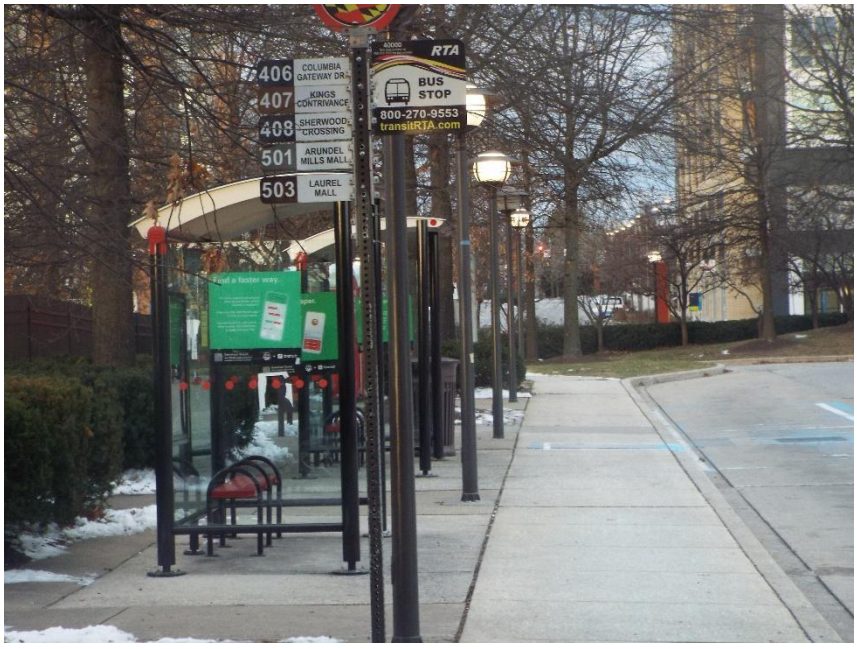
Central Maryland Regional Transit Plan
Pilot Corridor Analysis
Corridor 25: BWI Airport to Columbia Town Center

Technical Deliverable #3

Implementation Analysis



1. Introduction

Analysis completed during Task #2 of the "Central Maryland Regional Transit Plan Pilot Corridor Analysis Corridor 25: BWI to Columbia Town Center" yielded recommendations on six alignment alternatives to move forward for more detailed analysis. Three of these alignment alternatives run between Columbia Town Center and Arundel Mills Mall, BWI Marshall Airport, and the BWI Business District, and three run between Columbia Town Center and Fort Meade. The six alignment alternatives proposed for more detailed analysis are contained in Appendix 1.

The purpose of the Task #3 analysis outlined in this Technical Report is to identify the costs to implement service along each alignment alternative in order to provide an understanding of the resources that would be required to implement new service in Corridor #25. The analysis also includes land use recommendations that would make the corridor more transit friendly and potential funding sources that could be used to help implement new transit service in the corridor. Finally, it provides recommendations and next steps to move the project forward.

2. Operations and Maintenance Cost Estimates

Understanding operations and maintenance costs is essential to support decision making regarding moving forward with a new service, given that these costs will be recurring each year of service. To that end, operations and maintenance cost estimates were developed for each of the six alternatives that have been recommended for more detailed analysis, for three time frames: near-term (current year), mid-term (2030) and long-term (2035).

The steps used to estimate operations and maintenance costs are as follows:

1. Develop a service plan for new service (see below)
    a. service frequency by time of day
    b. hours of service per day, by day of week
    c. days of week service provided
2. Calculate round-trip run time of service and round-trip cycle time (run time plus recovery time at each end of trip)
3. Calculate the number of buses in service based on the round trip cycle time and service frequency from the service plan
4. Calculate daily revenue vehicle hours based on number of vehicles in service and service hours per day
5. Multiply daily revenue vehicle hours by cost per revenue vehicle hour to calculate daily operations and maintenance costs
6. Calculate annual operations and maintenance costs based on the number of weekday, Saturday, and Sunday days of service per year.

The service plan assumptions used for the operations and maintenance cost estimates are as follows:

- Seven-day-per-week operation
    - Weekday hours of service: 6 AM to 10 PM
    - Saturday hours of service: 6 AM to 9 PM
    - Sunday hours of service: 7 AM to 9 PM

- 30-minute service frequency – all day – seven days per week

Given the "24-hour" nature of two major activity centers in the corridor, the Maryland Live Casino and BWI -Marshall Airport, consideration of later hours of service should be evaluated as service implementation moves closer.

Of note is that the plan recommendations are such that this service plan would remain in place across all three analysis time-frames. The difference in operations and maintenance costs between the current, mid-term and long-term time frames would be based on inflation escalation only, with no changes in service levels. The escalation assumption is a 6% increase between the current year and the mid-term year (2030) and 5% between the mid-term and long-term (2035).

The estimated annual operating cost for each of the six alignment alternatives proposed for more detailed analysis by time frame is outlined below in Table 1.

Table 1 – Operations and Maintenance Costs by Alignment Alternative and by Time Period

Alternative	Short Term (current)	Mid-Term (2030)	Long Term (2035)
To BWI Business District			
Alignment 12 (via Columbia Gateway/MD 103	$4,225,000	$4,510,000	$4,736,000
Alignment 11 (via Columbia Gateway/Montevideo)	$4,225,000	$4,510,000	$4,736,000
Alignment 4 (via Columbia Gateway/MD 175)	$3,546,000	$3,759,000	$3,947,000
To Fort Meade			
Alignment 3 (via MD 175 – serve Columbia Gateway)	$2,837,000	$3,007,000	$3,157,000
Alignment 4 (via Columbia Gateway/MD 175)	$2,837,000	$3,007,000	$3,157,000
Alignment 11 (via Columbia Gateway/Montevideo Road)	$2,837,000	$3,007,000	$3,157,000

3. Capital Cost Estimates

A full program of capital improvements to support implementation of service on each alignment alternative was identified. Understanding funding for the full program would not be available immediately, implementation of the different elements of the program were divided among the three analysis time-frames and capital cost estimates were then developed for each time frame based on the elements to be implemented during that time period.

The elements in each time period reflect those elements that are essential for implementation versus those elements that can be implemented over a longer time frame. Elements by time period are as follows:

- Short Term Time Period (Current)
    - Vehicles
    - Stop Improvements (20% of total required stops)
        - Regular bus stops – bus stop flag, bus stop pad
        - Full bus stops – bus stop flag, bus stop pad, shelter, bench, trash receptacle
- Mid-Term (2030)
    - Remaining Stops
    - 50% of Sidewalk Improvements
- Long-Term (2035)
    - Remaining Sidewalk Improvements
    - Additional Accessibility Improvements
        - Pedestrian signals
        - Crosswalks
        - Pedestrian Refuges

The capital cost estimates for each analysis time period as well as for the total program are outlined below in Tables 2 through 5.

More detail on the quantities of each of the capital improvement elements is included in Appendix 2.

Table 2 – Capital Cost Estimates – Short-Term Time Frame

Alignment Alternative	Capital Cost
To BWI Business District	
Alignment 12 (via Columbia Gateway/MD 103	$2,237,000
Alignment 11 (via Columbia Gateway/Montevideo Road)	$2,221,000
Alignment 4 – (via Columbia Gateway/MD 175)	$1,914,000
To Fort Meade	
Alignment 3 (via MD 175 - serve Columbia Gateway)	$1,562,000
Alignment 4 (via Columbia Gateway/MD 175)	$1,567,000
Alignment 11 (via Columbia Gateway/Montevideo Road)	$1,574,000

Table 3 – Capital Cost Estimates – Mid-Term Time Frame

Alignment Alternative	Capital Cost
To BWI Business District	
Alignment 12 (via Columbia Gateway/MD 103	$4,426,000
Alignment 11 (via Columbia Gateway/Montevideo Road)	$4,675,000
Alignment 4 – (via Columbia Gateway/MD 175)	$4,610,000
To Fort Meade	
Alignment 3 (via MD 175 - serve Columbia Gateway)	$3,363,000
Alignment 4 (via Columbia Gateway/MD 175)	$2,849,000
Alignment 11 (via Columbia Gateway/Montevideo Road)	$2,927,000

Table 4 – Capital Cost Estimates – Long-Term Time Frame

Alignment Alternative	Capital Cost
To BWI Business District	
Alignment 12 (via Columbia Gateway/MD 103	$4,920,000
Alignment 11 (via Columbia Gateway/Montevideo Road)	$5,081,000
Alignment 4 – (via Columbia Gateway/MD 175)	$5,138,000
To Fort Meade	
Alignment 3 (via MD 175 - serve Columbia Gateway)	$3,716,000
Alignment 4 (via Columbia Gateway/MD 175)	$3,193,000
Alignment 11 (via Columbia Gateway/Montevideo Road)	$3,098,000

Table 5 – Capital Cost Estimates – Full Program

Alignment Alternative	Capital Cost
To BWI Business District	
Alignment 12 (via Columbia Gateway/MD 103	$11,584,000
Alignment 11 (via Columbia Gateway/Montevideo Road)	$11,978,000
Alignment 4 – (via Columbia Gateway/MD 175)	$11,663,000
To Fort Meade	
Alignment 3 (via MD 175 - serve Columbia Gateway)	$8,640,000
Alignment 4 (via Columbia Gateway/MD 175)	$7,609,000
Alignment 11 (via Columbia Gateway/Montevideo Road)	$7,599,000

4. Land Use and Zoning

Land use within the BWI Marshall Airport to Columbia Town Center corridor is generally suburban in nature but within that overall suburban context there are a range of land uses, from lower density single family residential to light industrial and warehouse properties, to large regional activity centers. Generally, the large activity centers provide the greatest concentration of jobs and employment within the corridor while residential uses are more dispersed, though Columbia Town Center and to a lesser extent the Arundel Mills Mall vicinity also have fairly high density residential concentrations.

Because of the overall suburban, low density nature of the corridor, much of the corridor is not transit-friendly, with the low densities making it difficult to effectively access transit at either the origin or destination end of a trip. This low transit accessibility due to low land use densities is exacerbated by gaps in pedestrian and bike supportive infrastructure such as sidewalks and bike paths.

Even with existing land use patterns within the corridor locked in long term, there are opportunities within the corridor to improve transit accessibility and ease of use. Perhaps the most important action local jurisdictions can undertake is the continued implementation of plans and policies for redevelopment and density increases (both residential and commercial) already underway within the corridor. Initiatives include ongoing transit friendly development within Columbia Town Center and redevelopment along US 1 in Howard County as well as longer term plans for redevelopment and higher densities in Columbia Gateway and along Snowden River Parkway in Howard County as well as higher density development plans along the MD 175 corridor in Anne Arundel County.

Continuation of improvements already underway should be coupled with accessibility improvements such as sidewalks on both sides of the street and into the new developments, as well as intersection improvements to enhance pedestrian friendliness. These improvements would include pedestrian signals, pedestrian refuges on wide roadways such as US 1 and well-marked crosswalks.

While the large activity centers within the corridor such as Columbia Town Center and Arundel Mills likely present the best opportunity for dense transit-friendly land uses, the jurisdictions should also work to identify spot opportunities for denser development. A good example of these spot opportunities is the apartment and town home development along MD 175 in Anne Arundel County near the Baltimore-Washington Parkway. This newer higher density development stands in contrast to older single-family development on large lot sizes along the MD 175 corridor. Another example of higher density development at a small scale is on MD 103 near its intersection with Dorsey Run Road. While higher density development of this nature is not significant enough to warrant transit service on its own, combining developments of this type along a route would be more supportive of transit. In addition, the surrounding land uses in this area may be candidates for up zoning to achieve greater density and transit friendly land uses.

Regarding a fully connected sidewalk network, the development on MD 103 shows how sidewalk infrastructure built as part of the development needs to be supplemented with additional infrastructure on adjacent properties. Currently the sidewalks built as part of the development simply end at the edge of the property.

A final opportunity for transit friendly development are the MARC stations within the study area, especially the Dorsey MARC station off MD 100. The station is located in Howard County but the CSX line that serves the station actually represents the border between Howard County and Anne Arundel County so there are opportunities for both jurisdictions at the station. Both jurisdictions have noted the importance of Transit Oriented Development at MARC stations as part of a larger strategy for sustainable, transit friendly residential and commercial development, and are pursuing plans to support implementation. Transit Oriented Development at the Savage MARC station provides an example of the type of transit friendly development that is possible.

A summary of land use initiatives the jurisdictions within the project area can undertake to make it more transit friendly are outlined below.

Table 6 – Potential Initiatives to Increase Transit Supportive Land Use

Land Use Initiative	Examples
Continue ongoing redevelopment/densification initiatives	In Howard County, current redevelopment along US 1 and in Columbia Town Center and longer-term along Snowden River Parkway and Columbia Gateway. In Anne Arundel County, development and redevelopment along, and north of, MD 175.
Pursue Spot Density Increases	Existing examples include townhome and apartment development along MD 175 in vicinity of Baltimore/Washington Parkway and, at a smaller scale, at the intersection of MD 103 and Dorsey Run Road.
Transit Oriented Development at MARC Stations	Best candidate is Dorsey Station on Camden Line. Opportunity for both Howard and Anne Arundel County. Example is development at Savage Station of MD 32.
Strengthen Existing Pedestrian and Bike Infrastructure	Pursue all opportunities, including as part of redevelopment efforts. Focus should be on filling in gaps on likely transit corridors.

5. Potential Funding Sources

This technical report section outlines potential funding sources to support implementation of a new service in Corridor #25.

A more detailed funding strategy would need to be developed as the alternatives identified during this early stage of planning are refined and defined in greater detail but the sources outlined below provide potential building blocks for the strategy.

Federal Funding

- **Federal Transit Administration (FTA) Capital Investment Program** – This is a federal program that provides capital funding for new transit projects or the expansion of existing projects and consists of New Starts, Small Starts and Core Capacity projects. This will require a partnership with MDOT MTA as any potential funding awarded through this process is administered by the agency. The most appropriate project category for Corridor #25 is likely Small Starts, which covers fixed guideway or corridor-based BRT projects costing less than $300 million and seeking less than $100 million from the Capital Investment Program. Corridor based BRT, which is the most likely candidate for this corridor, is defined as operating in mixed traffic, has frequent bi-directional service on weekdays, and incorporates defined stations and traffic signal priority.

  The program is competitive among projects and demand for funds currently exceeds available funding. Competing projects are evaluated based on a range of criteria to determine which projects are the most competitive/beneficial and are evaluated at different steps in the project development process. Evaluation criteria include a project's mobility improvements, environmental benefits, congestion relief, cost-effectiveness, economic development, existing land use, and capacity needs within the corridor.

  The current Corridor #25 project definition as framed by the preliminary service plan and proposed capital improvements would not result in a Small Starts eligible corridor based BRT. As the project moves forward, a redefinition can be completed to make it eligible for consideration in Small Starts, though there is no guarantee that a redefined project would be competitive compared to other projects throughout the U.S. In addition, the funding strategy for this corridor should also consider other projects in the Baltimore region and which projects are most competitive given that pursuit of Small Starts funding involves both a monetary and schedule cost.

- **FTA Urbanized Area Formula Funding** – This program makes Federal resources available to urbanized areas and to Governors for transit capital and operating assistance and for transportation related planning in urbanized areas. This money is disbursed by the Maryland Transit Administration for the Baltimore region and funds for Corridor #25 would be evaluated against other transit needs in the region.

  FTA Bus and Bus Facilities Grant Program - The Grants for Buses and Bus Facilities Competitive Program makes Federal resources available to states and direct recipients to replace, rehabilitate and purchase buses and related equipment and to construct bus-related facilities, including technological changes or innovations to modify low or no emission vehicles or facilities. Funding is provided through formula allocations and competitive grants and is disbursed through the MTA. Bus stop improvements and fleet purchases for Corridor #25 may be eligible through this program.

- **US Department of Transportation (US DOT) Safe Street for All Program (SS4A) –** This program is part of the Bipartisan Infrastructure Law and is a discretionary program that will provide grants

totaling $5 to $6 billion over the next five years. Funding supports regional and local initiatives through grants to prevent roadway deaths and serious injuries. The BMC as well as local jurisdictions are eligible to apply for the grants. An example of projects that would be eligible for funding would include improved safety features for pedestrian crossings, separated bike lanes, speed management projects such as traffic calming, sidewalks and additional lighting for pedestrians and bicyclists. Overall, this program is a potential source of funding for the pedestrian and bicycle improvements that would make the corridor more transit friendly. BMC and the local jurisdictions are eligible to apply for SS4A grants.

State Funding

- The Maryland Transit Administration disburses funding received from the Maryland Department of Transportation from the Transportation Trust Fund. These funds include state taxes, fees, bonding, federal aid (i.e. Federal Transit Administration funding) and other revenues. The Maryland Transit Administration uses these funds to improve their services and operations and distributes some of these funds to Locally Operated Transit Systems. Howard County through the RTA, and Anne Arundel County, currently coordinate with the MTA on funding and therefore can work with the MTA on possible funding strategies/scenarios for Corridor #25.

- The Transportation Alternatives Program (TAP) is a reimbursable federal aid funding program for transportation-related community projects that strengthen the intermodal transportation system, including pedestrian and bicycle access to existing or planned transit service. TAP funding may be requested for up to 80 percent of a project's total estimated cost with a minimum 20% cash match. The competitive grant is awarded annually and funding is distributed by MDOT. Pedestrian and bicycle access improvements to support planned transit service for Corridor #25 would be evaluated against other applications in the region.

Regional Funding

The Baltimore Regional Transportation Board (BRTB), through the Transportation and Land Use Connections (TLC) Grant Program, provides short-term technical assistance in the form of consultant services to local governments in the Baltimore region to help them implement changes to the built environment. Eligible projects include planning or preliminary design (up to 30%) activities that reduce traffic on roads or enable more people to easily walk, bike, and connect to transit. Applicable projects for Corridor #25 would be evaluated against other applications in the region.

A summary of potential funding opportunities is provided below in Table 7.

Table 7 – Summary – Potential Funding Sources

Funding Program	Granting Agency	Application/Consideration	Potential Award	Grant Application Timeline
Federal Transit Administration Capital Investment Program	FTA, project sponsor must partner with MDOT MTA	Most likely project would be a Corridor-Based BRT within the Small Starts Program as opposed to a Fixed Guideway BRT. Current definition of project based on work completed in this planning phase would not be eligible as a Corridor-Based BRT	Up to $150 million	One to two years to funding agreement based on project complexity
FTA Urbanized Area Formula Funding	FTA, distributed through MDOT MTA	General FTA funding source for both operating and capital assistance Funds for Corridor #25 would be evaluated against other regional transit needs	Baltimore Urbanized Area received $75,098,000 in FY 21	N/A – no application, allocated annually
Bus and Bus Facilities Grant Program	FTA Competitive grants	Can be used to purchase service fleet or install bus stops. Competitive grant process in response to Notice of Funding Availability.	Grants range in size. FY 21 grants ranged from $752,000 to $15 million.	6 month application process, grants awarded annually
Safe Street for All Program (SS4A)	U.S. Department of Transportation	Can be used for pedestrian and bike safety improvements to make corridor more transit friendly Competitive process against projects nationally	$1 million maximum for a political jurisdiction and $5 million for an MPO	Annual grant application / award cycle for 5 years from FY 2022 - FY 2026

Funding Program	Granting Agency	Application/Consideration	Potential Award	Grant Application Timeline
Transportation Alternatives Program	Federal funds distributed by MDOT	Can be used for pedestrian and bike safety improvements to make corridor more transit friendly Funds for Corridor #25 would be evaluated against other regional applications.	Varied by Fiscal Year	Annual grant application / award cycle
Transportation and Land Use Connection Grant Program	BRTB	Consultant services may be used for planning or preliminary design that improve bicycle, pedestrian and micro-mobility connections to transit. Applicable projects for Corridor #25 would be evaluated against other applications in the region.	Up to $80,000	Annual grant application / award cycle

When developing a funding strategy for Corridor #25, it will be important to consider that the Baltimore Metropolitan Council is currently leading a Transit Governance and Funding Working Group whose main objective is to prioritize one or more transit governance models identified in the 2021 Baltimore Regional Transit Governance and Funding Study. The working group will review the options outlined in the 2021 Study and make a formal recommendation to the BMC Board of Directors, the Maryland General Assembly, and the Governor. The working group is also tasked with reviewing funding associated with Locally Operated Transit Systems (LOTS). The Working Group will convene through the end of Calendar Year 2022 before making a final recommendation on a regional governance structure.

6. High Level Ridership Estimates

High-level ridership forecasts were developed by the Baltimore Metropolitan Council Travel Forecasting team for each of the six alignment alternatives that were proposed to move forward for additional analysis, for the mid-term and long-term analysis time frames. These are summarized below in Table 8.

Table 8 – High Level Daily Ridership Forecasts by Alignment Alternative and Time Frame

Alignment	Beginning Terminal	End Terminal	2030	2035
#12 – (via Columbia Gateway/MD 103	BWI Business District	Columbia Town Center	6,504	7,403
#11 – (via Columbia Gateway/Montevideo Rd.)	BWI Business District	Columbia Town Center	8,379	8,824
#4 – via Columbia Gateway/MD 175	BWI Business District	Columbia Town Center	8,366	8,791
#3 – (via MD 175 – also serves Columbia Gateway)	Columbia Town Center	Fort Meade	4,708	5,320
#4 – (via Columbia Gateway/MD 175)	Columbia Town Center	Fort Meade	4,930	5,193
#11 – (via Columbia Gateway /Montevideo Rd)	Columbia Town Center	Fort Meade	4,824	5,190

Boarding and alighting data by stop showing the same data for the six alternatives proposed for more detailed analysis are contained in Appendix 3. Appendix 4 contains the same data in tabular format.

7. Recommendations and Next Steps

The study outlined in this Technical Report and the reports summarizing Task 2 results provide an extensive amount of data for planners and decision makers. The purpose of this report section is to incorporate the data results into a set of recommendations and next steps that will provide a foundation for moving the project forward.

The recommendations/next steps are divided into two different areas, one related to transit service and one related to land use and zoning. Each is outlined below.

7.1 Transit Service

There are two options regarding implementation of transit service; implement local service within the study corridor or BRT service within the corridor. The results of the study analysis have led to a recommendation by the project team to implement local service but next steps for both options are summarized here in case a decision to pursue BRT is reached.

Next steps for implementation of local service include:

- **Select Final Alignment** – this step would involve making a final decision regarding the alignments proposed for more analysis in this study or perhaps an alignment not identified during the study process.

- **Finalize Service Plan** – once an alignment is identified, a service plan should be developed and finalized. Service plan elements will include service frequency by time of day, hours of service, and days of week service is provided. An important input into the service plan will be a detailed run time analysis for the proposed service. The final service plan will be the basis for identifying the number of vehicles required to meet service and the service's estimated operations and maintenance costs.

- **Identify Operator** – operator candidates include the Regional Transportation Agency of Central Maryland (RTA), which operates transit service in Howard County and a small number of routes that operate partially in Anne Arundel County, Anne Arundel County Transit, or a new entity as identified through the Transit Funding and Governance Study Working Group now working under the supervision of the Baltimore Metropolitan Council.

- **Identify Funding Sources** – this step will involve the identification of funding to support local service as well as the capital funds to purchase vehicles, install bus stops, and make other accessibility improvements as identified during the planning process (more detail on accessibility improvements is found in Appendix 2).

- **Procure Vehicles or Identify Existing Vehicle Availability** – in this step the source of the vehicles to run the service will be identified. This may include the procurement of additional vehicles or the use of vehicles in the chosen operator's existing fleet.

- **Develop and Prioritize Capital Program** – outlined above in Section 3 are the estimated capital costs for the project as well as recommendations on the staging of capital improvement implementation. This step would involve finalizing the capital program and developing an implementation plan, including identifying capital funding sources.

- **Implement Program** – in this final step, the transit service and capital program would be implemented.

If BRT is determined to be potentially feasible as opposed to the proposed local service, the steps for implementation would include:

- **More Detailed Ridership Forecast** – the high level ridership developed as part of this study indicates that BRT may be feasible but a first step in confirming this would be a more detailed ridership forecast based on a more refined project definition and travel times.

- **Concept Design** – in this step concept design would be developed for transit priority and BRT stations within the selected alignment. Potential transit priority elements would include:

    - *Dedicated lanes* – given the relative lack of traffic congestion along the alignments selected for more detailed analysis it is not clear that there would be a positive

benefit/cost ratio for dedicated lanes. During this step, the potential for dedicated lanes would be evaluated and would include an assessment of run time benefits versus the capital cost, property taking, and environmental impacts of dedicated lanes.

An alternative to a new fully dedicated lane through right-of-way expansion is the use of existing lanes to provide priority. This type of lane, known as a Business Access and Transit Lane (BAT) does not require additional right-of-way but rather limits access to the lane to transit and autos that are turning into businesses along the roadway or making a right turn at an intersection.

- *Transit Signal Priority (TSP)* – Transit Signal Priority would involve retrofitting existing traffic signals along the alignment with signal priority equipment. The most common application of TSP is the extension of a green signal phase to allow a bus arriving at the intersection as the phase is changing to pass through the intersection and not have to wait through an additional cycle. TSP is easily installed and implemented but there is significant coordination with the agencies controlling the signals required to ensure they find potential traffic operations impacts acceptable. The benefits of TSP decline if traffic congestion is not significant and transit service is fairly infrequent.

- *Queue Jumps* – Queue jumps involve the use of an existing right turn lane or the addition of a new lane to allow a bus to "jump" past a long queue at an intersection. The highest benefits accrue at intersections where a queue does not fully clear during the green phase and vehicles at the end of the queue must wait through another signal cycle. The potential for queue jumps would be evaluated and would include an assessment of run time benefits versus the capital cost, property taking, and environmental impacts of dedicated lanes.

Concept station design would also be part of this step. This would include identifying the station location, development of a station program, and concept station design. This concept design would also evaluate fiber connections for fare equipment and Next Time Arrival information.

- **Project Development Strategy** – in this step a detailed project development strategy and implementation plan would be developed. This step will be essential to ensuring project development is productive and effort is not wasted on tasks that do not move the project forward. Elements of the strategy would include:

- *Funding approach* – this step would involve the determination of how BRT would be paid for, both operating and capital. With regard to capital funding, of special importance would be a determination of whether Federal Small Starts funding would be pursued. A number of factors must be considered when making this decision including:

    - The cost and schedule impacts associated with assembling the Small Starts package.
    - The fact that Small Starts is a competitive process and there is no guarantee of receiving funding.
    - This project would compete with other corridors within the Baltimore region and may not be the most appropriate use of resources within the region.

- *NEPA Clearance* - If Federal funding is to be pursued, NEPA clearance would be required. Preliminary coordination with the MTA and FTA regarding NEPA Class of Action is proposed so that a firm implementation strategy can be developed.

- *Coordination with MDOT MTA* **–** MDOT MTA will be key player in any Small Starts application process. Early coordination will assist in determining the implementation strategy and how Corridor #25 fits into overall regional priorities.

7.2 Land Use and Zoning

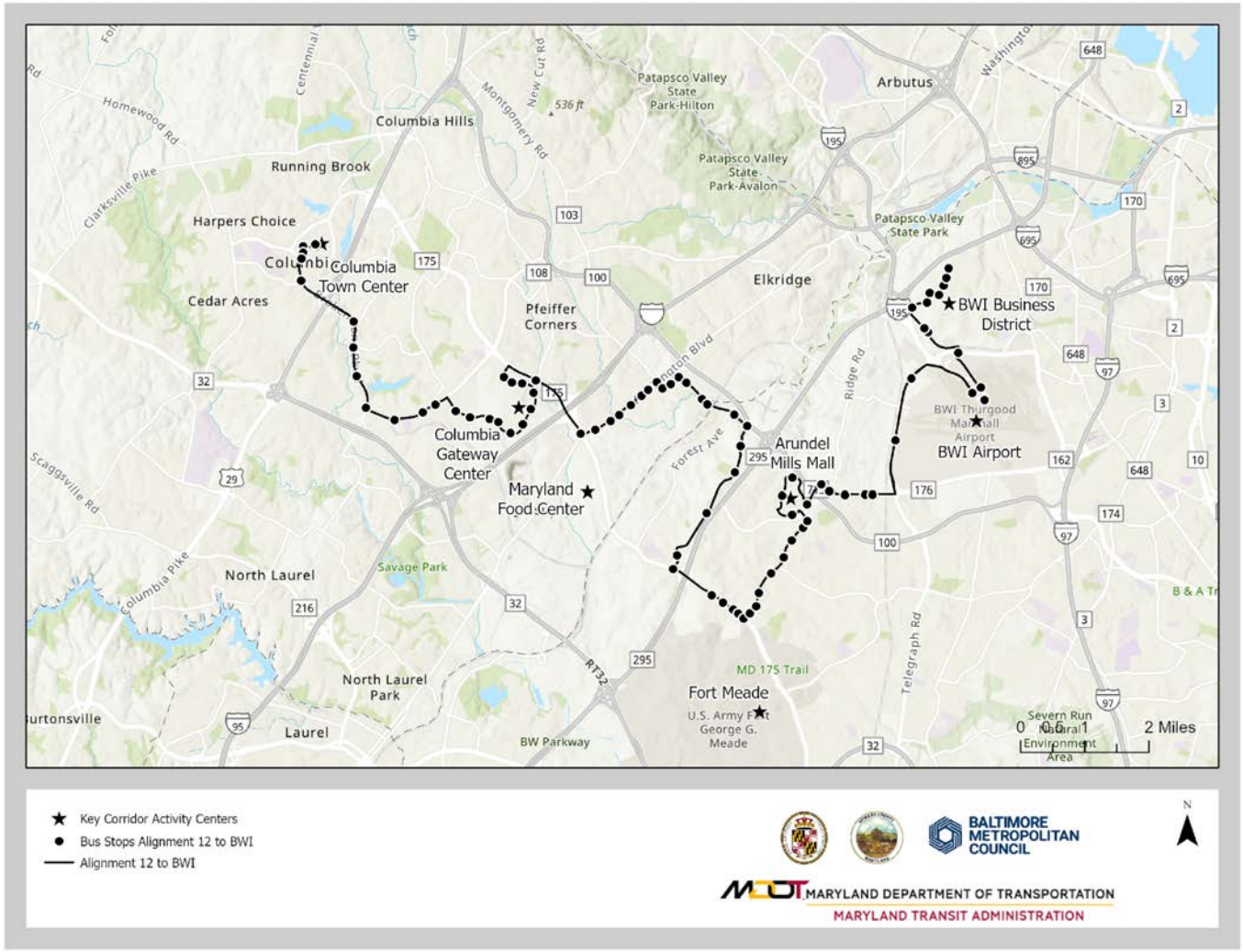
Section 4 of this Report outlines a general framework for improving Corridor #25 transit friendliness through Land Use, Zoning and accessibility improvements. This section contains recommendations on more concrete steps that can be undertaken to expedite the process to a more transit-friendly Corridor #25. A list of proposed actions is outlined below.

- **Complete Inventory of Proposed Plans** – in this step a full inventory of the land use and economic development plans in both jurisdictions would be completed, with a specific focus on determining how well these plans align with current transit plans overall as well as the recommendations contained in this study. This inventory would help to identify gaps between land use and zoning initiatives and transit initiatives, with the analysis acting as a foundation for modifying land use plans to support more strengthened transit friendliness within the corridor. In addition, the inventory would also assist in developing an action plan for expediting current land use plan initiatives that support transit.

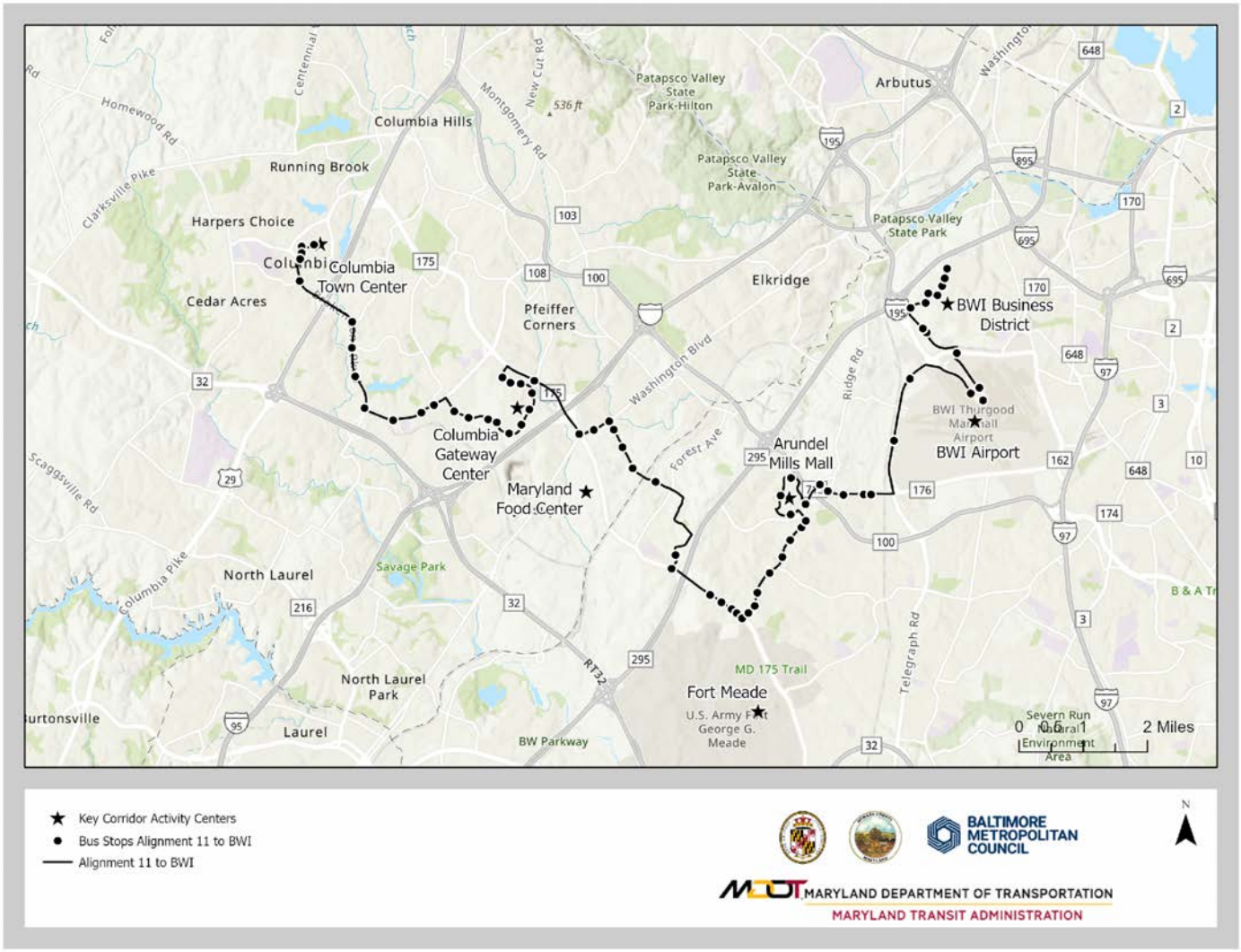
- **Complete Land/Use Inventory of Corridor #25 Project Area –** In this step, underused and low value land uses within key transit corridors would be identified and evaluated as candidates for rezoning to a more transit friendly land use. In addition, analysis in this this step would evaluate current land uses against allowable zoning to determine if there are opportunities to expedite redevelopment to take full advantage of densities and uses allowed by current zoning.

Appendix 1 – Alignments Proposed for More Detailed Analysis

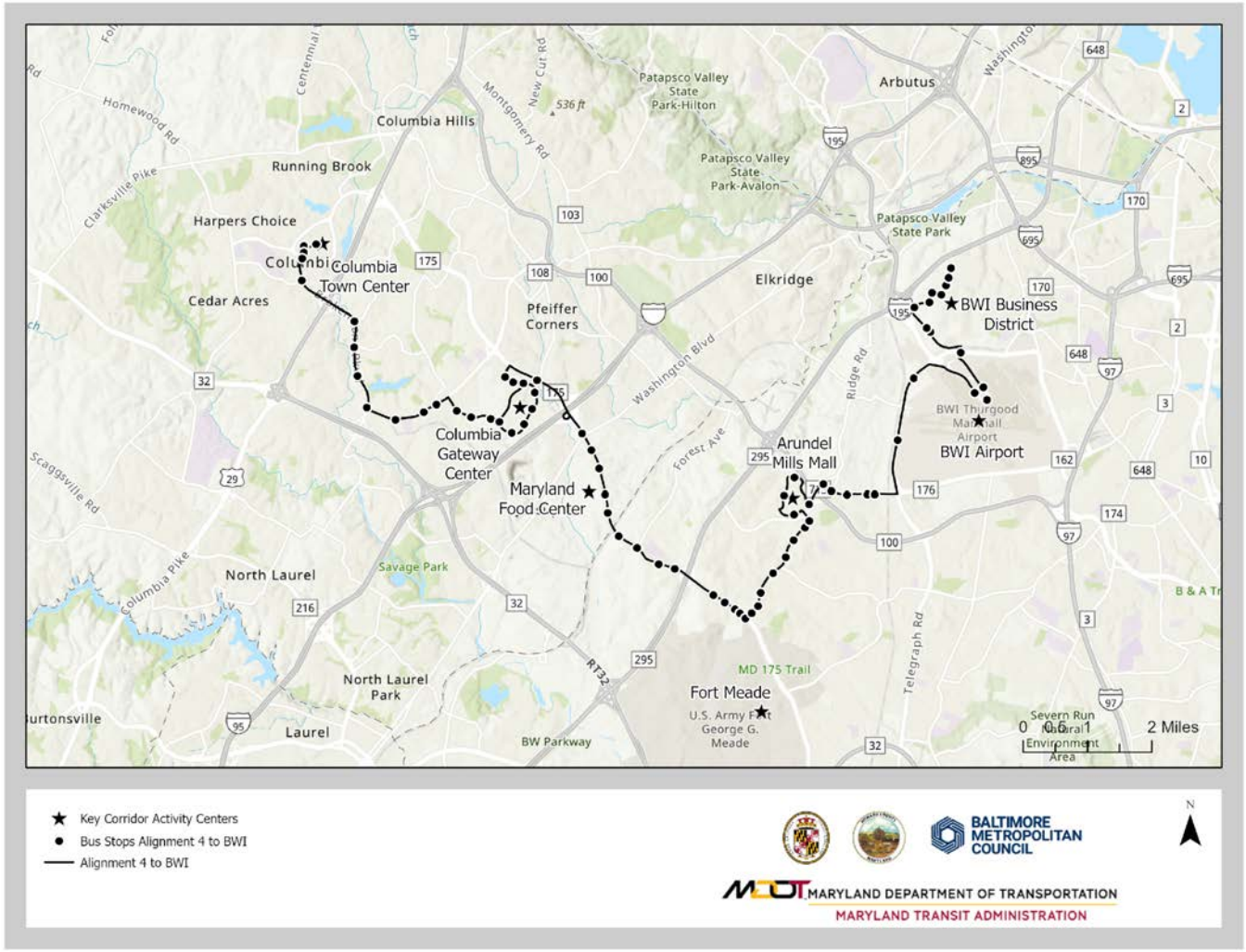
Alignment #12 – Columbia Town Center to BWI Business District (Highest Scoring of Three Alternatives to BWI Business District Based On Alternatives Analysis – 40/49 Total Potential Points)



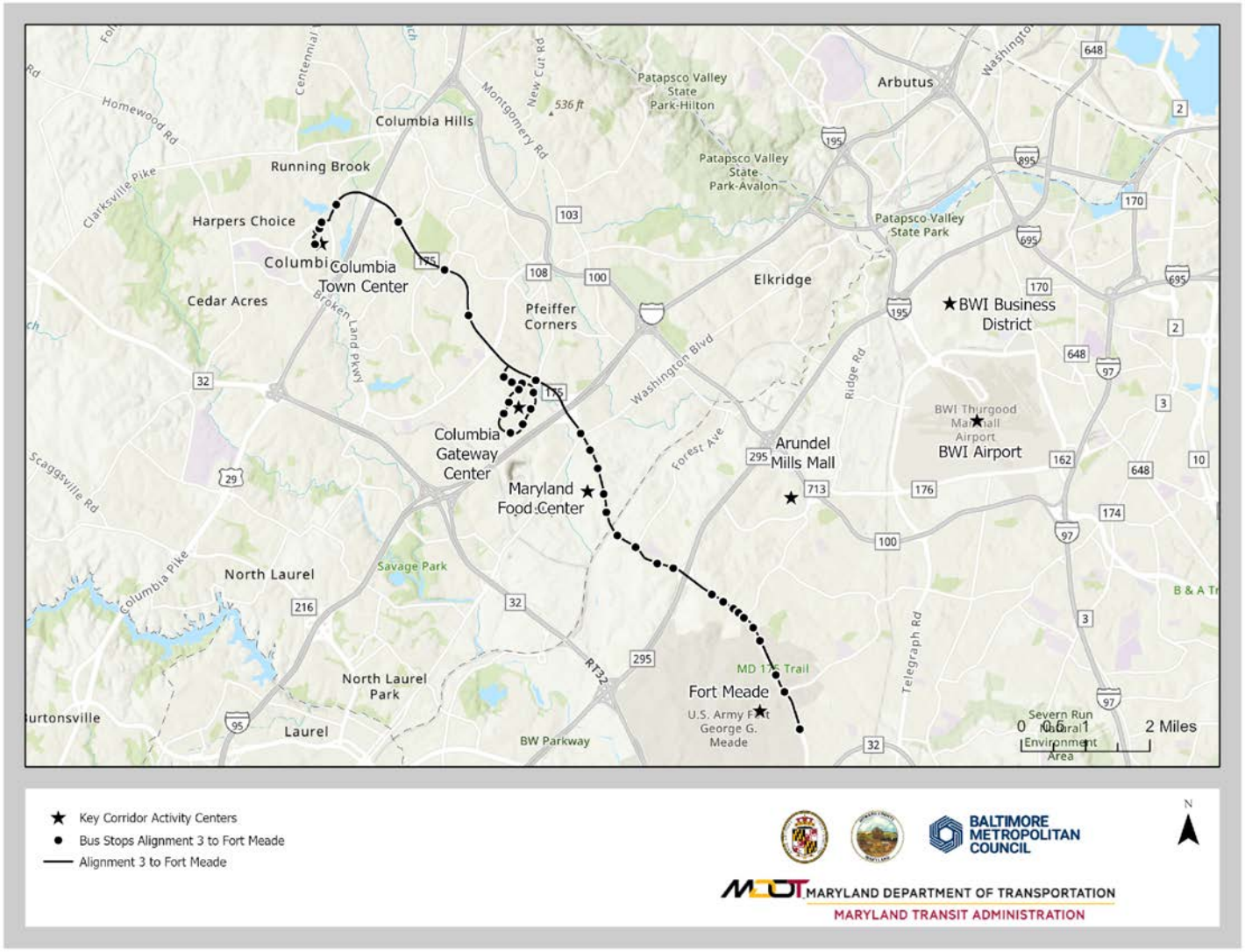
Alignment #11 – Columbia Town Center to BWI Business District (Second Highest Scoring of Three Alternatives to BWI Business District Based On Alternatives Analysis – 39/49 Total Potential Points)



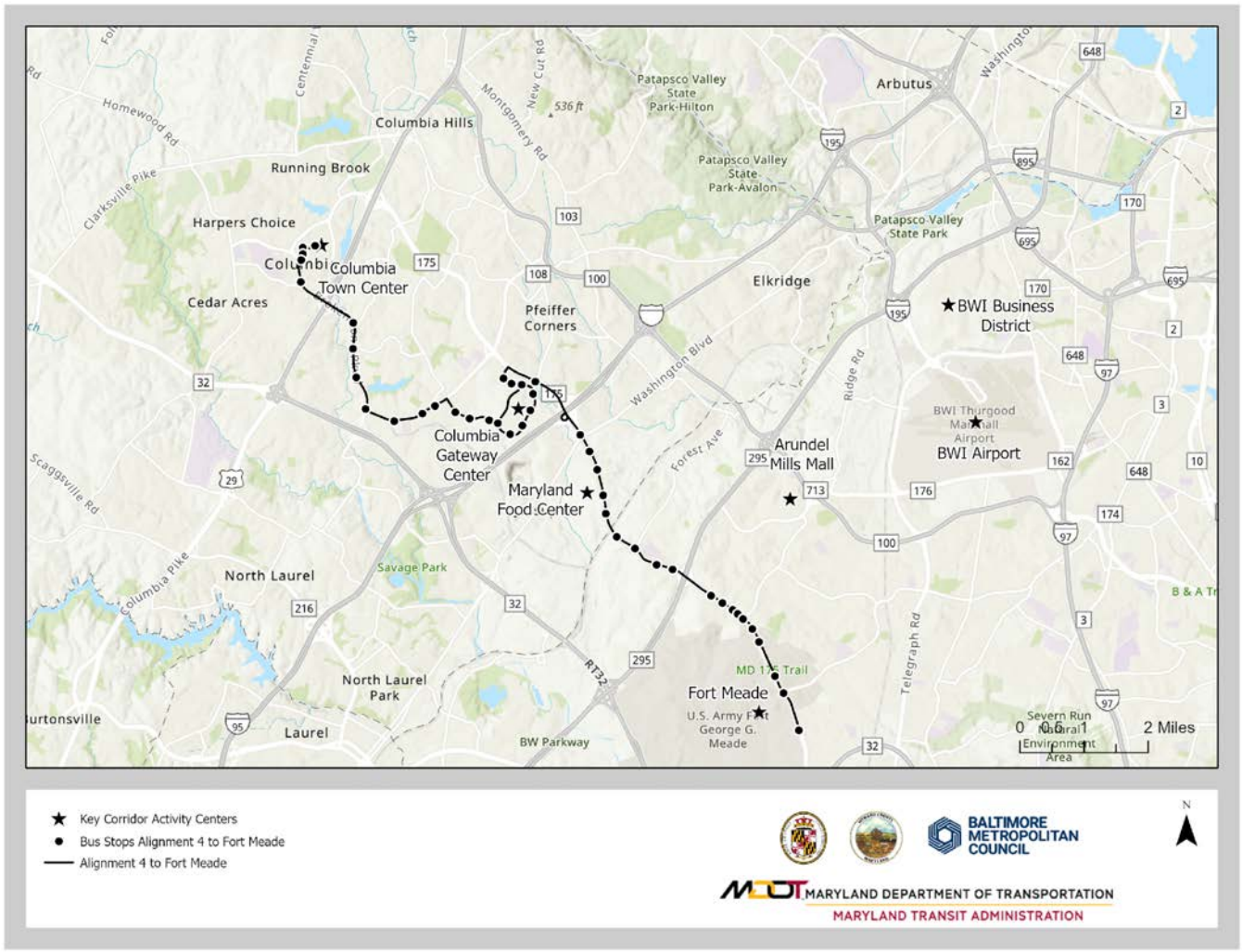
Alignment #4 – Columbia Town Center to BWI Business District (Third Highest Scoring of Three Alternatives to BWI Business District Based On Alternatives Analysis – 38/49 Total Potential Points)



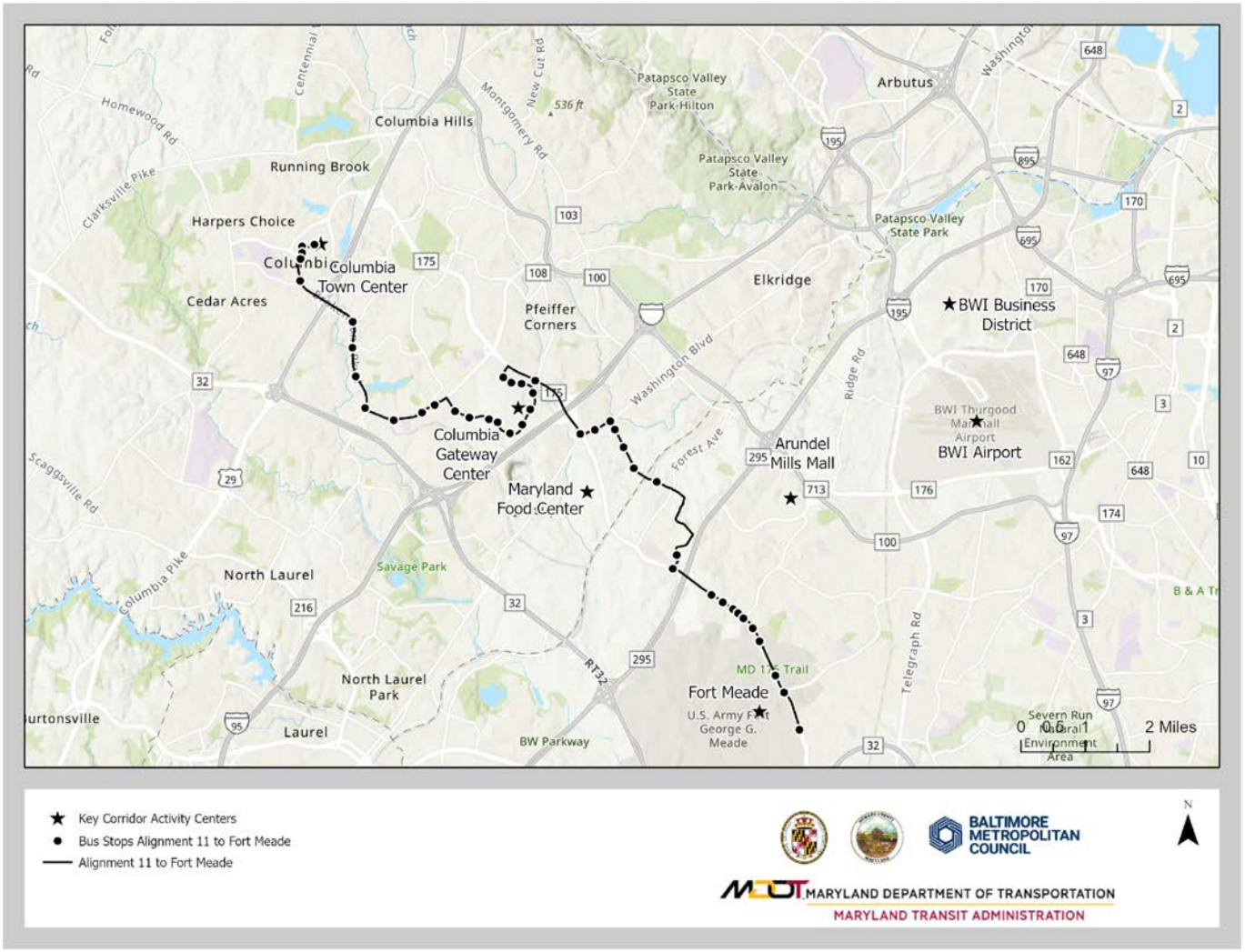
Alignment #3 – Columbia Town Center to Fort Meade (Highest Scoring of Three Alternatives to Fort Meade Based On Alternatives Analysis – 38/49 Total Potential Points)



Alignment #4 – Columbia Town Center to Fort Meade (Highest Scoring of Three Alternatives to Fort Meade Based On Alternatives Analysis – 38/49 Total Potential Points – Tied with Alternative #3)



Alignment #4 – Columbia Town Center to Fort Meade (Third Highest Scoring of Three Alternatives to Fort Meade Based On Alternatives Analysis – 37/49 Total Potential Points)



Appendix 2 – Accessibility Improvements Detail by Alignment Segment

Unit Costs

CODE	UNIT	UNIT PRICE	Title
655105	SF	$10.00	5 INCH CONCRETE SIDEWALK
860285	EA	$750.00	16 INCH LED COUNTDOWN PEDESTRIAN SIGNAL HEAD
865210	EA	$825.00	AUDIBLE/TACTILE PEDESTRIAN PUSHBUTTON STATION AND SIGNS
549409	LF	$10.00	24 INCH WHITE THERMOPLASTIC PAVEMENT MARKINGS
60000	SF	$15.00	PEDESTRIAN REFUGE INSTALL

Source: SHA Price Index

Units by Segment

Alignment Segment		Unit	Unit Description	# of Units
Columbia Mall Transit Center to Broken Land Parkway/Snowden River Parkway	12 (BWI), 11 (BWI), 4 (BWI) 4 (FM), 11 (FM)	Sidewalk	Square Footage of Sidewalk (5 inches thick, 5 feet wide)	88,190
		X-Walk	Linear Foot - 24 Inch White Thermoplastic Pavement Markings	5,585
		Ped Signal Heads	One Pedestrian Signal Head	32
		Ped Signal Push Buttons	One Push Button	32
		Ped Refuge	Square Foot of Refuge	1,568
Broken Land Parkway/Snowden River Parkway to Snowden River Parkway/Robert Fulton Drive	12 (BWI), 11 (BWI), 4 (BWI) 4 (FM), 11 (FM)	Sidewalk	Square Footage of Sidewalk (5 inches thick, 5 feet wide)	64,977
		X-Walk	Linear Foot - 24 Inch White Thermoplastic Pavement Markings	5,680
		Ped Signal Heads	One Pedestrian Signal Head	36
		Ped Signal Push Buttons	One Push Button	36
		Ped Refuge	Square Foot of Refuge	1,149

Alignment Segment	Applicable Alignment Alternatives	Unit	Unit Description	# of Units
Snowden River/Robert Fulton to Columbia Gateway Center Drive/MD 175	12 (BWI), 11 (BWI), 4 (BWI) 4 (FM), 11 (FM)	Sidewalk	Square Footage of Sidewalk (5 inches thick, 5 feet wide)	63,509
		X-Walk	Linear Foot - 24 Inch White Thermoplastic Pavement Markings	3,723
		Ped Signal Heads	One Pedestrian Signal Head	16
		Ped Signal Push Buttons	One Push Button	16
		Ped Refuge	Square Foot of Refuge	244
Columbia Mall Transit Center to MD 175/Gateway Center Drive (includes loop through Columbia Gateway Center)	3 (FM)	Sidewalk	Square Footage of Sidewalk (5 inches thick, 5 feet wide)	313,154
		X-Walk	Linear Foot - 24 Inch White Thermoplastic Pavement Markings	8,564
		Ped Signal Heads	One Pedestrian Signal Head	40
		Ped Signal Push Buttons	One Push Button	40
		Ped Refuge	Square Foot of Refuge	1,604
Columbia Gateway Center Drive/MD 175 to MD 175/MD 713 via US 1, MD 103 and Race Road	12 (BWI)	Sidewalk	Square Footage of Sidewalk (5 inches thick, 5 feet wide)	212,976
		X-Walk	Linear Foot - 24 Inch White Thermoplastic Pavement Markings	16,599
		Ped Signal Heads	One Pedestrian Signal Head	52
		Ped Signal Push Buttons	One Push Button	52
		Ped Refuge	Square Foot of Refuge	1,169

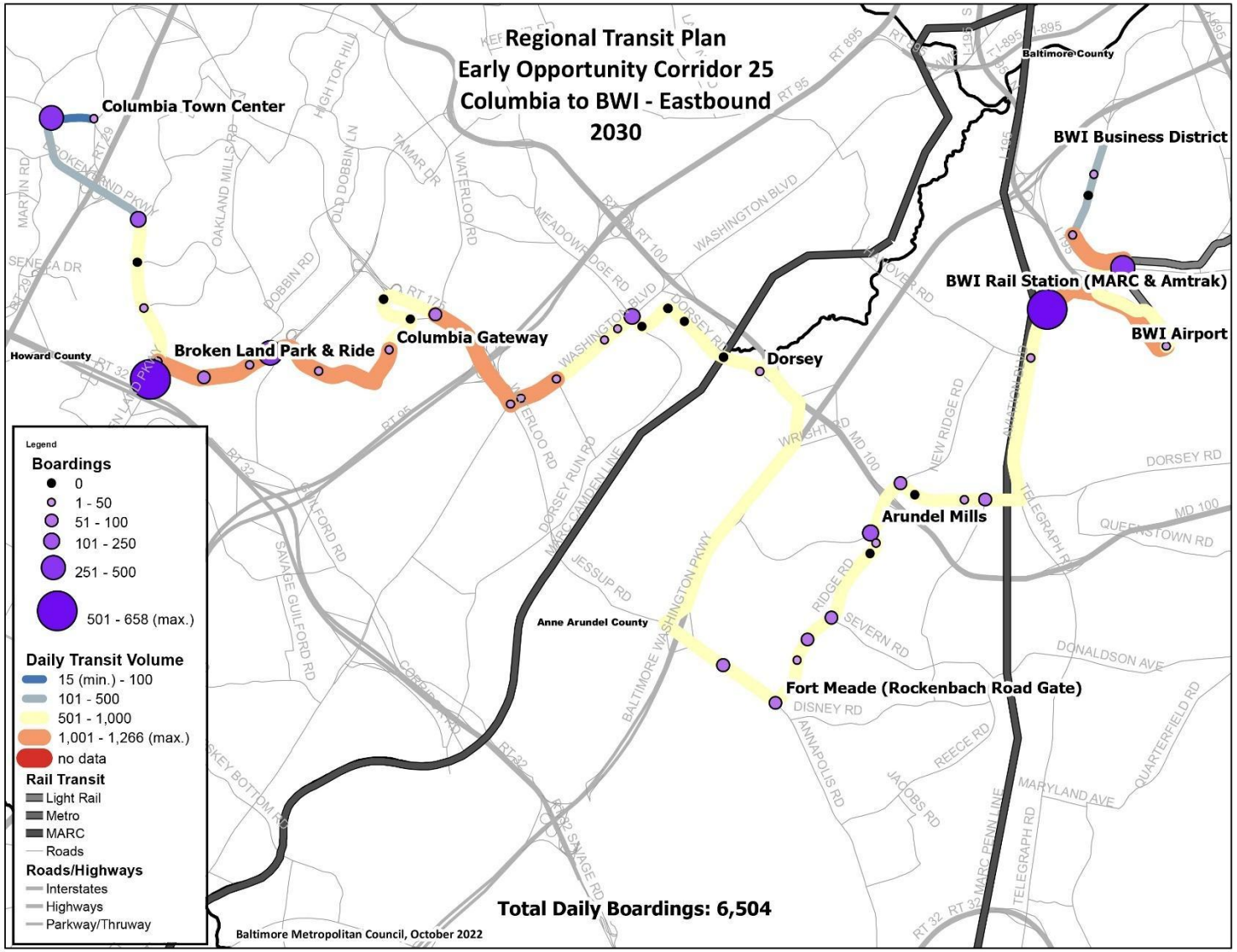
Alignment Segment	Applicable Alignment Alternatives	Unit	Unit Description	# of Units
Columbia Gateway Center Drive/MD 175 to MD 175/MD 713 via US 1, Montevideo Road and Race Road	11(BWI), 11 (FM)	Sidewalk	Square Footage of Sidewalk (5 inches thick, 5 feet wide)	275,913
		X-Walk	Linear Foot - 24 Inch White Thermoplastic Pavement Markings	6,676
		Ped Signal Heads	One Pedestrian Signal Head	18
		Ped Signal Push Buttons	One Push Button	18
		Ped Refuge	Square Foot of Refuge	1,104
Columbia Gateway Center Drive/MD 175 to MD 175/MD 713	4 (BWI)	Sidewalk	Square Footage of Sidewalk (5 inches thick, 5 feet wide)	267,869
		X-Walk	Linear Foot - 24 Inch White Thermoplastic Pavement Markings	9,287
		Ped Signal Heads	One Pedestrian Signal Head	64
		Ped Signal Push Buttons	One Push Button	64
		Ped Refuge	Square Foot of Refuge	992
MD 175/MD 713 to Arundel Mills Bus Stops	12 (BWI), 11 (BWI), 4 (BWI)	Sidewalk	Square Footage of Sidewalk (5 inches thick, 5 feet wide)	83,813
		X-Walk	Linear Foot - 24 Inch White Thermoplastic Pavement Markings	5,183
		Ped Signal Heads	One Pedestrian Signal Head	22
		Ped Signal Push Buttons	One Push Button	22
		Ped Refuge	Square Foot of Refuge	268

Alignment Segment	Applicable Alignment Alternatives	Unit	Unit Description	# of Units
Arundel Mills Bus Stops to BWI Airport Terminal (via MD 170/MD 176)	12 (BWI), 11 (BWI), 4 (BWI)	Sidewalk	Square Footage of Sidewalk (5 inches thick, 5 feet wide)	219,010
		X-Walk	Linear Foot - 24 Inch White Thermoplastic Pavement Markings	12,867
		Ped Signal Heads	One Pedestrian Signal Head	86
		Ped Signal Push Buttons	One Push Button	86
		Ped Refuge	Square Foot of Refuge	1,432
BWI Airport to BWI Business District	12 (BWI), 11 (BWI), 4 (BWI)	Sidewalk	Square Footage of Sidewalk (5 inches thick, 5 feet wide)	43,030
		X-Walk	Linear Foot - 24 Inch White Thermoplastic Pavement Markings	4,470
		Ped Signal Heads	One Pedestrian Signal Head	28
		Ped Signal Push Buttons	One Push Button	28
		Ped Refuge	Square Foot of Refuge	440
MD 175/Columbia Gateway Drive to Fort Meade (Mapes Road	3 (FM), 4 (FM)	Sidewalk	Square Footage of Sidewalk (5 inches thick, 5 feet wide)	299,286
		X-Walk	Linear Foot - 24 Inch White Thermoplastic Pavement Markings	15,535
		Ped Signal Heads	One Pedestrian Signal Head	82
		Ped Signal Push Buttons	One Push Button	82
		Ped Refuge	Square Foot of Refuge	1,484

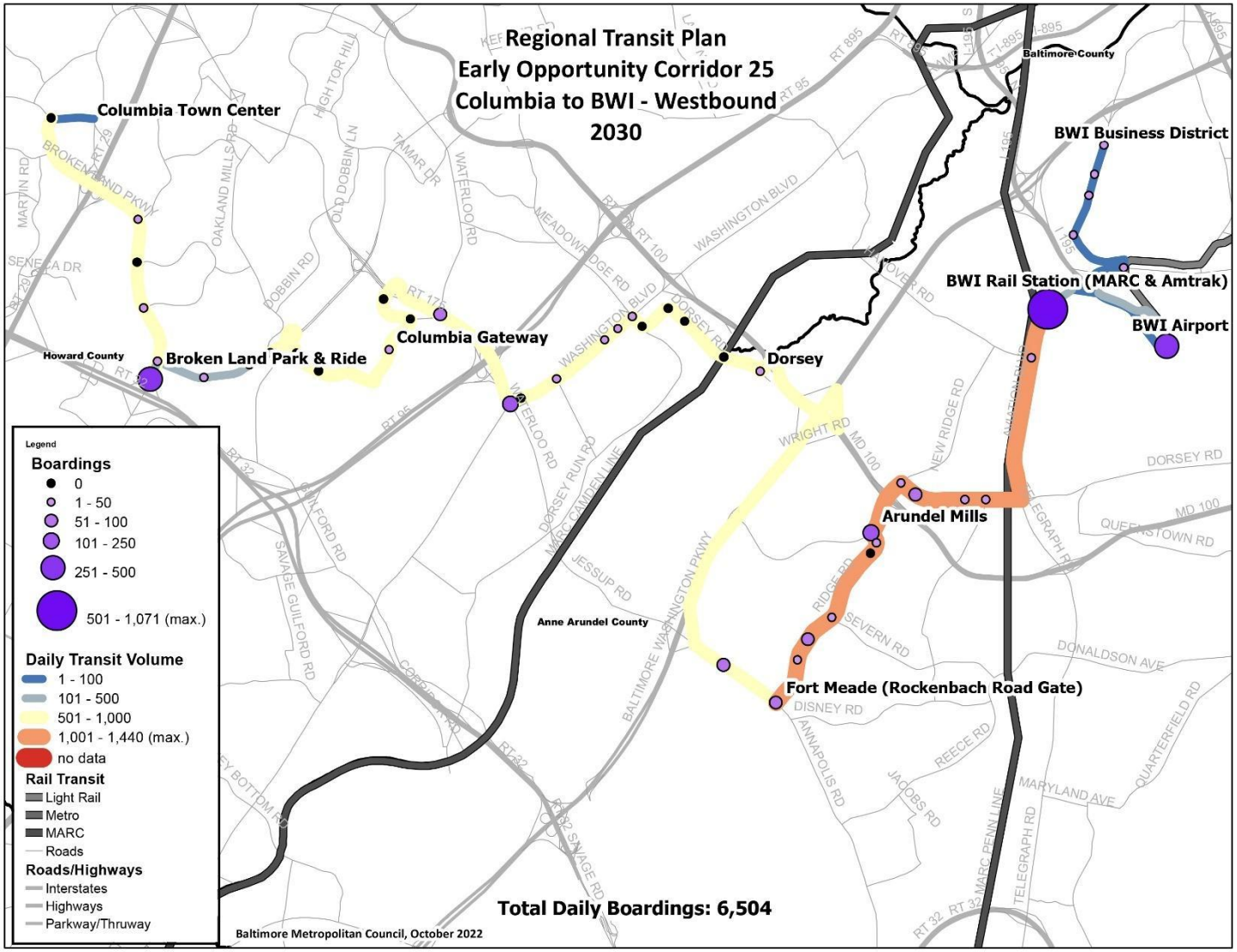
Alignment Segment	Applicable Alignment Alternatives	Unit	Unit Description	# of Units
MD 175/MD 713 to Fort Meade	11(FM)	Sidewalk	Square Footage of Sidewalk (5 inches thick, 5 feet wide)	33,430
		X-Walk	Linear Foot - 24 Inch White Thermoplastic Pavement Markings	3,154
		Ped Signal Heads	One Pedestrian Signal Head	11
		Ped Signal Push Buttons	One Push Button	11
		Ped Refuge	Square Foot of Refuge	102

Appendix 3 – Ridership Forecasts – Boarding and Alighting by Stop Maps

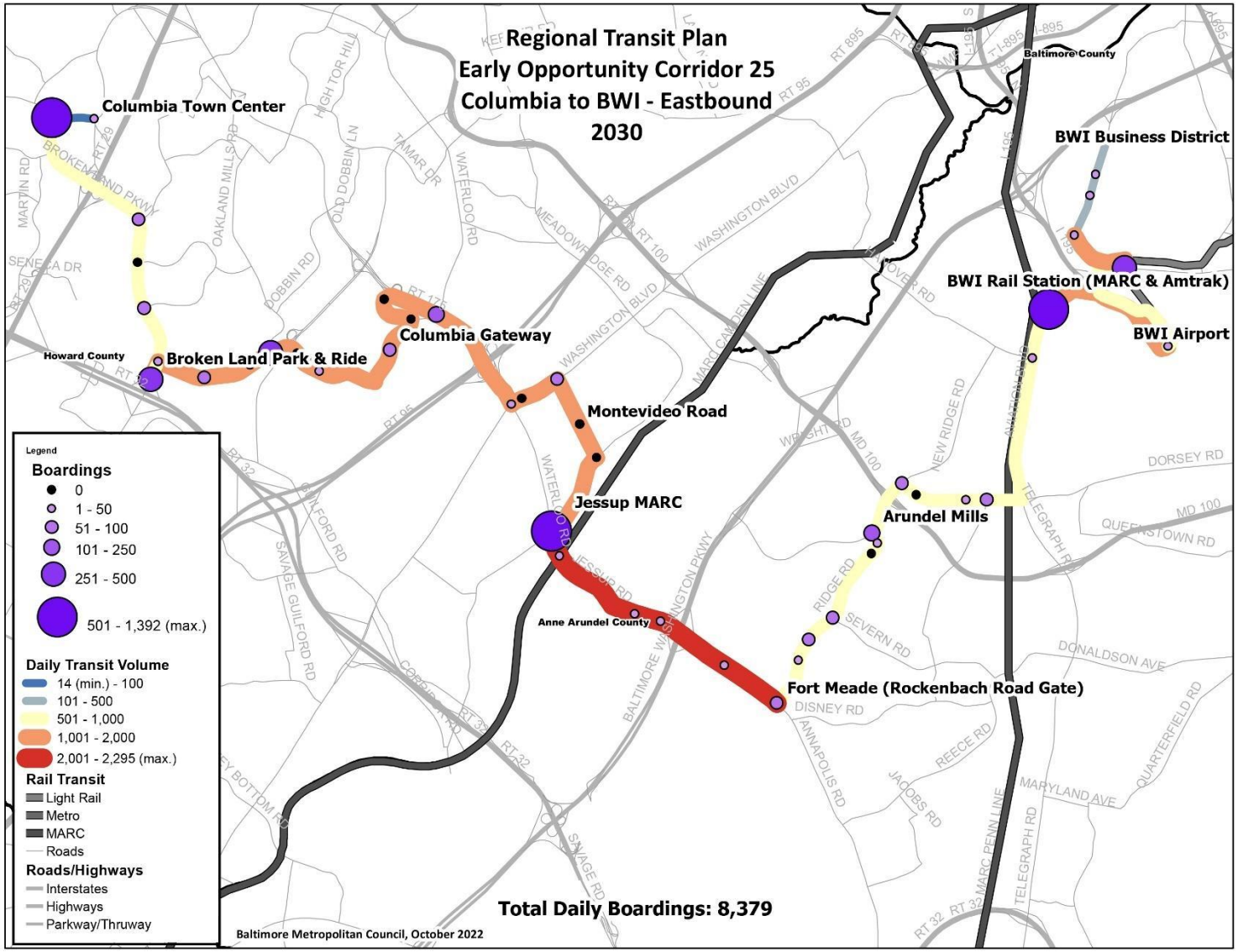
2030 Alignment Alternative #12 to BWI – Eastbound



2030 Alignment Alternative #12 to BWI – Westbound



2030 Alignment Alternative #11 to BWI – Eastbound



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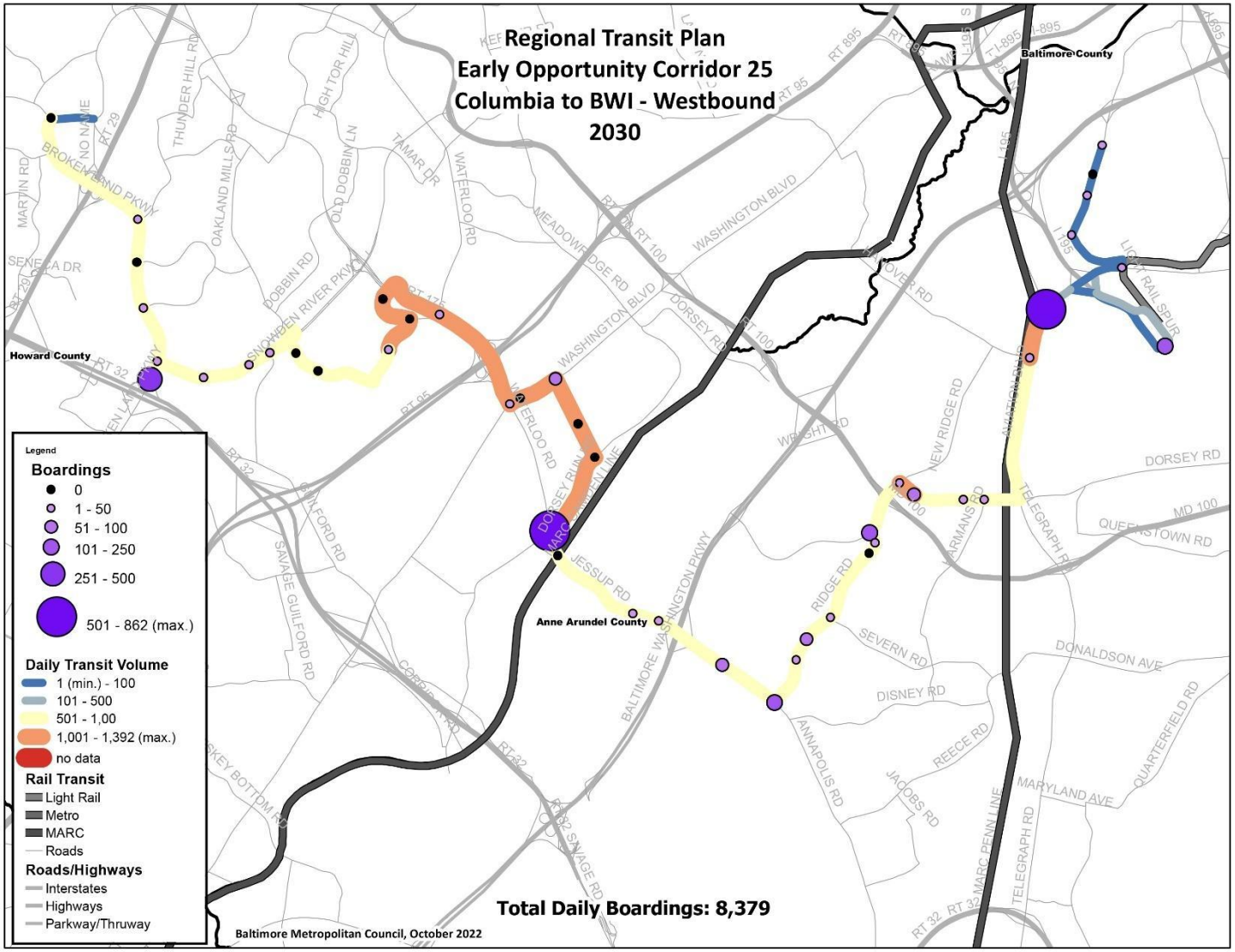
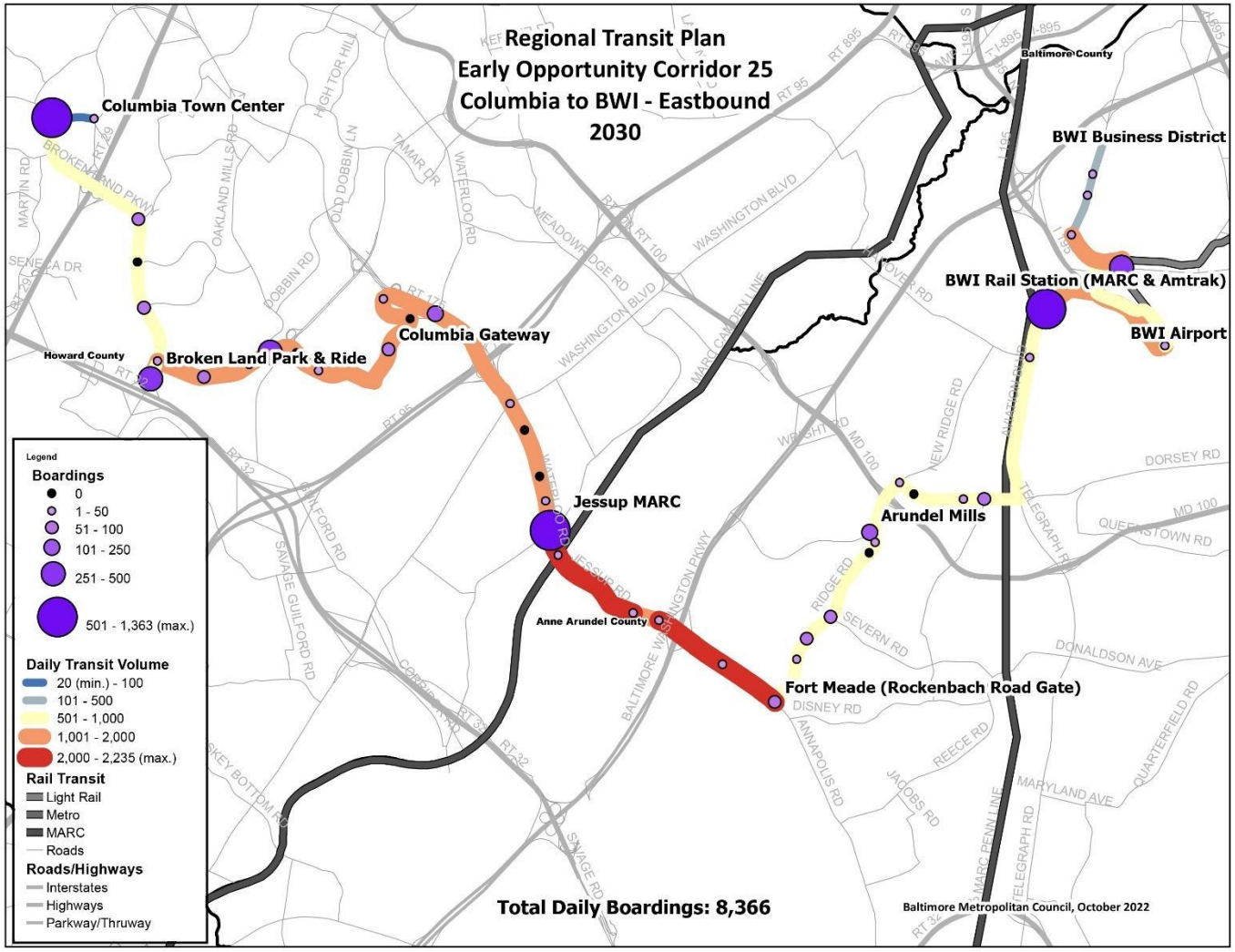


2030 Alignment Alternative #4 to BWI – Eastbound



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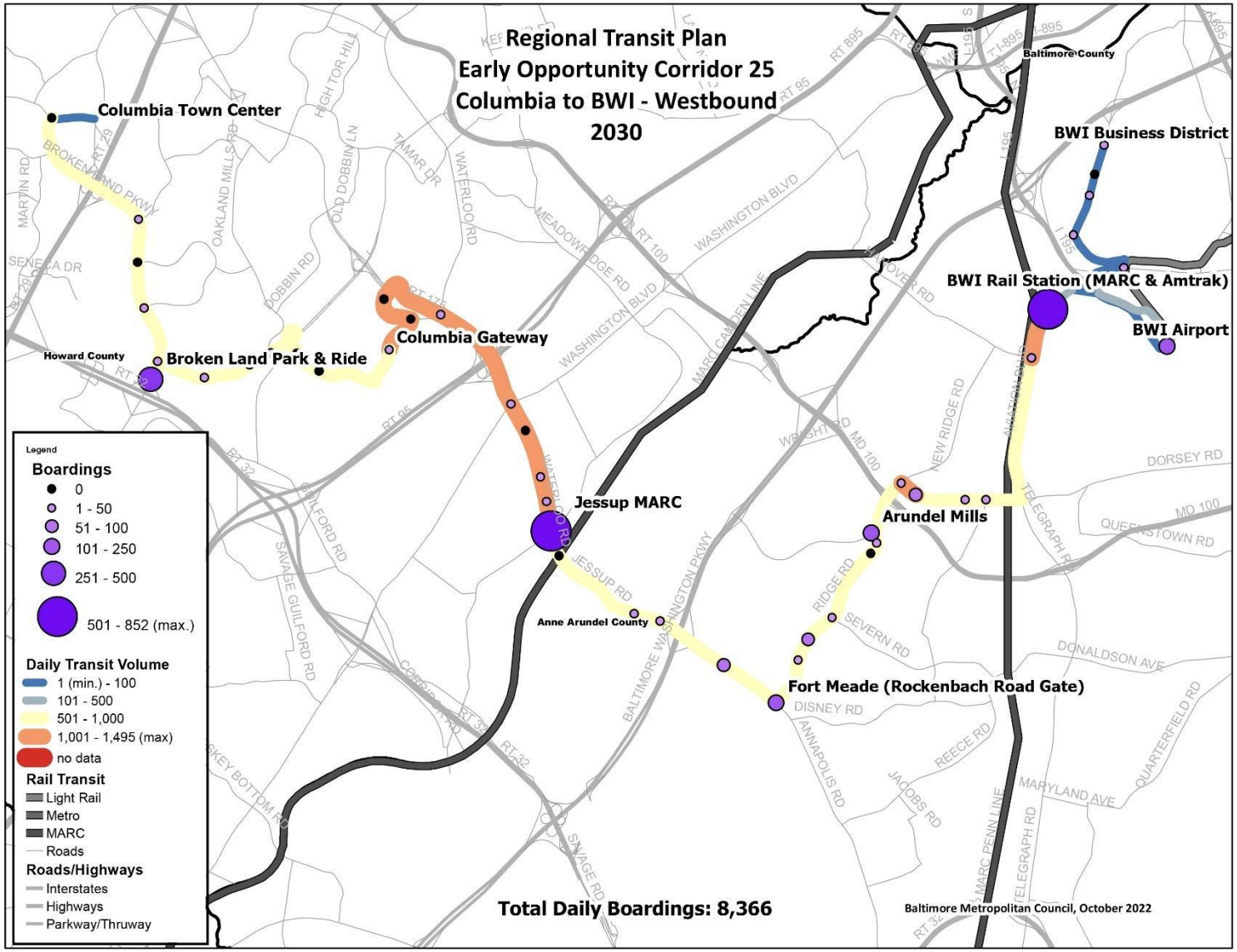
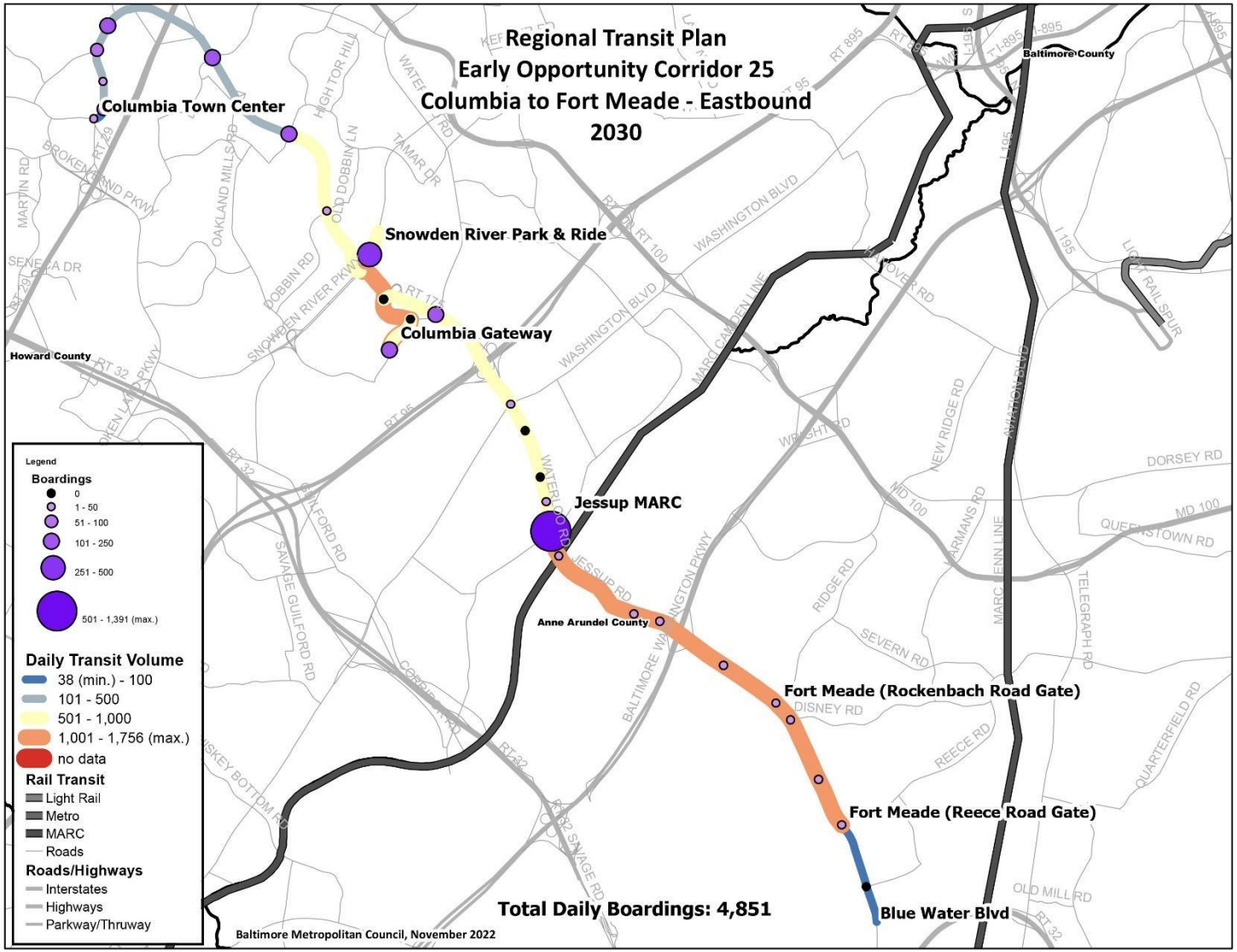


2030 Alignment Alternative #3 to Fort Meade – Eastbound



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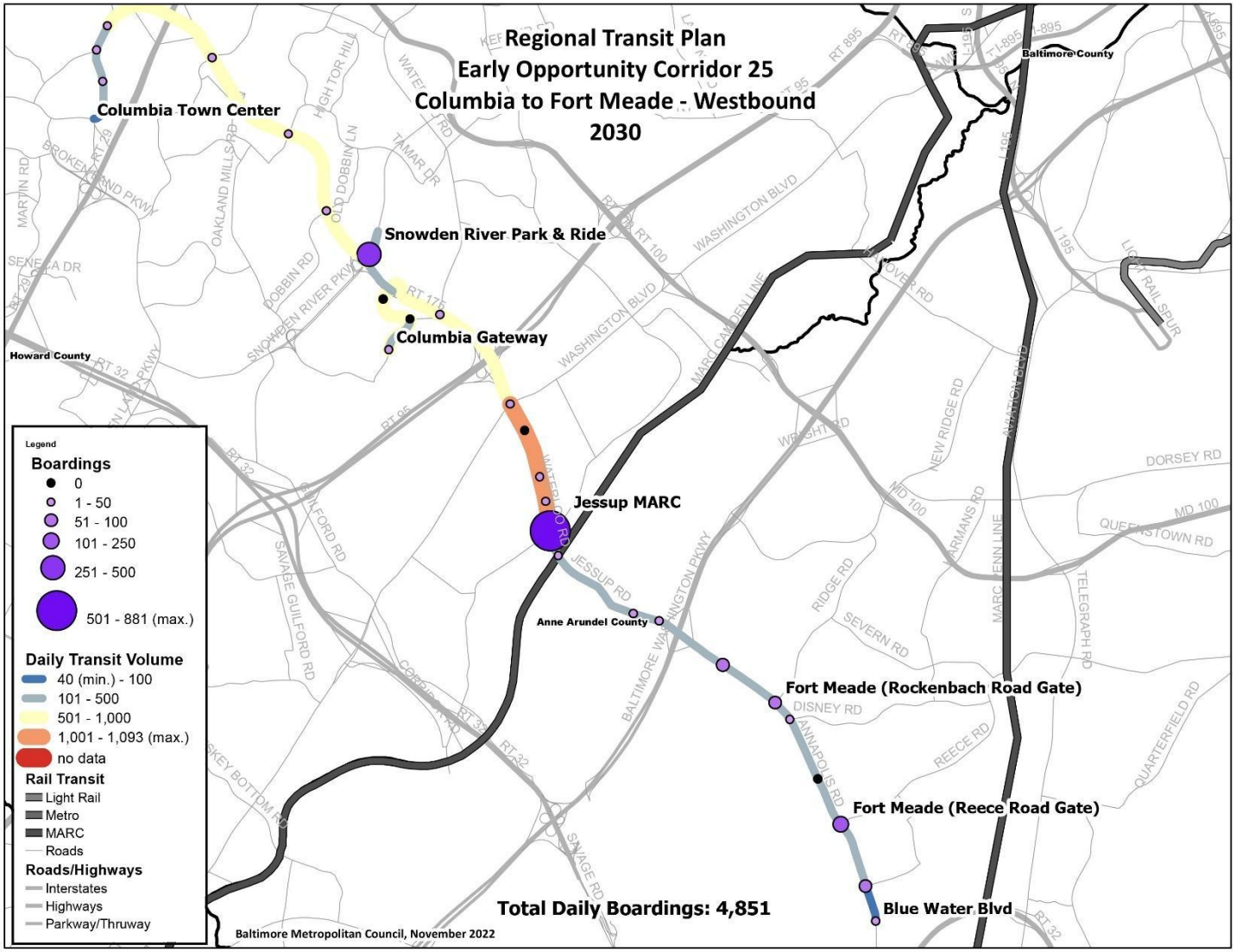

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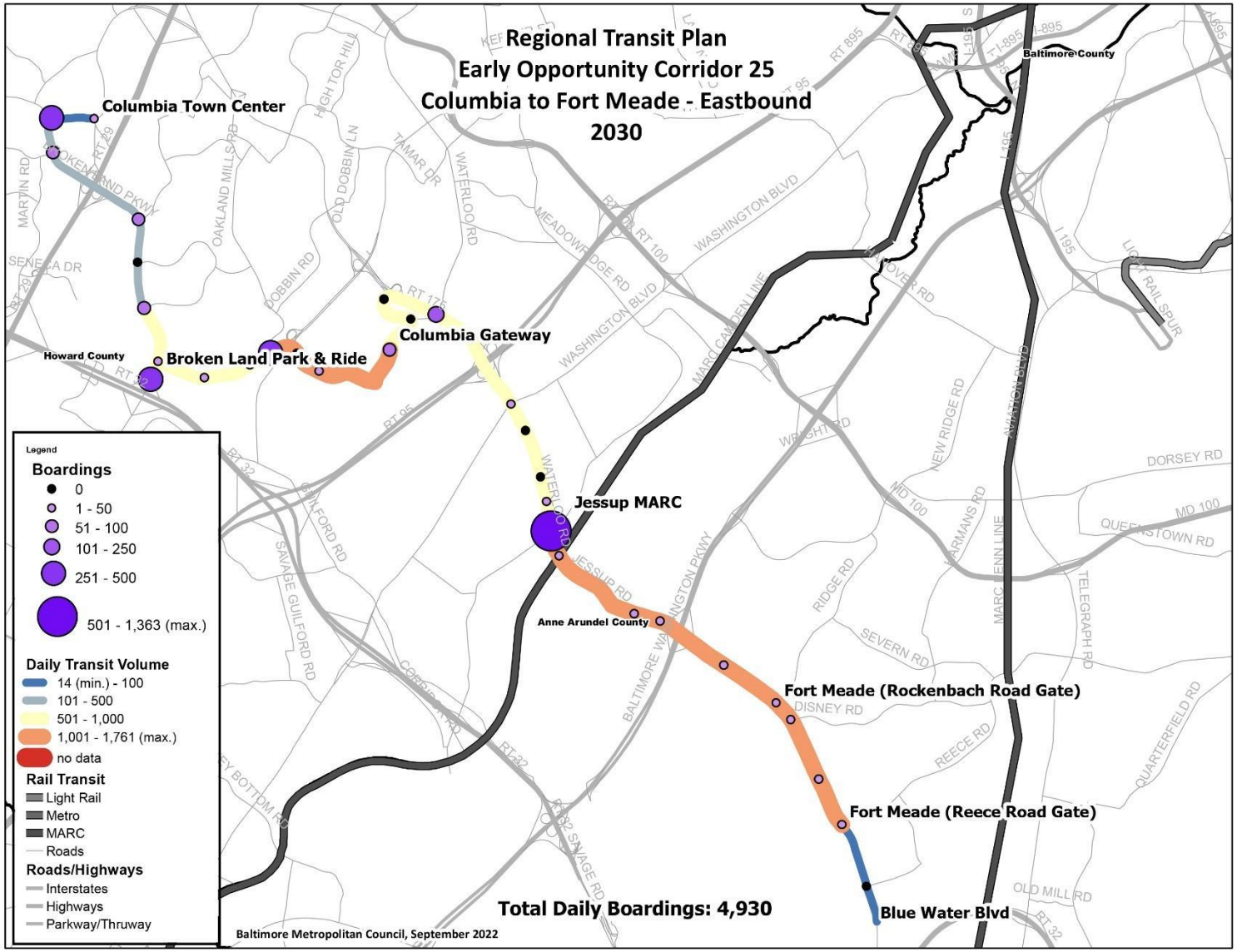

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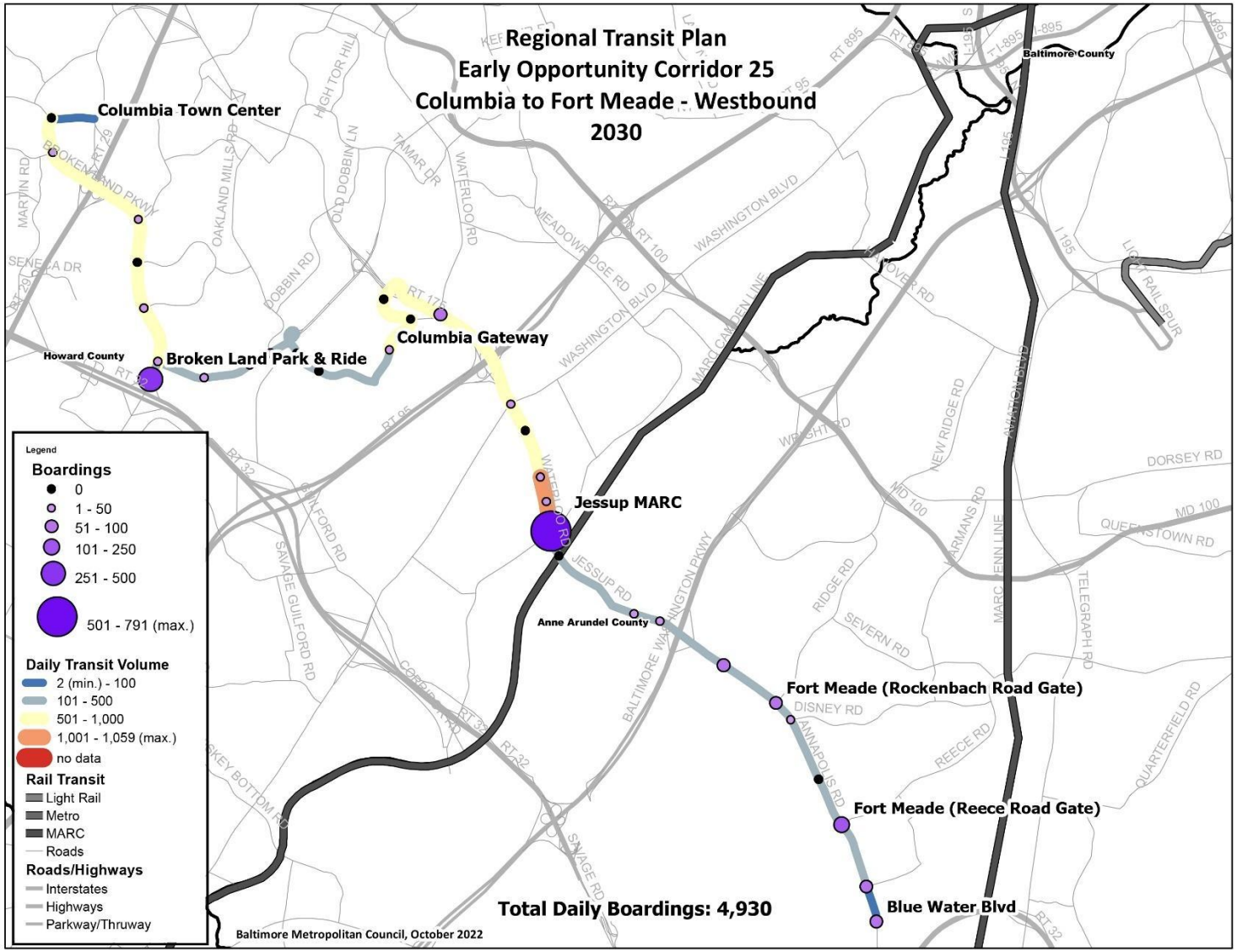

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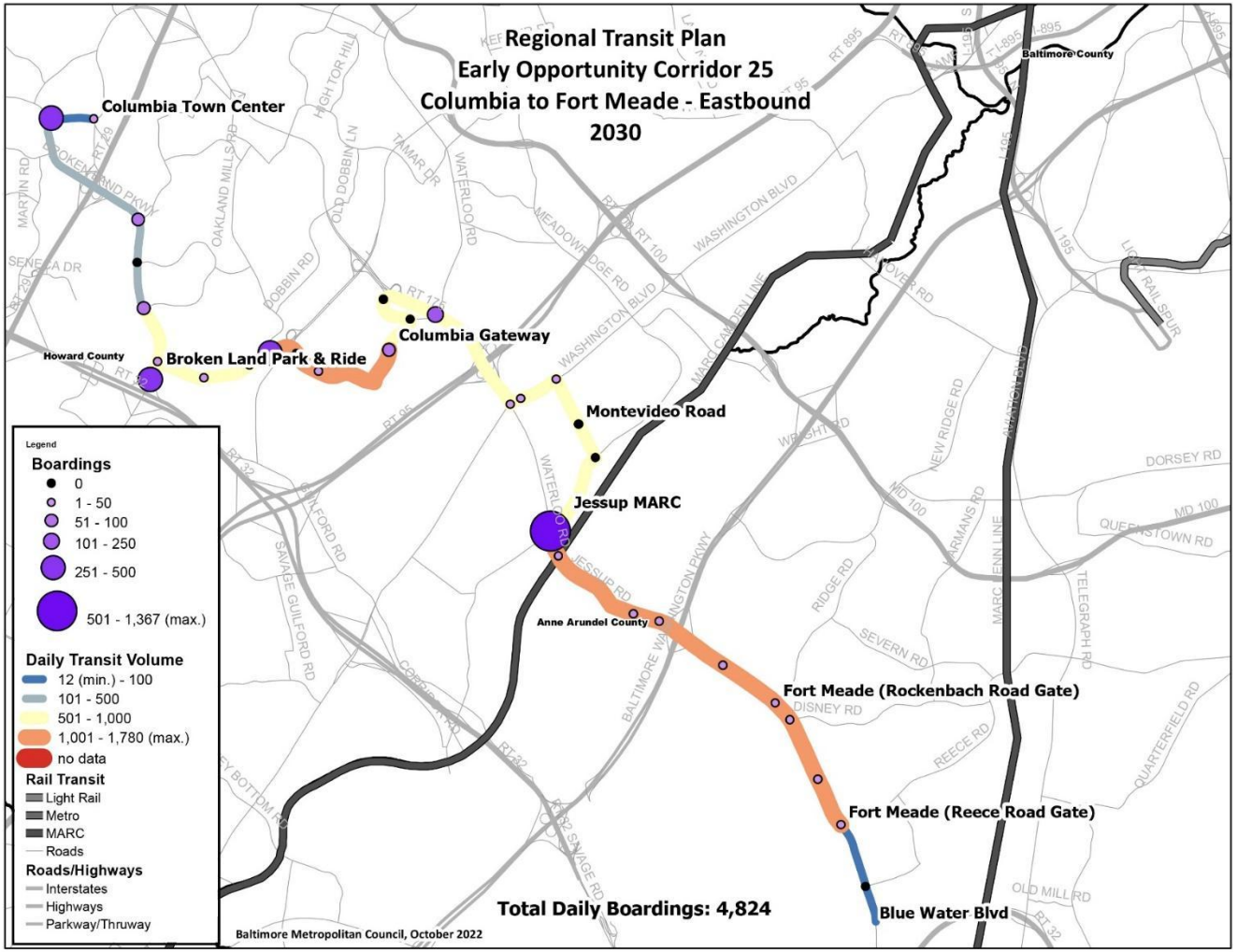

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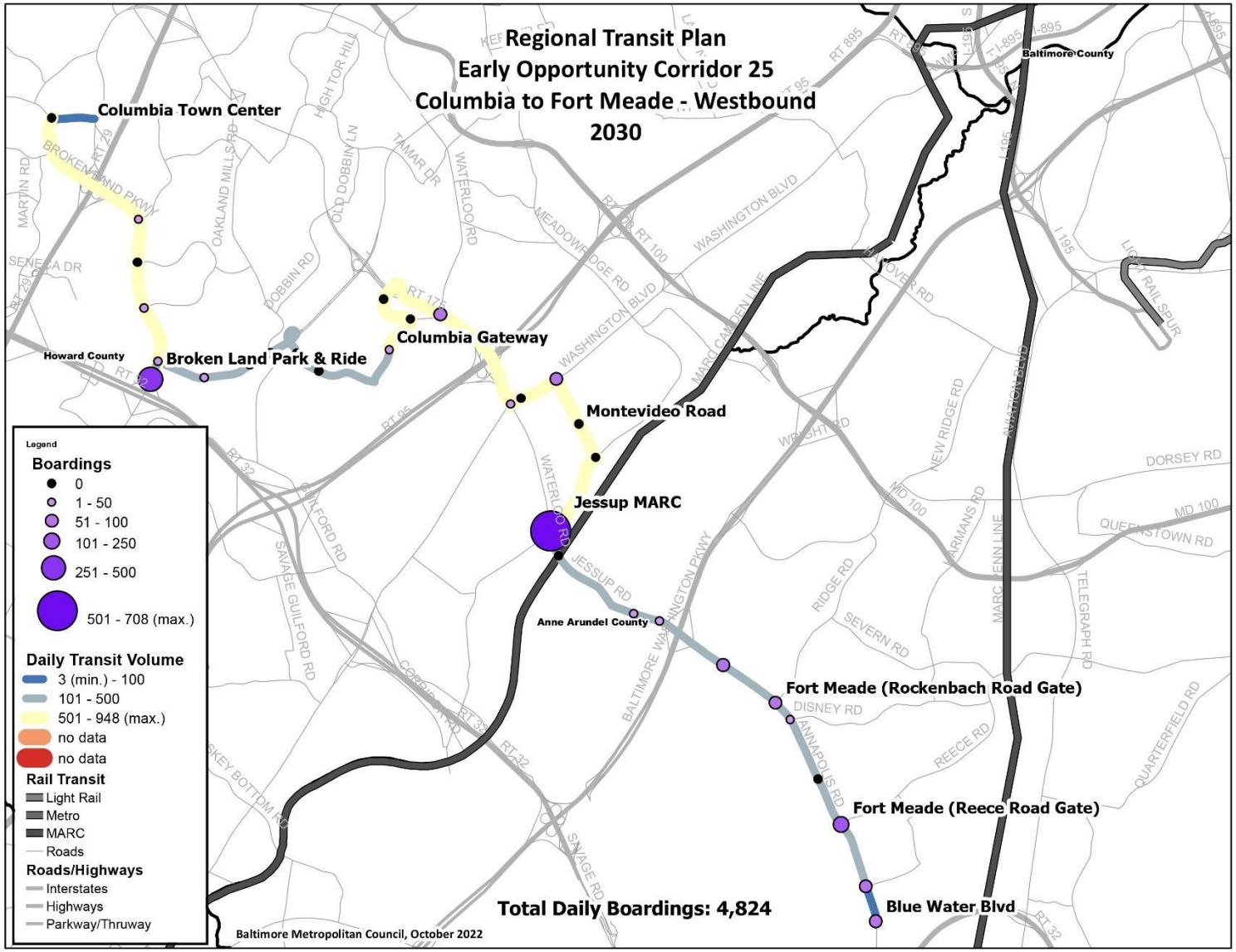
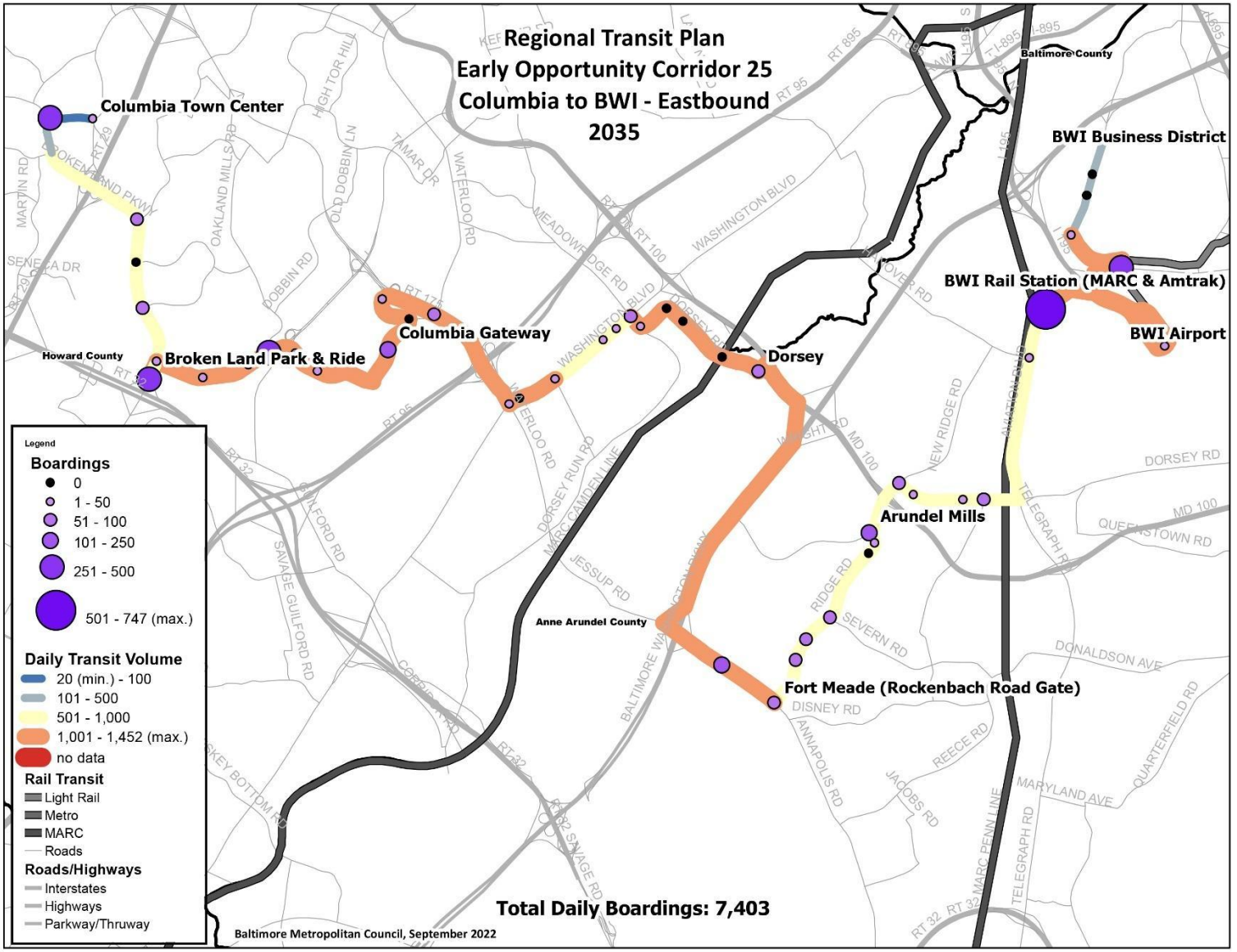


2035 Alignment Alternative #12 to BWI – Eastbound



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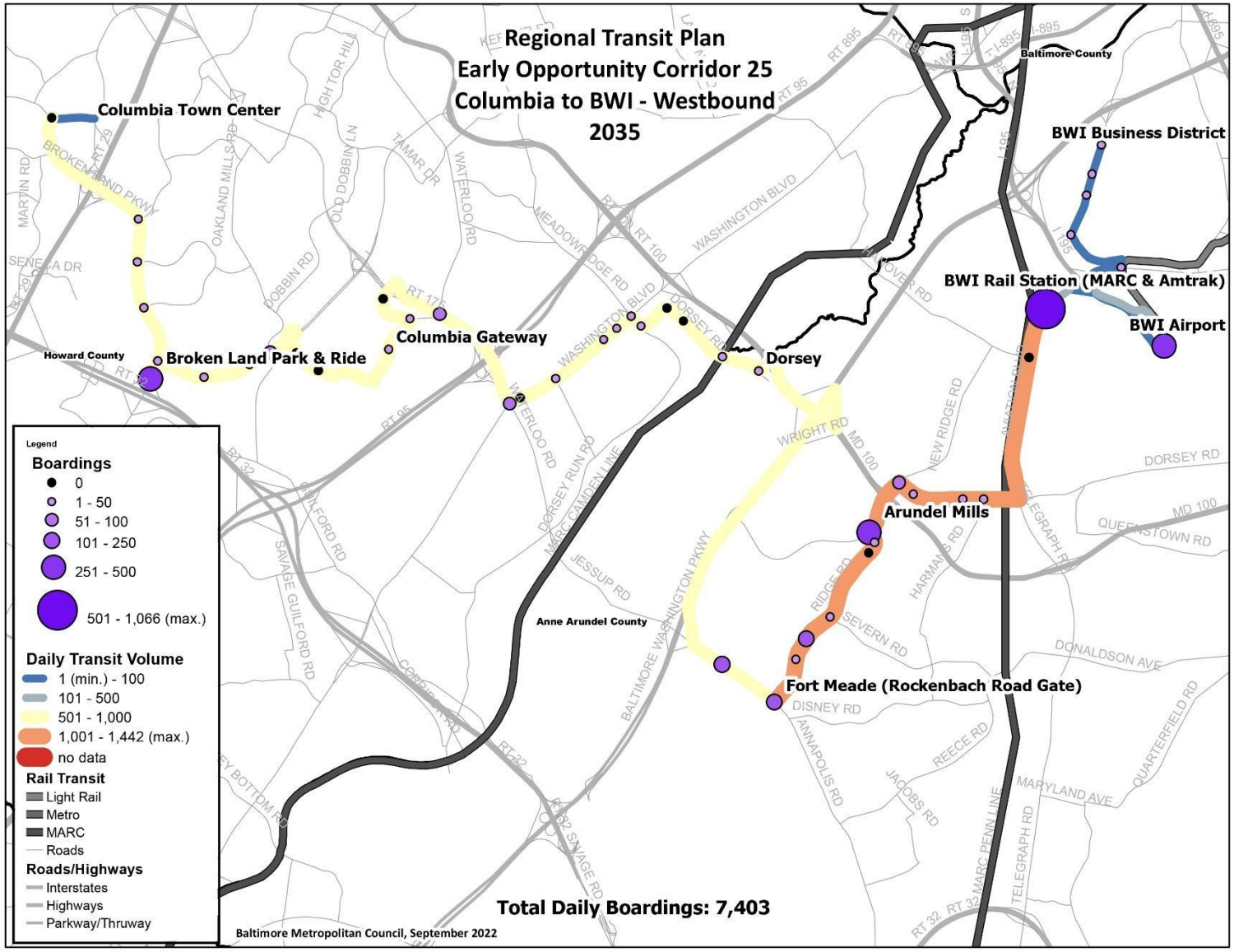

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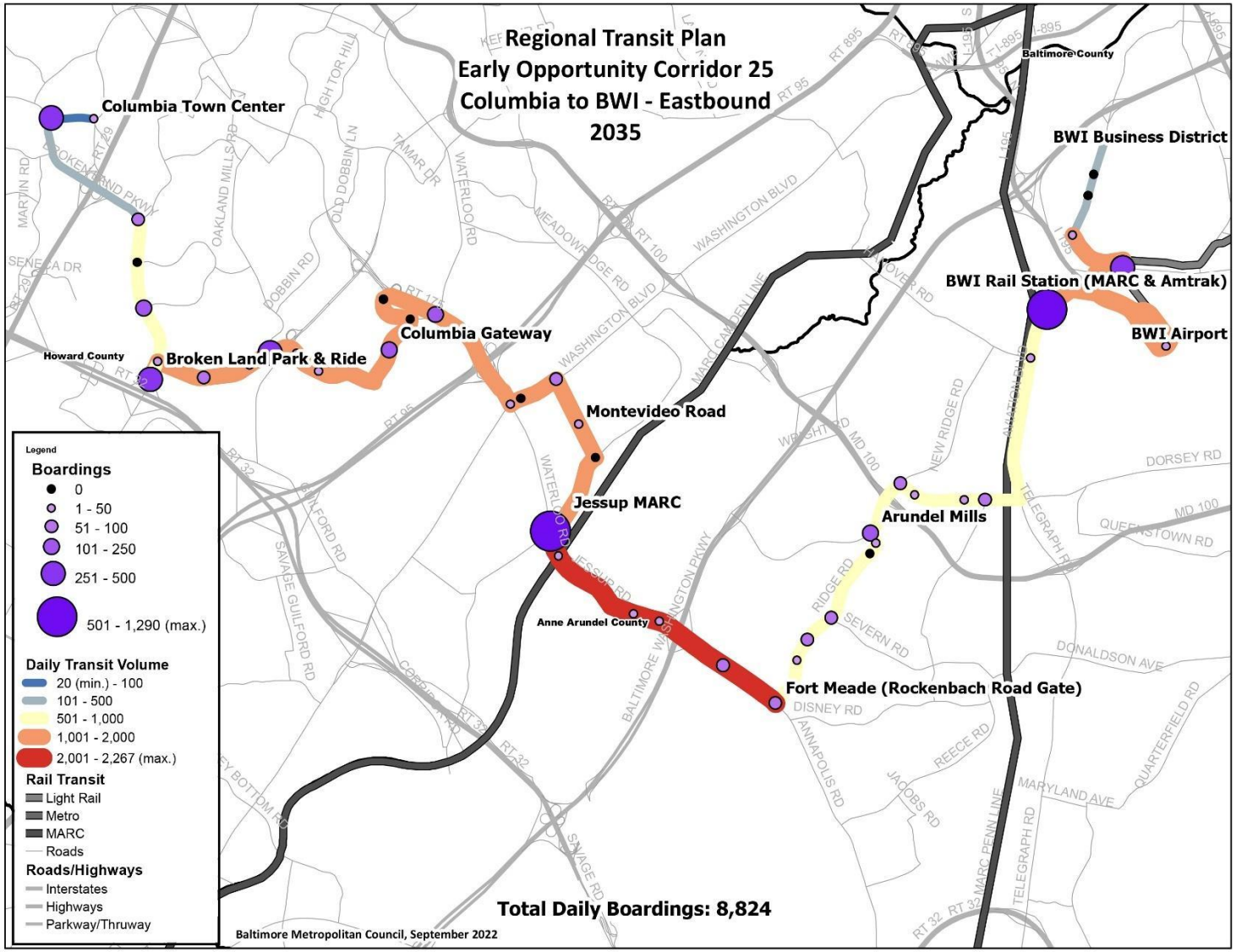

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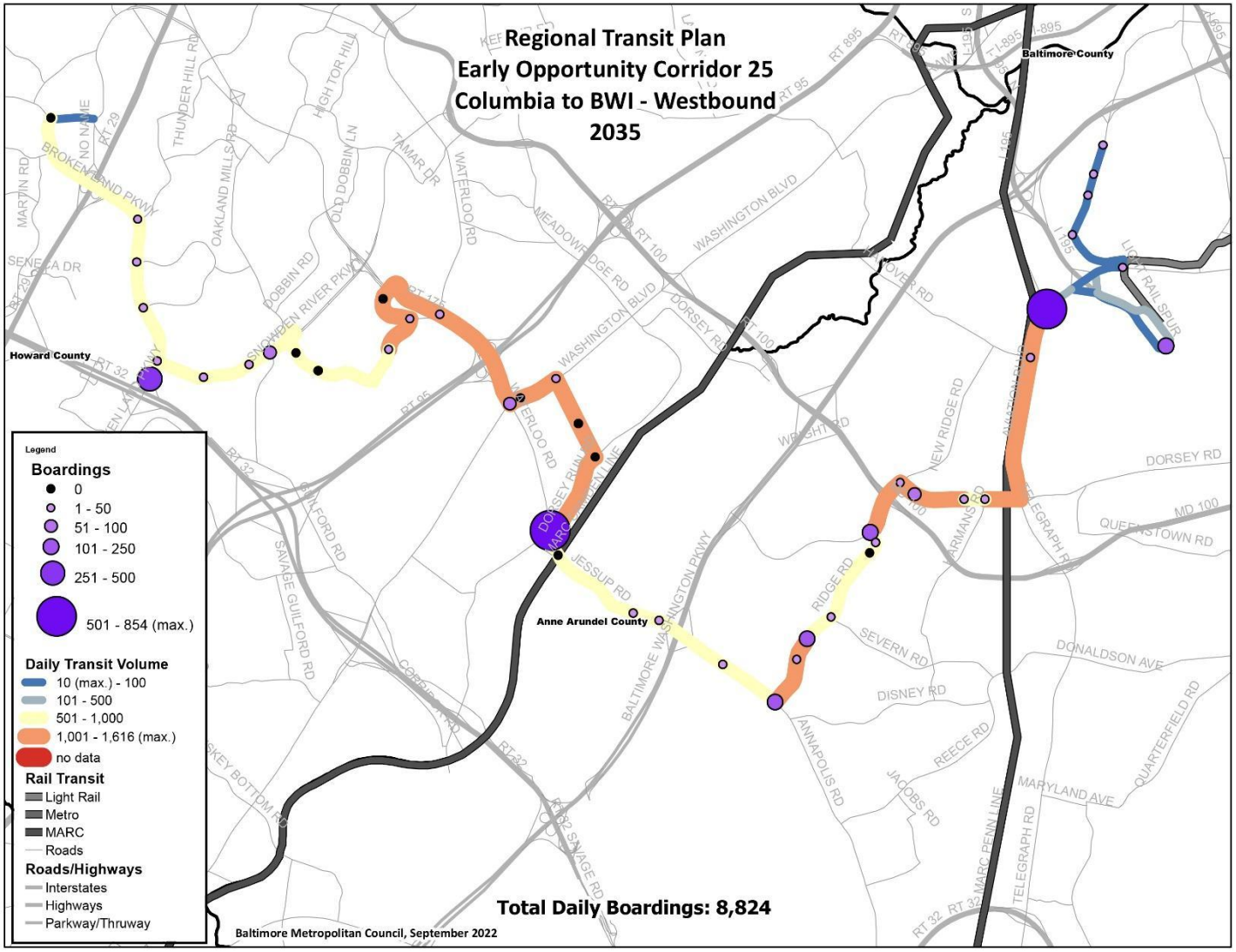

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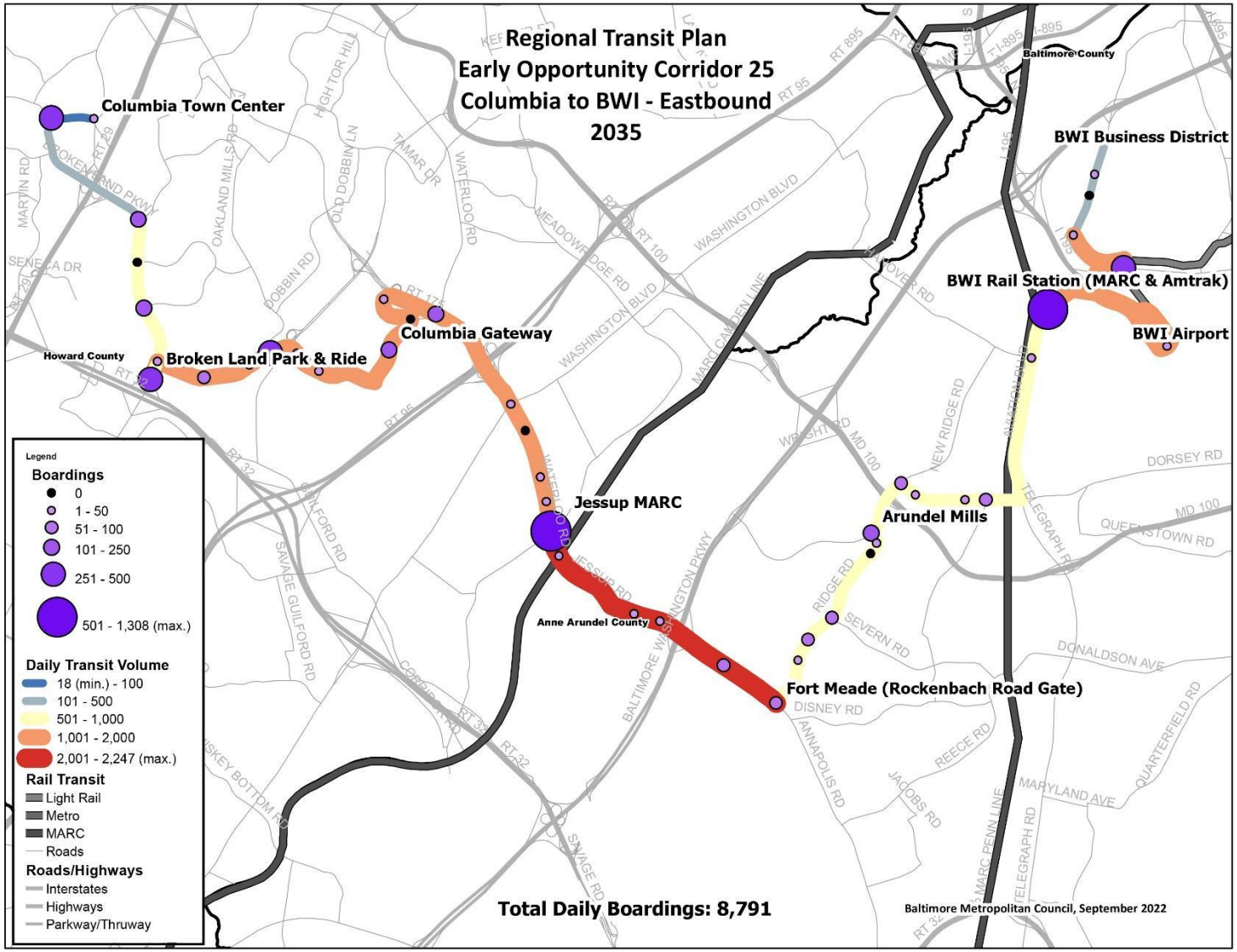

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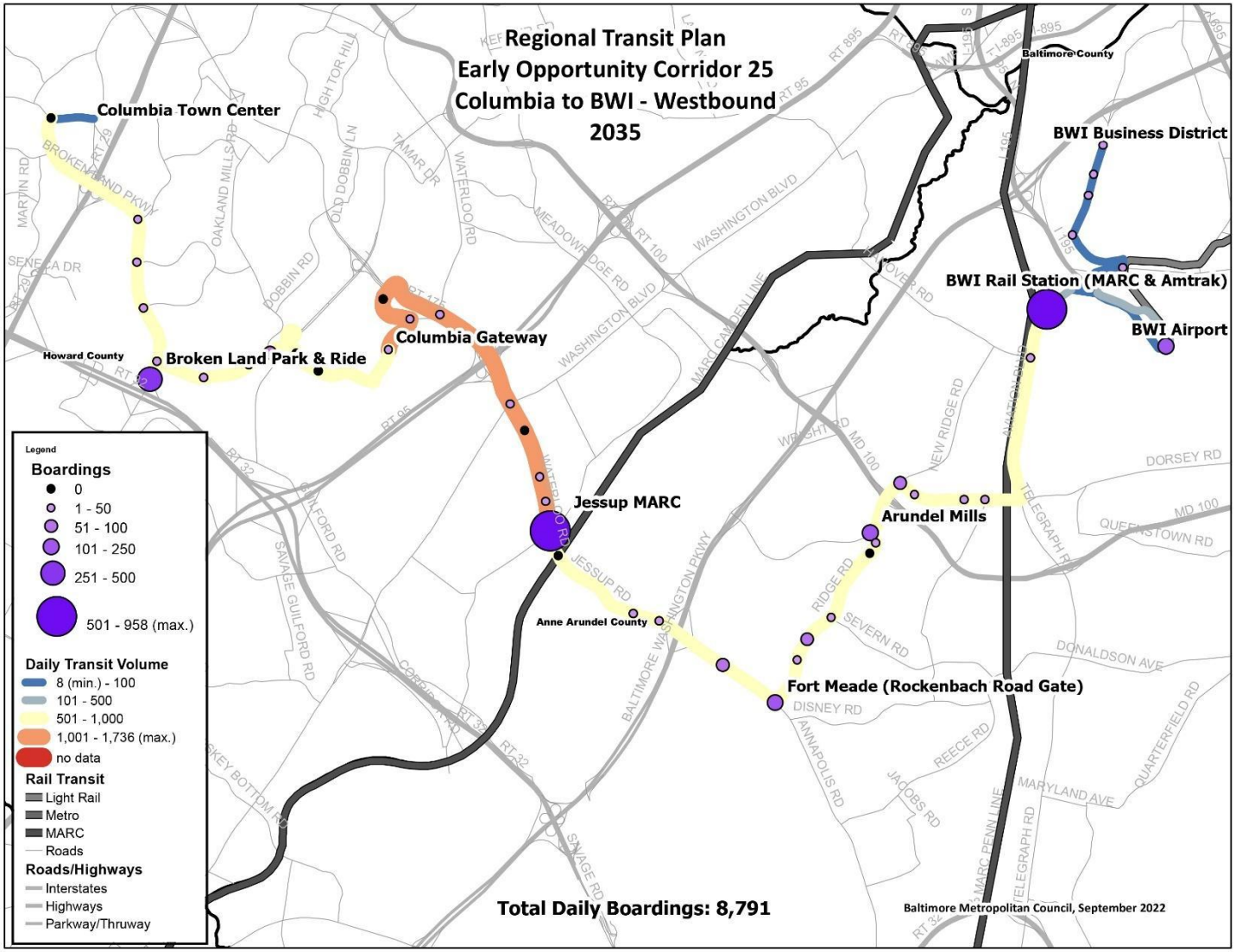

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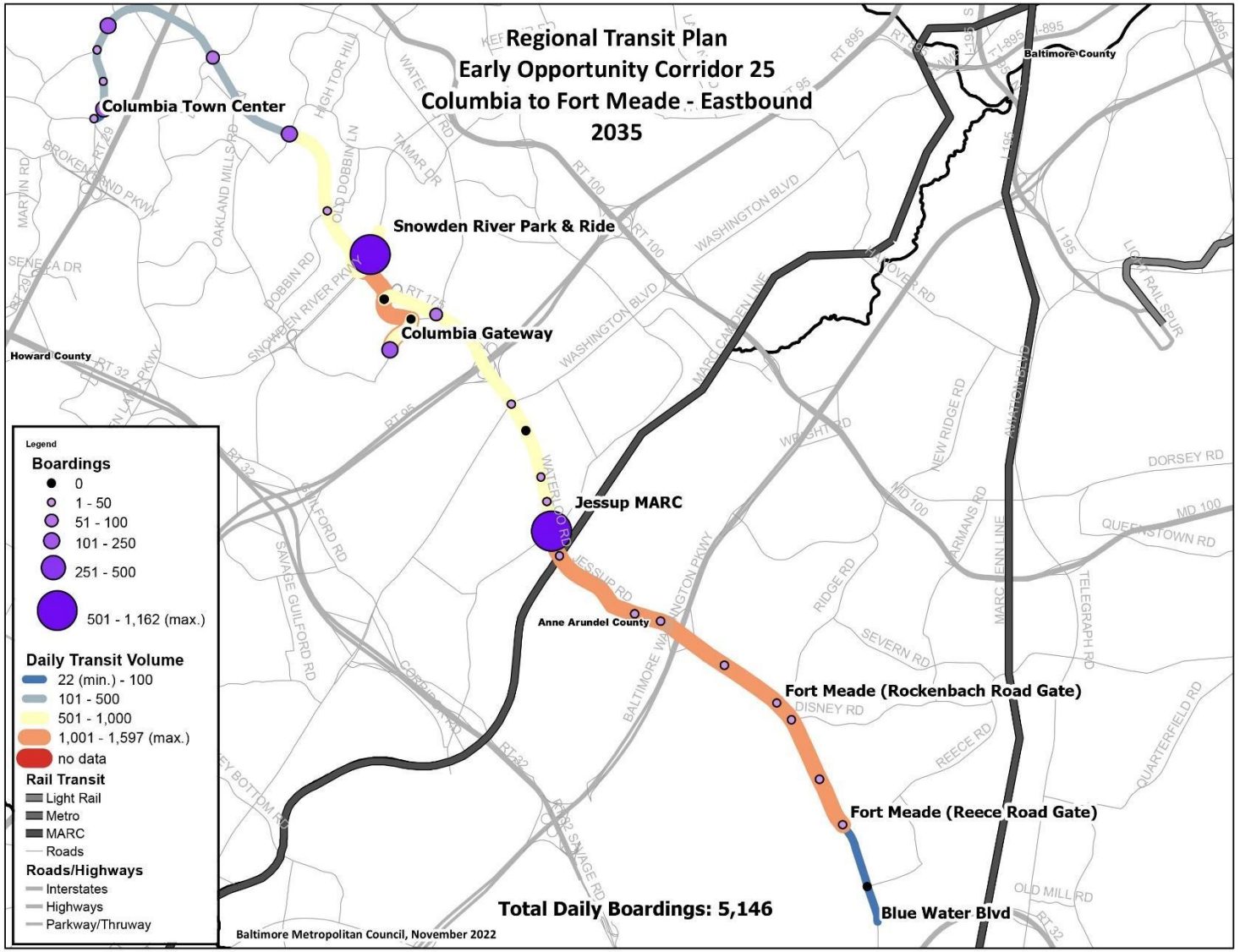
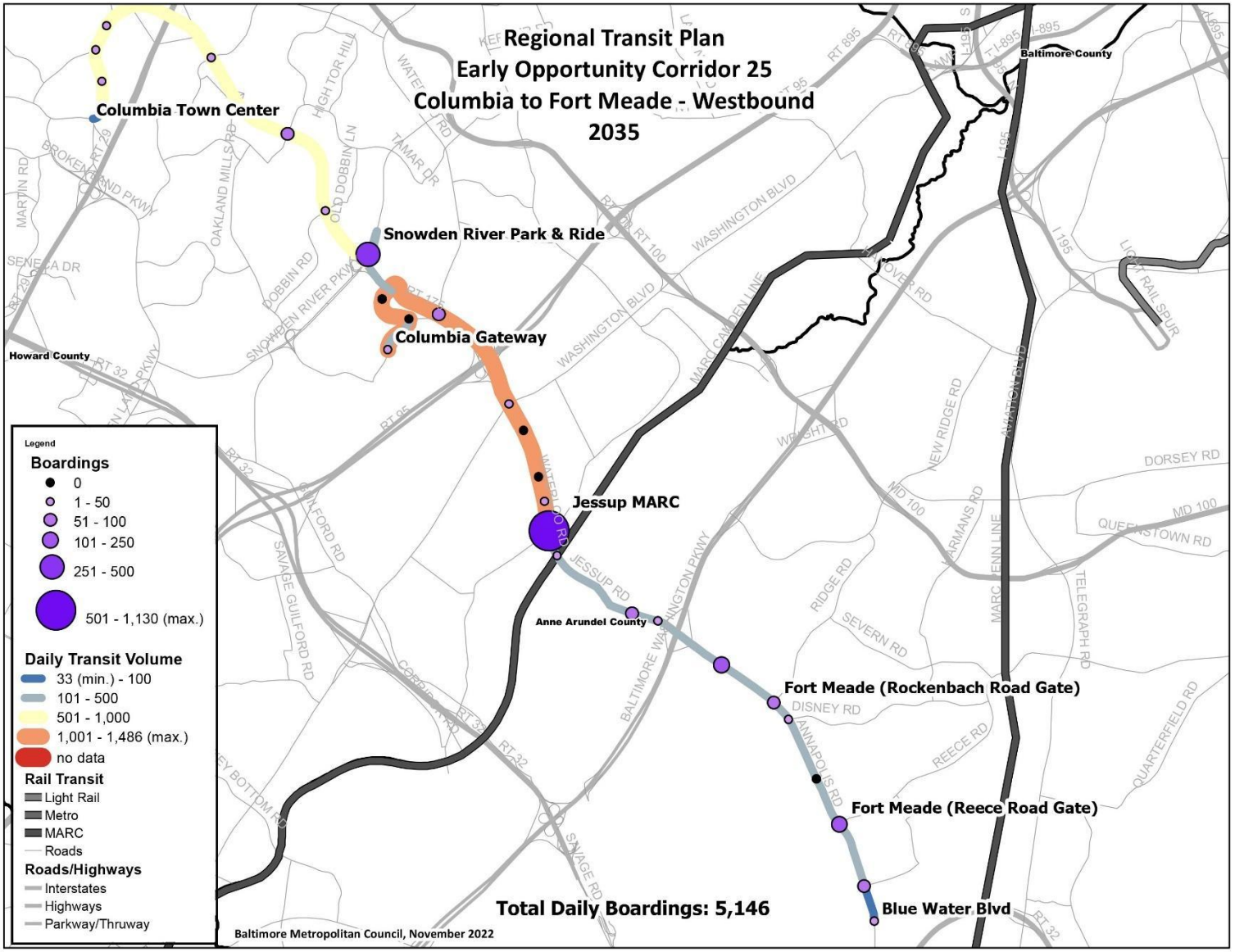


2035 Alignment Alternative #3 to Fort Meade – Westbound



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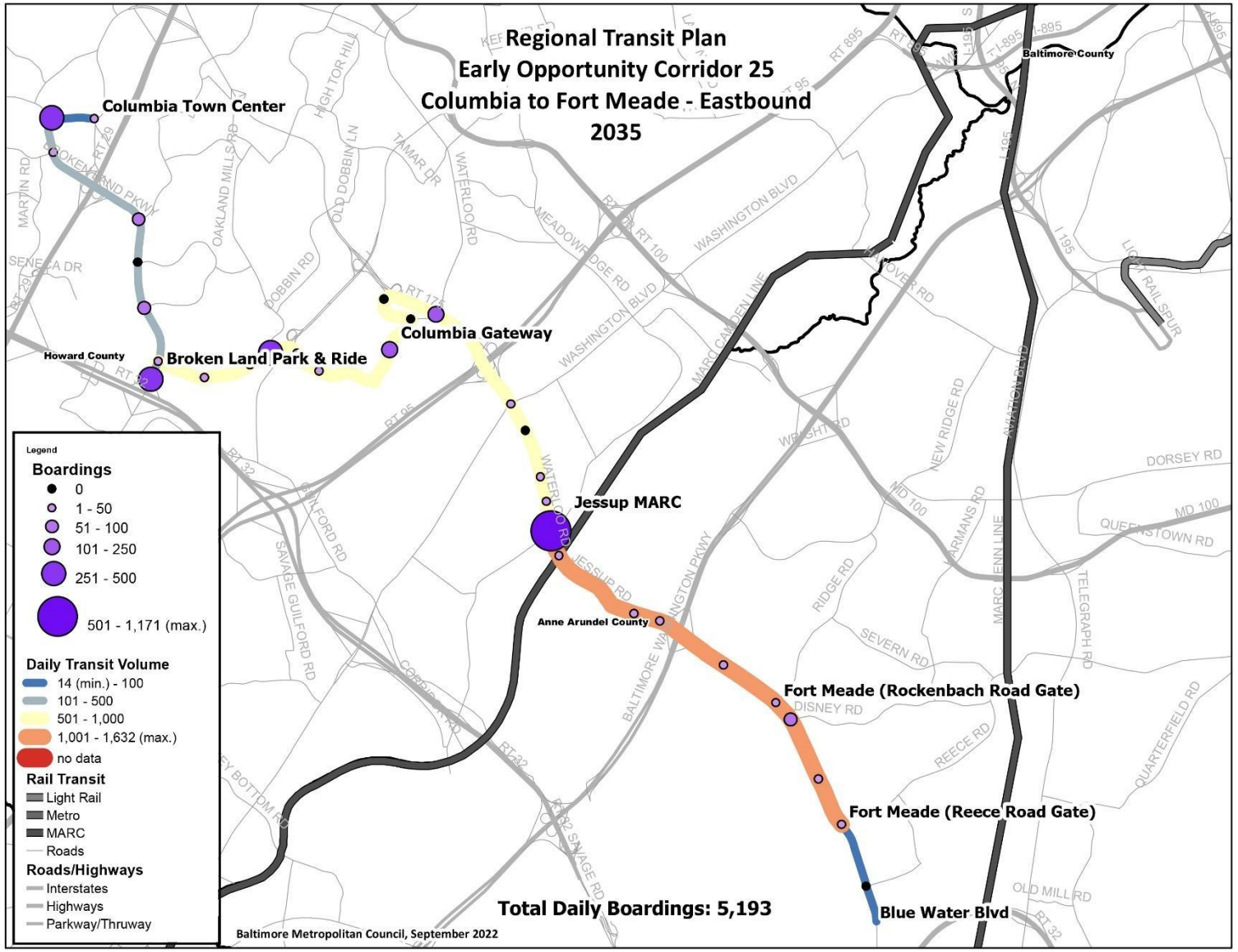

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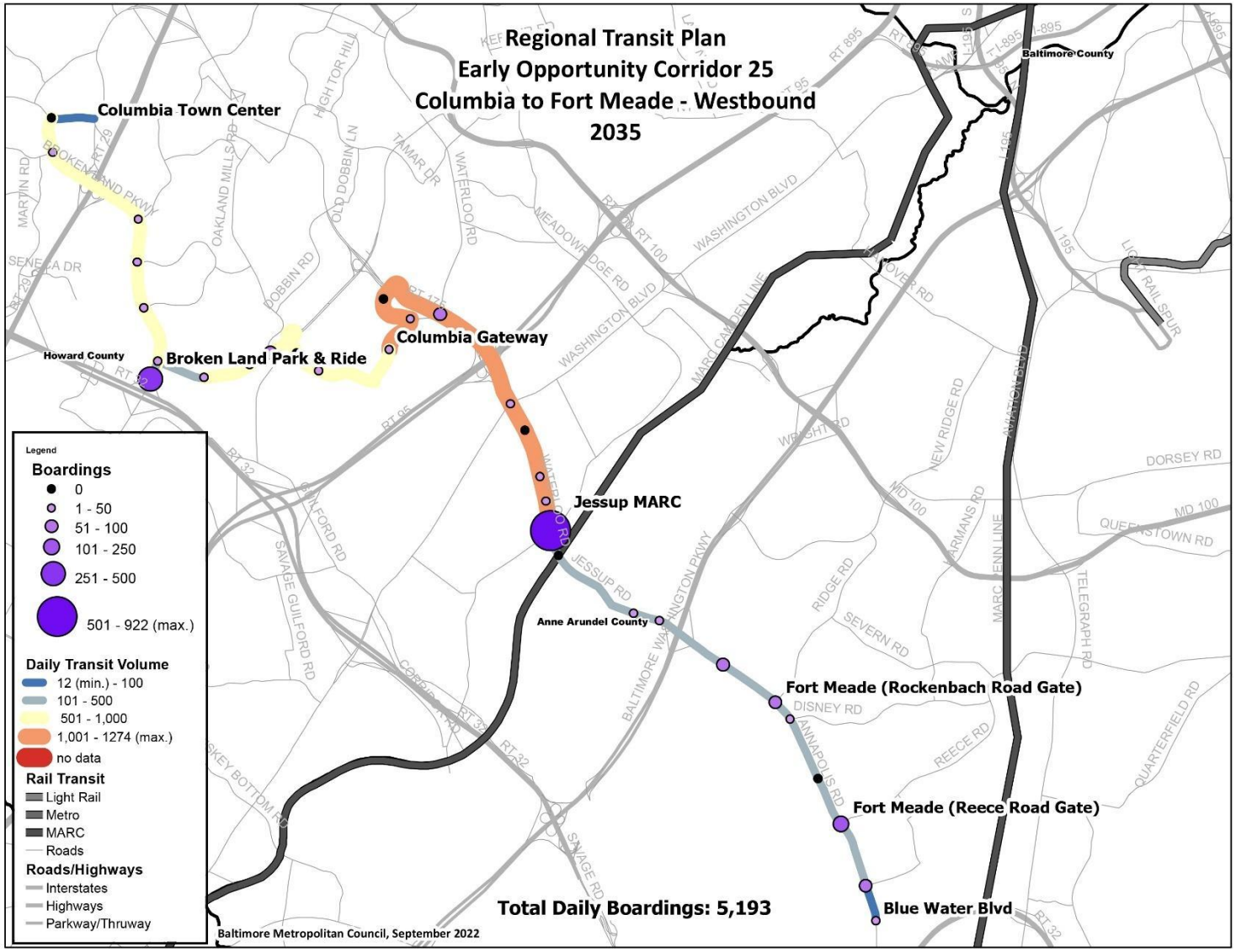

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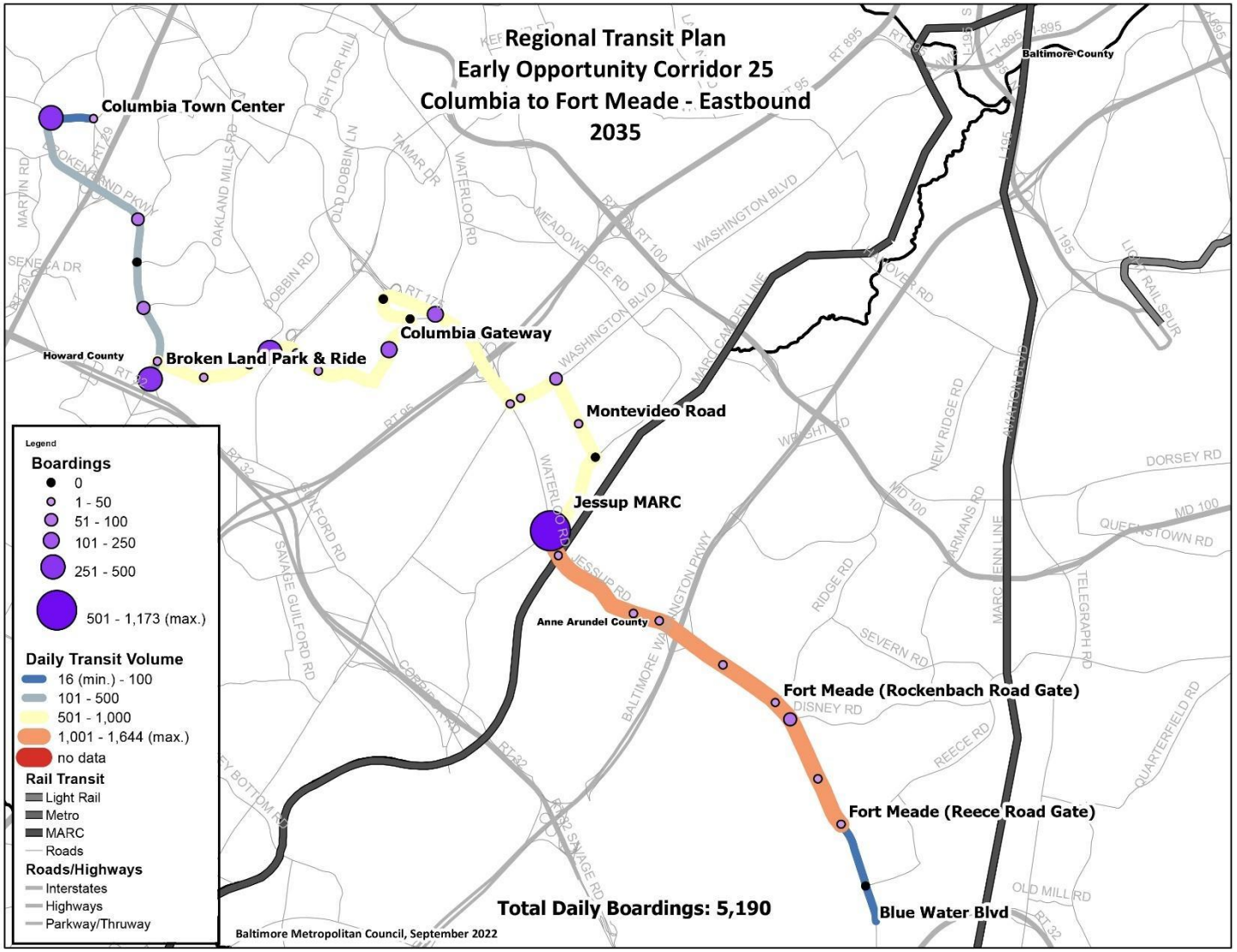
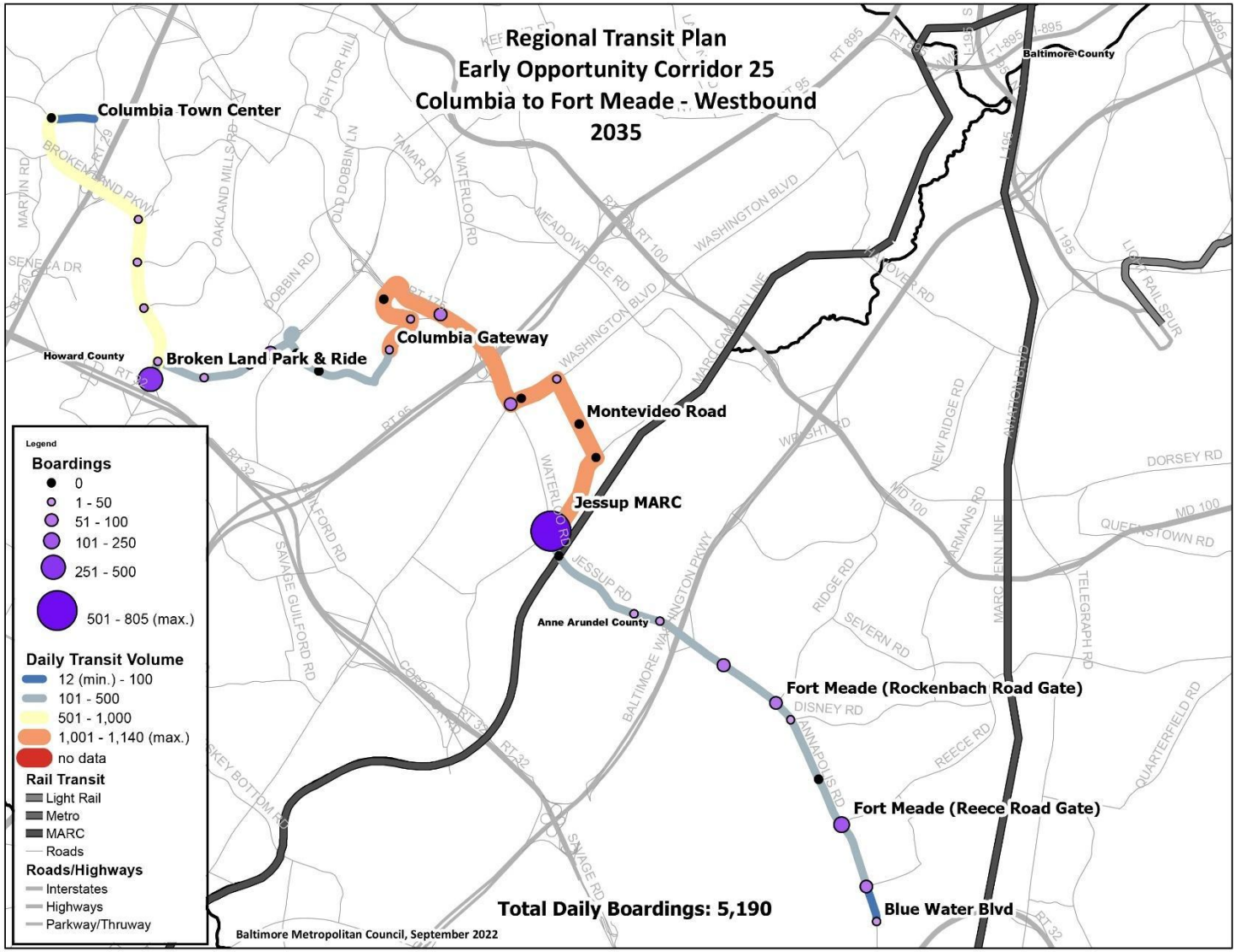


2035 Alignment Alternative #11 to Fort Meade – Westbound



Appendix 4 – Ridership Forecasts – Boarding and Alighting by Stop

Tabular Format

Alignment #12 to BWI – 2030 Boardings and Alightings by Stop

P&R	Station Name	Boardings	Alightings
	Little Patuxent Pkwy and South Entrance Rd	14	0
	Broken Land Parkway and Little Patuxent Parkway	748	604
	Broken Land Parkway and Hickory Ridge Road	44	2
	Broken Land Parkway and Stevens Forest Road	149	78
	Broken Land Parkway and Cradlerock Way North	0	1
	Broken Land Parkway and Cradlerock Way South	83	20
	Broken Land Parkway and Snowden River Parkway	22	3
yes	Broken Land Park & Ride (Commuter Bus)	913	112
	Snowden River Parkway and Berger Road	145	234
	Snowden River Parkway and Rustling Leaf	65	81
	Snowden River Parkway and Oakland Mills Road	452	272
	Robert Fulton Drive and Solar Walk	0	0
	Robert Fulton Drive and Lee Deforest Drive	4	0
	Columbia Gateway	197	380
	Columbia Gateway Drive and Columbia Gateway Drive	0	0
	Columbia Gateway Drive and Alexander Bell Drive	0	0
	MD 175 and MD 108	136	119
	MD 175 and US 1	156	57
	US 1 and Howard Square entrance	2	0
	US 1 and Montevideo Road	37	165
	US 1 and Cemetery Lane	70	95
	US 1 and Cooney Lane	72	59
	US 1 and MD 103	166	79
	MD 103 and Dorsey Run Road	0	0
	MD 103 and Binder Lane	0	0
	MD 103 and Scarlet Oak Drive	0	0
	MD 103 and Old Dorsey Road	0	12
	MD 103 and Coca Cola Drive	25	93
	MD 175 and Parkside Blvd	129	137
	MD 175 and MD 713	516	1,122
	MD 713 and Stone Castle Drive	17	5
	MD 713 and Bastille Place	126	5
	MD 713 and Cameron Ridge Road	68	0
	MD 713 and Stony Run Drive North	0	0
	MD 713 and Teague Drive	27	2
	Arundel Mills Transit Center on Arundel Mills Circle	529	490

P&R	Station Name	Boardings	Alightings
	New Ridge Road and Dorsey Road	122	106
	MD 176 and Ridge Road	65	42
	MD 176 and Candlewood Road	58	10
	MD 176 and Harmans Road	88	90
	MD 170 and Mathison Way	54	80
yes	MD 170 and Northrop Grumman main entrance (BWI Rail Station MARC)	1,731	534
	BWI Airport - Center Entrance (BWI Airport LIGHT RAIL)	309	175
	MD 170 and Elkridge Landing Road	375	10
	Elkridge Landing Road and Nursery Road	366	1,010
	Elkridge Landing Road and Springhill Suites	46	2
	Winterson Road and Nursery Road	12	36
	Nursery Road and International Drive	62	180
		6,504	6,504

Alignment #12 to BWI – 2035 Boardings and Alightings by Stop

P&R	Station Name	Boardings	Alightings
	Little Patuxent Pkwy and South Entrance Rd	20	0
	Broken Land Parkway and Little Patuxent Parkway	830	816
	Broken Land Parkway and Hickory Ridge Road	41	12
	Broken Land Parkway and Stevens Forest Road	143	114
	Broken Land Parkway and Cradlerock Way North	1	1
	Broken Land Parkway and Cradlerock Way South	137	38
	Broken Land Parkway and Snowden River Parkway	6	1
yes	Broken Land Park & Ride (Commuter Bus)	940	116
	Snowden River Parkway and Berger Road	140	209
	Snowden River Parkway and Rustling Leaf	77	73
	Snowden River Parkway and Oakland Mills Road	505	345
	Robert Fulton Drive and Solar Walk	4	0
	Robert Fulton Drive and Lee Deforest Drive	12	0
	Columbia Gateway	259	510
	Columbia Gateway Drive and Columbia Gateway Drive	7	0
	Columbia Gateway Drive and Alexander Bell Drive	4	0
	MD 175 and MD 108	177	107
	MD 175 and US 1	136	90
	US 1 and Howard Square entrance	0	0
	US 1 and Montevideo Road	29	149
	US 1 and Cemetery Lane	114	161
	US 1 and Cooney Lane	59	56
	US 1 and MD 103	154	80
	MD 103 and Dorsey Run Road	7	8
	MD 103 and Binder Lane	0	0
	MD 103 and Scarlet Oak Drive	0	0
	MD 103 and Old Dorsey Road	15	0
	MD 103 and Coca Cola Drive	121	161
	MD 175 and Parkside Blvd	242	215
	MD 175 and MD 713	450	1,052
	MD 713 and Stone Castle Drive	89	15
	MD 713 and Bastille Place	175	18
	MD 713 and Cameron Ridge Road	90	2
	MD 713 and Stony Run Drive North	0	0
	MD 713 and Teague Drive	18	0
P&R	**Station Name**	**Boardings**	**Alightings**

	Arundel Mills Transit Center on Arundel Mills Circle	587	485
	New Ridge Road and Dorsey Road	170	149
	MD 176 and Ridge Road	68	151
	MD 176 and Candlewood Road	73	3
	MD 176 and Harmans Road	140	75
	MD 170 and Mathison Way	38	32
yes	MD 170 and Northrop Grumman main entrance (BWI Rail Station MARC)	1,813	520
	BWI Airport - Center Entrance (BWI Airport LIGHT RAIL)	300	164
	MD 170 and Elkridge Landing Road	408	7
	Elkridge Landing Road and Nursery Road	360	1,286
	Elkridge Landing Road and Springhill Suites	22	8
	Winterson Road and Nursery Road	6	62
	Nursery Road and International Drive	50	110
		7,403	7,403

Alignment #11 to BWI – 2030 Boardings and Alightings by Stop

P&R	Station Name	Boardings	Alightings
	Little Patuxent Pkwy and South Entrance Rd	14	0
	Broken Land Parkway and Little Patuxent Parkway	631	790
	Broken Land Parkway and Hickory Ridge Road	65	0
	Broken Land Parkway and Stevens Forest Road	126	91
	Broken Land Parkway and Cradlerock Way North	0	0
	Broken Land Parkway and Cradlerock Way South	97	8
	Broken Land Parkway and Snowden River Parkway	18	3
yes	Broken Land Park & Ride (Commuter Bus)	866	137
	Snowden River Parkway and Berger Road	90	268
	Snowden River Parkway and Rustling Leaf	59	79
	Snowden River Parkway and Oakland Mills Road	480	280
	Robert Fulton Drive and Solar Walk	0	0
	Robert Fulton Drive and Lee Deforest Drive	8	0
	Columbia Gateway	108	696
	Columbia Gateway Drive and Columbia Gateway Drive	0	0
	Columbia Gateway Drive and Alexander Bell Drive	0	8
	MD 175 and MD 108	209	171
	MD 175 and US 1	70	84
	US 1 and Howard Square entrance	0	3
	US 1 and Montevideo Road	192	122
	Montevideo and Sunbelt Rentals	0	20
	Montevideo and Dorsey Run Road	0	0
yes	MD 175 and Dorsey Run Road (Jessup MARC)	2,116	587
	MD 175 and Old Jessup Road	13	0
	MD 175 and National Business Parkway	83	297
	MD 175 and Race Road	46	13
	MD 175 and Parkside Blvd	109	27
	MD 175 and MD 713	445	1,837
	MD 713 and Stone Castle Drive	13	14
	MD 713 and Bastille Place	133	2
	MD 713 and Cameron Ridge Road	74	2
	MD 713 and Stony Run Drive North	0	0
	MD 713 and Teague Drive	25	2
	Arundel Mills Transit Center on Arundel Mills Circle	486	541
	New Ridge Road and Dorsey Road	106	106
	MD 176 and Ridge Road	67	40
	MD 176 and Candlewood Road	48	4
P&R	**Station Name**	**Boardings**	**Alightings**

	MD 176 and Harmans Road	85	100
	MD 170 and Mathison Way	50	72
yes	MD 170 and Northrop Grumman main entrance (BWI Rail Station MARC)	1,540	481
	BWI Airport - Center Entrance (BWI Airport LIGHT RAIL)	144	191
	MD 170 and Elkridge Landing Road	392	10
	Elkridge Landing Road and Nursery Road	144	1,030
	Elkridge Landing Road and Springhill Suites	52	8
	Winterson Road and Nursery Road	8	48
	Nursery Road and International Drive	38	206
		8,379	8,379

Alignment #11 to BWI – 2035 Boardings and Alightings by Stop

P&R	Station Name	Boardings	Alightings
	Little Patuxent Pkwy and South Entrance Rd	20	10
	Broken Land Parkway and Little Patuxent Parkway	571	925
	Broken Land Parkway and Hickory Ridge Road	45	12
	Broken Land Parkway and Stevens Forest Road	130	103
	Broken Land Parkway and Cradlerock Way North	1	1
	Broken Land Parkway and Cradlerock Way South	145	32
	Broken Land Parkway and Snowden River Parkway	11	3
yes	Broken Land Park & Ride (Commuter Bus)	924	120
	Snowden River Parkway and Berger Road	119	207
	Snowden River Parkway and Rustling Leaf	71	75
	Snowden River Parkway and Oakland Mills Road	555	342
	Robert Fulton Drive and Solar Walk	8	0
	Robert Fulton Drive and Lee Deforest Drive	12	0
	Columbia Gateway	184	978
	Columbia Gateway Drive and Columbia Gateway Drive	7	7
	Columbia Gateway Drive and Alexander Bell Drive	0	0
	MD 175 and MD 108	250	121
	MD 175 and US 1	109	113
	US 1 and Howard Square entrance	0	7
	US 1 and Montevideo Road	141	192
	Montevideo and Sunbelt Rentals	2	6
	Montevideo and Dorsey Run Road	0	0
yes	MD 175 and Dorsey Run Road (Jessup MARC)	2,109	434
	MD 175 and Old Jessup Road	21	0
	MD 175 and National Business Parkway	97	320
	MD 175 and Race Road	66	21
	MD 175 and Parkside Blvd	124	22
	MD 175 and MD 713	395	1,731
	MD 713 and Stone Castle Drive	78	23
	MD 713 and Bastille Place	164	18
	MD 713 and Cameron Ridge Road	102	2
	MD 713 and Stony Run Drive North	0	0
	MD 713 and Teague Drive	18	0
	Arundel Mills Transit Center on Arundel Mills Circle	527	550
	New Ridge Road and Dorsey Road	125	109
	MD 176 and Ridge Road	82	147
P&R	**Station Name**	**Boardings**	**Alightings**
	MD 176 and Candlewood Road	66	4

	MD 176 and Harmans Road	113	79
	MD 170 and Mathison Way	32	30
yes	MD 170 and Northrop Grumman main entrance (BWI Rail Station MARC)	1,541	514
	BWI Airport - Center Entrance (BWI Airport LIGHT RAIL)	180	142
	MD 170 and Elkridge Landing Road	408	10
	Elkridge Landing Road and Nursery Road	116	1,248
	Elkridge Landing Road and Springhill Suites	22	8
	Winterson Road and Nursery Road	4	34
	Nursery Road and International Drive	20	126
		8,824	8,824

Alignment #4 to BWI – 2030 Boardings and Alightings by Stop

P&R	Station Name	Boardings	Alightings
	Little Patuxent Pkwy and South Entrance Rd	20	0
	Broken Land Parkway and Little Patuxent Parkway	518	762
	Broken Land Parkway and Hickory Ridge Road	63	3
	Broken Land Parkway and Stevens Forest Road	119	95
	Broken Land Parkway and Cradlerock Way North	0	0
	Broken Land Parkway and Cradlerock Way South	98	17
	Broken Land Parkway and Snowden River Parkway	18	3
yes	Broken Land Park & Ride (Commuter Bus)	853	147
	Snowden River Parkway and Berger Road	81	256
	Snowden River Parkway and Rustling Leaf	52	72
	Snowden River Parkway and Oakland Mills Road	388	272
	Robert Fulton Drive and Solar Walk	0	0
	Robert Fulton Drive and Lee Deforest Drive	20	0
	Columbia Gateway	69	699
	Columbia Gateway Drive and Columbia Gateway Drive	0	0
	Columbia Gateway Drive and Alexander Bell Drive	4	0
	MD 175 and MD 108	202	180
	MD 175 and US 1	85	90
	MD 175 and Pocomoke Avenue	0	0
	MD 175 and entrance to Maryland Corrections facility	7	78
	MD 175 and Oceano Avenue	35	107
yes	MD 175 and Dorsey Run Road (Jessup MARC)	2,187	619
	MD 175 and Old Jessup Road	11	0
	MD 175 and National Business Parkway	56	313
	MD 175 and Race Road	46	21
	MD 175 and Parkside Blvd	107	27
	MD 175 and MD 713	230	1,799
	MD 713 and Stone Castle Drive	13	16
	MD 713 and Bastille Place	126	2
	MD 713 and Cameron Ridge Road	76	2
	MD 713 and Stony Run Drive North	0	0
	MD 713 and Teague Drive	22	2
	Arundel Mills Transit Center on Arundel Mills Circle	385	500
	New Ridge Road and Dorsey Road	80	104
	MD 176 and Ridge Road	68	60
	MD 176 and Candlewood Road	56	5
	MD 176 and Harmans Road	73	94
P&R	**Station Name**	**Boardings**	**Alightings**

	MD 170 and Mathison Way	32	78
yes	MD 170 and Northrop Grumman main entrance (BWI Rail Station MARC)	1,539	458
	BWI Airport - Center Entrance (BWI Airport LIGHT RAIL)	138	175
	MD 170 and Elkridge Landing Road	386	10
	Elkridge Landing Road and Nursery Road	34	1,054
	Elkridge Landing Road and Springhill Suites	50	10
	Winterson Road and Nursery Road	2	38
	Nursery Road and International Drive	16	196
		8,366	8,366

Alignment #4 to BWI – 2035 Boardings and Alightings by Stop

P&R	Station Name	Boardings	Alightings
	Little Patuxent Pkwy and South Entrance Rd	18	10
	Broken Land Parkway and Little Patuxent Parkway	432	911
	Broken Land Parkway and Hickory Ridge Road	42	13
	Broken Land Parkway and Stevens Forest Road	128	113
	Broken Land Parkway and Cradlerock Way North	1	1
	Broken Land Parkway and Cradlerock Way South	150	34
	Broken Land Parkway and Snowden River Parkway	9	1
yes	Broken Land Park & Ride (Commuter Bus)	928	104
	Snowden River Parkway and Berger Road	95	227
	Snowden River Parkway and Rustling Leaf	59	78
	Snowden River Parkway and Oakland Mills Road	418	349
	Robert Fulton Drive and Solar Walk	16	0
	Robert Fulton Drive and Lee Deforest Drive	12	0
	Columbia Gateway	159	1,006
	Columbia Gateway Drive and Columbia Gateway Drive	7	0
	Columbia Gateway Drive and Alexander Bell Drive	4	0
	MD 175 and MD 108	217	143
	MD 175 and US 1	52	107
	MD 175 and Pocomoke Avenue	0	0
	MD 175 and entrance to Maryland Corrections facility	5	52
	MD 175 and Oceano Avenue	26	108
yes	MD 175 and Dorsey Run Road (Jessup MARC)	2,266	417
	MD 175 and Old Jessup Road	21	0
	MD 175 and National Business Parkway	61	309
	MD 175 and Race Road	66	27
	MD 175 and Parkside Blvd	136	23
	MD 175 and MD 713	188	1,753
	MD 713 and Stone Castle Drive	78	23
	MD 713 and Bastille Place	152	20
	MD 713 and Cameron Ridge Road	93	6
	MD 713 and Stony Run Drive North	0	0
	MD 713 and Teague Drive	20	0
	Arundel Mills Transit Center on Arundel Mills Circle	441	528
	New Ridge Road and Dorsey Road	124	93
	MD 176 and Ridge Road	48	146
	MD 176 and Candlewood Road	67	6
P&R	**Station Name**	**Boardings**	**Alightings**
	MD 176 and Harmans Road	91	74

	MD 170 and Mathison Way	28	30
yes	MD 170 and Northrop Grumman main entrance (BWI Rail Station MARC)	1,511	498
	BWI Airport - Center Entrance (BWI Airport LIGHT RAIL)	163	141
	MD 170 and Elkridge Landing Road	402	9
	Elkridge Landing Road and Nursery Road	24	1,252
	Elkridge Landing Road and Springhill Suites	22	12
	Winterson Road and Nursery Road	4	36
	Nursery Road and International Drive	8	128
		8,791	8,791

Alignment #3 to Fort Meade - 2030 Boardings and Alightings by Stop

P&R	Station Name	Boardings	Alightings
	Little Patuxent Pkwy and South Entrance Rd	41	40
	Columbia Mall transit center - adjacent to Barnes and Noble	84	445
	Columbia Mall Ring Road and Windstream Drive	22	1
	Windstream Drive and Governor Warfield Parkway	72	10
	Little Patuxent Parkway and Running Brook Road	200	42
	Little Patuxent Parkway and Thunder Hill Road	129	81
	Little Patuxent Parkway and Tamar Drive	208	80
	Little Patuxent Parkway and Dobbin Road	19	173
yes	Snowden River Pkwy Park & Ride (Commuter Bus)	862	49
	Columbia Gateway Drive and Alexander Bell Drive	0	0
	Columbia Gateway	125	1,043
	Columbia Gateway Drive and Columbia Gateway Drive	0	0
	MD 175 and MD 108	185	159
	MD 175 and US 1	58	104
	MD 175 and Pocomoke Avenue	0	0
	MD 175 and entrance to Maryland Corrections facility	2	68
	MD 175 and Oceano Avenue	29	102
yes	MD 175 and Dorsey Run Road (Jessup MARC)	2,272	522
	MD 175 and Old Jessup Road	12	1
	MD 175 and National Business Parkway	46	287
	MD 175 and Race Road	50	27
	MD 175 and Parkside Blvd	69	21
	MD 175 and MD 713	68	4
	MD 175 and Disney Road	58	13
	MD 175 and 20th Street	7	7
	MD 175 and Reece Road	112	1,509
	MD 175 and Mapes Road	76	25
	MD 175 and Blue Water Blvd	45	38
		4,851	4,851

Alignment #3 to Fort Meade - 2035 Boardings and Alightings by Stop

P&R	Station Name	Boardings	Alightings
	Little Patuxent Pkwy and South Entrance Rd	29	39
	Columbia Mall transit center - adjacent to Barnes and Noble	134	537
	Columbia Mall Ring Road and Windstream Drive	15	3
	Windstream Drive and Governor Warfield Parkway	49	28
	Little Patuxent Parkway and Running Brook Road	139	71
	Little Patuxent Parkway and Thunder Hill Road	117	108
	Little Patuxent Parkway and Tamar Drive	245	43
	Little Patuxent Parkway and Dobbin Road	35	171
yes	Snowden River Pkwy Park & Ride (Commuter Bus)	891	35
	Columbia Gateway Drive and Alexander Bell Drive	0	0
	Columbia Gateway	170	1,427
	Columbia Gateway Drive and Columbia Gateway Drive	0	0
	MD 175 and MD 108	175	89
	MD 175 and US 1	69	130
	MD 175 and Pocomoke Avenue	0	0
	MD 175 and entrance to Maryland Corrections facility	4	49
	MD 175 and Oceano Avenue	30	78
yes	MD 175 and Dorsey Run Road (Jessup MARC)	2,292	492
	MD 175 and Old Jessup Road	31	0
	MD 175 and National Business Parkway	68	251
	MD 175 and Race Road	55	44
	MD 175 and Parkside Blvd	144	20
	MD 175 and MD 713	82	6
	MD 175 and Disney Road	95	4
	MD 175 and 20th Street	5	5
	MD 175 and Reece Road	162	1,479
	MD 175 and Mapes Road	78	16
	MD 175 and Blue Water Blvd	33	22
		5,146	5,146

Alignment #4 to Fort Meade - 2030 Boardings and Alightings by Stop

P&R	Station Name	Boardings	Alightings
	Little Patuxent Pkwy and South Entrance Rd	17	2
	Broken Land Parkway and Little Patuxent Parkway	354	607
	Broken Land Parkway and Hickory Ridge Road	82	4
	Broken Land Parkway and Stevens Forest Road	94	68
	Broken Land Parkway and Cradlerock Way North	0	0
	Broken Land Parkway and Cradlerock Way South	99	13
	Broken Land Parkway and Snowden River Parkway	18	3
yes	Broken Land Park & Ride (Commuter Bus)	754	128
	Snowden River Parkway and Berger Road	58	213
	Snowden River Parkway and Rustling Leaf	49	59
	Snowden River Parkway and Oakland Mills Road	299	136
	Robert Fulton Drive and Solar Walk	0	0
	Robert Fulton Drive and Lee Deforest Drive	12	0
	Columbia Gateway	82	695
	Columbia Gateway Drive and Columbia Gateway Drive	0	0
	Columbia Gateway Drive and Alexander Bell Drive	0	0
	MD 175 and MD 108	177	185
	MD 175 and US 1	65	94
	MD 175 and Pocomoke Avenue	0	0
	MD 175 and entrance to Maryland Corrections facility	2	74
	MD 175 and Oceano Avenue	20	96
yes	MD 175 and Dorsey Run Road (Jessup MARC)	2,154	601
	MD 175 and Old Jessup Road	19	0
	MD 175 and National Business Parkway	39	297
	MD 175 and Race Road	59	25
	MD 175 and Parkside Blvd	72	23
	MD 175 and MD 713	65	2
	MD 175 and Disney Road	64	7
	MD 175 and 20th Street	7	7
	MD 175 and Reece Road	134	1,570
	MD 175 and Mapes Road	77	10
	MD 175 and Blue Water Blvd	60	14
		4,930	4,930

Alignment #4 to Fort Meade - 2035 Boardings and Alightings by Stop

P&R	Station Name	Boardings	Alightings
	Little Patuxent Pkwy and South Entrance Rd	14	12
	Broken Land Parkway and Little Patuxent Parkway	281	741
	Broken Land Parkway and Hickory Ridge Road	41	8
	Broken Land Parkway and Stevens Forest Road	103	89
	Broken Land Parkway and Cradlerock Way North	1	1
	Broken Land Parkway and Cradlerock Way South	109	40
	Broken Land Parkway and Snowden River Parkway	5	0
yes	Broken Land Park & Ride (Commuter Bus)	857	107
	Snowden River Parkway and Berger Road	65	223
	Snowden River Parkway and Rustling Leaf	53	77
	Snowden River Parkway and Oakland Mills Road	348	189
	Robert Fulton Drive and Solar Walk	8	0
	Robert Fulton Drive and Lee Deforest Drive	13	2
	Columbia Gateway	159	1,003
	Columbia Gateway Drive and Columbia Gateway Drive	9	0
	Columbia Gateway Drive and Alexander Bell Drive	0	8
	MD 175 and MD 108	204	106
	MD 175 and US 1	83	77
	MD 175 and Pocomoke Avenue	0	0
	MD 175 and entrance to Maryland Corrections facility	4	70
	MD 175 and Oceano Avenue	16	93
yes	MD 175 and Dorsey Run Road (Jessup MARC)	2,093	471
	MD 175 and Old Jessup Road	29	0
	MD 175 and National Business Parkway	47	281
	MD 175 and Race Road	43	41
	MD 175 and Parkside Blvd	123	20
	MD 175 and MD 713	87	14
	MD 175 and Disney Road	98	4
	MD 175 and 20th Street	4	4
	MD 175 and Reece Road	174	1,485
	MD 175 and Mapes Road	89	4
	MD 175 and Blue Water Blvd	35	24
		5,193	5,193

Alignment #11 to Fort Meade - 2030 Boardings and Alightings by Stop

P&R	Station Name	Boardings	Alightings
	Little Patuxent Pkwy and South Entrance Rd	12	2
	Broken Land Parkway and Little Patuxent Parkway	317	616
	Broken Land Parkway and Hickory Ridge Road	82	4
	Broken Land Parkway and Stevens Forest Road	88	51
	Broken Land Parkway and Cradlerock Way North	0	0
	Broken Land Parkway and Cradlerock Way South	92	25
	Broken Land Parkway and Snowden River Parkway	20	3
yes	Broken Land Park & Ride (Commuter Bus)	759	130
	Snowden River Parkway and Berger Road	52	217
	Snowden River Parkway and Rustling Leaf	45	61
	Snowden River Parkway and Oakland Mills Road	305	130
	Robert Fulton Drive and Solar Walk	0	0
	Robert Fulton Drive and Lee Deforest Drive	4	0
	Columbia Gateway	73	690
	Columbia Gateway Drive and Columbia Gateway Drive	0	0
	Columbia Gateway Drive and Alexander Bell Drive	0	0
	MD 175 and MD 108	166	152
	MD 175 and US 1	69	89
	US 1 and Howard Square entrance	2	5
	US 1 and Montevideo Road	99	108
	Montevideo and Sunbelt Rentals	0	24
	Montevideo and Dorsey Run Road	0	0
yes	MD 175 and Dorsey Run Road (Jessup MARC)	2,074	548
	MD 175 and Old Jessup Road	13	0
	MD 175 and National Business Parkway	47	313
	MD 175 and Race Road	53	14
	MD 175 and Parkside Blvd	79	23
	MD 175 and MD 713	62	2
	MD 175 and Disney Road	58	7
	MD 175 and 20th Street	9	9
	MD 175 and Reece Road	123	1,579
	MD 175 and Mapes Road	71	12
	MD 175 and Blue Water Blvd	51	12
		4,824	4,824

Alignment #11 to Fort Meade - 2035 Boardings and Alightings by Stop

P&R	Station Name	Boardings	Alightings
	Little Patuxent Pkwy and South Entrance Rd	16	12
	Broken Land Parkway and Little Patuxent Parkway	273	736
	Broken Land Parkway and Hickory Ridge Road	43	9
	Broken Land Parkway and Stevens Forest Road	102	88
	Broken Land Parkway and Cradlerock Way North	1	1
	Broken Land Parkway and Cradlerock Way South	101	43
	Broken Land Parkway and Snowden River Parkway	5	0
yes	Broken Land Park & Ride (Commuter Bus)	853	103
	Snowden River Parkway and Berger Road	65	196
	Snowden River Parkway and Rustling Leaf	57	79
	Snowden River Parkway and Oakland Mills Road	338	209
	Robert Fulton Drive and Solar Walk	16	0
	Robert Fulton Drive and Lee Deforest Drive	12	0
	Columbia Gateway	150	1,007
	Columbia Gateway Drive and Columbia Gateway Drive	9	12
	Columbia Gateway Drive and Alexander Bell Drive	0	8
	MD 175 and MD 108	201	72
	MD 175 and US 1	120	91
	US 1 and Howard Square entrance	4	0
	US 1 and Montevideo Road	113	145
	Montevideo and Sunbelt Rentals	2	6
	Montevideo and Dorsey Run Road	0	0
yes	MD 175 and Dorsey Run Road (Jessup MARC)	1,979	458
	MD 175 and Old Jessup Road	27	0
	MD 175 and National Business Parkway	48	278
	MD 175 and Race Road	59	47
	MD 175 and Parkside Blvd	109	31
	MD 175 and MD 713	104	9
	MD 175 and Disney Road	93	6
	MD 175 and 20th Street	4	4
	MD 175 and Reece Road	171	1,513
	MD 175 and Mapes Road	85	10
	MD 175 and Blue Water Blvd	31	17
		5,190	5,190