitway’s connectivity to other transit routes is an important metric to consider. In addition to the known connections to the Red Line Metrorail at both of the eastern termini, the study team identified each alternative’s proximity to the rest of the planned BRT network and considered trip attraction to cross-Potomac travel as detailed in other regional transit planning studies.

### 2.1.3.1 Connections to Planned BRT Network

The North Bethesda Transitway’s connectivity to the rest of the County’s planned, BRT network will add to the quality of service for transit users traveling in and around Montgomery County. As shown in **Figure 15**, both alternatives will connect to the MD 355 BRT currently in the preliminary engineering phase of planning. Additionally, the White Flint alternative is within a 0.5-mile buffer of the preliminary termini location for the Randolph Road BRT that is identified in the 2013 Plan. During the more detailed planning study for this BRT route, adding a connection to the White Flint terminus may be an option.

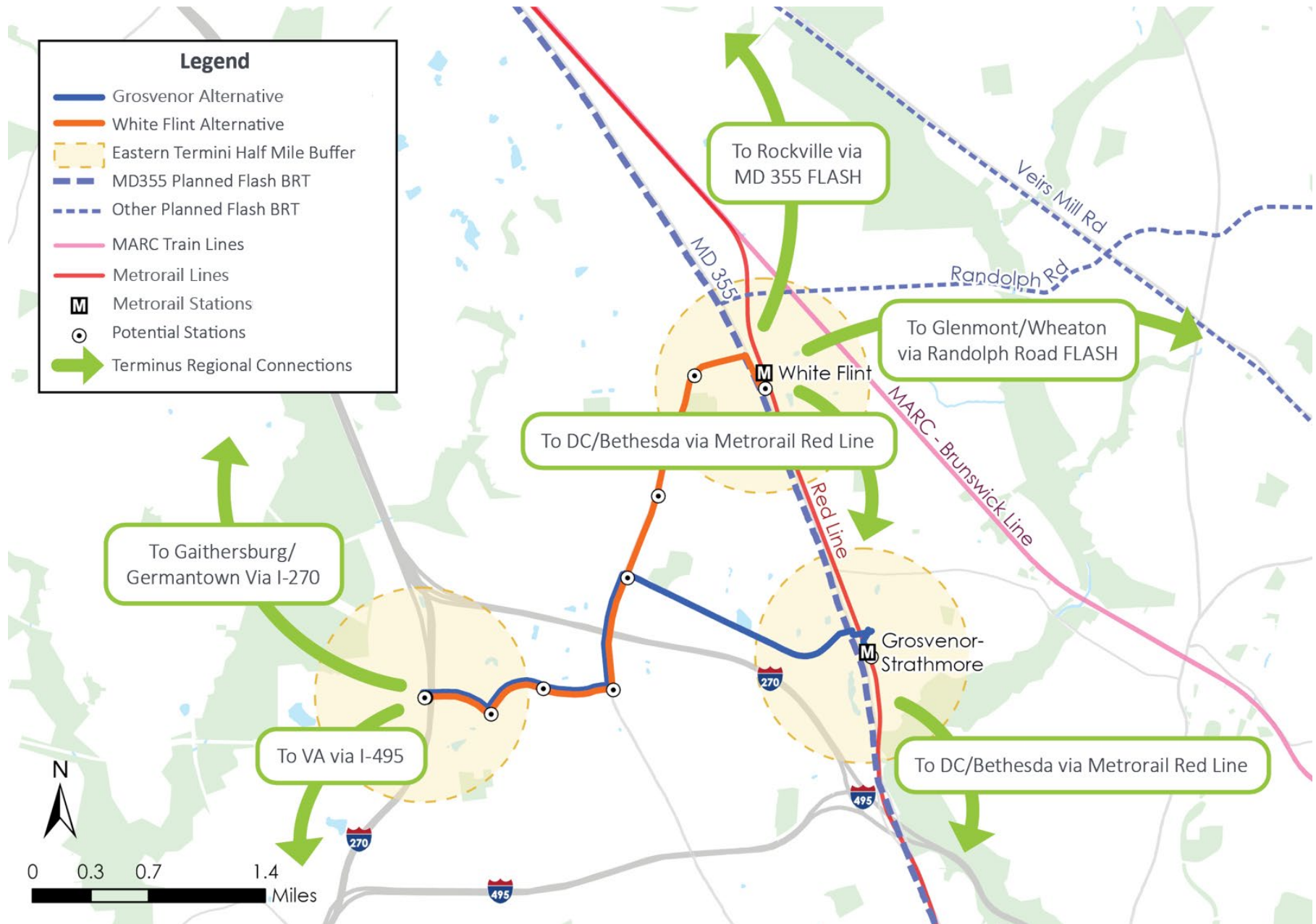


Figure 15: Alternatives Connection to Planned BRT Network

## 2.1.3.2 Regional Connectivity

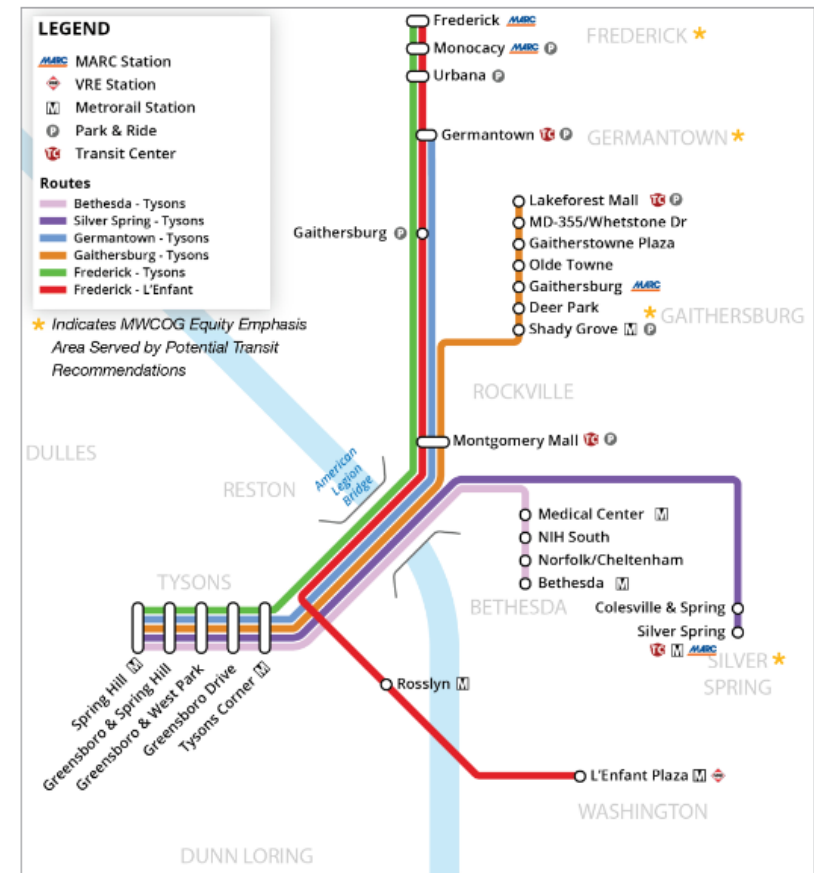
With regards to connectivity to the region as a whole, an analysis in the [Replica](#) platform was conducted to determine all trip types that ended in each alternative analysis area and originated outside the analysis area or elsewhere in the region on an average weekday and weekend day between September 2019 and November 2019. The reciprocal analysis (trips originating in the analysis area and ending elsewhere in the region) was conducted, but the results are not included in this report due to the nearly identical results. On average, more average weekday trips (approximately 44% more) ended in the White Flint alternative analysis area as compared to the Grosvenor alternative, as shown in [Table 8](#).

**Table 9: Total of All Trip Types Ending in the Analysis Area That Originate Elsewhere in the Region between September 2019 and November 2019**

Alternative	Trips Ending in Alternative Analysis Area That Originate Elsewhere in the Region on an Average Weekday	Trips Ending in Alternative Analysis Area That Originate Elsewhere in the Region on an Average Weekend Day	% of All Trips That Are Originating Externally on an Average Weekday
White Flint	91,000	86,000	80%
Grosvenor	63,000	60,000	81%

Looking more specifically at bi-state connectivity to Fairfax County, Virginia, there is not an existing, high-speed transit connection to the study area. However, as a part of the [I-495/American Legion Bridge Transit and TDM Study](#), conducted in 2020, the study recommends, in its medium-level investment package, three potential transit routes that stop at Montgomery Mall, shown in [Figure 16](#). These connections would expand interstate, transit mobility from the North Bethesda transitway and work in conjunction with the [Managed Lane's Study draft recommendations](#) for direct, aerial-structure ramp access to the I-270 managed lanes at the Westlake Terrace interchange.

Included in the analysis of I-495 Transit study, the study team examined activity centers with the largest concentration of trips attracted from MWCOG transportation analysis zones (TAZs) in the other state. This analysis highlights the activity centers that attract the most significant concentration of cross-Potomac trips. The White-Flint TAZ has a larger total number of trips (4,604 compared to 496 for Grosvenor) and a higher density of trips per square mile (2,798 compared to 403 for Grosvenor) attracted to Virginia.



**Figure 16: Potential Transit Recommendations from the I-495 Transit TDM Study – Medium Investment Package**

## 2.2 MOBILITY CHOICES

A core objective of this study is to increase mobility choices through improving access to jobs, activity centers, and community facilities in North Bethesda. Three metrics were developed to determine which of the two eastern termini alternatives best align with this goal as shown in **Table 9**. The three mobility choices metrics are generally related to opportunity access and the bike network in the area. Both of these components are essential to providing true mobility options. The first ensures that meaningful opportunities exist through the mobility options and then second ensures that those options are well connected.

**Table 10: Mobility Choices Termini Screening Metrics**

Goal / Objective	Termini Screening Metrics	Metric Measure
<b>Mobility Choices</b>  Improve access to jobs, activity centers, and community facilities	<b>Access to Community Facilities</b> <i>How many community facilities are connected to/accessible from the alternative?</i>	Quantity of community facilities within the alternative analysis buffer.
	<b>Access to Existing Jobs</b> <i>How many job opportunities are accessible from the alternative?</i>	Number of jobs from 2019 within the alternatives analysis buffers.
	<b>Connections to Existing and Planned Bike Network</b> <i>How many existing and planned bicycle facilities connect to the corridor? Are there multimodal connections?</i>	Number of existing and planned bikeways that intersect with the alternative alignment.

### 2.2.1 OPPORTUNITY ACCESS

To understand the opportunity access of the two termini alternatives, access to community facilities and access to existing jobs were measured for each alternative within the analysis buffer.

#### 2.2.1.1 Access to Community Facilities

**Figure 17** shows community facilities in the study area. These include civic/governmental services, community services, educational facilities, retail, and employment centers, and medical facilities. As shown, there are significantly more community resources along the White Flint Alternative than the Grosvenor Alternative alignment: 28 versus 14, respectively.



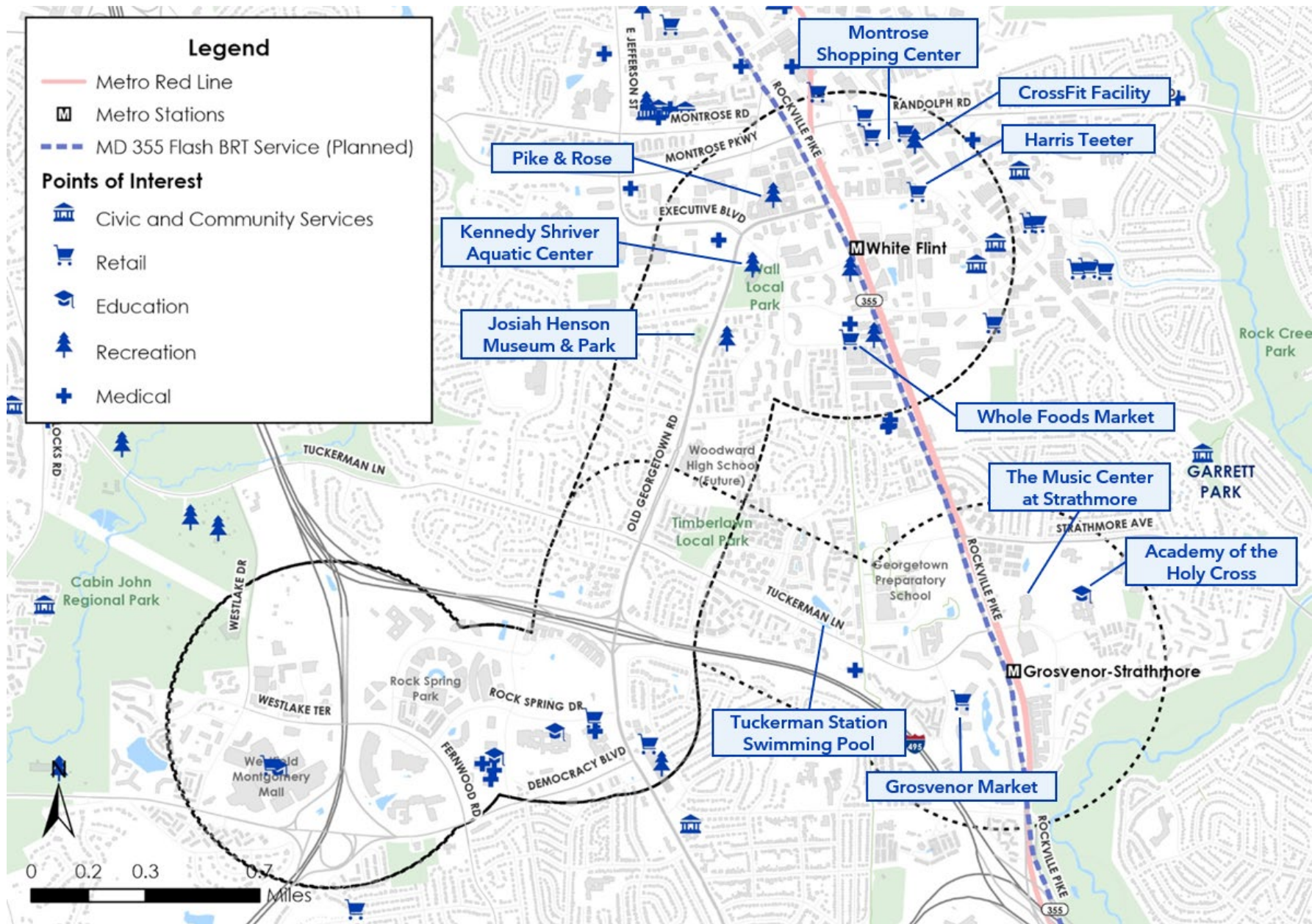


Figure 17. Community Facilities in the Alternative Analysis Areas

## 2.2.1.2 Access to Existing Jobs

There are approximately 41,200 jobs within the White Flint Alternative analysis area and 23,700 jobs within the Grosvenor Alternative analysis area. There are a high number of jobs around Montgomery Mall, the western terminus of both alternative alignments, as well as around the White Flint Metrorail station. **Figure 18** presents the total number of jobs within each alignments study area, highlighting connections to activity centers and opportunities. This metric is calculated using block group level data from the Longitudinal Employer-Household Dynamics (LEHD) survey for 2019. It should be noted that future jobs are accounted for in the metric presented in **Section 2.5.2** under the goal of Economic Growth.



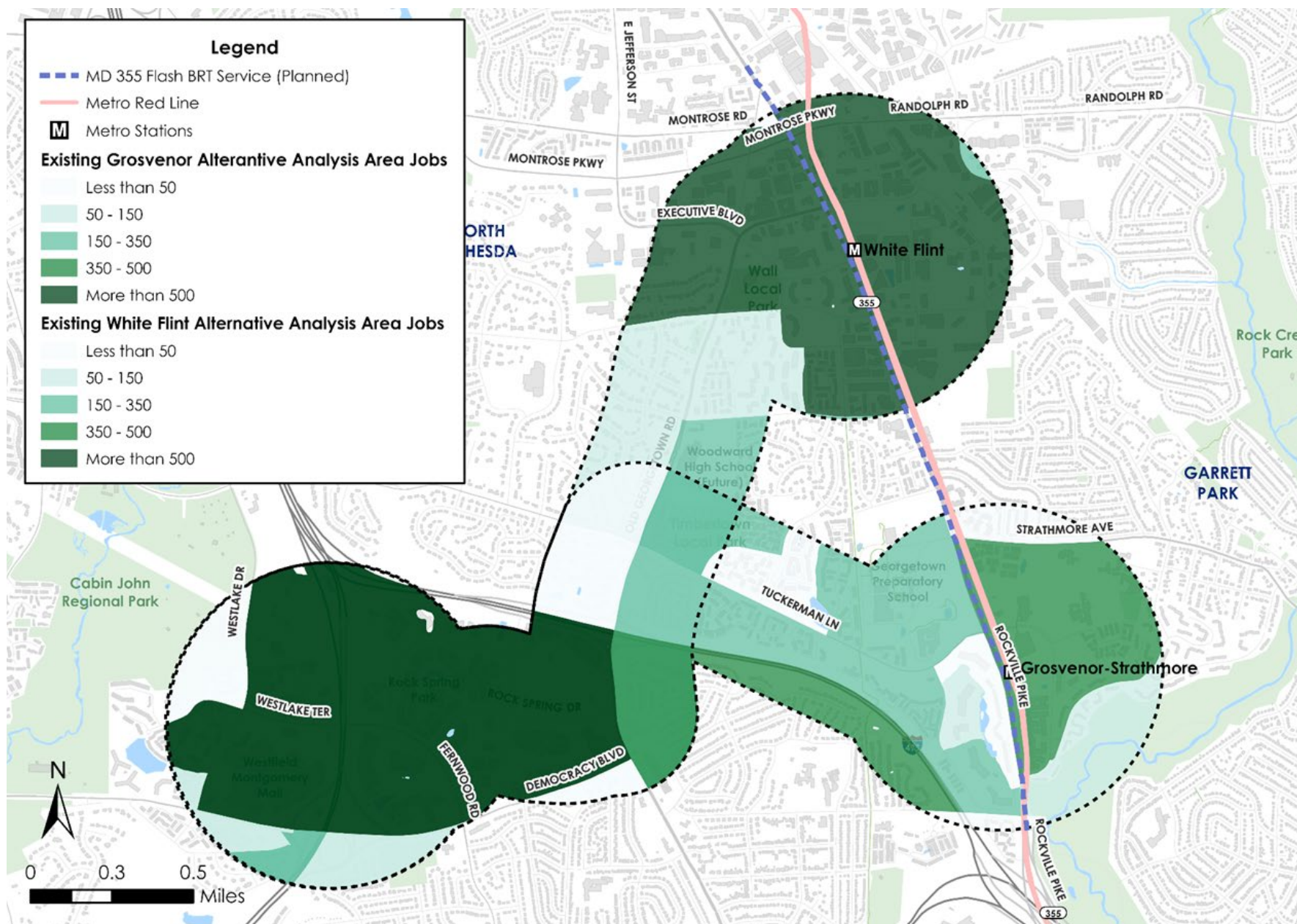


Figure 18. Existing Jobs in the Alternative Analysis Area

## 2.2.2 PEDESTRIAN AND BICYCLE INFRASTRUCTURE

Quantifying pedestrian and bicycle enhancements ensures that access to key destinations and opportunities is not only available through multimodal options but is also adequate and inviting. For this termini screening assessment, measurements of the improvements to the pedestrian and bicycle experience and the alignment to the planned bicycle network capture the practical ways in which pedestrian and bicycle modes will be enhanced by the two alternatives. A part of BRT implementation will include construction of new pedestrian side paths and dedicated bike lanes where appropriate and as planned for in the selected alignment.

### 2.2.2.1 Connections to Existing and Planned Bike Network

The number of existing and planned bicycle facilities that connect to the corridor was counted to capture the benefit these alternatives would play in adding cohesivity to the County's multimodal network. **Table 10** shows a list of each intersection that has bicycle facilities on the intersecting streets. Of the alternatives, White Flint has two more connections to planned dedicated bicycle facilities than Grosvenor, as shown in **Figure 19**. While both alternatives play an important role as the County is continuing to build out its bicycle network, the White Flint alternative provides greater connectivity to other streets the County is prioritizing. Note that the streets adjacent to Tuckerman lane have lower existing bicycle traffic stress (see **Figure 21**) and are bicycle friendly even without dedicated bicycle facilities.

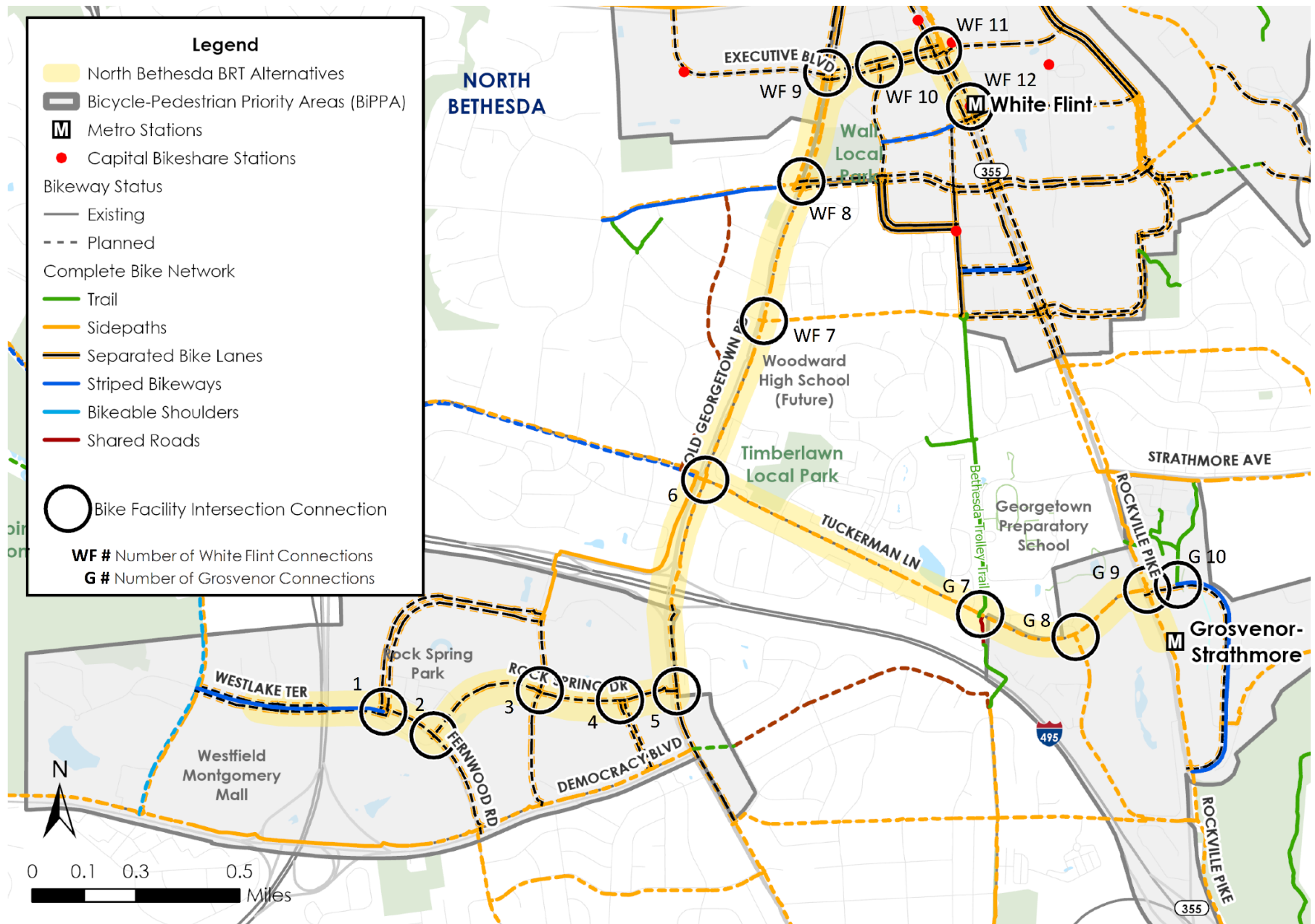


Figure 19: Connections to Existing and Planned Bicycle Network

Table 11: Alternative Bicycle Connections to Existing and Planned Bike Network

Alternative	Count	Road	Intersecting Street	Connection Facility Type*
White Flint	1	Westlake Terrace	Rockledge Drive	Separated Bike Lanes
	2	Westlake Terrace	Rock Spring Drive	
	3	Rock Springs Drive	Rockledge Drive	
	4	Rock Springs Drive	Shopping Plaza Entrance	
	5	Rock Springs Drive	Old Georgetown Road	
	6	Old Georgetown Road	Tuckerman Lane	Side paths
	7	Old Georgetown Road	Edson Lane	
	8	Old Georgetown Road	Nicholson Lane	Separated Bike Lanes
	9	Old Georgetown Road	Executive Boulevard	
	10	Executive Boulevard	Grand Park Avenue	
	11	Executive Boulevard	Rockville Pike	
	12	Rockville Pike	Marinelli Road	
Grosvenor	1	Westlake Terrace	Rockledge Drive	Separated Bike Lanes
	2	Westlake Terrace	Rock Spring Drive	
	3	Rock Springs Drive	Rockledge Drive	
	4	Rock Springs Drive	Shopping Plaza Entrance	
	5	Rock Springs Drive	Old Georgetown Road	
	6	Old Georgetown Road	Tuckerman Lane	Side paths
	7	Tuckerman Lane	Bethesda Trolley Trail	Trail (Existing)
	8	Tuckerman Lane	Grosvenor Place	Side paths
	9	Tuckerman Lane	Rockville Pike	
	10	Tuckerman Lane	Kiss & Ride Entrance	Trail (Existing)

\* Unless otherwise noted, all connection facilities are planned County improvements and are not a part of the existing network.

## 2.2.2.2 Current Pedestrian and Bicycle Conditions

Montgomery County has completed countywide pedestrian and bicycle experience analyses as a part of its master planning efforts. The County's Planning Department developed a [Pedestrian Level of Comfort](#) (PLOC) map that determines the level of comfort based on traffic speeds, number of lanes, and the presence of a buffer between a pathway and the street. Similarly, as a part of the Montgomery County Bicycle Master Plan conducted in 2018, the County calculated the *Bicycle Level of Traffic Stress*<sup>3</sup> (Bike LTS) to identify networks of low, moderate, and high biking stress throughout the county. These conditions are presented in **Figure 20** and **Figure 21** below but are not quantitatively utilized as metrics for this termini screening.

<sup>3</sup> <https://montgomeryplanning.org/wp-content/uploads/2017/11/Appendix-D.pdf>



## 2.2.2.2.1 Pedestrian Level of Comfort

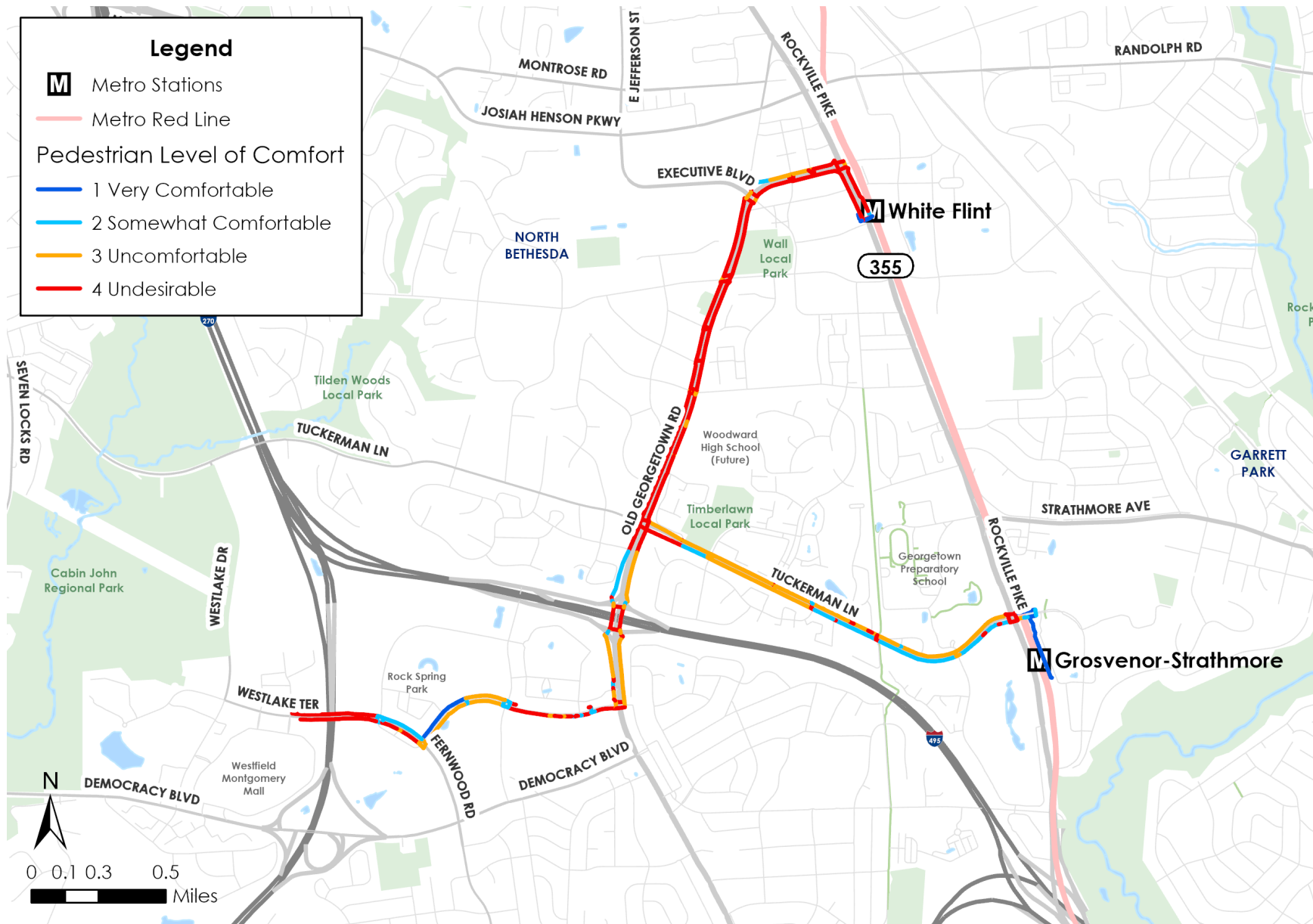


Figure 20: Alternatives Existing Pedestrian Level of Comfort

## 2.2.2.2.2 Bicycle Level of Traffic Stress

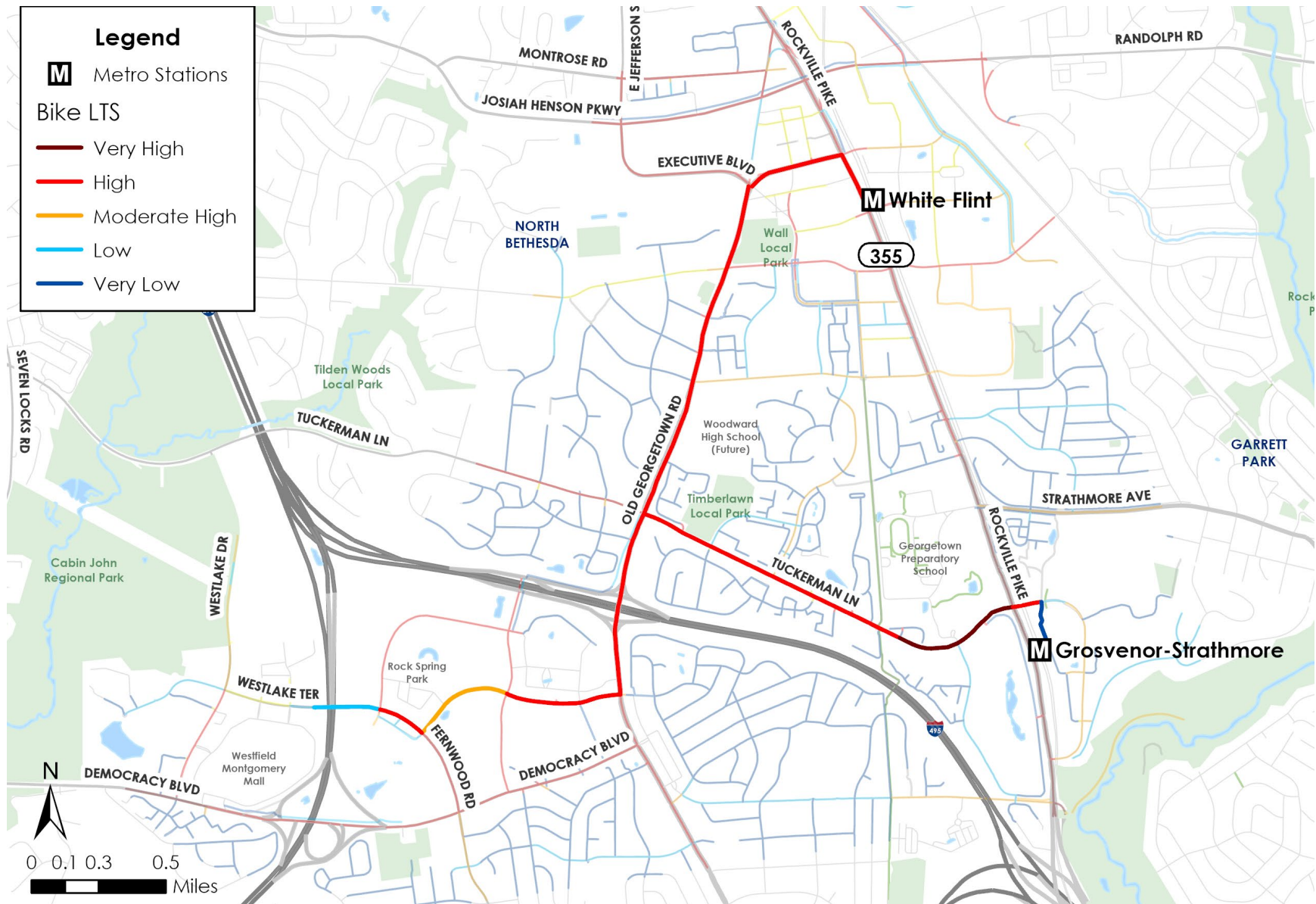


Figure 21: Existing Bike LTS along Alternatives

## 2.3 SUSTAINABLE SOLUTIONS

A primary goal of all Flash BRT routes is to minimize environmental impacts of transit service and utilize cost-effective design. In this section, the two eastern termini alternatives are evaluated based on preliminary measures of capital costs, operational costs, and the potential to support electric fleet. **Table 11** shows the list of metrics used to determine which alternative best aligns with the goal of sustainable solutions.

**Table 12: Sustainable Solutions Termini Screening Metrics**

Goal / Objective	Termini Screening Metrics	Metric Measure
<b>Sustainable Solutions</b>  Minimize environmental impacts and utilize cost-effective design	<b>Potential Right of Way Expansion Needed</b> <i>What is the impact of the BRT on right of way and/or the environment?</i>	Difference in feet between planned right-of-way (ROW) from the Master Plan of Highways and existing ROW, times centerline length (ft) of segment in the alternative alignment.
	<b>Level of Infrastructure Investment</b> <i>What is the high-level magnitude of capital costs?</i>	Estimated magnitude of infrastructure investment (according to various factors) required for the alternative.
	<b>Operational Cost</b> <i>What is the cost (capital and operating) of the BRT service?</i>	Daily and annual cost projections for the alternative.
	<b>Potential to Support Electric Fleet</b> <i>Possibility to convert the fleet to zero-emissions buses?</i>	If the length of the alternative falls within the typical operating range of a battery electric bus (BEB) of 150 miles or less.

### 2.3.1 CAPITAL COSTS

The potential expansion of right-of-way (ROW) and the level of infrastructure investment required for the two eastern termini alternative alignments are summarized in the section below. These metrics help capture the preliminary magnitude of capital costs for each alternative.

#### 2.3.1.1 Potential Right of Way Expansion Needed

To estimate the potential right-of-way expansion needs of each alternative, the study team took the difference between planned and existing ROW for each segment along the alignments and multiplied that by the segment's centerline mileage. Existing ROW was obtained by measuring ROW length for each segment as shown in the County's online [Property Lines Map](#). Planned ROW was obtained from the County's current [Master Plan of Highways](#) map and modified based on assumed cross-sections for each alternative's alignment. All cross-section widths are potential and could be modified to fit in constrained right-of-way but represent a generalized typical section. Thus, this right-of-way needs represent a conservative estimate.

As shown in **Table 12** and **Table 13**, the White Flint Alternative is estimated to have nearly a 3-acre higher ROW expansion need than the Grosvenor Alternative.

**Table 13: White Flint Alternative Estimated Future ROW Expansion Need**

Road	From	To	Centerline Mileage	Ex. Est ROW	Planned ROW*	Future Need (acres)
Old Georgetown Road	Rockville Pike	Grand Park Avenue	0.15	100	120	0.36
Old Georgetown Road	Grand Park Avenue	Executive Blvd at Hoya Drive	0.13	100	120	0.32
Old Georgetown Road	Executive Blvd	Nicholson Ln	0.25	110	126	0.48
Old Georgetown Road	Nicholson Ln	Poindexter Ln	0.34	100	126	1.1
Old Georgetown Road	Poindexter Ln	Woodward High School	0.10	100	126	0.31
Old Georgetown Road	Woodward High School	Tuckerman Ln	0.31	100	126	0.98
Old Georgetown Road	Tuckerman Lane	I-270	0.28	130	130	-
Old Georgetown Road	I-270	Rock Spring Drive	0.25	150	150	-
Rock Spring Drive	Old Georgetown Road	Rockledge Drive	0.34	80	80	-
Rock Spring Drive	Rockledge Drive	Fernwood Road	0.30	80	80	-
Fernwood Road	Rock Spring Drive	I-270 Spur	0.29	80	80	-
Westlake Terrace	I-270 Spur	Transit Hub	0.04	90	90	-
Total Future ROW Estimated Need (acres):						3.5

**Table 14: Grosvenor Alternative Estimated Future ROW Expansion Need**

Road	From	To	Centerline Mileage	Ex. Est ROW	Planned ROW*	Future Need (acres)
Metrorail Entrance	Grosvenor Metrorail Station	Tuckerman Ln	0.13	n/a	n/a	-
Tuckerman Lane	Metrorail Entrance	Rockville Pike	0.08	80	80	-
Tuckerman Lane	Rockville Pike	The Bethesda Trolley Trail	0.44	75	80	0.27
Tuckerman Lane	The Bethesda Trolley Trail	Gloxina Dr	0.54	75	80	0.33
Tuckerman Lane	Gloxina Dr	Old Georgetown Road	0.21	80	80	-
Old Georgetown Road	Tuckerman Lane	I-270	0.28	130	130	-
Old Georgetown Road	I-270	Rock Spring Drive	0.25	150	150	-
Rock Spring Drive	Old Georgetown Road	Rockledge Drive	0.34	80	80	-
Rock Spring Drive	Rockledge Drive	Fernwood Road	0.30	80	80	-
Fernwood Road	Rock Spring Drive	I-270 Spur	0.29	80	80	-
Westlake Terrace	I-270 Spur	Transit Hub	0.04	90	90	-
Total Future ROW Estimated Need (acres):						0.6

*Orange in both the tables signifies where planned ROW exceeds existing*



## 2.3.1.2 Level of Infrastructure Investment

For the termini screening stage of this study, the main components of infrastructure costs were calculated for each alternative for comparison. Infrastructure components that would be the same for both alternatives, such as number of buses, are not included in the probable magnitude of cost comparison.

As shown in **Table 14**, the White Flint alternative has a higher number of proposed stations, traffic signals that will require bus priority modifications, centerline mileage for sidewalk and bike lane enhancements (as shown in the Montgomery Count Pedestrian and Bicycle Master Plans), and centerline mileage for estimated roadway expansion based on the number of transit lanes proposed to be added to the roadway in the County's 2013 Plan. While the Grosvenor alternative has higher centerline mileage for new side path construction and dedicated transit lanes, it is estimated that the White Flint alternatives will require a greater magnitude of infrastructure investment.

Note that the parameters utilized for this infrastructure investment metric analysis are based on the 2013 master plan's station locations, alignment, and dedicated lane assumptions. Therefore, the parameters presented in **Table 14** are subject to refinements in the build alternatives development phase of this study.

**Table 15: Alternatives Magnitude of Infrastructure Investment**

Infrastructure Investment Parameters:	White Flint	Grosvenor-Strathmore
Preliminary Number of Stations	8	6
Number of Traffic Signals	14	13
New Side Path Centerline Mileage	1.28	1.48
New Sidewalk Centerline Mileage	1.67	1.43
New Bike Lane Centerline Mileage	1.67	1.30
Dedicated Transit Centerline Mileage	2.66	2.82
Roadway Expansion Mileage	1.70	0.54
Total Centerline Mileage	2.95	2.91

## 2.3.2 OPERATIONAL COST

**Table 15** presents the anticipated runtime and the estimated daily revenue hours and operating cost for the two alternatives. This runtime calculation assumes that all planned infrastructure improvements are implemented, and the alternatives are operating in a dedicated lane for the majority of their trip. The cost calculation uses Ride On's existing operating cost per revenue hour of \$143.32<sup>4</sup> and assumes the service will operate with a 15-minute frequency all day.

The estimated runtime for the White Flint and Grosvenor Alternatives are similar. The Grosvenor Alternative's runtime is approximately three minutes shorter than White Flint Alternative's runtime. The Grosvenor Alternative is marginally shorter than the White Flint Alternative (2.91 miles versus 2.95 miles) and will operate in a dedicated lane for more of its alignment (97 percent versus 91 percent), two factors which contribute to the alternative having a shorter runtime. Operationally, the shorter runtime does not lead to savings in daily revenue hours or cost. However, it does mean a shorter trip for customers, who can reach a Metrorail station slightly faster if traveling on the Grosvenor Alternative rather than the White Flint Alternative.

**Table 16. Estimated Operating Costs by Alternative**

Alternative	Runtime	Estimated Daily Revenue Hours	Estimated Daily Operating Cost
White Flint	21 minutes	36 hours and 50 minutes	\$5,279.00
Grosvenor	18 minutes	36 hours and 50 minutes	\$5,279.00

<sup>4</sup> Based on FY 2020 NTD

## 2.3.3 POTENTIAL TO SUPPORT ELECTRIC FLEET

The implementation of zero emissions bus (ZEB) technologies, such as battery electric buses (BEBs) and fuel cell electric buses (FCEBs), is taking root across the United States as a mechanism to improve sustainability and reduce environmental impacts. As federal funding for ZEB transit services increases, this growth in fleet conversions will likely continue. Measuring the potential for either alternative to support an electric fleet is a metric for how well environmental impacts are (or have the potential to be) minimized by this proposed BRT.

At this stage in the study, the potential for electrification of the BRT fleet cannot be extensively measured or quantified due to various uncertainties surrounding service frequency, alignment, and more. The total centerline mileage of the White Flint and Grosvenor alternatives is 2.95 miles and 2.9 miles, respectively, both of which fall well below the typical BEB operating range and therefore do not preclude conversion to ZEBs.

## 2.4 COMMUNITY EQUITY

Community Equity aligns directly with the countywide [Thrive Montgomery 2050](#) Master Plan goals and is an important addition to the County's transit planning process. Each termini screening metric associated with this goal measures the accessibility of transit service for a particular underserved population, as shown in **Table 16**. Underserved populations reflect those defined in the Maryland-National Capital Park and Planning Commission (MNCPPC) [Equity Focus Areas Analysis](#). Additionally, proximity to Equity Focus Areas was measured to ensure County-identified areas of emphasis are captured in the termini screening process.

**Figure 22** through **Figure 29** present analysis on specific underserved populations in the study area, highlighting which groups will have access to new transit service. **Table 17** summarizes the results for the two alternatives. The analysis uses block group level demographic and socio-economic data from ACS 2015-2019 5-year averages and 2019 LEHD job data. In general, there isn't a significant difference in the number of underserved populations within the analysis areas of each alternative and concentrations of underserved populations are found at all three terminus points.

**Table 17: Community Equity Termini Screening Metrics**

Goal / Objective	Termini Screening Metrics	Metric Measure
<b>Community Equity</b>  Provide improved and accessible transit service for underserved populations	<b>Access for Low-Income Households</b> <i>What low-income households would the BRT provide access to?</i>	Quantity of low-income households within the alternative analysis buffer, according to 2015-2019 ACS 5-year averages.
	<b>Access for Zero-Car Households</b> <i>What zero-car households would the BRT provide access to?</i>	Quantity of zero-car households within the alternative analysis buffer, according to 2015-2019 ACS 5-year averages.
	<b>Access for Low English Proficiency Populations</b> <i>What low English proficiency households would the BRT provide access to?</i>	Quantity of low English proficiency within the alternative analysis buffer, according to 2015-2019 ACS 5-year averages.
	<b>Access for Seniors</b> <i>What senior populations would the BRT provide access to?</i>	Quantity of seniors within the alternative analysis buffer, according to 2015-2019 ACS 5-year averages.
	<b>Access for Persons with Disabilities</b> <i>What persons with disabilities would the BRT provide access to?</i>	Quantity of persons with disabilities within the alternative analysis buffer, according to 2015-2019 ACS 5-year averages.
	<b>Access for Minority Populations</b> <i>What minority populations, would the BRT provide access to?</i>	Quantity of persons of minority populations within the alternative analysis buffer, according to 2015-2019 ACS 5-year averages.
	<b>Access for Lower Paying Jobs</b> <i>Where are there job locations that may be lower income or one of multiple jobs is located?</i>	Quantity of retail and restaurant jobs within alternative analysis buffer.
	<b>Number of Equity Focus Areas Within ¼ Mile of Alignment</b> <i>What underserved populations, such as equity focus areas, would the BRT provide access to?</i>	Number of Montgomery County equity focus areas (EFAs) within alternative analysis buffer.

Table 18. Equity Metrics by Alternative

Metric	White Flint Alternative	Grosvenor Alternative
Low-Income Households <sup>5</sup>	2,400 households	1,900 households
Zero-Car Households	800 households	800 households
Limited English Proficiency (LEP) Individuals <sup>6</sup>	2,400 people	1,500 people
Seniors <sup>7</sup>	3,700 people	3,300 people
Persons with Disabilities <sup>8</sup>	1,700 people	1,700 people
Minority Population <sup>9</sup>	8,900 people	8,200 people
Lower-Paying Jobs <sup>10</sup>	7,900 jobs	4,800 jobs
Equity Focus Areas	2 (within ¾ mile)	1 (within ¾ mile)

Some key takeaways regarding the equity metrics are as follows:

- For most metrics, equity populations are concentrated in the areas directly surrounding the termini points (White Flint Metrorail Station and Grosvenor-Strathmore Metrorail Station).
- Both alternatives serve roughly the same number of zero-car households and persons with disabilities, and the White Flint Alternative serves less than 20 percent more low-income households, seniors, and minorities.
- There are a greater number of lower-paying jobs (approximately 60 percent) within walking distance to the White Flint Alternative, compared to the Grosvenor Alternative, where jobs are concentrated largely around Montgomery Mall.
- Close to 1,000 more individuals with limited English proficiency reside in the White Flint Alternative, compared to the Grosvenor Alternative.
- There is an additional County equity focus area east of the White Flint terminus, along Randolph Road, as shown in **Figure 29**.

<sup>5</sup> Low-income is defined as households earning 150 percent of the federal poverty line.

<sup>6</sup> LEP is defined as individuals who speak English less than very well.

<sup>7</sup> Senior is defined as an individual who is 65 or older.

<sup>8</sup> Persons with disabilities is defined as the civilian population 18 years of age or older with a disability.

<sup>9</sup> Minority is defined as an individual who identifies as non-White or Hispanic.

<sup>10</sup> Lower-paying jobs were defined as all retail and restaurant jobs.



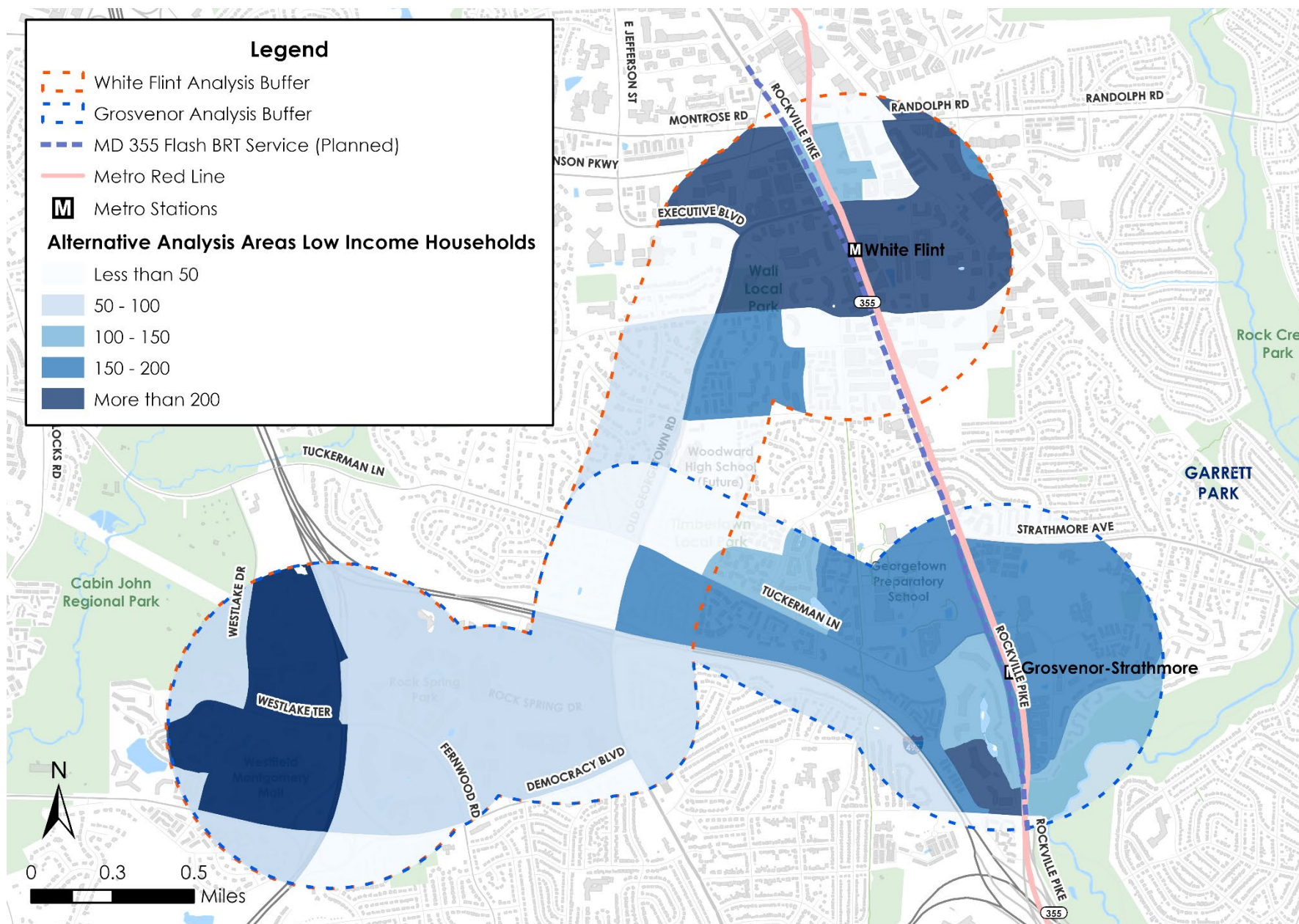
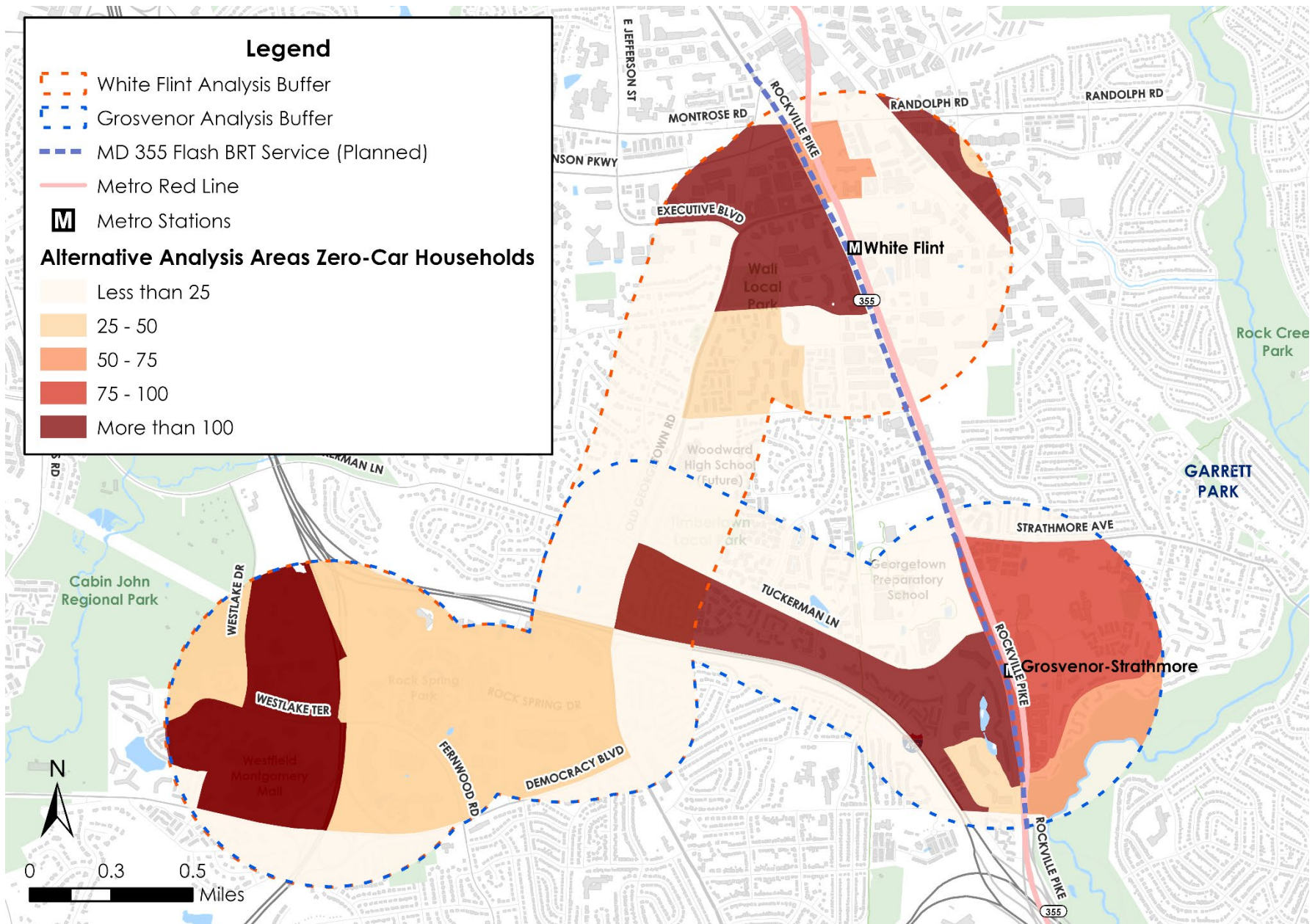
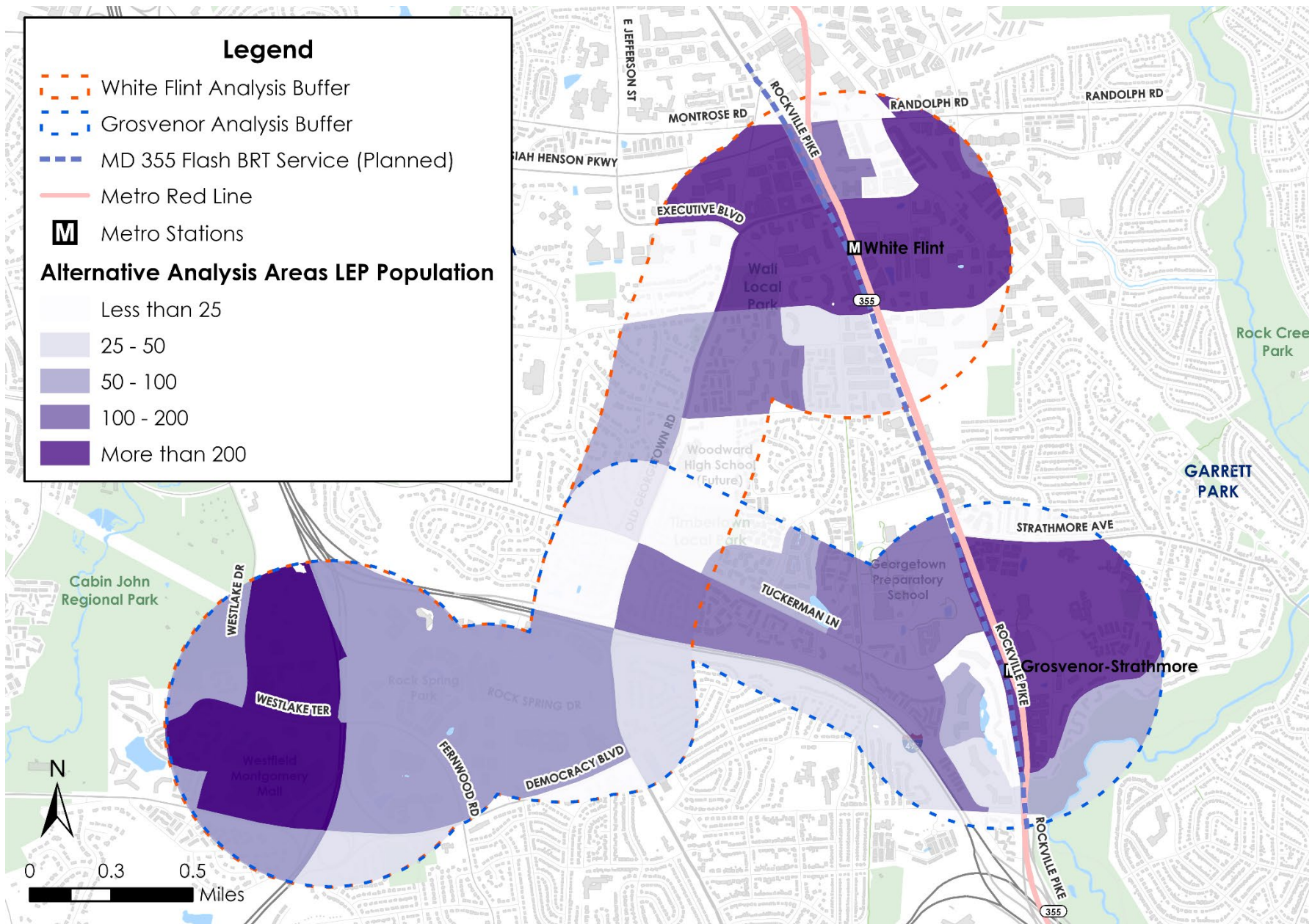
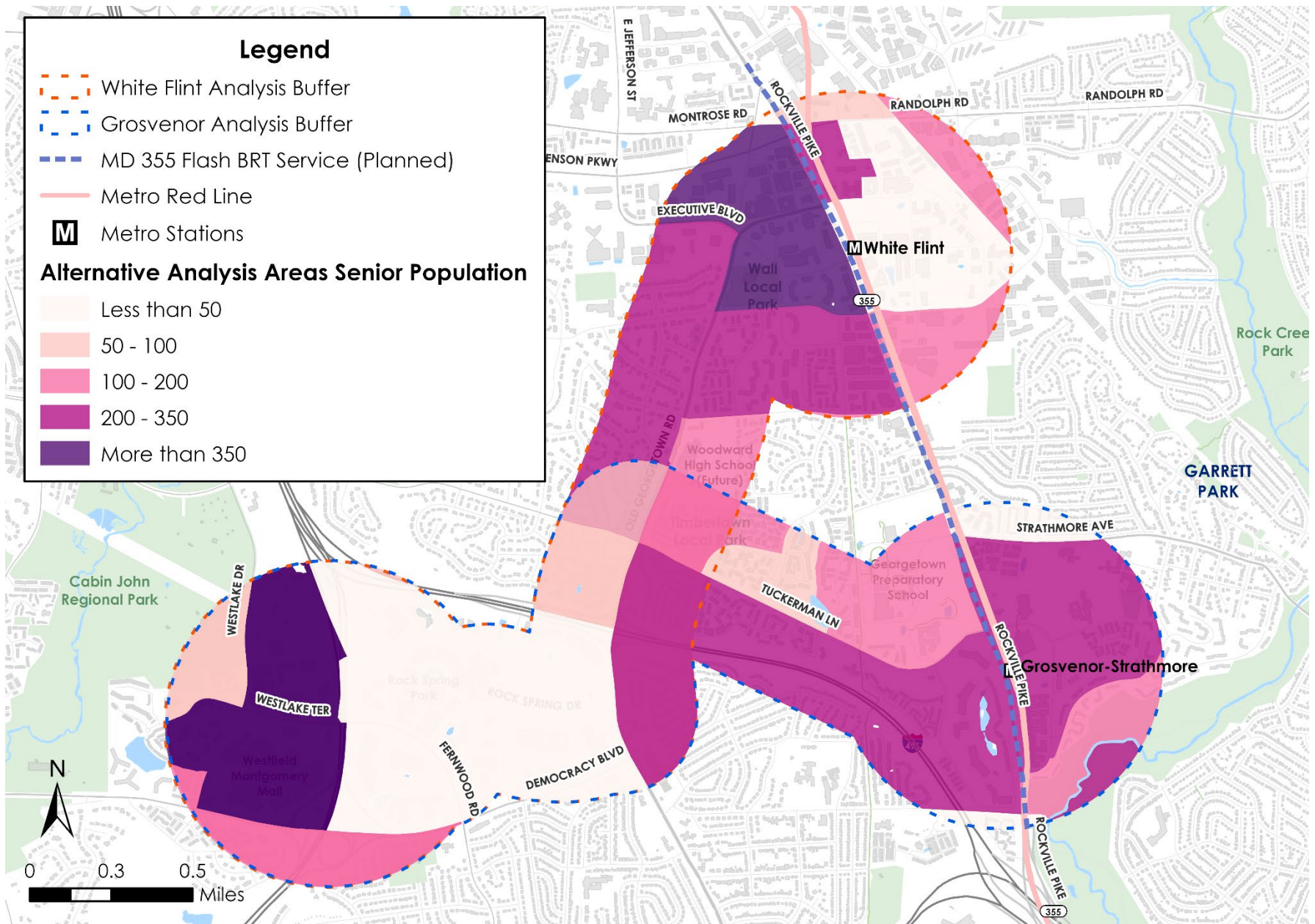


Figure 22. Low Income Households in the Alternative Analysis Area











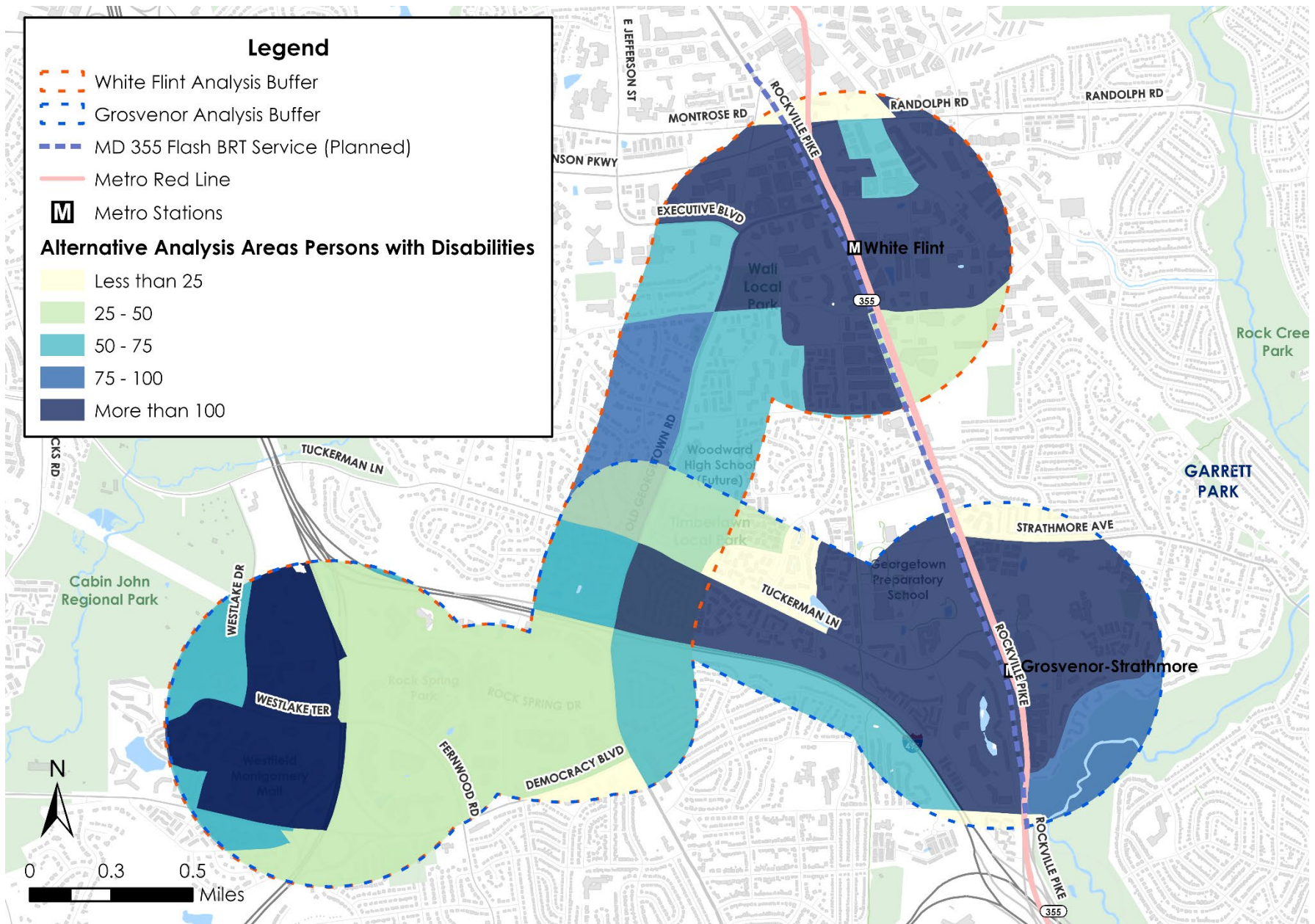
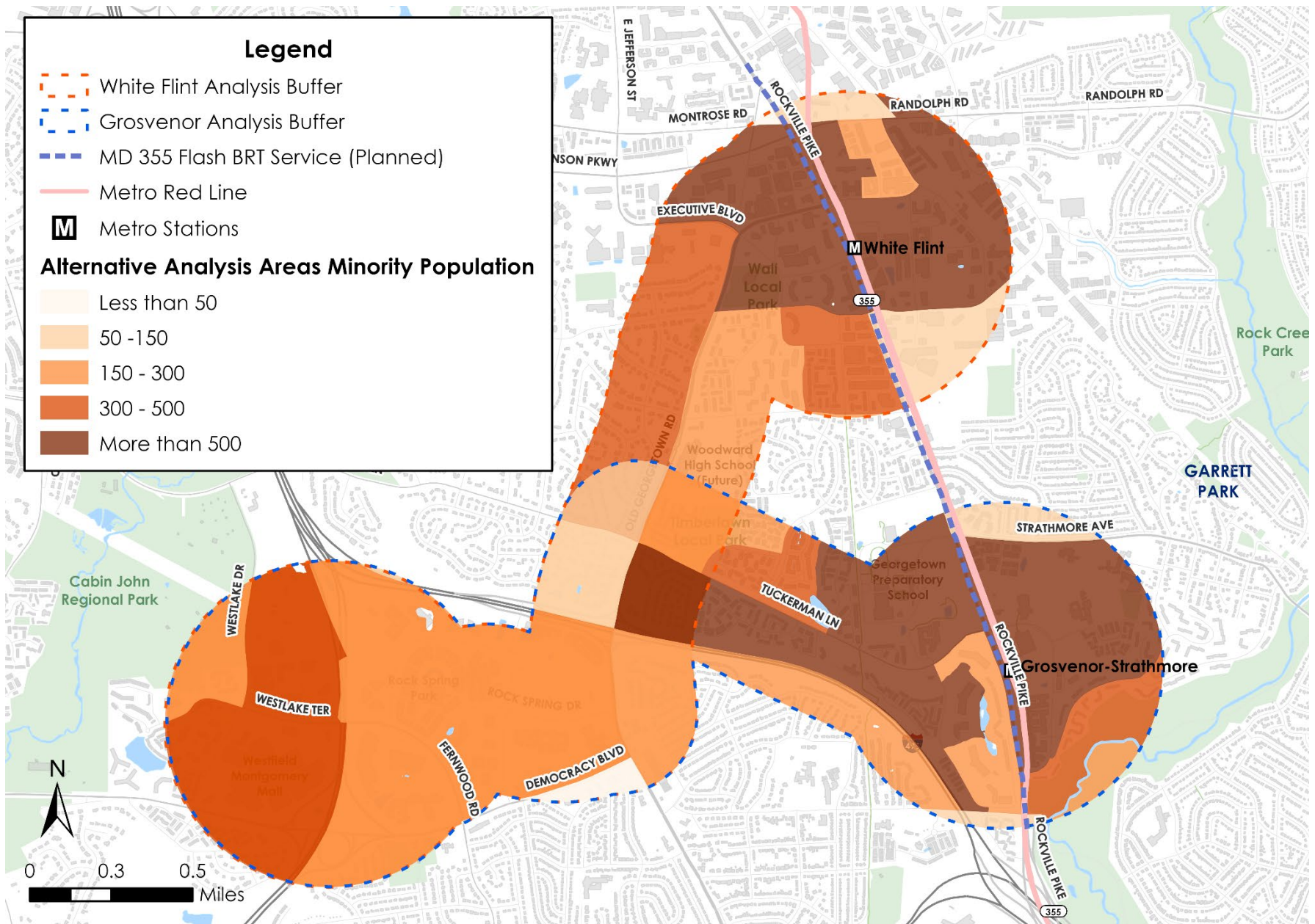


Figure 26. Individuals with Disabilities in the Alternatives Analysis Areas





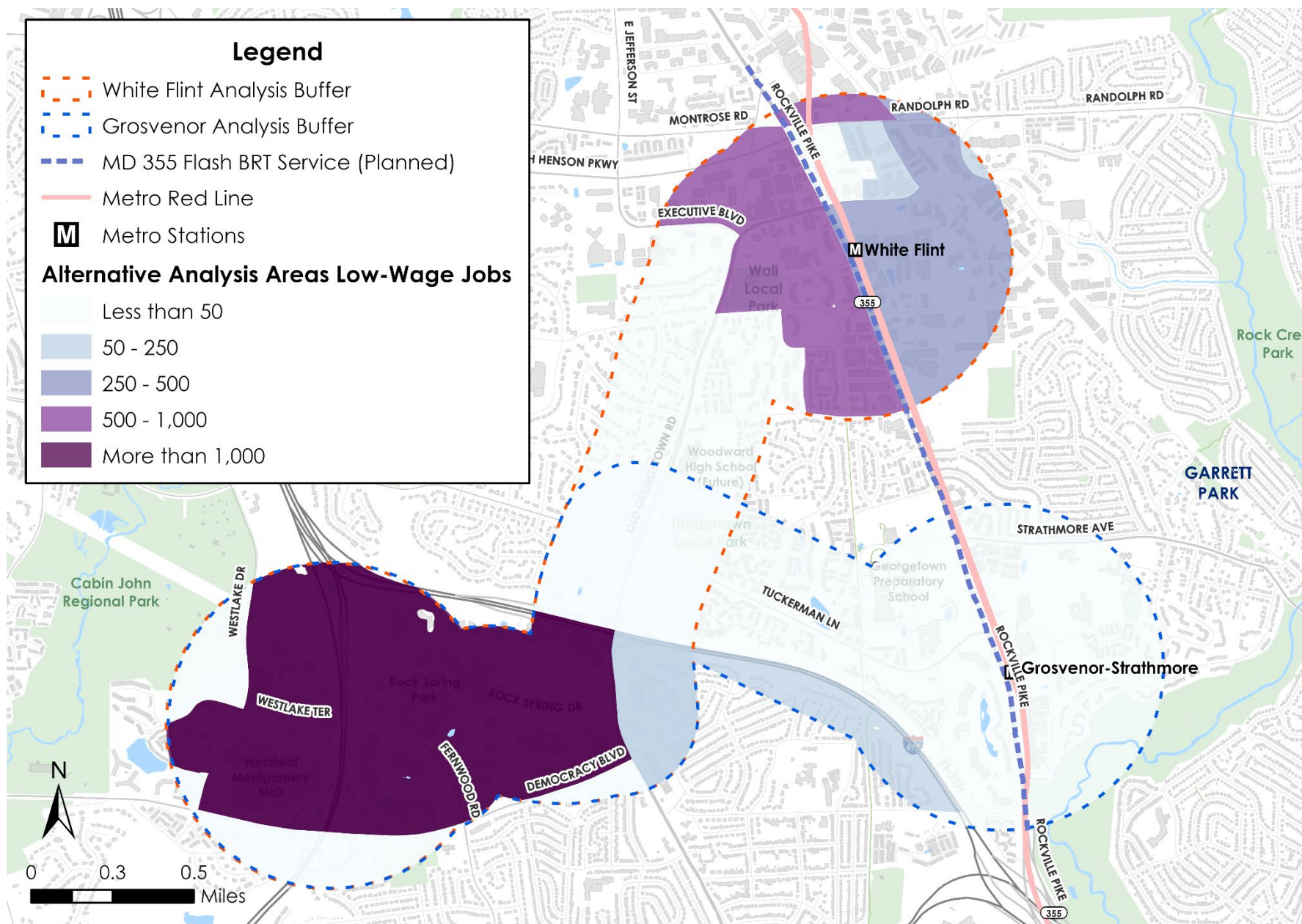


Figure 28. Low-Wage Jobs in the Alternatives Analysis Areas



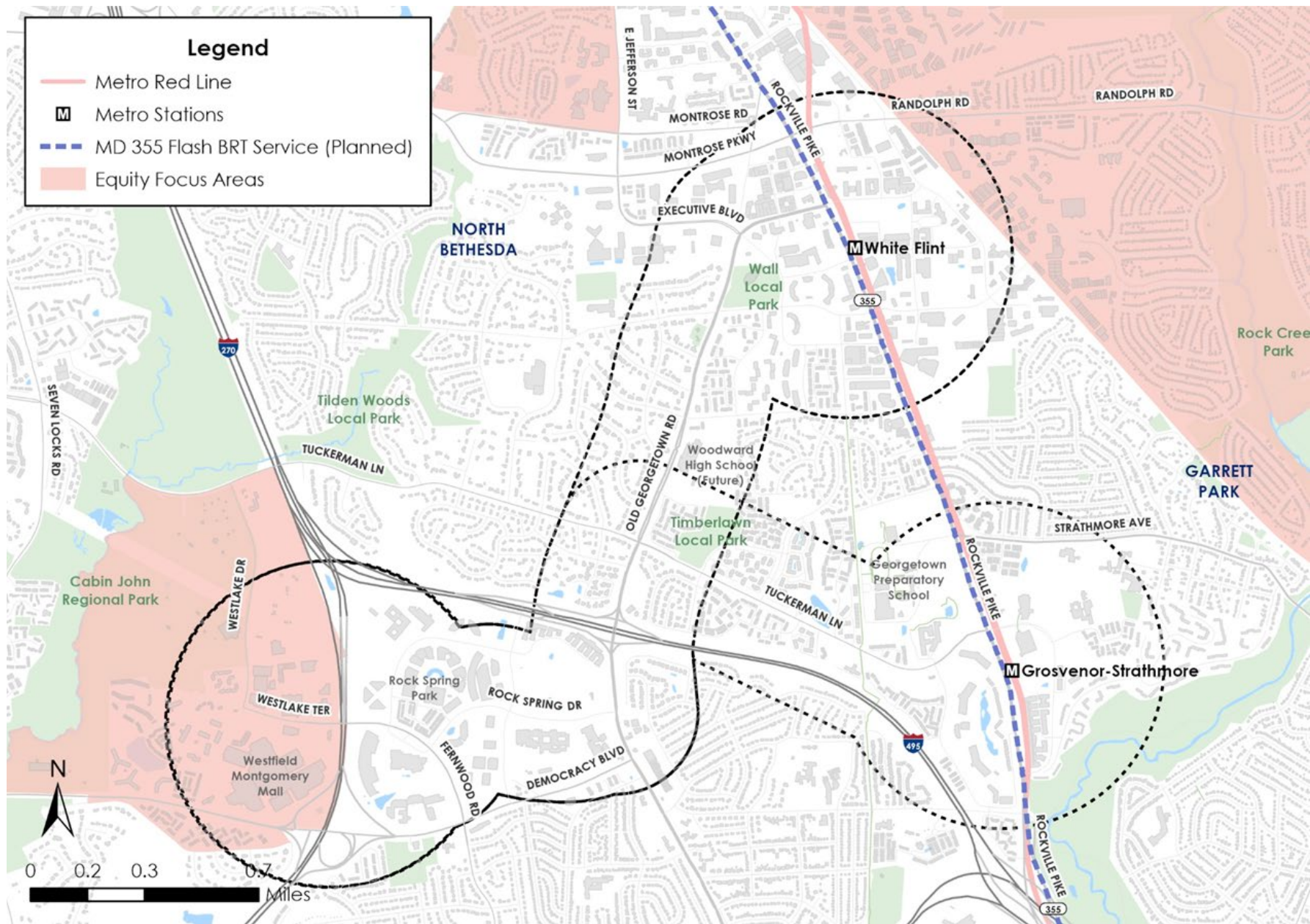


Figure 29. Equity Focus Areas in the Alternatives Analysis Areas

## 2.5 ECONOMIC GROWTH

Promoting economic growth is one of the key benefits of developing high-quality transit services. The three termini screening metrics for this goal (shown in **Table 18**) measure how supportive transit may be for economic development and activity in the study area, especially high-density, walkable, sustainable, transit-oriented development that the county is actively encouraging through the Thrive Montgomery 2050 Master Plan.

**Table 19: Economic Growth Termini Screening Metrics**

Goal / Objective	Termini Screening Metrics	
<b>Economic Growth</b>  Promote economic development with appealing and functional transit	<b>Connections to Planned Development</b> <i>How much economic growth may be brought to the area through pipeline developments?</i>	Total approved gross floor area (square feet) of all pipeline developments within the alternative analysis area.
	<b>Projected Future Activity (Jobs and People) Along Corridor</b> <i>What is the change in activity density along the corridor between 2020 and 2030?</i>	Percent increase of from 2020 activity density (jobs + population) to 2030 activity density within the alternative analysis area.
	<b>Support for Transit Oriented Development</b> <i>Which corridor has the potential to support the most transit-oriented development?</i>	Total acres of zoning blocks that have the potential to support transit-oriented development.

### 2.5.1 CONNECTIONS TO PLANNED DEVELOPMENT

New developments may yield increased activity and job opportunities to an area. Therefore, the quantity and scale of pipeline developments within a given proximity to the proposed BRT corridor can serve as an approximate measure of how much economic growth may come to an area in the future. Montgomery County Pipeline Developments are publicly available and were used to measure connections to planned development for each alternative. Any pipeline developments that fall (even partially) within the alternatives analysis buffers were attributed as a planned development adjacent to the respective alternative. Due to the varying sizes of each planned development, the total approved gross floor area (GFA, square feet) was used as the quantity to compare alternatives' connections to planned development, rather than a count of pipeline developments falling within the analysis buffer. **Figure 30** shows the pipeline developments connected to each alternative, and **Table 19** breaks down the highlighted pipeline developments by name, development type, approved GFA, and associated alternative.



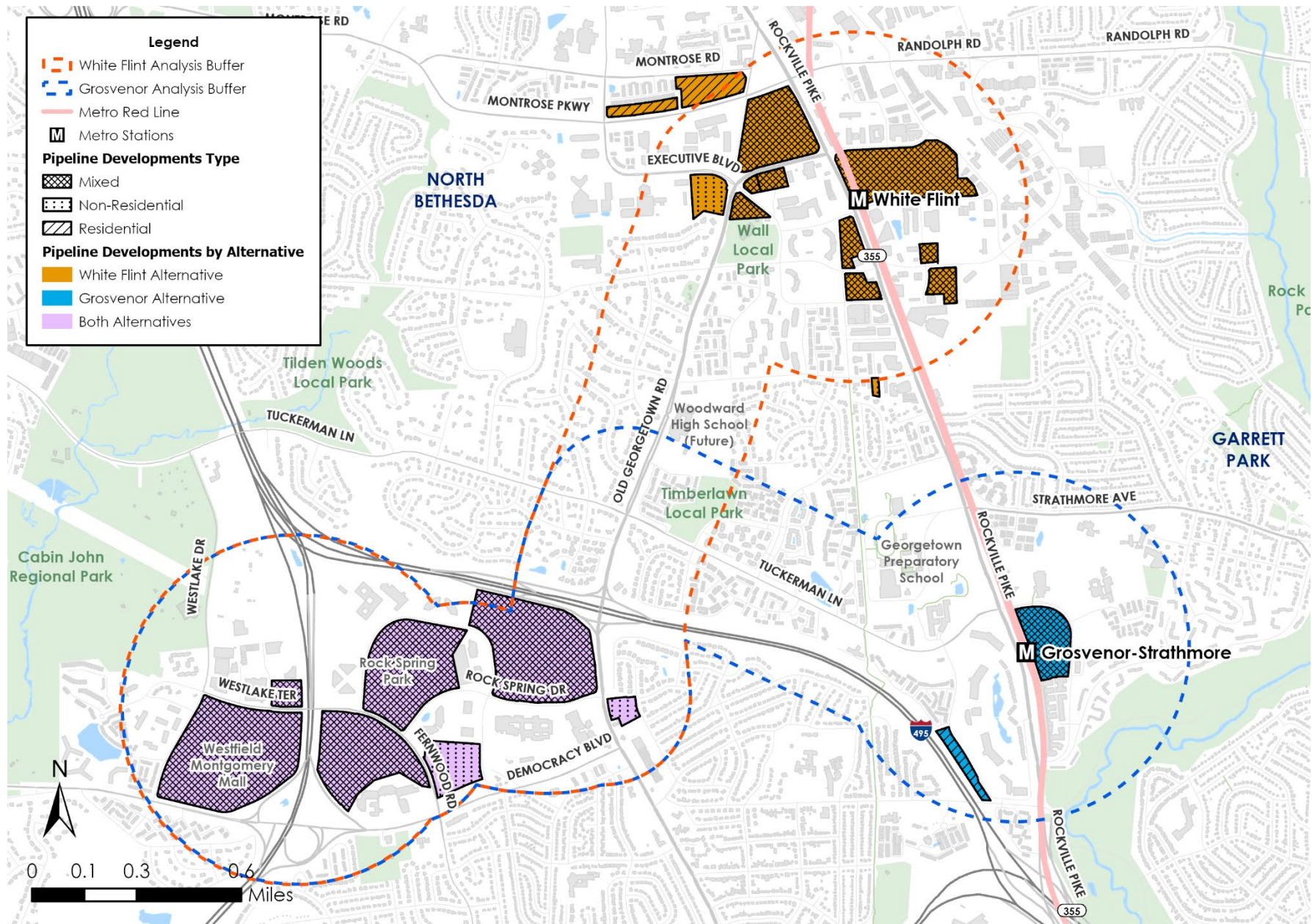


Figure 30. Pipeline Developments by Development Type and Alternative

Table 20: Pipeline Development Details by Alternative

Development Name	Development Type	Approved GFA (Gross Floor Area)	Alternative	
			White Flint	Grosvenor-Strathmore
Saul Centers White Flint West	Mixed	204,000	✓	
5500 Edson Lane	Non-Residential	13,000	✓	
White Flint View	Mixed	30,000	✓	
Washington Science Center	Non-Residential	141,000	✓	
VOB Development	Mixed	110,000	✓	
Wilgus	Residential	15,000	✓	
East Village at North Bethesda Gateway	Mixed	36,000	✓	
North Bethesda Market II	Mixed	67,000	✓	
Mid Pike Plaza	Mixed	1,976,000	✓	
North Bethesda Town Center	Mixed	1,430,000	✓	
Gables White Flint	Mixed	31,000	✓	
Grosvenor Place	Residential	0		✓
Strathmore Square	Mixed	318,000		✓
Westfield Montgomery Mall	Mixed	2,063,000	✓	✓
Ourisman Ford	Mixed	0	✓	✓
Wildwood Manor Shopping Center	Non-Residential	44,000	✓	✓
Rock Spring Center	Mixed	1,080,000	✓	✓
Rock Spring Park	Non-Residential	464,000	✓	✓
ELP Bethesda at Rock Spring	Mixed	6,000	✓	✓
Rock Spring Park	Mixed	1,573,000	✓	✓
<b>Total</b>			<b>9,283,000</b>	<b>5,548,000</b>

In summary, the White Flint alternative has far more connections to planned development than the Grosvenor alternative. In total, White Flint has connections to approximately 9.3 million square feet of planned development, whereas Grosvenor has connections to approximately 5.6 million square feet of planned development. Therefore, the total gross floor area of planned development connected to White Flint is roughly 1.7 times more than that of Grosvenor.

## 2.5.2 PROJECTED FUTURE ACTIVITY (JOBS AND PEOPLE) ALONG CORRIDOR

**Figure 31** shows the activity density (jobs and population) projected for 2030. In 2020, the area surrounding the White Flint Metrorail currently has high population and employment density, as does a smaller area near the Grosvenor Metro. The low and high thresholds are based on quantiles, or portions of the range. The 2020 population per acre ranges from 2 to 24 and the 2020 jobs per acre ranges from 0 to 67. In 2030, the population per acre ranged from 2 to 54 and the jobs per acre ranged from 0 to 107. The area south of I-270 currently has high employment density but low population density. By 2030, the entire area surrounding the White Flint and Grosvenor Metrorail stations will have high employment and population densities, but only the area surrounding the White Flint Metrorail will have a density increase of greater than 50 percent. The analysis shown in **Table 20** is based on the population and employment estimates from the MWCOG regional travel demand forecasting model, which uses traffic analysis zone (TAZ). Results represent job and population densities per acre for each TAZ bordering the alignment.

**Table 21. Activity Density by Alternative for 2020 and 2030**

Alternative	Jobs + Population Density 2020 (per acre)	Jobs + Population Density 2030 (per acre)	Percent Increase (%)
White Flint	28.0	36.7	31%
Grosvenor	19.9	20.3	2%



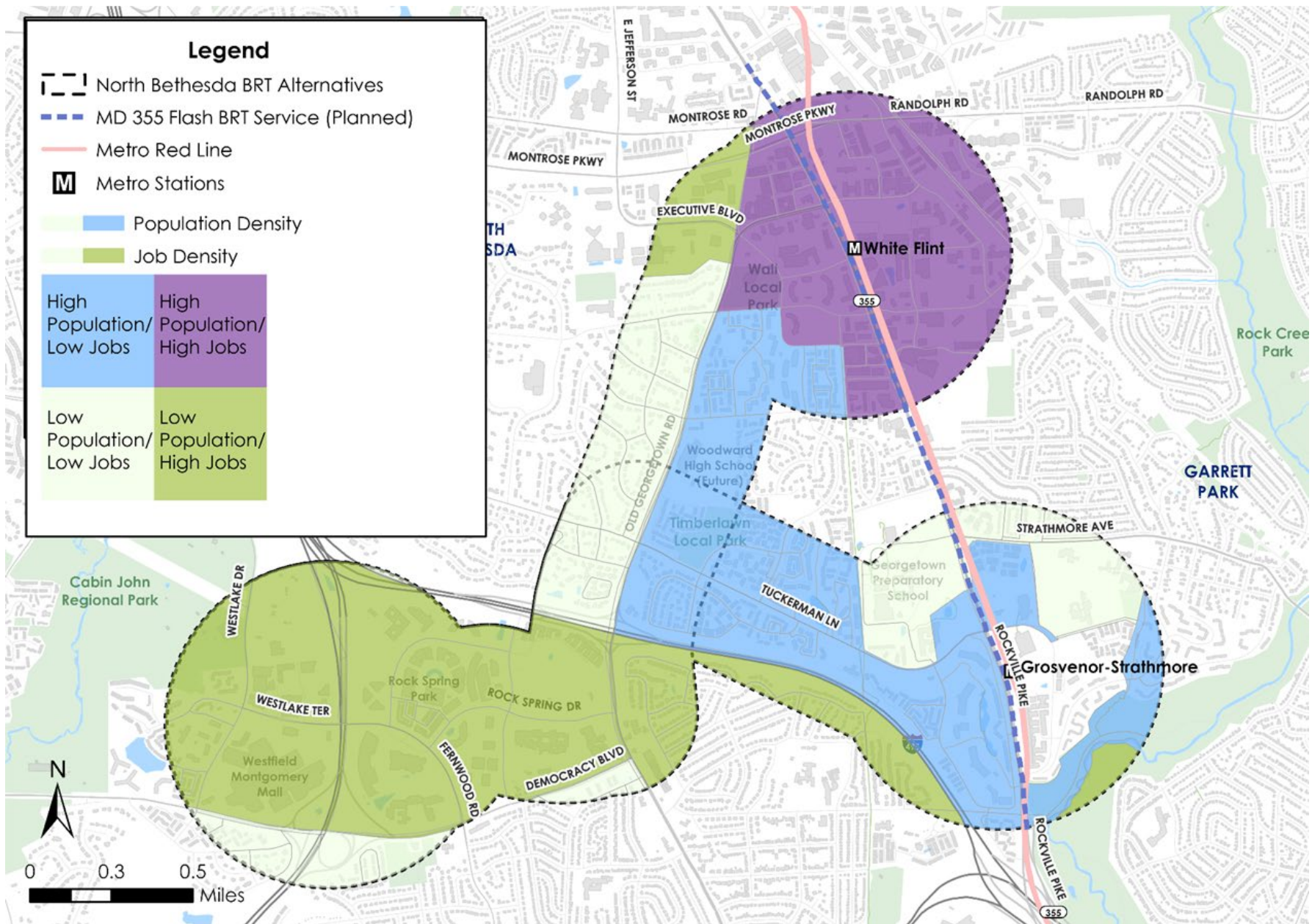


Figure 31. 2030 Activity Density (Population + Jobs)

## 2.5.3 SUPPORT FOR TRANSIT-ORIENTED DEVELOPMENT

Some zoning types and/or land uses lend themselves more to transit-oriented development (TOD) than others. To measure the potential support for (TOD) for each alternative, Montgomery County zoning blocks were trimmed to the alternative analysis buffers, after which the total area (in acres) of each zoning block type was calculated. Using the descriptions of each zoning block type in the Montgomery County Zoning Ordinance, the team applied a binary (yes or no) assessment of whether a given zoning type had the potential to support TOD or not. Zoning types categorized as having potential to support TOD generally included higher densities and/or mixed uses. After this assessment, the total area of land with the potential to support TOD was calculated as a proxy for potential economic growth. Note that this measure does not factor in the level of development, but rather utilizes the land area of each zoning block. **Figure 32** shows the zoning blocks falling within the analysis buffers of both alternatives. **Table 21** presents the zoning types, definitions, categorization, and total acreage for each alternative.



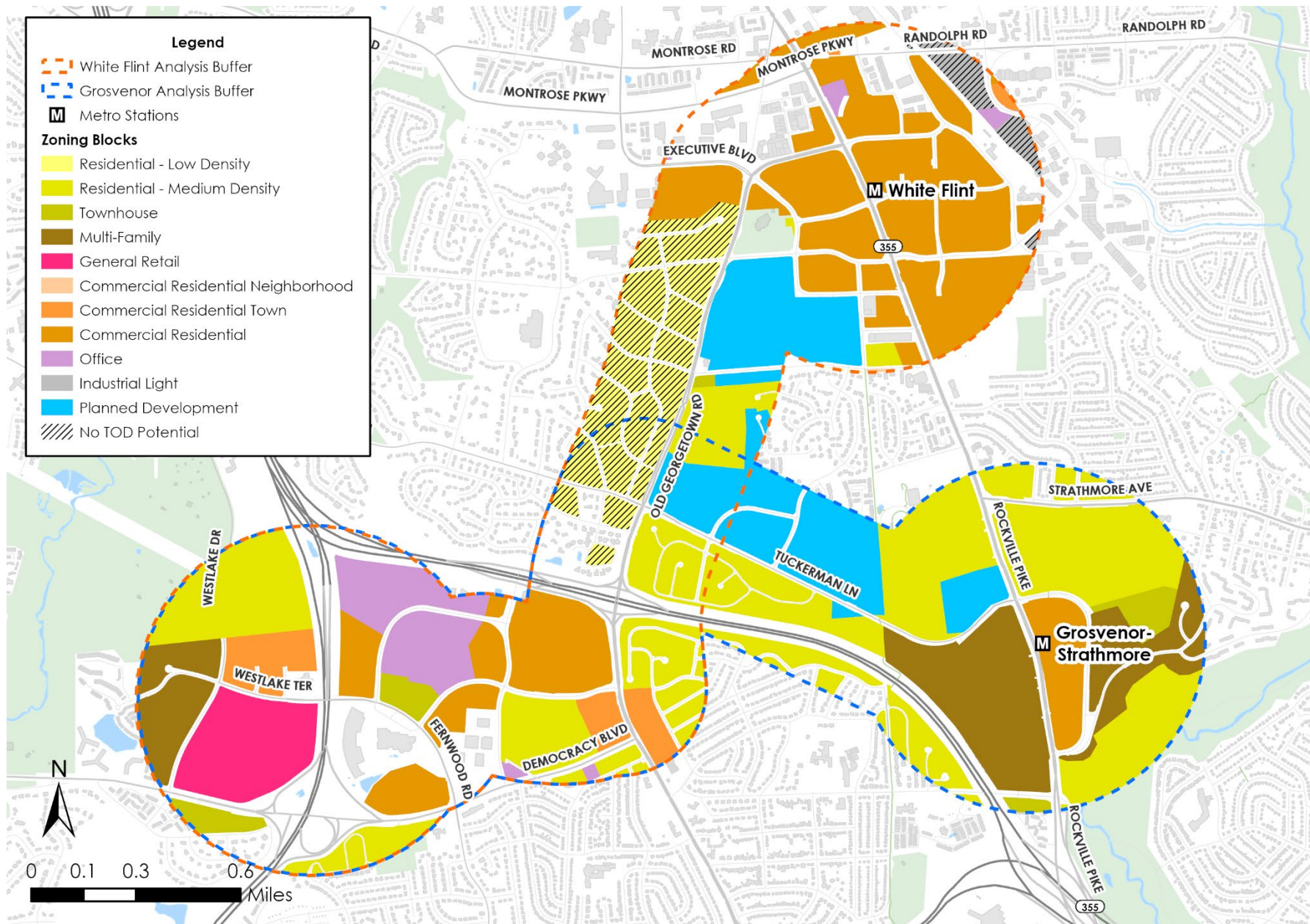


Figure 32. Zoning Blocks by Alternative

**Table 22. Total Transit-Oriented Development Land Area by Alternative**

Zoning Type	County Zoning Type Definition	Total Land Area (Acres)	
		White Flint	Grosvenor-Strathmore
Residential - Medium Density	Intended to provide designated areas of the County for moderate density residential uses. The predominant use is residential in a duplex or detached house. A limited number of other building types may be allowed.	213.3	461.7
Townhouse	Intended to provide designated areas of the County for residential purposes at slightly higher densities than the Residential – Medium Density zones.	20.2	33.8
Multi-Family	Intended to provide designated areas of the County for higher-density, multi-unit residential uses. The predominant use is residential in an apartment building, although detached house, duplex, and townhouse building types are allowed.	39.7	167.8
General Retail	Intended for commercial areas of a general nature, including regional shopping centers and clusters of commercial development.	61.2	61.2
Commercial Residential Neighborhood	Intended for pedestrian-scale, neighborhood-serving mixed-use centers and transitional edges. Retail tenant ground floor footprints are limited to preserve community scale.	0.4	0.0
Commercial Residential Town	Intended for small downtown, mixed-use, pedestrian-oriented centers and edges of larger, more intense downtowns. Retail tenant ground floor footprints are limited to preserve the town center scale. Transit options may include light rail, Metro, and bus.	48.1	45.2
Commercial Residential	Intended for larger downtown, mixed-use, and pedestrian-oriented areas in close proximity to transit options such as Metro, light rail, and bus. Retail tenant gross floor area is not restricted.	352.4	132.9
Office	Intended for office and employment activity combined with limited residential and neighborhood commercial uses.	70.9	66.0
Planned Development	A development in this zone should have a balanced and coordinated mixture of residential and convenience commercial uses, other commercial and industrial uses shown on the area master plan, and related public and private facilities.	104.8	110.8
<b>Potential for Transit-Oriented Development Subtotal</b>		<b>911.0</b>	<b>1079.4</b>

In summary, the Grosvenor-Strathmore alternative has slightly more transit-oriented development potential (by proxy of zoning type) than the White Flint alternative, but only by a measure of approximately 168 acres, or approximately 18 percent more.

## 2.6 PUBLIC SAFETY

The goal of public safety is to better capture the departmental importance of striving for the safety of the community in all projects. Notably, Vision Zero documents for the County point to BRT projects as opportunities to promote safety. The three metrics to evaluate each alternative's impact toward improving street safety and increasing community livability and wellness is shown in **Table 22**. It should be noted that a BRT project will not necessarily address all safety issues along the corridor, however it has the potential to address some. Future phases can use the Montgomery County predictive safety analytics to assess the potential for improved safety based on a proposed cross-section.

**Table 23: Public Safety Termini Screening Metrics**

Goal / Objective	Termini Screening Metrics	
Public Safety  Improve safety of our streets and the livability and wellness of our communities	<b>Potential to Improve Vulnerable Road User (VRU) Safety</b> <i>Where is there room to improve safety for bicyclists and pedestrians along the corridor?</i>	Total number of VRU crashes that occurred along the alternative alignment in the last five years (2017-2021).
	<b>Potential to Improve Vehicular Safety</b> <i>Where is there room to improve motorist safety along the corridor?</i>	Total number of motor-vehicle only crashes that occurred along the alternative alignment in the last five years (2017-2021).
	<b>Connection to Green Space</b> <i>Will the alternative improve connections to parks/green space, and therefore increase livability for BRT users?</i>	Acres of public green space accessible within the alternative analysis buffer area.

### 2.6.1 POTENTIAL TO IMPROVE VULNERABLE ROAD USER (VRU) SAFETY

Vulnerable road users (VRUs), bicyclists and pedestrians, are more vulnerable on the roadway than individuals traveling in motor vehicles or transit. **Figure 33** shows the location of all the vulnerable road user crashes that have occurred along the study area corridors in the past five years (2017 to 2021). In total, 15 crashes involving pedestrians or bicyclists occurred, all of which resulted in either fatalities or injuries (no property damage, only crashes). **Table 23** presents a quantitative comparison of the VRU-involved crashes that occurred on each of alternative corridors.



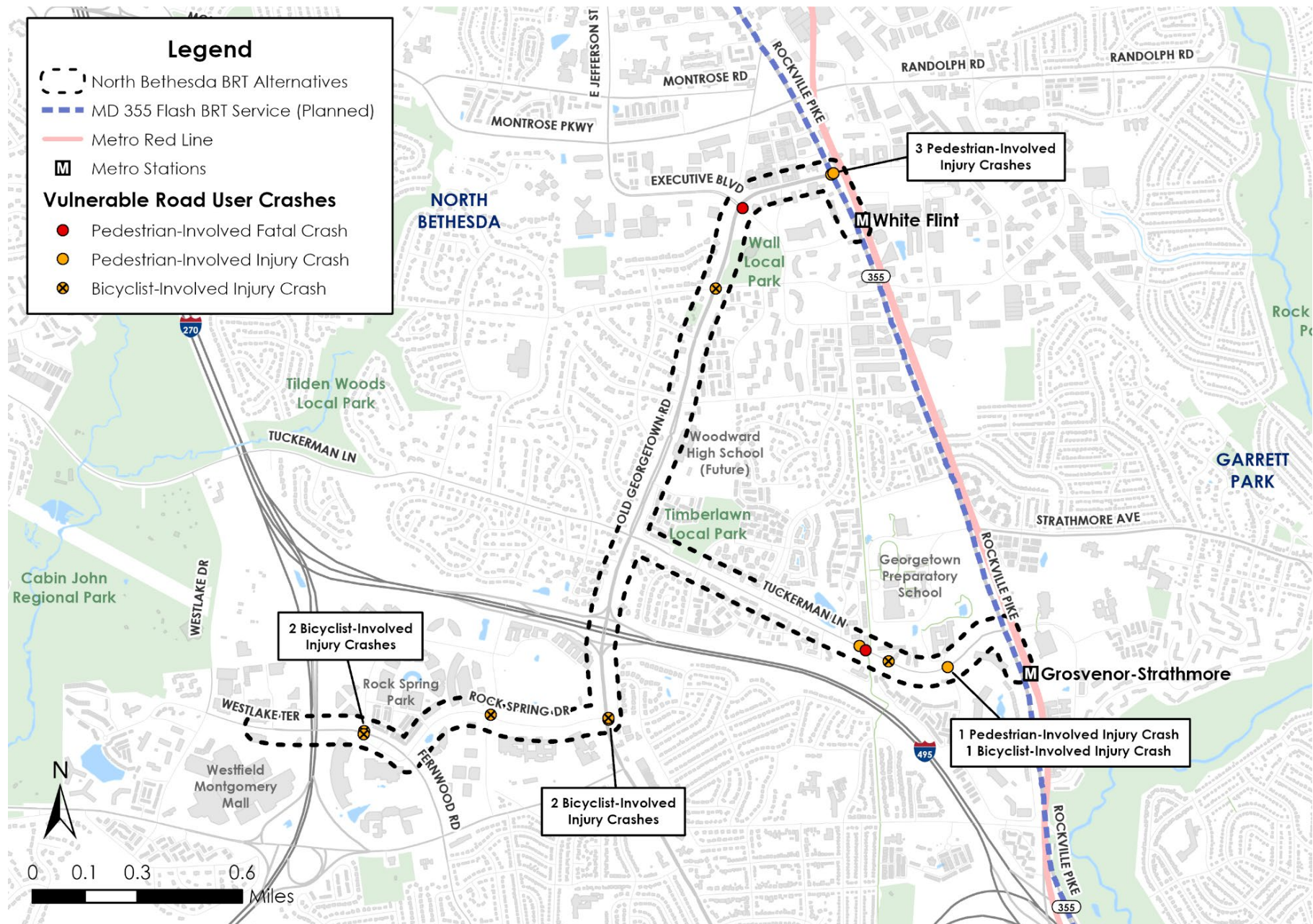


Figure 33. Vulnerable Road User Crashes

Table 24. VRU Crash Comparison of Alternatives

Alternative	Bicyclist-Involved Injury Crashes	Bicyclist-Involved Fatal Crashes	Pedestrian-Involved Injury Crashes	Pedestrian-Involved Fatal Crashes	Total VRU-Involved Crashes
Grosvenor-Strathmore	7	0	2	1	10
White Flint	6	0	3	1	10

Both alternatives experienced 10 VRU crashes during the past 5 years, 1 of which was a fatal VRU crash on each alternative. Therefore, both alternatives could be considered equal in their potential to improve VRU safety with the implementation of a BRT route.

## 2.6.2 POTENTIAL TO IMPROVE VEHICULAR SAFETY

Excluding crashes involving bicyclists and pedestrians, there were 350 motor vehicle crashes along the transitway corridor in the past 5 years (2017 to 2021), none of which resulted in motorist fatalities. **Figure 34** shows the total quantity and locations of motor-vehicle only crashes on both alternatives. The Grosvenor-Strathmore alternative had a total of 206 motor-vehicle only crashes in the last five years, whereas the White Flint alternative had 298. As a result, there is more opportunity to improve motorist safety with the implementation of a BRT route on the White Flint alternative, in comparison with the Grosvenor-Strathmore alternative. Nonetheless, there is still some opportunity to improve motorist safety on both alternatives. It should be noted that both alternatives had approximately the same breakdown of motor-vehicle crash types—slightly more than 35% were injury crashes, and a little less than 65% were property damage only crashes.



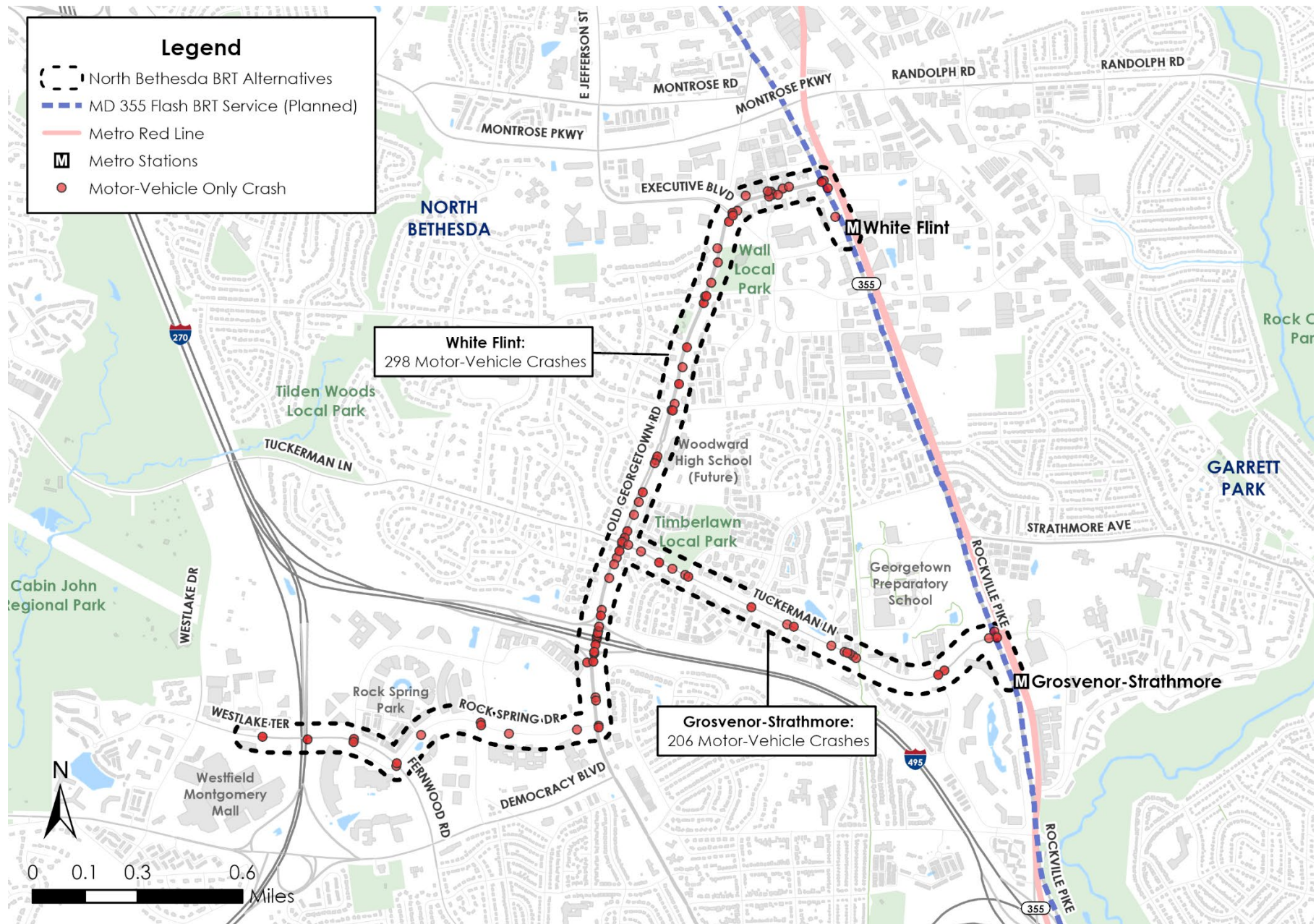


Figure 34. Motor Vehicle Crashes

## 2.6.3 CONNECTION TO GREEN SPACE

The Public Safety objective statement references improving the livability of the community's streets and overall community wellness. One measure of this is connections to green space. **Figure 35** and **Figure 36** show the public green space located within the analysis buffers for the White Flint and Grosvenor-Strathmore alternatives, respectively. **Table 24** breaks down the total green space within each alternative analysis area by park name, park type, and total acreage.



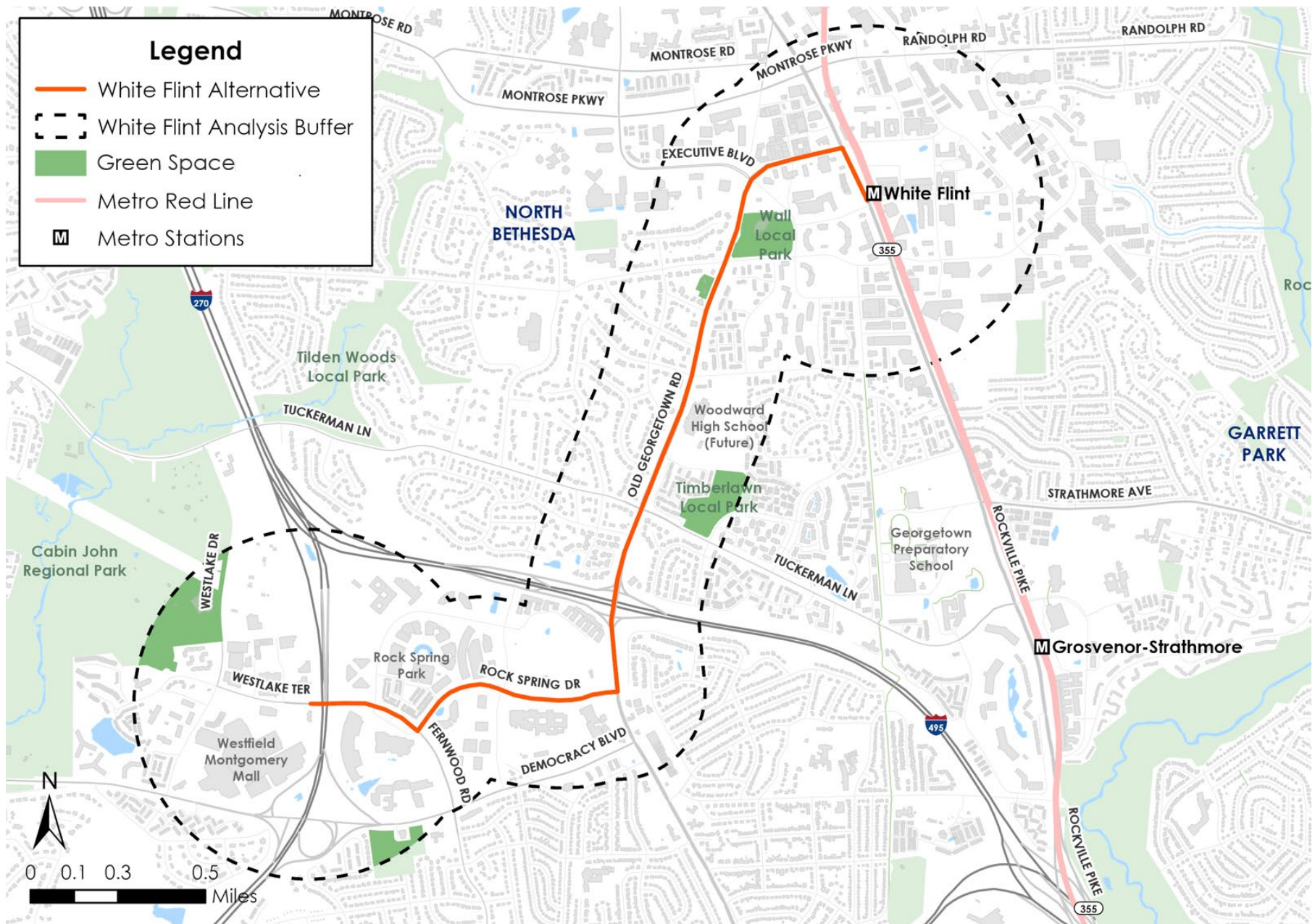


Figure 35. Green Space Connected to the White Flint Alignment



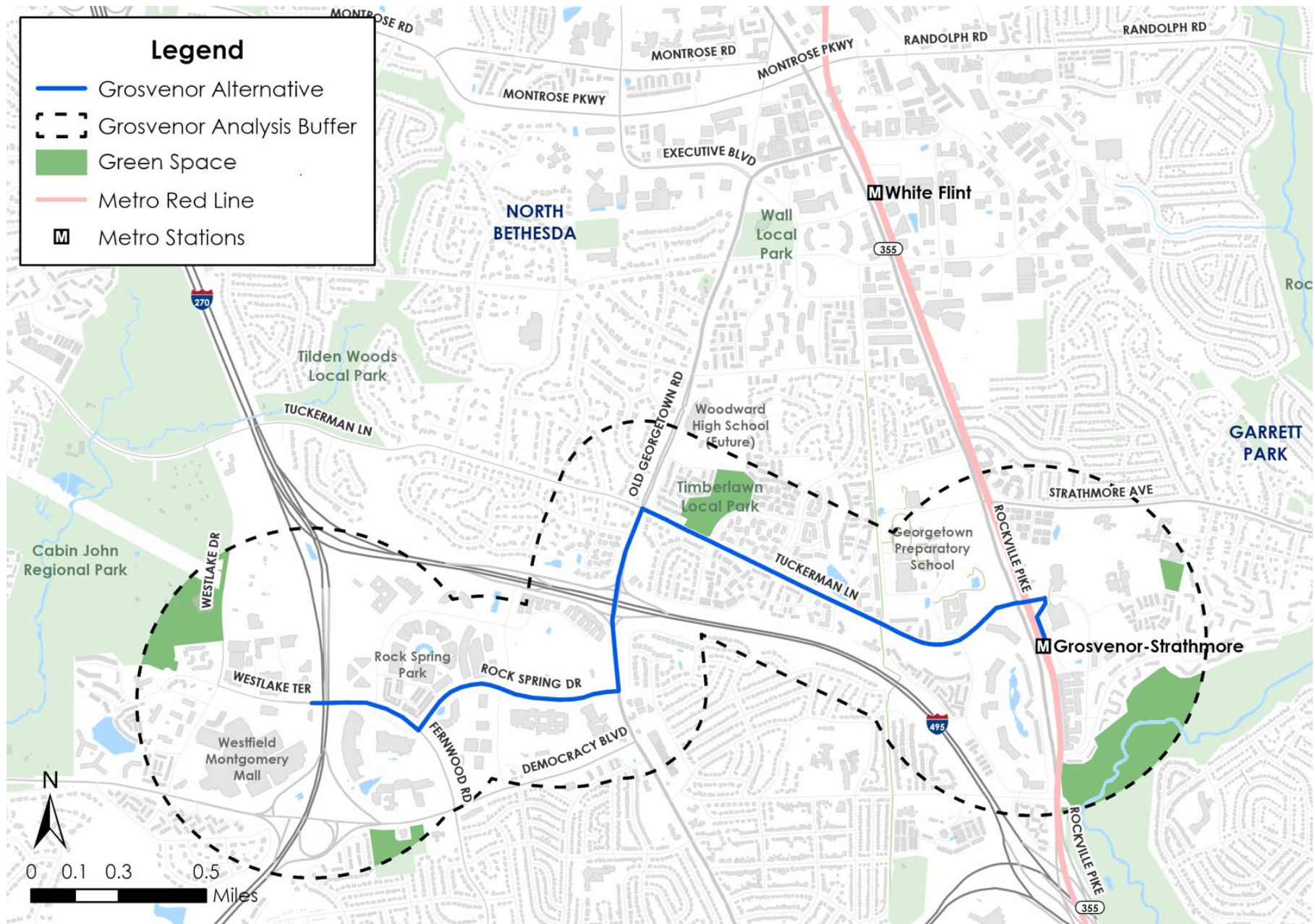


Figure 36. Green Space Connected to the Grosvenor-Strathmore Alignment



Table 25. Summary of Connected Green Space




Alternative	Park Name	Park Type	Acres of Connected Green Space
White Flint	Cabin John Regional Park	Regional	25
	Wall Local Park	Local	12
	Stratton Local Park	Local	6
	Josiah Henson Special Park	Special	1
	Timberlawn Local Park	Local	12
<b>Total</b>			<b>57</b>
Grosvenor-Strathmore	Cabin John Regional Park	Regional	25
	Garrett Park Estates Local Park	Local	3
	Stratton Local Park	Local	6
	Timberlawn Local Park	Local	14
	Rock Creek Park	Stream Valley	48
<b>Total</b>			<b>96</b>

Both alternatives have connections to the same number of parks, but the Grosvenor-Strathmore alignment has connections to more green space by a measure of nearly 40 acres.

## 3 SUMMARY OF RESULTS

### 3.1 EVALUATION METHODOLOGY

Metrics were drafted to measure how well each route alternative (White Flint or Grosvenor) would achieve the study goals and objectives comparative to one another. Metrics were measured for each alternative according to the methodology presented in their respective sections of this report. **Figure 37** shows the graphical scores assigned to each alternative according to metric results.

KEY:	
	Negative or Negligible Impact Towards Goal
	Supports Achieving Goal
	Best Alternative for Supporting Achievement of Goal (Greater than 15% Difference)

























**Figure 37. Metric Scoring Key**



























### 3.2 SUMMARY EVALUATION

#### 3.2.1 COMPARISON TABLE



The following table contains a detailed overview of the results and scoring for every metric by alternative.

Table 26: Alternatives’ Metric Score Summary

Goals Objective	Termini Screening Metrics	Results			Score	
		Metric Measure	White Flint	Grosvenor	White Flint	Grosvenor
 <b>Quality Service</b> <i>Provide a fast, reliable, efficient, and connected transit service</i>	<b>Existing Bus Ridership</b> Capture of existing transit usage along the corridor--How much is the service relevant to existing transit use?	Total number of weekday boardings at WMATA and Ride On bus stops located directly on the alignment in Fall 2019.	1,603	1,145		
	<b>Access for Existing Residents along the Corridor</b> As a proxy for current ridership demand, how many residents live along the corridor?	ACS 2015-2019 5-year population averages by block group within the alternative analysis buffer.	19,235	20,280		
	<b>Existing Metrorail Ridership at Termini</b> How many people are already utilizing the Metrorail stations at the terminus? What potential BRT ridership could come from it?	Total number of average weekday entries and exits in 2019 at the terminus Metrorail Station.	6,035	8,364		
	<b>Potential to Improve Transit Reliability</b> Is the transit service on this alternative in need of reliability improvements?	On-time performance from Fall 2019 for Ride On routes that approximately follow the alignment.	Peak 65% Off Peak 62%	Peak 62% Off Peak 63%		
	<b>Increase of Service Frequency and Span</b> How would the BRT compare to the existing transit service?	Number of New Bus trips (weekday and weekend) that operate along the corridor	Weekday: 30 Weekend: 48	Weekday: 44 Weekend: 76		
	<b>Minimizing Impacts to Traffic Flow</b> How does the alternative minimize impacts to traffic flow?	Centerline mileage with v/c ratio over 1.0 in 2045 PM MWCOG Model	1.21	0.62		
	<b>Connections to Planned BRT Network</b> How does the terminus fit with other planned BRT routes?	Number of BRT routes from the 2013 Countywide Transit Corridors Functional Master Plan within ½ mile buffer of terminus.	2	1		
	<b>Regional Connectivity</b> Other than Metrorail, what connections are there to the region?	Trips ending in alternative analysis area that originate elsewhere in the region on an average weekday between Sept. 2019 and Nov. 2019.	91,000	63,000		
 <b>Mobility Choices</b> <i>Improve access to jobs, activity centers, and community facilities</i>	<b>Access to Community Facilities</b> How many community facilities are connected to/accessible from the alternative?	Quantity of community facilities within the alternative analysis buffer.	28	16		
	<b>Access to Existing Jobs</b> How many job opportunities are accessible from the alternative?	Number of jobs from 2019 within the alternatives analysis buffers.	41,224	23,718		
	<b>Connections to Existing and Planned Bike Network</b> How many existing and planned bicycle facilities connect to the corridor? Are there multimodal connections?	Number of existing and planned bikeways that intersect with the alternative alignment.	12	10		

Goals Objective	Termini Screening Metrics	Results			Score	
		Metric Measure	White Flint	Grosvenor	White Flint	Grosvenor
<div></div> <div><b>Sustainable Solutions</b></div> <div><i>Minimize environmental impacts and utilize cost-effective design</i></div>	<b>Potential Right of Way Expansion Needed</b> What is the impact of the BRT on right of way and/or the environment?	Difference between planned right of way (ROW) and existing ROW, times centerline length of segment in the alternative alignment.	4	1		
	<b>Level of Infrastructure Investment</b> What is the high-level magnitude of capital costs?	Estimated magnitude of infrastructure investment (according to various factors) required for the alternative.	\$\$	\$		
	<b>Operational Cost</b> What is the cost (capital and operating) of the BRT service?	Daily and annual cost projections for the alternative.	\$	\$		
	<b>Potential to Support Electric Fleet</b> Possibility to convert the fleet to zero-emissions buses?	If the length of the alternative falls within the typical operating range of a battery electric bus (BEB).	Yes	Yes		
<div></div> <div><b>Community Equity</b></div> <div><i>Provide improved and accessible transit service for underserved populations</i></div>	<b>Access for Low-Income Households</b> What low-income households would the BRT provide access to?	Quantity of low-income households within the alternative analysis buffer, according to 2015-2019 ACS 5-year averages.	2,438	1,909		
	<b>Access for Zero-Car Households</b> What zero-car households would the BRT provide access to?	Quantity of zero-car households within the alternative analysis buffer, according to 2015-2019 ACS 5-year averages.	764	770		
	<b>Access for Low-English Proficiency Populations</b> What low-English proficiency populations would the BRT provide access to?	Quantity of low English proficiency within the alternative analysis buffer, according to 2015-2019 ACS 5-year averages.	3,731	3,307		
	<b>Access for Seniors</b> What senior populations would the BRT provide access to?	Quantity of seniors within the alternative analysis buffer, according to 2015-2019 ACS 5-year averages.	1,650	1,692		
	<b>Access for Persons with Disabilities</b> What persons with disabilities would the BRT provide access to?	Quantity of persons with disabilities within the alternative analysis buffer, according to 2015-2019 ACS 5-year averages.	8,876	8,182		
	<b>Access for Minority Populations</b> What minority populations would the BRT provide access to?	Quantity of persons of minority populations within the alternative analysis buffer, according to 2015-2019 ACS 5-year averages.	7,939	4,762		
	<b>Access for Lower Paying Jobs</b> Where are there job locations that may be lower-income or one of multiple jobs located?	Quantity of retail and restaurant jobs within alternative analysis buffer.	2,362	1,533		
	<b>Number of Equity Focus Areas Within 3/4 Mile of Alignment</b> What underserved populations, such as equity focus areas, would the BRT provide access to?	Number of Montgomery County equity focus areas (EFAs) within alternative analysis buffer.	3	1		



Goals Objective	Termini Screening Metrics	Results			Score	
		Metric Measure	White Flint	Grosvenor	White Flint	Grosvenor
<div></div> <div><b>Economic Growth</b></div> <div><i>Promote economic development with appealing and functional transit</i></div>	<b>Connections to Planned Development</b> How much economic growth will be brought to the area through pipeline developments?	Total approved gross floor area (square feet) of all pipeline developments within the alternative analysis area.	9.3 M	5.6 M	<div></div>	<div></div>
	<b>Projected Future Activity (Jobs and People) Along Corridor</b> What is the change in activity density along the corridor between 2020 and 2030?	Percent increase of from 2020 activity density (jobs + population) to 2030 activity density within the alternative analysis area.	31%	2%	<div></div>	<div></div>
	<b>Support for Transit Oriented Development</b> Which corridor has the potential to support the most transit-oriented development?	Total acres of zoning blocks that have the potential to support transit-oriented development	911	1079	<div></div>	<div></div>
<div></div> <div><b>Public Safety</b></div> <div><i>Improve safety of our streets and the livability and wellness of our communities</i></div>	<b>Potential to Improve Vulnerable Road Users (VRU) Safety</b> Where is there room to improve safety for bicyclists and pedestrians along the corridor?	Total number of VRU crashes that occurred along the alternative alignment in the last five years (2017-2021).	10	10	<div></div>	<div></div>
	<b>Potential to Improve Vehicular Safety</b> Where is there room to improve motorist safety along the corridor?	Total number of motor-vehicle only crashes that occurred along the alternative alignment in the last five years (2017-2021).	298	206	<div></div>	<div></div>
	<b>Connection to Green Space</b> Will the alternative improve connections to parks/green space, and therefore increase livability for BRT users?	Acres of public green space within the alternative analysis buffer area.	57	96	<div></div>	<div></div>

## 3.2.2 CONCLUSIONS

The Termini Screening process described in this report has compared and contrasted two potential termini alternatives based on a series of metrics aligned with project goals and objectives. Although both termini alignments offer potential benefits for the BRT corridor, the recommend terminus for this project is the White Flint Termini Alternative. Some of the key takeaways and justification for this recommendation are summarized below.

- **Advantages of White Flint Alternative**

- Serves more existing bus ridership than Grosvenor (approximately 450 more riders per weekday)
- Provides better opportunity to increase countywide and regional connectivity through better integration with Montgomery County's planned BRT network, and attracting approximately 25% more regional trips to the analysis area than the Grosvenor Alternative
- Serves almost double the number of jobs (approximately 41,000 compared with 24,000) and community facilities (28 versus 16) within the analysis area as compared to Grosvenor
- Has the potential to improve the most (longest distance) of pedestrian facilities with uncomfortable experiences
- Provides improved service to a higher number of low-income, minority, low-paying jobs, and equity emphasis areas than the Grosvenor Alternative
- Will strengthen and promote 9.3 million square feet of planned development, approximately double the footprint of planned development along the Grosvenor alignment
- Better supports forecasted change in people and jobs. The White Flint corridor has a 31% forecast growth from 2020 to 2030, whereas Grosvenor's projected growth is 2%
- Greater potential to address areas that have been locations of previous crashes along the corridor

- **Advantages of Grosvenor Alternative**








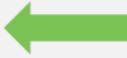




- Serves more existing pre-pandemic Metrorail riders than the White Flint Alternative, likely due to the larger presence of parking facilities at the Grosvenor-Strathmore Station
- Lower level of infrastructure investment and potential right-of-way needed which would indicate a lower cost and potentially shorter construction timeline<sup>11</sup>
- Serves more area of existing land use that is supportive of transit such as higher-density residential or mixed use
- Connections to more area of green space than the White Flint Alternative, primarily Rock Creek Park and Timberlawn Local Park.

In conclusion, although both termini alignments offer potential benefits for the BRT corridor, the recommend terminus for this project is the White Flint Termini Alternative, as shown in **Table 26** below.

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<sup>11</sup> Alignment, station locations, dedicated lane assumptions, and pedestrian/bike facilities based on the County's Transitways Corridor Master Plan, Master Plan of Highways and Transitways, and Bicycle Master Plan. All are subject to further analysis during the Build Alternatives Phase.

Table 27: Alternative Screening Summary

Goals and Objectives		White Flint	Grosvenor	Rationale
 <b>Quality Service</b>	Provide a fast, reliable, efficient, and connected transit service			White Flint Alternative serves more existing local bus trips and overall regional trips
 <b>Mobility Choices</b>	Improve access to jobs, activity centers, and community facilities			White Flint alternative serves more existing jobs and community facilities with more travel choices
 <b>Sustainable Solutions</b>	Minimize environmental impacts and utilize cost-effective design			Grosvenor alternative requires a less significant investment in infrastructure and potential right-of-way impacts
 <b>Community Equity</b>	Provide improved and accessible transit service for underserved populations			More disadvantaged populations live along or are connected to the White Flint alternative
 <b>Economic Growth</b>	Promote economic development with appealing and functional transit			White Flint better aligns with planned development
 <b>Public Safety</b>	Improve safety of our streets and the livability and wellness of our communities			Both alternatives improve public safety on the corridor

**Which Alternative Best Achieves the Goal?**

No Notable Advantage



Some Advantage



Significant Advantage



## APPENDIX

Table 28: White Flint Alternative Assumptions Summary

Roadway Segment	From	To	Stop	Dedicated Lane(s)?	Planned ROW*	Transit Lanes	Vehicle Lanes	Bike Lanes	Type of Bike Facility	Type of Ped Facility	Speed Limit	Centerline Mileage
Rockville Pike	White Flint Metro Station	Old Georgetown Road	1	Yes	150	2	6	2	Separated Bike Lanes	Sidewalk	40	0.17
Old Georgetown Road	Rockville Pike	Grand Park Avenue	0	No	120	0	4	2			40	0.15
Old Georgetown Road	Grand Park Avenue	Executive Blvd	1	No	120	0	4	0			40	0.13
Old Georgetown Road	Executive Blvd	Nicholson Ln	0	Yes	150	2	4	0	Side path	Side path	40	0.25
Old Georgetown Road	Nicholson Ln	Poindexter Ln	1	Yes	126	2	4	0			40	0.34
Old Georgetown Road	Poindexter Ln	Woodward High School	0	Yes	126	2	4	0			40	0.10
Old Georgetown Road	Woodward High School	Tuckerman Ln	1	Yes	126	2	4	0			40	0.31
Old Georgetown Road	Tuckerman Lane	I-270	0	Yes	130	2	4	0			40	0.28
Old Georgetown Road	I-270	Rock Spring Drive	1	Yes	150	2	4	2	Separated Bike Lanes	Sidewalk	40	0.25
Rock Spring Drive	Old Georgetown Road	Rockledge Drive	1	Yes	80	2	2	2			25	0.34
Rock Spring Drive	Rockledge Drive	Fernwood Road	1	Yes	80	2	2	2			25	0.30
Fernwood Road	Rock Spring Drive	I-270 Spur	0	Yes	80	2	2	2			30	0.29
Westlake Terrace	I-270 Spur	Transit Hub	1	Yes	90	2	2	2			30	0.04

NOTE: Alignment, station locations, dedicated lane assumptions, and pedestrian/bike facilities based on the County's Transitways Corridor Master Plan, Master Plan of Highways and Transitways, and Bicycle Master Plan. All are subject to further analysis during the Build Alternatives Phase.



Table 29: Grosvenor Alternative Assumptions Summary

Roadway Segment	From	To	Stop	Dedicated Lane(s)?	Planned ROW*	Transit Lanes	Vehicle Lanes	Bike Lanes	Type of Bike Facility	Type of Ped Facility	Speed Limit	Centerline Mileage
<b>Metro Entrance</b>	Grosvenor Metro Station	Tuckerman Ln	1	Yes	n/a	1	1	0	None	Sidewalk	0	0.13
<b>Tuckerman Lane</b>	Metro Entrance	Rockville Pike	0	No	80	0	4	2	Separated Bike Lanes	Sidewalk	40	0.08
<b>Tuckerman Lane</b>	Rockville Pike	The Bethesda Trolley Trail	0	Yes	80	2	2	0	Side path	Side path	40	0.44
<b>Tuckerman Lane</b>	The Bethesda Trolley Trail	Gloxina Dr	0	Yes	80	2	2	0			40	0.54
<b>Tuckerman Lane</b>	Gloxina Dr	Old Georgetown Road	1	Yes	80	2	2	0			40	0.21
<b>Old Georgetown Road</b>	Tuckerman Lane	I-270	0	Yes	130	2	4	0			40	0.28
<b>Old Georgetown Road</b>	I-270	Rock Spring Drive	1	Yes	150	2	4	2	Separated Bike Lanes	Sidewalk	40	0.25
<b>Rock Spring Drive</b>	Old Georgetown Road	Rockledge Drive	1	Yes	80	2	2	2			25	0.34
<b>Rock Spring Drive</b>	Rockledge Drive	Fernwood Road	1	Yes	80	2	2	2			25	0.30
<b>Fernwood Road</b>	Rock Spring Drive	I-270 Spur	0	Yes	80	2	2	2			30	0.29
<b>Westlake Terrace</b>	I-270 Spur	Transit Hub	1	Yes	90	2	2	2			30	0.04

NOTE: Alignment, station locations, dedicated lane assumptions, and pedestrian/bike facilities based on the County's Transitways Corridor Master Plan, Master Plan of Highways and Transitways, and Bicycle Master Plan. All are subject to further analysis during the Build Alternatives Phase.